Courses, programs and any arrangements for programs including staff allocated as stated in this Handbook are an expression of intent only. The University reserves the right to discontinue or vary arrangements at any time without notice. Information has been brought up to date as at 7 December 2000, but may be amended without notice by the University Council.

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- Master of Science by coursework (MSc) – Biotechnology/Biopharmaceuticals  
- Master of Engineering (ME) and Master of Science (MSc)  
- Master of Engineering (ME), Master of Science (MSc) and Master of Surveying (MSurv) without supervision  
- Master of Science and Technology (MScTech)  
- Master of Environmental Studies (MEnvStudies)  
- Master of Optometry (MOptom)  
- Master of Psychology (Clinical) (MPsycho(Clin)), Master of Psychology (Forensic) (MPsycho(For)) and Master of Psychology (Organisational) (MPsycho(Org))  
- Master of Safety Science (MSafetySc)  
- Master of Science (MSc), Master of Science (MSc) without supervision  
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Welcome to Science at UNSW

Whether you are beginning studies as an undergraduate student, or are continuing on to postgraduate courses or research, we hope that your experience at UNSW will exceed your expectations, and that your studies in Science will provide you with an education which is second to none and the basis for a rewarding career.

Students study science for many different reasons. Some are looking to establish themselves in particular science-based industries or professions, some are looking to science to enhance or complement their studies in other areas such as law or medicine or commerce, while others study science because they have a passion for it or are fascinated by it as a tool to understand the world.

Whatever your reasons for studying science, we have subjects or programs which will meet your needs. Your program of study can have a strong vocational orientation or be quite general. It can lead to research in a particular discipline, or incorporate non-science areas in a multidisciplinary combination. Most programs are very flexible, providing a degree of specialisation and also the option to include subjects of your own choice.

The UNSW science courses have a reputation which is unsurpassed in Australia. The Science Faculties are renowned for their research, and all of our staff are committed to providing the best possible science education and to sharing their enthusiasm for their areas of interest with you.

This Handbook provides the basic information on the science courses and Faculties. However, it can only indicate the full range of possibilities which are open to you. All of the science staff are ready, willing and able to provide advice on administrative matters, and on subject, course and career options. Students are thus encouraged to approach staff to discuss any concerns they have.

We wish you every success in your studies in Science at UNSW, and hope that the time you spend with us as valued members of the UNSW community will be happy, stimulating, productive and rewarding.

C E Sutherland
Dean
Faculty of Science and Technology

M J Sleigh
Dean
Faculty of Life Sciences
General Information

This Handbook is designed as a detailed source of information in all matters related to the Faculties of Life Science and of Science and Technology, and more generally to science at UNSW. Other information sources include the Student Guide, which is distributed at no charge to all students, and which provides information on the University as a whole, on many of the services available to students, and on some important rules and guidelines. For other details on some aspects of the University, students may need to consult the University Calendar.

Science at UNSW

The education and academic activities at UNSW are organised around the Faculties. Two of these, the Faculties of Life Science, and of Science and Technology, are focussed towards providing teaching and research in the sciences. Others, including Engineering, Medicine, Arts and Social Sciences, and Commerce and Economics, also make a major contribution to activities in the sciences.

The basic educational building blocks in the sciences are the courses which students take. These subjects are drawn together into majors, minors, and study plans providing coherent development of specific disciplines, and these programs are in turn drawn together to form degrees. These majors, minors, and study plans are listed in the contents pages, and are described in detail in the body of this Handbook, as are the courses which make up these components.

Each course is assigned a unit of credit or UOC value, typically 3 or 6. This is intended to indicate the workload required of students to satisfactorily complete the course. A good rule of thumb is that one unit of credit corresponds to 25-30 hours of student effort, both in and out of class.

Because science draws on so many Faculties, UNSW has created an inter-Faculty body called the Cross Faculty Standing Committee for Science to administer the majority of the undergraduate science programs. Some of the more specialised science programs, and all postgraduate programs, are administered by the Faculties themselves.

Advice on Courses and Programs

Each School has staff that advise on courses and programs offered by that School. For general advice and for all matters regarding enrolment, degree requirements, progression within programs or any other general matters, contact the Science Student Office, Lower Ground Floor, Electrical Building: telephone (02) 9385 6125, fax (02) 9385 6127 or email SSO@unsw.edu.au.
The academic year is divided into two sessions, each containing 14 weeks for teaching. Between the two sessions there is a break of approximately six weeks, which includes a one-week study period, two weeks for examinations, and three weeks recess. There is also a short recess of one week within each session. Session 1 commences on the Monday nearest 1 March.

### Faculties other than Medicine, AGSM and University College, ADFA

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<td>M 22 Medicine IV – Term 1 begins</td>
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<td>Th 25 AGSM Executive MBA Program – Graduate Certificate in Management – classes end</td>
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<td>F 26 Australia Day – Public Holiday</td>
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<td>Su 11 Medicine IV – Term 1 ends</td>
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<td>M 12 Medicine IV – Term 2 begins</td>
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<td>Su 18 Medicine V – Term 1 ends</td>
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<td>W 25 Anzac Day – Public Holiday</td>
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<td>T 6 Publication of the provisional timetable for the June examinations</td>
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<td>M 14 AGSM MBA Program – all classes – Examinations begin</td>
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<td>F 18 AGSM MBA Program - all classes – Examinations end</td>
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<td>AGSM Executive MBA Graduate Diploma in Management Program – Session 1 ends</td>
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Su 20 Medicine VI - Term 3 ends
University College, ADFA - Mid-session recess ends
M 21 Medicine VI - Term 4 begins
F 25 AGSM Executive MBA Graduate Certificate in Management Program - Session 1 ends
S 26 AGSM Executive MBA Graduate Diploma in Management - Examination
Su 27 Medicine V - Term 2 ends

June 2001
S 2 AGSM EMBA Graduate Certificate in Management Program - Examinations start
M 4 AGSM MBA Program - all classes - Term 2 begins
F 8 Session 1 ends - for Faculties other than Medicine, AGSM and University College, ADFA
S 9 Study period begins - for Faculties other than Medicine, AGSM and University College, ADFA
Su 10 Medicine IV - Term 3 ends
M 11 Queen's Birthday - Public Holiday
T 12 Medicine IV - Term 4 begins
Th 14 Study period ends - for Faculties other than Medicine, AGSM and University College, ADFA
F 15 Examinations begin - for Faculties other than Medicine, AGSM and University College, ADFA
F 22 University College, ADFA - Session 1 ends
M 25 University College, ADFA - Examinations begin

July 2001
T 3 Examinations end - for Faculties other than Medicine, AGSM and University College, ADFA
W 4 Mid-year recess begins - for Faculties other than Medicine, AGSM and University College, ADFA
F 6 University College, ADFA - Examinations ends
Su 8 University College, ADFA - Mid-year recess begins
F 13 Medicine VI - Term 4 ends
M 16 AGSM Executive MBA - Graduate Certificate in Management program - Session 2 begins
Su 22 Mid-year recess ends - for Faculties other than Medicine, AGSM and University College, ADFA
University College, ADFA - Mid-year recess ends
AGSM MBA Program - all classes - Term 2 ends
M 23 Session 2 begins - for Faculties other than Medicine, AGSM
Medicine VI - Term 5 begins
AGSM MBA Program - all classes - Examinations begin
AGSM MBA Program - all classes - Examinations end
F 27 AGSM MBA Program - all classes - Examinations end

August 2001
F 3 Last day applications are accepted from students to enrol in Session 2 courses
Su 5 Medicine V - Term 3 ends
Medicine IV - Term 4 ends
M 6 AGSM MBA Program - all classes - Term 3 begins
M 13 Medicine IV - Term 5 begins
Medicine V - Term 4 Begins
F 31 HECS Census Date for Session 2
Last day for students to discontinue without failure Session 2 courses

September 2001
S 1 Courses and Careers Day
M 2 Medicine VI - Term 5 ends
M 3 Medicine VI - Term 6 begins
Th 13 Closing date for "on time" applications to the Universities Admissions Centre
F 22 Mid-session recess begins - for Faculties other than Medicine, AGSM and University College, ADFA University College
ADFA - Mid-session recess begins
AGSM - Mid-session recess begins
Su 23 Medicine IV - Term 5 ends
M 24 Medicine IV - Term 6 begins
Su 30 Mid-session recess ends - for Faculties other than Medicine, AGSM and University College, ADFA
AGSM - Mid-session recess ends

October 2001
M 1 Labour Day - Public Holiday
W 10 Last day for students to advise of examination clashes
Su 14 Medicine V - Term 4 ends
M 16 University College, ADFA - Examinations end
W 17 AGSM - Executive MBA Program - Session 2 begins
T 23 AGSM Executive MBA Graduate Certificate in Management Program - Session 2 ends.
University College, ADFA - Session 2 ends.
S 27 AGSM Executive MBA Graduate Diploma in Management Program - Examination

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F 2 Session 2 ends - for Faculties other than Medicine, AGSM and University College, ADFA
S 3 Study period begins - for Faculties other than Medicine, AGSM and University College, ADFA
AGSM Executive MBA Graduate Certificate in Management Program - Examination
Su 4 Medicine IV - Term 6 ends
Th 8 Study period ends - for Faculties other than Medicine, AGSM and University College, ADFA
F 9 Examinations begin - for Faculties other than Medicine, AGSM and University College, ADFA
AGSM MBA Program - all classes - Term 3 ends
M 12 AGSM MBA Program - all classes - Examinations begin
F 16 University College, ADFA - Examinations end
AGSM MBA Program - all classes - Examinations end
S 17 AGSM - Executive MBA Program - Session 2 begins
M 19 AGSM Executive MBA Graduate Certificate in Management - Summer session begins
T 27 Examinations ends - for Faculties other than Medicine, AGSM and University College, ADFA

December 2001
S 22 AGSM Graduate Certificate in Management - Summer session break
T 25 Christmas Day - Public Holiday
W 26 Boxing Day - Public Holiday
Cross Faculty Standing Committee for Science

The Cross Faculty Standing Committee for Science is the coordinating body for undergraduate science programs. Its membership comprises: the Deans and Presiding Members of the Faculty of Life Sciences and the Faculty of Science and Technology, and elected members from these Faculties and the Faculties of Arts and Social Sciences, Commerce and Economics, Engineering, and Medicine. This Standing Committee is responsible for the development and administration of most science degrees.

The day to day administration of student affairs is carried out by the Science Student Office.

Presiding Member
Morgan Eugene Cyril Sant, BA Keele, MSc PhD Lond

Science Student Office

Associate Dean (Undergraduate Science)
Morgan Eugene Cyril Sant, BA Keele, MSc PhD Lond

Executive Officer Undergraduate Science
Paul Buist, BA MEd UNSW

Student Advisors Undergraduate Science
Claire Firth, BSc UNSW
Felicity James, BSc BA UNSW
Faculty of Life Sciences

Comprises Schools of Applied Bioscience (encompassing the Departments of Biotechnology and Food Science and Technology), Biochemistry and Molecular Genetics, Biological Science, Microbiology and Immunology, Psychology, the Centre for Marine and Coastal Studies, the Centre for Biofouling and Bio-Innovation, the Centre for Entomological Research and Insecticide Technology, The Centre for Injury Risk Management, The Clive and Vera Ramaciotti Centre for Gene Function and Analysis and the Co-operative Research Centre for Food Industry Innovation.

Dean
Professor Merilyn Joy Sleigh, BSc Syd, PhD Macq, DipCorpMan, FTSE

Associate Dean (Research)
Professor Ian William Dawes, BSc UNSW, DPhil Oxf

Associate Dean (International Development)
Professor Kenneth Alan Buckle, BSc PhD UNSW, FTSE, FAIFST, FIAFoST, MIFT

Associate Dean (Undergraduate Science)
Morgan Eugene Cyril Sant, BA Keele, MSc PhD Lond

Presiding Member
Associate Professor Kevin David Barrow, BSc PhD Adel

Executive Officer
Michael Dwyer, BSc UNSW

Communications Manager
Deborah Lum, BSc DipEd PhD UNSW, GradDipSciComm ANU

Science Advisor
Yvette Filby, BSc (Pharm Chem) GU

School of Applied Bioscience

Head of School and Head of Department of Food Science and Technology
Graham Harold Fleet, MSc Qld, PhD UC Davis, FASM, FAIFST

Professor of Biotechnology and Head of Department of Biotechnology
Peter Philip Gray, BSc Syd, PhD UNSW, FTSE, FIEAust, MABA, MAIChe

Department of Biotechnology

Head of Department of Biotechnology
Professor PP Gray

Professors
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Brien Anthony Holden, BAppSc Melb, PhD City Lond, LOSc, FAAO, FVCO, DCLP, DSc, OAM

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Adjunct Associate Professor, Executive Director and Director of Clinical Research
Deborah Sweeney, BOptom PhD UNSW, FAAO

Associate Professor and Director of Biological Research
Mark Willcox, BSc Bristol Poly, PhD Manc

Directors of Research
Arthur Back, BOptom PhD UNSW, FAAO
Arthur Ho, BOptom PhD UNSW

Senior Project Coordinator
Donna La Hood, BOptom UNSW, FAAO

Adjunct Senior Lecturer and Senior Project Scientist
Fiona Stapleton, BSc Wales, MSc Manc, PhD City Lond
Senior Project Scientist
Padaja Sankaridurg, BOpt MedResFound, Madras

Project Scientists
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Robert Terry, BOptom MSc UNSW
Reg Wong, FIS

Optometric Researchers
Michelle Huang, BOptom UNSW
Edward Lum, BOptom BindDes UNSW

Community Optometrists
Jacqueline Ramke, BOptom QUT
Katherine Costello, BOptom UNSW

Clinical Research Manager
Nicole O’Hare, BOptom UNSW

Research Manager in Technology
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Manager of Animal Research Facility
Denise Lawler

Data Coordinator
Kathy Laarakkers

Clinical Assistants
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Kim Khuu, BAppSc Syd

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Robyn Lawler
Adrienne Perera, BSc Sri Lanka, MPhil HK
Maxine Tan, BSc Macq

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Graphics Manager
Greta Spies

Computing Manager
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Computer Systems Officer
Eric Lo

Administrators
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Claire Grij
Debbie McDonald*

Visiting Professors
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Gullapalli Rao, MD Guntur
Anti Vannas, MD PhD Helsinki

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*Seconded to CRCERT.

School of Physics

Professor and Head of School
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Professor and Head of Department of Theoretical Physics
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Michael Gal, MSc PhD Eotvos Lorand, Budapest
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John Kelvin Webb, BSc Sur., PhD Camb.

Senior Lecturer
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Department of Biophysics

Associate Professors
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Department of Theoretical Physics

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Professor of Safety Engineering
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Centre for Advanced Numerical Computation in Engineering and Science
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Industry Research Liaison Program Manager
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Visualisation Consultant
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Deputy Manager
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Director
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Systems Administrators
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Youzhen Cheng, BEng Tongji China

Australian Research Council Special Research Centre for Quantum Computer Technology: UNSW node
(in association with the Faculty of Engineering)

Including Semiconductor Nanofabrication Facility and National Magnet Laboratory

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Gavin Hicks

Program Manager
Christian Honsberg, BE ME PhD Delaware

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Michelle Simmons, BSc PhD Durham

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Mark Gross, BSc PhD Syd
Nancy Lumpkin, BSc Virginia, PhD Macquarie

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(Also Adjunct Associate Professor in Microbiology)

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W B Searle, DipSci NSWIT

Senior Technical Officers
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B Wolpensinger, DipLing FH

Laboratory Assistant
M Budanovic, BSc Syd
Administrative Assistant
S Scarcella

Australian Research Council Special Research Centre for Quantum Computer Technology: UNSW node
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Australian Research Council Special Research Centre for Quantum Computer Technology: UNSW node
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Executive Officer
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Administrative Assistant
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Visiting Fellow
Frederick Green, FAIP, BSc PhD UNSW
The information in this Handbook is set out as follows:

1. General Information

2. Undergraduate Study

This contains:
- Courses: Science and Advanced Science
- Information on how to structure your course
- Program outlines
- Specific, Professional and Combined courses: followed by program outlines of these courses
- Course Descriptions: this section includes HSC requirements, prerequisites, corequisites, exclusions and other notes

3. Postgraduate Study

This contains:
- Courses and Programs: followed by course outlines
- Course Descriptions: this section includes prerequisites, corequisites, exclusions and other notes
- Conditions for the Award of Degrees

4. Scholarships and Prizes

Information Key

The following key provides a guide to abbreviations used in this book:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Full Year (Session 1 plus Session 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPW</td>
<td>full year (Session 1 plus Session 2)</td>
</tr>
<tr>
<td>L</td>
<td>lecture</td>
</tr>
<tr>
<td>P/T</td>
<td>part-time</td>
</tr>
<tr>
<td>S1</td>
<td>Session 1</td>
</tr>
<tr>
<td>S2</td>
<td>Session 2</td>
</tr>
<tr>
<td>SS</td>
<td>single Session, but which Session taught is not known at time of publication</td>
</tr>
<tr>
<td>T</td>
<td>tutorial/laboratory</td>
</tr>
<tr>
<td>UOC</td>
<td>Unit(s) of Credit</td>
</tr>
<tr>
<td>WKS</td>
<td>weeks of duration</td>
</tr>
<tr>
<td>X</td>
<td>external</td>
</tr>
</tbody>
</table>

Prefixes

The identifying alphabetical prefixes for each organisational unit offering courses to students in Science Degrees.

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Organisational Unit</th>
<th>Faculty/Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT</td>
<td>School of Accounting</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>ANAT</td>
<td>School of Anatomy</td>
<td>Medicine</td>
</tr>
<tr>
<td>AVIA</td>
<td>Department of Aviation</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>BIOC</td>
<td>School of Biochemistry and Molecular Genetics</td>
<td>Life Sciences</td>
</tr>
<tr>
<td>BIOS</td>
<td>School of Biological Science</td>
<td>Life Sciences</td>
</tr>
<tr>
<td>BIOM</td>
<td>Centre for Biomedical Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td>BIOT</td>
<td>Department of Biotechnology</td>
<td>Life Sciences</td>
</tr>
<tr>
<td>BSSM</td>
<td>Board of Studies in Science and Mathematics</td>
<td></td>
</tr>
<tr>
<td>Prefix</td>
<td>Organisational Unit</td>
<td>Faculty/Board</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>CEIC</td>
<td>School of Chemical Engineering and Industrial Chemistry</td>
<td>Engineering</td>
</tr>
<tr>
<td>CHEM</td>
<td>School of Chemistry</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>CVEN</td>
<td>School of Civil and Environmental Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td>CMED</td>
<td>School of Community Medicine</td>
<td>Medicine</td>
</tr>
<tr>
<td>COMP</td>
<td>School of Computer Science and Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td>ECOH</td>
<td>Department of Economic History</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>ECON</td>
<td>School of Economics, Departments of Economics and Econometrics</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>ELEC</td>
<td>School of Electrical Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td>ENVS</td>
<td>Environmental Studies</td>
<td>Life Sciences</td>
</tr>
<tr>
<td>FINS</td>
<td>School of Banking and Finance</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>GENS</td>
<td>Centre for Liberal and General Studies</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>GEOG</td>
<td>School of Geography</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>GEOL</td>
<td>School of Geology</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>INFN</td>
<td>School of Information Systems</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>JAPN</td>
<td>Asian Studies Unit</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>LAWS</td>
<td>School of Law</td>
<td>Law</td>
</tr>
<tr>
<td>LEGT</td>
<td>Department of Legal Studies and Taxation</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>MANF</td>
<td>School of Mechanical and Manufacturing Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td>MATH</td>
<td>School of Mathematics</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>MASTS</td>
<td>School of Materials Science and Engineering</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>MDCN</td>
<td>School of Medicine</td>
<td>Medicine</td>
</tr>
<tr>
<td>MECH</td>
<td>School of Mechanical and Manufacturing Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td>MIRC</td>
<td>School of Microbiology and Immunology</td>
<td>Life Sciences</td>
</tr>
<tr>
<td>MSCC</td>
<td>Centre for Marine and Coastal Studies</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>OCEA</td>
<td>Oceanography (Mathematics)</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>OPTM</td>
<td>School of Optometry</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>PATH</td>
<td>School of Pathology</td>
<td>Medicine</td>
</tr>
<tr>
<td>PHIL</td>
<td>School of Philosophy</td>
<td>Arts and Social Sciences</td>
</tr>
<tr>
<td>PHPH</td>
<td>School of Physiology and Pharmacology</td>
<td>Medicine</td>
</tr>
<tr>
<td>PHYS</td>
<td>School of Physics</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>POLY</td>
<td>Department of Polymer Science</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>PSCY</td>
<td>School of Psychiatry</td>
<td>Medicine</td>
</tr>
<tr>
<td>PSYC</td>
<td>School of Psychology</td>
<td>Life Sciences</td>
</tr>
<tr>
<td>REMO</td>
<td>Centre for Remote Sensing</td>
<td>Engineering</td>
</tr>
<tr>
<td>SESC</td>
<td>School of Safety Science</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>SCS</td>
<td>School of Science and Technology</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>HPST</td>
<td>Technology Studies</td>
<td>Arts and Social Sciences</td>
</tr>
<tr>
<td>WOOL</td>
<td>Department of Wool and Animal Science</td>
<td>Science and Technology</td>
</tr>
</tbody>
</table>
Science programs are built from the wide range of science and technology-based courses available across the University.

These programs are divided into two types – the general “Science” and “Advanced Science” programs, and a range of “Vocational Science Programs” oriented more toward professional or industry-based careers. These programs, and the courses which they are composed of, are described in later sections of the handbook.

However, the information which follows in this section applies equally to both types of program.

### Some People Who Can Help You

If you require advice about enrolment, degree requirements, progression within programs or any other general matters, contact the Science Student Office, Lower Ground Floor, Electrical Building: telephone (02) 9385 6125, fax (02) 9385 6127 or email SSO@unsw.edu.au. The office is staffed during teaching weeks between 9am and 5pm from Monday to Thursday and between 9am and 4pm on Fridays. During non-teaching weeks the Student Centre is staffed Monday to Friday between 9am and 4pm.

For information and advice about course content and requirements, contact the appropriate schools/teaching units.

**Important:** As changes may be made to information provided in this Handbook, students should frequently consult the noticeboards of the schools/teaching units, the official noticeboards of the University, and the appropriate websites.

### Enrolment Procedures

New students will receive enrolment information with their offer of a place in their chosen program. All students re-enrolling in 2001 should obtain a copy of the leaflet Re-Enrolling 2001: Procedures and Fees for Science Programs. This is available from the Science student Office and the Admissions Office. Students enrolling in graduate programs should contact the Postgraduate Section. The Course timetable for the Science and the Advanced Science programs is available in late October/early November from the Science Student Office, The Undercroft, Electrical Engineering Building. All re-enrolling students should collect one of these timetables. Students who expect to complete the requirements for their degree in 2001 will also need to collect form (SM2001). This enrolment form is to be completed and returned to the Science Student Office by late December.

Students not enrolling before the first day of Session 1 have no guarantee that a place is available in the courses offered in that year. This is particularly important for courses where laboratory space is limited. Students should be aware that some courses may require a field trip which may involve personal costs to the student. Consult individual course authorities for details.

* It should be noted that quotas apply to certain courses and programs, as indicated in the relevant program or course descriptions. All quotas are assessed on the basis of applications made at the time of preliminary enrolment.

### Learning Centre

The Learning Centre provides a wide range of academic support services to students enrolled at the University. Assistance is available through workshops in academic skills, individual consultations and discipline or course specific learning and language programs. All services and programs are free, and individual consultations (approximately one hour per consultation) are completely confidential. The types of assistance available are:

**Learning Assistance:** The Learning Centre assists students in adjusting to their new academic culture and to new approaches to learning and teaching. The centre provides a range of workshops in study skills in areas such as learning styles, time management, managing study stress, examination preparation, seminar presentation, reading and note-taking, essay writing, etc. The Centre also offers individual consultations for students where study-related and other academic concerns can be discussed confidentially with a Learning Adviser.

**Language Assistance:** The Learning Centre offers a wide range of language assistance programs, particularly for students for whom English is a second language. There are lunchtime classes and intensive workshops covering general and academic English. Teachers are also available for individual consultations by appointment.

Lunchtime classes cover general skills such as grammar, vocabulary, listening skills and colloquial Australian English. Students can attend these classes without enrolling.

The intensive workshops assist students with academic writing and speaking skills. These include: orientation to academic writing, essay writing, writing a report, a thesis proposal, a literature review and developing seminar and discussion skills. The courses run for 2-3 hours a week over several weeks; it is recommended to attend as many as possible and to enrol early as space is strictly limited.

There are also faculty-based courses such as English for Commerce, English for Food Technology, etc.

For further information and a complete list of programs, contact the Learning Centre, Room 231, Level 2 Library Building, tel 9385 3690.
General Education Program

UNSW requires that all undergraduate students undertake a structured program in General Education as an integral part of studies for their degree unless they are enrolled in combined degrees. The University believes that a general education complements the more specialised learning undertaken in a student's chosen field of study and contributes to the flexibility which graduates are increasingly required to demonstrate. Employers repeatedly point to the complex nature of the modern work environment and advise that they highly value graduates with the skills provided by a broad general education, as well as the specialised knowledge provided in more narrowly defined degree programs. As well, over many years graduates of this University have reported that they greatly valued their General Education studies, which are found to be relevant to both career and personal development.

The General Education Program at UNSW intends to broaden students' understanding of the environment in which they live and work and to enhance their skills of critical analysis.

Objectives of the General Education Program

The following objectives were approved by the Council of the University in December 1994.

1. To provide a learning environment in which students acquire, develop, and deploy skills of rational thought and critical analysis.

2. To enable students to evaluate arguments and information.

3. To empower students to systematically challenge received traditions of knowledge, beliefs and values.

4. To enable students to acquire skills and competencies, including written and spoken communication skills.

5. To ensure that students examine the purposes and consequences of their education and experience at University, and to foster acceptance of professional and ethical action and the social responsibility of graduates.

6. To foster among students the competence and the confidence to contribute creatively and responsibly to the development of their society.

7. To provide structured opportunities for students from disparate disciplines to co-operatively interact within a learning situation.

8. To provide opportunities for students to explore discipline and paradigm bases other than those of their professional or major disciplinary specialisation through non-specialist subjects offered in those other areas.

9. To provide an environment in which students are able to experience the benefits of moving beyond the knowledge boundaries of a single discipline and explore cross- and interdisciplinary connections.

10. To provide a learning environment and teaching methodology in which students can bring the approaches of a number of disciplines to bear on a complex problem or issue.

General Education requirements

The basic General Education requirements are the same for students in all courses:

- Four (4) session length courses carrying 3 units of credit each or their equivalent in combinations of session length and year long courses
- An additional fifty-six (56) hours of study which fosters acceptance of professional and ethical action and social responsibility. This fifty-six hours of study may be distributed throughout the program, or exist as a separate course, depending on the program.

Because the objectives of General Education require students to explore discipline and paradigm bases other than those of their professional or major disciplinary specialisation, all students are excluded from counting courses toward the fulfilment of the General Education requirement, which are similar in content or approach to courses required in their program.

Each Faculty has responsibility for deciding what courses are not able to be counted towards the General Education requirement for their students. In most cases, this means that courses offered by the Faculty in which a student is enrolled, or courses which are a required part of a program even though offered by another Faculty, are not able to be counted toward the General Education requirement. Students may also only count a maximum of 6 units of Credit (56 hours) of General Education courses from a single Faculty.

Students should consult the General Education Handbook for detailed information about what courses may and may not be taken to fulfill the General Education requirements for each program offered by the Faculty. The General Education Handbook is freely available from all Faculty Offices.

Additional information for undergraduate students who first enrolled before 1996

Transitional arrangements

It is intended that no student will be disadvantaged by the change to the new General Education Program. The old Program had specific requirements to complete four session length courses (or their equivalent) in designated categories A and B. The new General Education Program does not categorise courses in the same way.

As a result, students who enrolled prior to 1996 will be given full credit for any General Education courses completed up to the end of Session two 1995.

From the summer session of 1995-96, students will be required to satisfy the unfilled portion of their General Education requirement under the terms of the new Program.

The exemption of General Education requirements for some double or combined degree programs will continue to apply for students who enrolled in these exempt programs prior to 1996.

Computing at UNSW

The Department of Information Services has general responsibility for information technology at UNSW, and for the University Library. Information on both areas may be accessed through the UNSW home page http://www.unsw.edu.au and its "navigation" link, or through the pages http://www.ascu.unsw.edu.au or http://www.misu.unsw.edu.au using Mosaic or Netscape. In particular, the campus is served by an optical fibre network which supports TCP/IP, IPX and AppleTalk protocols.

Within the Faculties of Life Sciences and of Science and Technology, each of the Schools manages or has access to undergraduate computing laboratories equipped with a combination of X-terminals, PCs and MacIntoshes. These are connected through the campus-wide network, and are used extensively in undergraduate teaching and in providing e-mail access to all students.

Many of the Schools also use computing extensively in research and postgraduate education. This is provided through local and often specialised facilities, and through access to regional and national centres. The systems accessible range from PCs to supercomputers together with the associated peripherals and support personnel.

Further information on computing is available through each of the Schools' web pages.
Library Information

Faculty of Life Sciences Library Facilities

Although any of the university libraries may meet specific needs, the staff and students of the Faculty of Life Sciences are served mainly by the Biomedical Library.

The Biomedical Library

The Biomedical Library provides library services for staff and students from the Faculties of Medicine and Life Sciences, and the Schools of Health Services Management and of Safety Science. The Biomedical Library is located on Levels 2, 3 and 4 of the Mathews Building Annexe and is connected to the other Special Libraries via a link through Level 3 of the Library Building. Professional staff are available at the Information Desk on Level 2 to provide reference services and to assist in the use of the catalogues. Instructional classes in the use of the library and specific subject material can be arranged through the Information Desk. Serials in the Biomedical Library are shelved in alphabetical order by title and carry the prefix MB or MBQ. Details about Biomedical Library books, serials and audiovisual material can be found in the Library Catalogue. In addition, the Biomedical Library offers the following services: literature searches; on-site and remote access to a wide range of bibliographic databases; and a document supply service for external and remote students.

Biomedical Librarian: Jill Denholm

Faculty of Science and Technology Library Facilities

Although any of the university libraries may meet specific needs, the staff and students of the Faculty of Science and Technology are served mainly by the Physical Sciences Library.

The Physical Sciences Library

The Physical Sciences Library, located on levels 5, 6 and 7 of the Library Building, provides information for students and staff from the Faculties of Science and Technology, Engineering, and the Built Environment. During the academic year, the Library is open from 8.00 to 10.00 Monday to Thursday, 8.00 to 6.00 on Friday and 12.00 to 5.00 Saturday and Sunday. During vacations, Library hours of opening will vary. Staff assisted service is available after 10.00am including help with catalogue, CD-Roms, interlibrary loans, maps and online searching. An information skills program is in place with emphasis on developing basic information access and management skills for first years and advanced skills for final year and postgraduate students.

The Library’s catalogue and selected CD-Rom databases are available over the Campus Wide Network.

Physical Sciences Librarian: Rhonda Langford

Equal Opportunity in Education Policy Statement

Under the Federal Racial Discrimination Act (1975), Sex Discrimination Act (1984), and Disability Discrimination Act (1992) and the New South Wales Anti-Discrimination Act (1977), the University is required not to discriminate against students or prospective students on the grounds of age, disability, homosexuality (male or female), marital status, pregnancy, race (including colour, nationality, descent, ethnic, ethno-religious or national origin, and immigration), religious or political affiliation, views or beliefs, sex, and transgender or transsexuality. Under the University of New South Wales Act (1989), the University declares that it will not discriminate on the grounds of religious or political affiliations, views or beliefs.

University Commitment to Equal Opportunity in Education

As well as recognising its statutory obligations as listed, the University will eliminate discrimination on any other grounds which it deems to constitute disadvantage. The University is committed to providing a place to study free from harassment and discrimination, and one in which every student is encouraged to work towards her/his maximum potential. The University further commits itself to course design, curriculum content, classroom environment, assessment procedures and other aspects of campus life which will provide equality of educational opportunity to all students.

Special Admissions Schemes

The University will encourage the enrolment of students who belong to disadvantaged groups through programs such as the University Preparation Program and the ACCESS Scheme. Where members of disadvantaged groups are particularly under-represented in certain disciplines, the responsible faculties will actively encourage their enrolment.

Support of Disadvantaged Students

The University will provide support to assist the successful completion of studies by disadvantaged group members through such means as the Aboriginal Education Program and the Learning Centre. It will work towards the provision of other resources, such as access for students with impaired mobility, assistance to students with other disabilities, the provision of a parents’ room on the upper campus, and increased assistance with English language and communication.

Course Content, Curriculum Design, Teaching and Assessment, and Printed Material

Schools and faculties will monitor course content (including titles), teaching methods, assessment procedures, written material (including study guides and handbook and Calendar entries) and audiovisual material to ensure that they are not discriminatory or offensive and that they encourage and facilitate full participation in education by disadvantaged people.

Equal Opportunity Adviser Scheme

The University will continue its Equal Opportunity Adviser Scheme for students who feel that they have been harassed or who consider they have been disadvantaged in their education by practices and procedures within the University.

Harassment Policy

The University is committed to ensuring freedom from harassment for all people working or studying within the institution. It will continue to take action, including disciplinary action, to ensure that freedom from harassment is achieved.

Statement

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Special Government Policies

The NSW Health Department and the NSW Department of Education and Training have special requirements and policies of which students of health-related and education programs should be aware. The requirements relate to:

- clinical/internship placements which must be undertaken as part of your program and
- procedures for employment after you have completed the program

Health-related programs

Criminal record checks

The NSW Health Department has a policy that all students undertaking clinical placements undergo a criminal record check prior to employment or placement in any capacity in the NSW Health System. This check will be conducted by the NSW Police Service and will be co-ordinated by the Department of Health.

Infectious diseases

Students required to complete clinical training in the NSW hospital system will be subject to various guidelines and procedures laid down for health workers by the NSW Department of Health relating to vaccination and infection control.

An information sheet is available from your program officer and further details can be obtained from your Program Authority.

Education programs

Criminal record checks

It is a requirement that a check of police records be conducted for all teacher education students applying for an unsupervised internship placement in a New South Wales Government school.

Contact your program co-ordinator for further details.
Undergraduate Study
Science Programs
- program codes 3970; 3978; 3979
Advanced Science Programs
- program codes 3973; 3976; 3985; 3986; 3990
Environmental Science Program
3988
Media and Communications
3993,3994
Medical Science Program
3991

Overview of Programs

The main aims of the Science programs may be summarised as providing opportunities for students to prepare themselves for careers in research, technology, science, mathematics and education, or areas of management or public policy which involve the use of science or mathematics.

The Science Programs (3970; 3978; 3979; 3991; 3993; 3994) lead to the award of the degree of Bachelor of Science (BSc) at pass level on the completion of a three stage program, taking three years of full-time study. A student who completes the program with a high standard of achievement may be permitted to continue to a fourth year in order to take an Honours degree.

The Advanced Science Programs (3973; 3976; 3985; 3990) and the Bachelor of Environmental Science (3988) lead to the award of Bachelor of Science (BSc (Hons)) on the completion of a four stage program, at honours or pass level (level of award and honours is based on academic performance), taking four years of full-time study. Depending on their program of study, students in their fourth year undertake either a research honours program or a program of coursework and research.

The time specified (three or four years) is the minimum time required for completion of each program. Students may complete program requirements over a longer period of time or as part-time candidates. Students contemplating part-time study should note that with few exceptions classes are offered in the day only. This applies even at first year level and means that it is not possible to complete studies by evening classes alone.

Admission

For admission requirements for Science programs see the appropriate entry in the current UAC Handbook. Applicants for admission to Science programs should note that a number of new UAC entry codes have been introduced which correspond to specific programs and programs of study. UAC entry codes for Science programs are:

429000 Science
This is applicable to study in a wide range of Science areas in program 3970 as indicated in the majors outlined in Table A.

429003 Science Communications
This is applicable to study in a wide range of Science areas in program 3993. The majors available are the same as for 3970.

429004 Science Media and Communication
This is applicable to study in a wide range of Science areas in program 3994. The majors available are the same as for 3970.
Program Design

Content of Programs

All programs are governed by basic conditions or rules that specify what a student needs to complete in order to qualify for a degree.

Normally a student will study a mixture of compulsory and elective courses.

Compulsory courses are ones that must be studied, usually at the stage specified in the program. Often one compulsory course is a prerequisite for another that comes later.

Elective courses are ones that a student chooses in accordance with his or her own interests, subject to meeting prerequisites and capacity in the course. Some electives may have to be taken from a specified list. Students have freedom to choose their General Education courses, except from their own faculty.

Prerequisites

These are courses that must be satisfactorily completed before a student can progress to a later course. Prerequisites are specified in the course descriptions and students without a necessary prerequisite for a course will be blocked from enrolment in that course by NSS.

The Science program (3970)

The three year Science degree has been designed for students who seek a 'generalist' degree in which there is a large element of choice. A student can combine courses from 2 or more Science disciplines, or take courses from outside the Science disciplines.

The basic rules for the degree are printed on page . The main thing that students in the Science program need to ensure is that they complete at least one Major and either a second Major or a Minor sequence. At least 84 units of credit (out of a total of 144) must be taken from Science. The remainder may be in another Faculty. Subject to certain conditions a student may be permitted to continue into a fourth year to complete an honours degree.

Advanced Science program (3973, 3985, 3986, 3990)

A feature of the design of both the Advanced Science program is the requirement that all students enrol in and complete requirements for a specified study plan. Each study plan is designed to link courses in such a way that a coherent pattern of study is achieved in a specific discipline or specialisation. A wide choice of study plans, designed to meet specific aims and objectives, is available. Most study plans are identified with a particular School or discipline (eg Anatomy, Chemistry) but some are multidisciplinary (eg Mathematics and Computer Science). Some courses are only available in the Advanced Science programs. See the relevant study plan for details.

Students are required to fulfill all of the requirements of their particular study plan as specified in the handbook in the year in which they first enrolled.
Computer Science program (3978)

Information Systems program (3979)

Medical Science Program (3991)
These are 3 year degrees based on structured study plans leading to a Bachelor of Science. Subject to certain conditions a student may be permitted to continue into a fourth year to complete an honours degree.

Environmental Science Program (3988)
This is a 4 year degree leading to a Bachelor of Environmental Science. A student must complete a specialisation in Environmental Science plus another specialisation in one of the approved disciplines.

Bachelor of Science (Communications) Program (3993)
Bachelor of Science (Media and Communications) Program (3994)
These are 3 year Science degrees in which students must do a major in Communications or Media Studies and either a major or two minors in Science. Subject to certain conditions a student may be permitted to continue into a fourth year to complete an honours degree.

Combined degrees
In these degrees Science is combined with studies in another Faculty (eg Engineering, Law, Arts and Social Sciences etc). The basic requirement from science is that a student should complete at least 84 units of credit in Science including a major. It may be possible with permission to combine Advanced Science with another Degree.

Courses
Typically, each program requires study of a number of prescribed courses and elective courses at specified stages or levels to ensure a sound basis in the discipline. Each course is assigned a "Level", which corresponds to the defined stages for each program. There are limits on the number of Level I courses that can be studied in a program (see Program Requirements and Rules below). Students are not normally allowed to enrol in courses at a given level before reaching the corresponding stage of the program. Levels are:

<table>
<thead>
<tr>
<th>Level</th>
<th>Stage</th>
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<tbody>
<tr>
<td>Level I</td>
<td>Stage 1</td>
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<tr>
<td>Level II</td>
<td>Stage 2</td>
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<tr>
<td>Level III</td>
<td>Stage 2 or 3</td>
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<tr>
<td>Level III</td>
<td>Stage 3 (also Stage 4 in some Advanced Science programs)</td>
</tr>
<tr>
<td>Level IV</td>
<td>Stage 4 (or Honours year) – Advanced Science only</td>
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</tbody>
</table>

Program Objectives
Programs in the Science and the Advanced Science degrees have been designed to:

1. develop and sustain an interest in and knowledge of Science.
2. develop a working knowledge of scientific methods of investigation.
3. encourage curiosity and creative imagination and an appreciation of the role of speculation in the selection and solution of problems, the construction of hypotheses, and the design of experiments.
4. develop an appreciation of scientific criteria and a concern for objectivity and precision.
5. develop confidence and skill in formulating problems and in treating both qualitative and quantitative data.
6. develop the ability and disposition to think logically, to communicate clearly by written and oral means, and to read critically and with understanding.
7. develop the habit of seeking and recognizing relationships between phenomena, principles, theories, conceptual frameworks and problems.
8. promote understanding of the significance of science, technology, economics and social factors in modern society, and of the contributions they can make in improving material conditions.
9. provide opportunities for the development of students' motivations and social maturity, and an awareness of their capabilities in relation to a choice of career which will be fruitful to themselves and to society.
10. provide opportunity to study science in combination with other disciplines.
Assessment of students

Students' assessment results are reviewed by the Assessment Review Committee at the end of each semester.

Students are awarded a mark in the range 0-100 in each course they take; letter grades are also used, with marks in the range 50-64 classified as a pass (P), those in the range 65-74 a credit (CR), those in the range 75-84 a distinction (D), and those in the range 85-100 a high distinction (HD).

Students in the Advanced Science programs should note that they normally need to maintain a Credit average in order to progress to the Honours year.

Academic Standing

A level of academic standing will be assigned to students at the end of each main session. These levels are defined as: good standing (the student's current progress is deemed satisfactory), Referral, Probation 1, Probation 2, Suspension, Probation 3 and Exclusion. Movement between levels is based on progress, measured by proportion of load passed. The Program Authority assigns an adviser to each student not in good standing. Continued poor progress can lead to suspension (one year with automatic readmission) or exclusion (two years without automatic readmission). For further information on Academic Standing please consult with the Student Guide or the Science Student Office.
Program Requirements and Rules

Science Programs (3970)
pass program (3 years)

Conditions for the Award of the Degree

1. A student must complete 144 units of credit including 12 units of General Education.
2. The degree must contain a Major sequence of study and either a second Major or a Minor sequence.
3. A student must complete at least 36 units and no more than 60 units in Level I courses from at least three Schools.
4. A student must complete at least 24 units at Level I from Science Schools *.
5. No student may commence Level II courses until 24 Level I units have been successfully completed.
6. A student must complete a minimum of 84 units of credit from Science Schools *.
7. For entry to Honours a student must complete at least 24 units at Level III in the relevant Major sequence and have the permission of the Head of School.
8. A Major sequence is defined as: at least 42 units at Level II and III in a single discipline or area of study, including at least 18 units at Level III. Major sequences are defined in Table A.
9. A Minor sequence is defined as: 24 units of credit at Level II or III. The Minor may either consist of courses available within but not taken as part of a Major or may be a sequence as defined in Table B.
10. Where a student does Majors in two cognate areas that have courses in common the Cross Faculty Standing committee in Science may permit up to 12 units at Level II and 6 units at Level III to be counted towards each Major sequence.

* Defined as Schools in the Science Faculties plus those in other Faculties that currently provide programs under the authority of the Cross Faculty Standing committee in Science.

Transition Rule

New rules were approved for program 3970 for 2000. New students entering in 2001 will enrol under the new Rules and Requirements. Re-enrolling students will be treated as follows:

- Students entering Year 2 or Year will be transferred into the new Conditions and will be required to complete a Major and Minor (or a second Major);
- Students who are suspended or have deferred in 2001 will be required to enter under the new Conditions when they recommence.
- Students entering Year 3 or Year 4 of a combined degree will need to consult with the Science Student Office.

Advanced Science Programs (3973; 3985; 3986; 3990)
Honours/Advanced Program (4 years)

Conditions for the Advanced Science Program

1. A student must complete 144 units of credit including 12 units of General Education in Stages 1-3 and a 48 unit Honours sequence at Stage 4. A minimum of 132 units of credit (including Stage 4) must be in Science courses.
2. The degree must contain a study plan as specified in the Handbook.
3. A student must complete at least 36 units and no more than 48 units in Level I courses except where specified in a particular plan.
4. A student must complete before the end of Stage III at least two 3 unit courses taken from Table 'X'.
5. No student may normally commence Level II courses until 24 Level I units have been successfully completed unless approved by the Head of School.
6. Progression to Stages III and IV is subject to academic performance. A student will be required to have attained an average of 65 or higher in courses relevant to the major area and cognate courses in each prior stage.
7. Students whose performance is unsatisfactory may be asked to show cause at the end of the academic year why they should remain in their program of study.
Transition Rule

New students entering in 2001 will enrol under the new Rules and Requirements. Re-enrolling students will be treated as follows:

- Students entering Stage 3 will be transferred into the new Conditions and will be required to complete 48 units of credit per year. They will not be required to comply with points 3 and 4 of the Conditions unless this can be accommodated within their current program.
- Students who are suspended or have deferred will be required to enter under the new Conditions when they recommence.

Rules and requirements for other programs in science are printed with the programs descriptions later in this handbook.

Elective Courses

Students enrolled in any Science degree may take as electives any courses (subject to satisfying prerequisites) which are:

- Specified as electives for their degree, or
- Available within a Major or Minor in Program 3970.

General Rules and Requirements

General Education Requirement

1. The University requires all students to complete a selection of General Education courses. The General Education Program is an integral part of all UNSW undergraduate programs and gives students the opportunity to address some of the key questions they will face as individuals, citizens and professionals. Students in the Science programs must complete General Education courses totalling 12 units of credit plus an additional 56 hours of study which fosters acceptance of professional and ethical action and social responsibility. See the General Education Handbook for a description of General Education course categories.

1.1 Mainstream courses may be substituted for General Education with the approval of the Associate Dean (Undergraduate Science). Only 6 units of credit from mainstream courses may be substituted for General Education.

1.2 Students enrolled in combined degrees are exempt from the General Education requirement.

Prerequisites, Corequisites and Excluded Courses

2. Where a choice of courses is available in a program students must take care to satisfy prerequisites and corequisites. A prerequisite is a course which must be completed prior to enrolment in the course for which it is prescribed. A corequisite course is one which must either be completed successfully before, or studied concurrently with, the course for which it is prescribed. An excluded course is one which cannot be counted towards the degree qualification together with the course which excludes it.

Credit Transfer

3. In addition to University rules governing admission with credit for previous studies or attainments, the following provisions apply:

Students admitted to the Science or Advanced Science programs may be granted credit for previous studies and attainments provided that:

3.1 where students transfer from another tertiary institution, they shall not in general be granted credit superior to that attained at the other institution.

3.2. Students admitted to the Science program who hold a completed or partly completed degree or another award, may be given credit for previous studies and attainments, but in order to qualify for the award of the BSc will be required as a minimum to complete courses equivalent to the requirements for Stage 3 of the program.

3.3 Students admitted to the Advanced Science program who hold a completed or part completed degree or another award (including the BSc at pass level at UNSW), may be given credit for previous studies and attainments, but in order to qualify for the award of the BSc in an Advanced Science program, will be required as a minimum to complete a sequence of courses or other requirements equivalent to the requirements for Stage 4 of the program.
Study Load

4. Students may not undertake a study load of more than 24 units of credit in any session (including General Education). This can be exceeded only in exceptional circumstances by students with an excellent academic record and requires the permission of the Associate Dean. Students with external commitments—such as part-time employment—in excess of ten hours per week, should take fewer courses each session. External commitments will not to be taken into consideration in relation to such matters as extensions of time for submission of written work or failure to attend examinations (which may, for some courses, be scheduled on Saturday mornings). Students who do not make satisfactory progress may be required to show cause why they should be allowed to continue in the program or may be given a restricted program.

Students wishing to take courses additional to those required for the award should be aware that the relevant courses will attract an additional fee, payable up-front, as voluntary courses.

Academic Standing

5. A level of academic standing will be assigned to students at the end of each main session. These levels are defined as: good standing (the student's current progress is deemed satisfactory), Referral, Probation 1, Probation 2, Suspension, Probation 3 and Exclusion. Movement between levels is based on progress, measured by proportion of load passed. The Program Authority assigns an adviser to each student not in good standing. Continued poor progress can lead to suspension (one year with automatic readmission) or exclusion (two years without automatic readmission). For further information on Academic Standing please consult with the Student Guide or the Science Student Office.

Program and Course Quotas

6. Quotas are imposed on some programs and courses (usually because of class size constraints related to space). Where quotas are imposed, students' eligibility to enrol will be assessed on academic merit or on the basis of the requirements of the program of study in which the student is enrolled.

Accelerated Progression in Advanced Science Programs

7. There is provision for exceptionally talented students to take higher level courses in Stage 1. Contact the Science Student Office for details.

Graduation and majors

Science Program (3970)

8. In order to graduate, students must satisfy requirements for the award by passing all the courses and requirements specified for their program. Students who complete requirements will be awarded the degree of Bachelor of Science at pass or honours level with a major in the area of specialisation (usually indicated by the program name). The award will appear on the testamur as:

Bachelor of Science in (name of program)

or

Bachelor of Science with Honours in (name of program or specialisation)

Advanced Science Programs (3973, 3985, 3986, 3990)

9. In order to graduate, students must satisfy requirements for the award by passing all courses and the requirements specified for their program. Students who complete requirements will be awarded the degree of Bachelor of Science at honours or pass level with a major in the area of specialisation (usually indicated by the program name, except that for some honours candidates the name of the honours specialisation will appear).

Students who successfully complete Stage 4 of their program will be considered for the award of Honours. The following scale generally applies to Honours gradings and, depending on the structure of the program, is based either on performance in the Stage 4 program or on performance over the whole 4 stages of the program:

- Honours Class 1 mark or weighted average of 85 or greater
- Honours Class 2 Division 1 mark or weighted average from 75 to 84
- Honours Class 2 Division 2 mark or weighted average from 65 to 74
- Honours Class 3 or Pass mark or weighted average below 65

The award will appear on the testamur as:

Bachelor of Science with Honours in (name of program or specialisation)
Rules on Progression and Transfer in the Advanced Science Programs

Transferring Study Plans

10. Students must apply in writing to transfer between study plans within each of the Advanced Science programs. Applications are assessed on academic performance and approval is subject to places being available in the nominated program. Applications must be lodged with the Science Student Office before the start of session.

Transferring between the Advanced Science Programs

11. Applications for transfer from one Advanced Science Program to another are only accepted at the end of each session. Applicants must lodge an application with the Science Student Office before the start of session. Transfer should not be considered automatic. Applications are assessed on academic performance and approval is subject to places being available in the nominated program. Students must satisfy all prerequisites for the courses specified in the study plan of the particular Advanced Science program, and have completed the relevant sequence of courses for the proposed study plan.

Progression to Stage 4 Honours in Advanced Science

12. Progression to Stage 4 is subject to academic performance. Students seeking to enrol in a Stage 4 honours program are required to have the approval of the Head of School and normally will be required:

- to have completed the requirements for Stages 1, 2 and 3 of the specific study plan and to have satisfied prerequisite requirements as specified in that study plan. All General Education also must have been completed;
- to have attained an average of 65 or higher in each stage of the program.

Students should also seek the guidance of the appropriate Head of School at an early stage of study to ensure that the study plan being followed is best suited to lead to the Year 4 honours program;

In addition, admission to a particular Stage 4 program is subject to appropriate research and supervision resources being available. Quotas may be imposed for entry in any year, in which case admission will be determined on academic merit.

Students who do not attain an average of 65 or higher in Stage 3 of their program are normally required to transfer to the Science program (3970) and take out the BSc award at pass level.

Transfers from Advanced Science to the Science Program

13. Students enrolled in the Advanced Science programs (program code 3973; 3976; 3985; 3986; 3990) who wish to take out the BSc award at pass level and without proceeding to Stage 4 are required to transfer to the Science program (3970). Applications to transfer should be lodged no later than the HECS census date in the session in which the student expects to satisfy requirements. Students applying after that date may not be able to graduate in the next round of graduation ceremonies. The application should state the 3970 Major in which the student wishes to be enrolled. Students must satisfy all requirements for the designated Science (3970) major in order to qualify for the award of the BSc. Further information regarding the transfer from the Advanced Science program to majors that are available in the Science program is available through the Science Office.

Table 1

Subject Areas, Programs and Study Plans in Science

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Available in Program(s)</th>
<th>UAC Entry Code(s)</th>
</tr>
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<tbody>
<tr>
<td>ANATOMY</td>
<td>3970, 3990</td>
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<tr>
<td>APPLIED MATHEMATICS</td>
<td>3985</td>
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<tr>
<td>AVIATION</td>
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<td>429016, 429107</td>
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<td>3970, 3990</td>
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<tr>
<td>BIOTECHNOLOGY</td>
<td>3970, 3990, 3052, 3055</td>
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<tr>
<td>CHEMISTRY</td>
<td>3970, 3985</td>
<td>429000, 429010</td>
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<tr>
<td>COMPUTER SCIENCE</td>
<td>3978</td>
<td>429019</td>
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<tr>
<td>ECOLOGY</td>
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<td>429000, 429009</td>
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<tr>
<td>ENGINEERING PHYSICS</td>
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<tr>
<td>Major</td>
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<tr>
<td>ENVIRONMENTAL SCIENCES</td>
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<tr>
<td>Biology</td>
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<td>429008</td>
</tr>
<tr>
<td>Marine</td>
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<td>429008</td>
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<td>Microbiology</td>
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<tr>
<td>Chemistry</td>
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<tr>
<td>Geography</td>
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</tr>
<tr>
<td>Oceanography</td>
<td>3988</td>
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<td>3970</td>
<td>429000</td>
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<td>FOOD SCIENCE AND NUTRITION</td>
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<td>INFORMATION SYSTEMS</td>
<td>3979, 3971</td>
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<td>MARINE SCIENCE</td>
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<td>MARINE AND COASTAL STUDIES</td>
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<td>MATERIALS SCIENCE</td>
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<td>MATHEMATICS AND FINANCE</td>
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<td>MATHEMATICS AND COMPUTER SCIENCE</td>
<td>3985</td>
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<td>MEDICAL CHEMISTRY</td>
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<tr>
<td>MEDICAL MICROBIOLOGY AND IMMUNOLOGY</td>
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<td>429000, 429009</td>
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<td>MICROBIOLOGY</td>
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<td>429000, 429009</td>
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<tr>
<td>NEUROSCIENCE</td>
<td>3990</td>
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<td>PHARMACOLOGY</td>
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<td>429000, 429009</td>
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<tr>
<td>PHILOSOPHY</td>
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<td>PHYSICAL OCEANOGRAPHY/</td>
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<td>429000, 429010</td>
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<td>METEOROLOGY</td>
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<td>PHYSICS</td>
<td>3970, 3985</td>
<td>429000, 429010</td>
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<td>PHYSICS AND ASTRONOMY</td>
<td>3985</td>
<td>429010</td>
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<td>PHYSICS WITH COMPUTER SCIENCE</td>
<td>3985</td>
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<td>PHYSIOLOGY</td>
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<td>429000, 429009</td>
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<td>PSYCHOLOGY</td>
<td>3970, 3990</td>
<td>429000, 429009</td>
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<td>3431</td>
<td>429026</td>
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<td>PSYCHOLOGY AND COMPUTER SCIENCE</td>
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<td>PURE MATHEMATICS</td>
<td>3985</td>
<td>429010</td>
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<td>SAFETY SCIENCE</td>
<td>3970, 3877</td>
<td>429000</td>
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<tr>
<td>SCIENCE AND TECHNOLOGY STUDIES</td>
<td>3970</td>
<td>429000</td>
</tr>
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<td>SCIENCE COMMUNICATIONS</td>
<td>3993</td>
<td>429003</td>
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<td>SCIENCE MEDIA AND COMMUNICATIONS</td>
<td>3994</td>
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<tr>
<td>STATISTICS</td>
<td>3970, 3985</td>
<td>429000, 429010</td>
</tr>
</tbody>
</table>

**Note:**

Certain of the majors listed above are also appropriate for programs 3930 (Science/Arts), 3931 (Advanced Science/Arts), 3529 (Science/Commerce), 3611 (Science/Aeronautical Engineering), 3661 (Science/Industrial Engineering), 3681 (Science/Mechanical Engineering), 3701 (Science/Naval Architecture), 3725 (Science/Electrical Engineering), 3730 (Science/Civil Engineering), 3820 (Science/Medicine), 3951 (Science/Optometry), 4075 (Science/Education), 4770 (Science/Law). Students in these courses should consult their program advisor for details.

Students interested in Life Sciences topics but unsure of which program to choose are advised to enrol in the Biological Sciences Holding Program for the First Year. Information sessions will be held to assist students in their choice of major or study plan for Year 2.
Program Descriptions

Science (3970)

Conditions for the Award of the Degree

1. A student must complete 144 units of credit including 12 units of General Education.
2. The degree must contain a Major sequence of study and either a second Major or a Minor sequence.
3. A student must complete at least 36 units and no more than 60 units in Level I courses from at least three Schools.
4. A student must complete at least 24 units at Level I from Science Schools.
5. No student may commence Level II courses until 24 Level I units have been successfully completed.
6. A student must complete a minimum of 84 units of credit from Science Schools.
7. For entry to Honours a student must complete at least 24 units at Level III in the relevant Major sequence and have the permission of the Head of School.
8. A Major sequence is defined as: at least 42 units at Level II and III in a single discipline or area of study, including at least 18 units at Level III. Major sequences are defined in Table A.
9. A Minor sequence is defined as: 24 units of credit at Level II or III. The Minor may either consist of courses available within but not taken as part of a Major or may be a sequence as defined in Table B.
10. Where a student does Majors in two cognate areas that have courses in common the Cross Faculty Standing committee in Science may permit up to 12 units at Level II and 6 units at Level III to be counted towards each Major sequence.

Defined as Schools in the Science Faculties plus those in other Faculties that currently provide programs under the authority of the Cross Faculty Standing committee in Science.

Transition Rule

New rules were approved for program 3970 for 2000. New students entering in 2001 will enrol under the new Rules and Requirements. Re-enrolling students will be treated as follows:

- Students entering Year 2 or Year will be transferred into the new Conditions and will be required to complete a Major and Minor (or a second Major);
- Students who are suspended or have deferred in 2001 will be required to enter under the new Conditions when they recommence;
- Students entering Year 3 or Year 4 of a combined degree will need to consult with the Science Student Office.

Elective Courses

Students enrolled in any Science degree may take as electives any courses (subject to satisfying prerequisites) which are Specified as electives for their degree, or Available within a Major or Minor in Program 3970.
### Table A

#### MAJORS OFFERED IN THE 3 YEAR BSC DEGREES (3970) AND IN COMBINED DEGREES

- All students in these degrees must complete at least one major from Table A.
- Students in Advanced Science and other degrees should refer to the appropriate entry later in the Handbook.

**Note:** Some of the courses listed in the later stages of a major may have prerequisites in an earlier stage or co-requisites to be taken at the same time. It is important to check the course description later in the Handbook for details.

Students who are unsure which major to choose may enrol in an 'undeclared plan'. The purpose of an undeclared plan is to cover a combination of Level 2 courses to enable a student to enter a variety of majors. Students will be required to choose a major before commencing Stage 2. There are recommended combinations for Biological or Life Sciences, Physical Sciences and Environmental Sciences. See notes at end of Table A.

<table>
<thead>
<tr>
<th>Major</th>
<th>Staff Contact</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy</td>
<td>Dr B Freeman</td>
<td>BIOS1101, BIOS1201</td>
<td>ANAT2111, ANAT2200, ANAT2210, ANAT2300, ANAT2310</td>
<td>Choose 18 units of credit from: ANAT3121, ANAT3131, ANAT3141, ANAT3231, ANAT3411, ANAT3421</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(ANAT3121 may be taken in stage 2)</td>
<td>Choose 6 units of credit from: level III Anatomy not already taken or 6 units of credit at level III from the schools of Biochemistry, Biological Science, Microbiology, Pathology or Physiology</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>A/Prof A Bagnara</td>
<td>BIOS1101, BIOS1201</td>
<td>BIOS2011, BIOS2201, Choose at least 6 units of credit from: BIOS2021, CHEM2021, CHEM2041, MIRC2011</td>
<td>A Total of 24 units of credit Choose 12 or 18 units of credit from: BIOC3111, BIOC3261, BIOC3271. Choose 0-12 units of credit from: BIOC3121, BIOC3281, BIOC3411. Choose 0 or 6 units of credit from: ANAT3231, BIOC3411, BIOT3061, CHEMS3021, CHEMS3041, MIRC3041, PHPH3211, PHPH3221</td>
</tr>
<tr>
<td></td>
<td>A/Prof M Edwards</td>
<td>CHEM1011, CHEM1021</td>
<td></td>
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</tr>
<tr>
<td>Biological Science</td>
<td>A/Prof P Adam</td>
<td>BIOS1201, BIOS1101, CHEM1011, MATH1041</td>
<td>BIOS2011, BIOS2021 (or BIOS2621), BIOS2041.Choose 6 units of credit from: BIOS2031, BIOS2051, BIOS2061</td>
<td>Choose 24 units of credit from Level III Biological Science Courses.</td>
</tr>
<tr>
<td>Biomechanics</td>
<td>Dr A McIntosh</td>
<td>12 units of credit from Level I Mathematics</td>
<td>ANAT2511 or ANAT2151 and SESC3400, SESC2451</td>
<td>BIOM9541, SESC3451 18 units of credit from: ANAT3131, BIOM9551, PPH2501, PPH2502, PHYS2410, SESC3901, SESC9460</td>
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<tr>
<td>Biotechnology</td>
<td>Ms R Lee</td>
<td>BIOS1101, BIOS1201, CHEM1011, CHEM1021 MATH1031, MATH1041</td>
<td>BIOS2011, BIOS2201, MIRC2021 Recommended BIOS2021, MIRC2011</td>
<td>BIOT3011, BIOT3021, Choose 12 units of credit from: BIOT3061, BIOT3071, BIOT3081</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Dr N Duffy</td>
<td>CHEM1011, CHEM1021 OR CHEM1031, CHEM1041</td>
<td>18 units of credit from: CHEM2011 or CHEM2817, CHEM2021, CHEM2031 or CHEM2839, CHEM2041 or CHEM2849</td>
<td>Choose 12 units of credit from: CHEM3011, CHEM3021, CHEM3031, CHEM3041 Plus a further 6 units of credit from level III Chemistry. Plus a further 6 units of credit from Level II/III Chemistry</td>
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<tr>
<td>Subject</td>
<td>Code(s)</td>
<td>Credits Required</td>
<td>Notes</td>
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<tr>
<td><strong>Ecology</strong></td>
<td>BIOS1201, BIOS1101, CHEM1011, MATH1041</td>
<td>6 units</td>
<td>Choose from BIOS2031, BIOS2051, BIOS2061</td>
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<tr>
<td>A/Prof P Adam</td>
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<tr>
<td></td>
<td>BIOS2011, BIOS2041.</td>
<td></td>
<td>Choose from BIOS3081, BIOS3091, BIOS3011, BIOS3111 (or Advanced level equivalents)</td>
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<tr>
<td><strong>Environmental Systems</strong></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Dr D Cohen</td>
<td>Choose at least 6 units of credit from Mathematics, Biology, Geology and Geography</td>
<td>6 units</td>
<td>Choose from Statistics.</td>
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<tr>
<td>Dr S Mooney</td>
<td></td>
<td></td>
<td>Choose from 2 of the following: BIOS2011, GEOG2711, or GEOG2711</td>
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<tr>
<td>A/Prof P Adam</td>
<td></td>
<td></td>
<td>OR GEO2240, GEOL3280, MSCI6300</td>
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<tr>
<td><strong>Food Science and Nutrition</strong></td>
<td>BIOS1101, BIOS1201, CHEM1011, FOOD1110, MATH1041</td>
<td>6 units</td>
<td>Choose from FOOD2320, FOOD2320, CHEM2801, FOOD1230, MICR2201, PHPH101, PHPH201</td>
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<tr>
<td>Prof K Buckle</td>
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<td>FOOD1310, FOOD3440, Choose 12 units of credit from: FOOD1390, FOOD2330, FOOD2340</td>
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<td>Recommended CHEM3801</td>
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<td>BIOC2181, FOOD2320</td>
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<td>BIOC2291, CHEM2801, FOOD1230, MICR2201, PHPH101, PHPH201</td>
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<tr>
<td><strong>Genetics</strong></td>
<td>BIOS1101, BIOS1201, CHEM1011, MATH1031, MATH1041</td>
<td>12 units</td>
<td>Choose from BIOS2101, BIOS2201, BIOS2041, MICR2011</td>
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<tr>
<td>Prof I Dawes</td>
<td>BIOS2041 (usually required but may be replaced by MATH2841 or an approved COMP course)</td>
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<tr>
<td>A/Prof M Edwards</td>
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<td>A total of 24 units of credit BIOC3151, BIOC3291</td>
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<td></td>
<td>BIOC3141, BIOC3131, MICR3021</td>
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<td>Choose 6 or 12 units of credit from: BIOC3141, BIOC3131, MICR3021</td>
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<td>Choose 0 or 6 units of credit from: BIOS3071, BIOT3061</td>
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<tr>
<td><strong>Geography</strong></td>
<td>Choose 12 units of credit from: GEOG1601, GEOG1701, GEOG1801</td>
<td>12 units</td>
<td>Choose from level II Geography.</td>
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<tr>
<td>Dr S Mooney</td>
<td>GEOG2101</td>
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<td>Choose 24 units of credit from level III Geography.</td>
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<td><strong>Geology</strong></td>
<td>GEOL1111, GEOL1211</td>
<td>12 units</td>
<td>Choose at least 18 units of credit from level II Geology</td>
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<tr>
<td>Dr D Cohen</td>
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<td>Choose additional Geology courses to make a total of at least 42 units of credit (54 for entry into honours) with at least 18 at level III.</td>
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<td><strong>Marine Science (Marine Biology)</strong></td>
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<td>Choose from MSC2001, MSC2000, MATH2011, MATH2120, MATH2301</td>
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<tr>
<td>Prof J Benzie</td>
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<td></td>
<td>MSCI3001, BIOS3081, BIOS3091,MICR3071</td>
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<td></td>
<td>MATH1131 or MATH1141, MATH1231 or MATH1241</td>
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<td>Choose from MATH2011, MATH2240, MATH2120, MATH2301</td>
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<td></td>
<td>MSCI3001, MATH3121, MATH3241, MATH3261 OR MATH3270</td>
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<tr>
<td><strong>Marine Science (Physical Oceanography)</strong></td>
<td>BIOS1101, BIOS1201</td>
<td>6 units</td>
<td>Choose from MSC2001, MSC2000, MATH2011, MATH2120, MATH2301</td>
<td></td>
</tr>
<tr>
<td>Dr M England</td>
<td></td>
<td></td>
<td>MSCI3001, GEO6300, choose 6 units of credit from: GEO2290, GEO3120, GEO2231, GEO3210.</td>
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<td></td>
<td>Choose a further 6 units of credit from level III Geology subjects.</td>
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<tr>
<td><strong>Marine Science (Marine Geology)</strong></td>
<td>GEOL1111, GEOL1211</td>
<td>6 units</td>
<td>Choose from MSC2001, MSC2000, MATH2011, MATH2120, MATH2301</td>
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<tr>
<td>A/Prof A Albani</td>
<td></td>
<td></td>
<td>MSCI3001, GEO6300, choose 6 units of credit from: GEO2290, GEO3120, GEO2231, GEO3210.</td>
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<td></td>
<td>Choose a further 6 units of credit from level III Geology subjects.</td>
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<tr>
<td><strong>Materials Science</strong></td>
<td>MATH1131, MATH1231, PHYS1121, PHYS1221</td>
<td>6 units</td>
<td>Choose from MATH1093, MATH1163, MATH1181, MATH1213, MATH283, MATH283</td>
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<tr>
<td><strong>Mathematics</strong></td>
<td>MATH1131, MATH1231, MATH1081</td>
<td>18 units</td>
<td>Choose 18 units of credit from level III Mathematics</td>
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<tr>
<td>Dr D Trenerry</td>
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<tr>
<td>Field of Study</td>
<td>Codings</td>
<td>Credits</td>
<td>Notes</td>
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<tr>
<td>Medical Microbiology and Immunology</td>
<td>CHEM1011, CHEM1021, BIOS1101, BIOS1201, MATH1031</td>
<td>MIRC2201 Choose 12 units of credit from: MIRC2011, BIOC2101 or BIOC2181, BIOM2201, PPH2101, PPH2201, BIOS2021, PATH2201</td>
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<tr>
<td></td>
<td></td>
<td>A total of 24 units of credit Choose at least 12 units of credit from: MIRC3041 or MIRC3641, MIRC3051, MIRC3081, MIRC3061</td>
<td>Choose 0-12 units of credit from: MIRC3031, MIRC3021, PPH3212, BIOC2391, BIOC2371, PATH3205, PATH3206</td>
<td></td>
</tr>
<tr>
<td>Microbiology</td>
<td>CHEM1011, CHEM1021, BIOS1101, BIOS1201, MATH1031, MATH1041</td>
<td>MIRC2201, MIRC2011 Choose 6 units of credit from: BIOS2011, BIOC2201, FOOD2200, BIOS2021 or BIOS2621</td>
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<td>MIRC3071, MIRC3011, MIRC3021 Choose 6 units of credit from: BIOM3061, MIRC3091, MIRC3081, GEOG3391, BIOS3071, BIOM3011, BIOM3041, CHEM3901, BIOS3312, FOOD2490, FOOD2490</td>
<td>Choose at least 12 units of credit from: BIOC3131, BIO3036, MIRC3011, MIRC3111, BIOC3211, BIOC3271</td>
<td></td>
</tr>
<tr>
<td>Molecular Biology</td>
<td>CHEM1011, CHEM1021, BIOS1101, BIOS1201, MATH1031, MATH1041</td>
<td>BIOS2021, MIRC2011 BIOC2101, BIOC2201</td>
<td>MIRC3021, BIOC3121, BIOC3281 Choose at least 6 units of credit from: BIOC3131, BIOC3061, MIRC3011, MIRC3111, BIOC3211, BIOC3271</td>
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<tr>
<td></td>
<td></td>
<td>MATH2011, MATH2120, MATH2240, MATH2301, PHYS2810 Choose 3 units of credit from Mathematics or Physics</td>
<td>MATH3010 MATH3121, MATH3241, MATH3261 OR MATH3270 Plus 3 units of credit of Mathematics</td>
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</tr>
<tr>
<td>Physical Oceanography/Meteorology</td>
<td>MATH1131, MATH1231 PHYS1121, PHYS1221, MATH1081</td>
<td>MATH2011, MATH2120, MATH2240, MATH2301, PHYS2810 Choose 3 units of credit from Mathematics or Physics</td>
<td>MATH3010 MATH3121, MATH3241, MATH3261 OR MATH3270 Plus 3 units of credit of Mathematics</td>
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<tr>
<td>Pharmacology</td>
<td>CHEM1011, CHEM1021, BIOS1101, BIOS1201, MATH1031, MATH1041</td>
<td>PPH2101, PPH2201 BIOC2101, BIOC2201 OR BIOC2181, BIOC2291</td>
<td>PPH3151, PPH3251 Choose 12 units of credit from: PPH3121, PPH3131, PPH3211, PPH3221 OR BIOC3261, BIOC3111, BIOC3121 OR CHEM3021, CHEM3901</td>
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<tr>
<td></td>
<td></td>
<td>12 units of credit of level I Philosophy</td>
<td>Choose 24 units of credit from level II/III Philosophy</td>
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<tr>
<td>Philosophy</td>
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<td></td>
<td>Choose 18 units of credit from level II/III Philosophy</td>
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<td></td>
<td>Choose 18 units of credit from level III Physics.</td>
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<tr>
<td>Physics</td>
<td>MATH1131, MATH1231 PHYS1121, PHYS1221</td>
<td>PHYS2050, PHYS2060, PHYS2040, PHYS2030, Choose 12 units of credit from level II or Level III Physics</td>
<td>Choose 18 units of credit from level III Physics.</td>
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<td></td>
<td>Choose 24 units of credit from level II/III Philosophy</td>
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<td></td>
<td>Choose 18 units of credit from level III Physics.</td>
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</tr>
<tr>
<td>Physiology</td>
<td>CHEM1011, CHEM1021, BIOS1101, BIOS1201, MATH1031, MATH1041</td>
<td>PPH2101, PPH2201 BIOC2101, BIOC2201 OR BIOC2181, BIOC2291</td>
<td>PPH3151, PPH3251 Choose 12 units of credit from: PPH3121, PPH3131, PPH3211, PPH3221 OR BIOC3261, BIOC3111, BIOC3121 OR CHEM3021, CHEM3901</td>
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<tr>
<td></td>
<td></td>
<td>12 units of credit of level I Philosophy</td>
<td>Choose 24 units of credit from level II/III Philosophy</td>
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<td></td>
<td>Choose 18 units of credit from level II/III Philosophy</td>
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<td></td>
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<td></td>
<td>Choose 18 units of credit from level III Physics.</td>
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<td></td>
<td>Choose 24 units of credit from level II/III Philosophy</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Choose 18 units of credit from level III Physics.</td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td>PSYC1001, PSYC1011</td>
<td>PSYC2001 Choose 18 units of credit from: PSYC2061, PSYC2071, PSYC2081, PSYC2101</td>
<td>PSYC3001 Choose 18 units of credit from level III Psychology courses (from at least two elective groups)</td>
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<td></td>
<td></td>
<td>Choose 18 units of credit from level III Psychology courses (from at least two elective groups)</td>
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<tr>
<td>Safety Science</td>
<td>12 units of credit from Level I Mathematics</td>
<td>ANAT2151, MATH2839*, SESC2091, SESC2100.</td>
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<tr>
<td>Prof J Cross</td>
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<td>* or any other approved statistics course</td>
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<td></td>
<td>PSYC3141 or IROB2721, SESC3200, SESC3541, SESC3601, SESC4310.</td>
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<tr>
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<td></td>
<td>Additional level II or III SESC courses to a total of 42 units of credit</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Science and Technology Studies</th>
<th>Up to 12 units of credit from: HPST1107, HPST1108, SCTS1106, SCTS1107</th>
<th>Choose 18 units of credit from level II/III Science and Technology Studies</th>
<th>Choose 24 units of credit from level II/III Science and Technology Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr A Corones</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Statistics</th>
<th>MATH1131, MATH1231, MATH1081</th>
<th>MATH2501, MATH2510, MATH2801, MATH2810, MATH2831</th>
<th>MATH3801, MATH3811, MATH3821, MATH3010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr P J Cooke</td>
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</tbody>
</table>

**NOTES:**

- Courses listed for stage 1 are recommended courses. It is important to note that many of these courses may be required as prerequisites for courses required for later years.
- Where a course appears in italics, that course has a pre or corequisite that is not listed as a compulsory part of the major.
- Where students have the necessary qualifications they are encouraged to enrol in the higher Mathematics courses.
- Where students have the necessary qualifications they are strongly encouraged to enrol in CHEM1031 and CHEM1041 instead of CHEM1011 and CHEM1021.
- Students are advised that Mathematics or Physics courses totalling 6 units of credit is recommended for all programs.
- Students doing a Physics major are also expected to take the courses MATH2011 and MATH2120.
- BIOC2181 and BIOC2291 may be substituted for BIOC2101 and BIOC2201 respectively (but only with the permission of the head of School). Minimum grades of credit in BIOC2181 and BIOC2291 will normally be required for entry into level III Biochemistry courses.
- Students wishing to do honours will need to consult with the appropriate school at the end of stage 2 of their program.
### Table B

<table>
<thead>
<tr>
<th>Minor</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>ACCT1501, ACCT1511</td>
<td>24 level II or III units of credit in Accounting.</td>
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</tr>
<tr>
<td>Aviation</td>
<td>AVIA1100, AVIA1900,</td>
<td>24 units of credit from AVIA2100, AVIA2400, AVIA2500, AVIA2700, AVIA2800, AVIA3005, AVIA3006, AVIA3400, AVIA3600, AVIA3701, AVIA3800, AVIA3810, AVIA3850</td>
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<tr>
<td>Botany</td>
<td>BIOS1101, BIOS1201</td>
<td>Bios 3061, BIOS3121</td>
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</tr>
<tr>
<td>Business Economics</td>
<td>ECON1101, ECON1102</td>
<td>24 Upper level units of credit in Business Economics.</td>
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</tr>
<tr>
<td>Business Law and Taxation</td>
<td>ECON1101, ECON1102</td>
<td>24 Upper level units of credit in Business Law and Taxation</td>
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</tr>
<tr>
<td>Chemical Engineering and</td>
<td>CEIC1020</td>
<td>24 level II or III units of credit in chemical engineering or Industrial Chemistry</td>
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<tr>
<td>Geomatic Engineering</td>
<td>One of GMAT0411,</td>
<td>24 Upper level units of credit in Geomatic Engineering</td>
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</tr>
<tr>
<td>Economic History</td>
<td>GMAT0441, GMAT0442</td>
<td>24 Upper level units of credit in Economic History</td>
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</tr>
<tr>
<td>Electrical Engineering &amp;</td>
<td>ELEC1011, ELEC2031, ELEC2032</td>
<td>12 Units of Credit from one of the following groups: ELEC3004, ELEC3014, ELEC3041; or ELEC3006, ELEC3016; or TELE3013, TELE3010, TELE3018</td>
<td></td>
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<tr>
<td>Geomatic Engineering</td>
<td>One of GMAT0411,</td>
<td>24 Upper level units of credit in Human Resource Management.</td>
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<tr>
<td>Industrial Relations</td>
<td></td>
<td>24 Upper level units of credit in Industrial Relations.</td>
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<tr>
<td>Information Systems</td>
<td></td>
<td>24 level II or III units of credit in Information Systems.</td>
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<tr>
<td>International Business</td>
<td></td>
<td>24 Upper level units of credit in International Business.</td>
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<tr>
<td>Marketing</td>
<td></td>
<td>24 Upper level units of credit in Marketing.</td>
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<tr>
<td>Pathology</td>
<td>PATH2201</td>
<td>PATH3205, PATH3206, PATH3207</td>
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<tr>
<td>Remote Sensing</td>
<td>GEG2811, GEG2821</td>
<td>GEOG3811, GEOG3821</td>
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<tr>
<td>Zoology</td>
<td>BIOS1101, BIOS1201</td>
<td>12 units of credit from: BIOS3011, BIOS3021, BIOS3081, BIOS3061</td>
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</tbody>
</table>

In addition to the minors listed below, 24 units of credit taken at level II or III in any major listed in Table A will also satisfy the requirements of a minor. All Minors from the Faculty of Arts and Social Sciences require a total of 24 upper level units of credit from a particular School.

- Australian Studies
- Chinese Studies
- Cognitive Science
- Comparative Development
- Education
- English
- Environmental Studies
- European Studies
- French
- German Studies
- Greek (Modern)
- History
- Indonesian Studies
- Japanese Studies
- Jewish Studies
- Korean Studies
- Latin
- Linguistics
- Music
- Philosophy of Science
- Politics and International Relations
- Russian Studies
- Social Science and Policy
- Sociology
- Spanish and Latin American Studies
- Theatre, Film and Dance
- Women's Studies
Advanced Science Degrees (3973; 3985; 3986; 3990) - Honours/Advanced Degree (4 years)

Conditions for the Completion of the Advanced Science Program

- A student must complete 144 units of credit including 12 units of General Education in Stages 1-3 and a 48 unit Honours sequence at Stage 4.
- The degree must contain a study plan as specified for each Advanced Science program in the Handbook.
- A student must complete at least 36 units and no more than 48 units in Level I courses except where specified in a particular program.
- A student must complete before the end of Stage 3 at least two 3 unit courses taken from Table 'X'.
- No student may normally commence Level II courses until 24 Level I units have been successfully completed unless approved by the Head of School.
- Progression to Stages 3 and 4 is subject to academic performance. A student will be required to have attained an average of 65 or higher in courses relevant to the major area and cognate subjects in each prior stage.

STUDY PLANS AVAILABLE IN ADVANCED SCIENCE

Anatomy                               Medical Chemistry
Applied Mathematics                  Medical Microbiology and Immunology
Biochemistry                          Medical Physics
Biological Science                   Microbiology
Biotechnology                        Molecular Biology
Chemistry                             Neuroscience
Ecology                               Pharmacology
Engineering Physics                  Physical Oceanography and Meteorology
Food Science                          Physics
Genetics                              Physics and Astronomy
Geophysics                            Physics with Computing
Marine and Coastal Studies           Physiology
Materials Science                    Psychology
Mathematics with Computer Science    Pure Mathematics
Mathematics and Finance              Statistics

Transition Rule

New students entering in 2001 will enrol under the new Rules and Requirements. Re-enrolling students will be treated as follows:

- Students entering Stage 3 will be transferred into the new Conditions and will be required to complete 48 units of credit per year. They will not be required to comply with points 3 and 4 of the Conditions unless this can be accommodated within their current program.
- Students who are suspended or have deferred will be required to enter under the new Conditions when they recommence.

Table X

Level I
CHEM1000
LIFE1001
MATH1000
PHYS1000
GEOS1000

Level II
FSCT2000
LIFE2001
Details of Study Plans in Advanced Science

ANATOMY

Anatomy is the study of the structure of the human body. The word 'anatomy' is derived from the Greek, and means 'cutting up' or 'dissection'. However, anatomy today is much more than the descriptive study of the dissected body although dissected specimens are still used for research and instruction. The study of Anatomy now embraces separate but strongly related disciplines. Gross Anatomy deals with the description of form, arrangement and function of the bones, joints, muscles and internal organs, together with their blood and nerve supply. Histology deals with the microscopic structure of tissues and cells. Embryology is concerned with the normal development of the embryo and fetus from conception to birth and with the mechanisms of development and malformations. Neuroanatomy deals with the internal organisation and functions of the brain and spinal cord. In all courses in Anatomy, strong emphasis is given to the functional significance of the structures in health and in disease. Advanced anatomy courses may include affiliation with a research project and a project evaluation report and, in some courses, an assessable dissection program.

A major in anatomy may be combined suitably with elective courses from Biochemistry, Physiology, Microbiology, Pathology or Psychology.

BIOCHEMISTRY

The Biochemistry Plan is closely allied to the Genetics Plan and the Molecular Biology Plan (see later) all of which are concerned with understanding life processes at the level of molecular structure, function and interaction. The Biochemistry Plan therefore provides a knowledge base and a broad range of specialised techniques which are relevant to all biology. The major impact of this discipline is largely at the molecular level and is ideal for those students whose interests are in understanding and appreciating biological processes at the molecular rather than the descriptive level. Integration of these molecular approaches at the cellular, tissue and whole organism level is an increasingly important part of Biochemistry. This discipline also is the foundation of medical science and is playing an increasingly important role in many aspects of modern medicine. The Biochemistry Plan (see below) provides opportunities to combine Biochemistry with other related discipline areas through careful choice of elective courses in Stages 2 and 3 of the Plan.

Biochemistry*

Stage 1
BIOS1101, BIOS1201
CHEM1011, CHEM1021 or CHEM1031, CHEM1041
Choose at least 6 units of credit from:
MATH1031, MATH1041*
Elective courses totalling 12 units of credit
(Recommended: Physics)
LIFE1001
One General Education course totalling 3 units of credit

Stage 2
Level II Anatomy courses totalling at least 18 units of credit from:
ANAT2111, ANAT2200, ANAT2210, ANAT2300, ANAT2310
(ANAT3121 may also be taken in Stage 2)
Elective courses totalling 24 units of credit
Recommended: Biological Science, Biochemistry, Physiology, Microbiology, Pathology, Psychology
LIFE2001
One General Education course totalling 3 units of credit

Stage 3
Choose 12 or 18 units of credit from:
BIOC3111***, BIOC3261, BIOC3271
Choose 0 - 6 units of credit from:
BIOC3121***, BIOC3281***, BIOC3131
Choose 0 - 6 units of credit from:
ANAT231, BIOC3141, BIOC3301, BIOC3061, CHEM3021, CHEM3041, MICR3041, MICR3641, PHHP3211, PHHP3221
Elective courses totalling 18 units of credit
General Education courses totalling 6 units of credit

Stage 4 (Honours)
BIOC4318
* At least two of the Stage 2 and two of the Stage 3 courses contributing to the major in Biochemistry must be taken at the advanced level.
** Other higher level study plan Mathematics courses may be substituted.
*** Advanced level options for these courses are proposed.
BIOLOGICAL SCIENCE

Biological Science encompasses all aspects of plants and animals including their relationship to each other and to the environment. The areas of study leading to the award of a science degree in Biological Science include cell biology, plant and animal physiology, ecology, genetics, taxonomy, marine biology and evolutionary studies. These studies are particularly relevant in the fields of agriculture, forestry, wildlife management, conservation and related environmental sciences. Within Advanced Science there are two plans available, Biological Science and Ecology.

Stage 1
BIOS1101, BIOS1201
CHEM1011
MATH1041
E elective courses totalling 18 units of credit
LIFE1001
One General Education course totalling 3 units of credit

Stage 2
BIOS2011, BIOS2621, BIOS2041, LIFE 2001
Choose 6 units of credit from:
BIOS2031, BIOS2051, BIOS2061
One General Education course totalling 3 units of credit
Elective courses totalling 18 units of credit. Recommended
BIOS2031, BIOS2051 and BIOS2061

Stage 3
Level III Biological Science courses totalling 36 units of credit, including advanced courses where available
General Education courses totalling 6 units of credit
Elective courses totalling 6 units of credit.

Stage 4 (Honours)
Strand A or Strand B
(See course descriptions)

ECOLOGY

Ecology

Stage 1
BIOS1101, BIOS1201
CHEM1011
MATH1041
LIFE1001
One General Education course totalling 3 units of credit
Elective courses totalling 18 units of credit

Stage 2
BIOS2011, BIOS2041
LIFE2001
Choose 6 units of credit from:
BIOS2031, BIOS2051, BIOS2061
One General Education course totalling 3 units of credit
Elective courses totalling 24 units of credit. Recommended
BIOS2031, BIOS2051, BIOS2061 and BIOS2621

Stage 3
Choose courses totalling 36 units of credit from:
BIOS3001, BIOS3011, BIOS3061, BIOS3071, BIOS3081, BIOS3091, BIOS3111, BIOS3611, BIOS3671, BIOS3681
Where ordinary and advanced options exist for the same course students are advised to take the advanced option.
Elective courses totalling 6 units of credit
General Education courses totalling 6 units of credit

Stage 4 (Honours)
Strand A or Strand B
(See course descriptions)

BIOTECHNOLOGY

Biotechnology can be defined as the use of various biological processes to make products and perform services. The essential feature of biotechnology therefore is the use of biological processes based on living cells and biochemical macro-molecules such as proteins, DNA and RNA in a rapidly-expanding range of activities of benefit to mankind. As such, biotechnology makes practical use of the recent scientific advances in areas such as molecular genetics.

The development of recombinant-DNA (r-DNA) technology has resulted in the ability to produce large quantities of any potentially useful product. Based on this technology, a new generation of biopharmaceuticals, including hormones, vaccines, anti-hypertensive and anti-inflammatory agents, are being developed which have the potential to revolutionise medicine. Microorganisms and viruses are being modified for use in controlling plant and animal diseases and pests. Diagnostic kits are being developed for use in forensic science and in product identification and quality control. In addition, genetic improvements in agriculture, plants and animals are becoming a reality, as is the control of inborn genetic disorders in humans.

Some aspects of biotechnology are traditional, having been used for centuries. The first makers of bread, cheese and fermented beverages over six thousand years ago were applying biotechnological principles in processing these goods. Without understanding the processes they were operating, they were in fact making use of catalysis mediated by microbial cells. Such processes are still in use today and scientific advances now allow for much greater control of the processes with resultant improvements in quality and economics of production. The number of such biological processes has expanded also and enzymes and/or microorganisms are used in the production of a wide range of fermented foods (such as cheese, wine, beer, soy sauce, sauerkraut, yoghurt, tofu, kefir) and in the production of flavouring, colouring and sweetening agents.

Bioprocesses are also used in the extraction of minerals from low grade ores, and modified and novel bioprocesses are being developed for the treatment of waste and degradation of recalcitrant molecules, an area of vital importance in our increasingly polluted planet.

The future for expansion in all the above areas is immense, and an ability to cope with the problems of the 21st century will be heavily dependent on these advances.
Choose 12 units of credit from:
BIOT3011, BIOT3061, BIOT3071, BIOT3021, BIOT3081

Choose elective courses totalling 30 units of credit

General Education courses totalling 6 units of credit

Stage 4 (Honours)
BIOT4073 (F/T) BIOT4083 (P/T)

* At least two of the level II and two of the level III subjects contributing to the major must be taken at advanced level.

** Advanced level options for these subjects are proposed

CHEMISTRY

Within Advanced Science there are two plans available: Chemistry, and Medical Chemistry. Both plans provide a broad scientific education and a professional training in the chemical sciences. Fundamental, applied, environmental and industrial aspects of chemistry may be included by the appropriate choice of courses.

Chemistry

The Chemistry plan is designed for students who wish to specialise in the chemical sciences, and undertake the maximum number of chemistry courses. It is designed to provide education and training in all contemporary fields of chemistry, and should be selected by students who wish to devote the majority of their studies at Stage III to chemistry.

Within this plan there are sufficient electives available to complete the equivalent of a minor in another discipline. The School of Chemistry commends the following discipline areas: biochemistry, biotechnology, computing, geology, materials science, mathematics, physics. Other areas are available both within, and outside the science faculties. These possibilities should be discussed with an advisor from the School of Chemistry.

Inclusion of advanced level studies, from more than one field of specialisation, result in a broadly based degree in the chemical sciences. For example, a combination of chemistry and biochemistry leads to further work in areas such as toxicology and neurochemistry. Combining Level III chemistry with mathematics or computing provides a valuable basis for the many applications of computers in chemistry. Chemistry with physics or materials science allows entry into the rapidly developing field of advanced materials.

Stage 1
CHEM1031, CHEM1041*
MATH1131 or MATH1141 or MATH1101
MATH1231 or MATH1241 or MATH1021
Choose 6 units of credit from level I Physics
One Course from CHEM1000, PHYS1000, MATH1000, GEOS1000, LIFE1001
One General Education course totalling 3 units of credit
Elective courses totalling 12 units of credit

Stage 2**
CHEM2011, CHEM2021, CHEM2031, CHEM2041
BIOC2101 or BIOC2181
Choose further specialisation in either physiology, pharmacology or molecular biology
BIOC2201 or BIOC2291
elective courses totalling 6 units of credit

or

PHPH2102 and PHPH2201
FSCT2000 or LIFE2001
General Education courses totalling 6 units of credit

Stage 3
CHEM3021, CHEM3041
Further specialisation in either physiology, pharmacology or biochemistry/molecular biology

PHPH3151 and

PHPH3251 or 6 units of credit from other level III physiology courses

or

Courses totalling 12 units of credit from Level III biochemistry and MICR3041
Elective courses totalling 12 units of credit
General Education courses totalling 6 units of credit

Stage 4
CHEM4003
Joint supervision of honours projects between the School of Chemistry and the Schools of either Physiology and Pharmacology or Biochemistry are strongly encouraged.

* Students without the assumed knowledge for these courses may substitute CHEM1001 and CHEM1021

**Alternative level II courses from CHEM2817, CHEM2821, CHEM2839 or CHEM2849 may be substituted by permission from the Head of School.

FOOD SCIENCE AND TECHNOLOGY

Food science and technology involves the understanding of basic sciences and the application of this knowledge to foods from the point of production, through handling, processing, preservation, distribution and marketing, up to consumption and utilisation by consumers. It is concerned with food processes, food commodities, food composition and food quality (including sensory properties, safety and nutritional value).

The study of food science and technology integrates many scientific disciplines. Its bases are in chemistry, physics, biochemistry and microbiology. Its borders merge with those of agriculture, engineering, human nutrition, public health, commerce, psychology and law. Biotechnology has a role of increasing importance in food science and technology.

The food scientist and food technologist are concerned with population food supplies and requirements, community wants and needs, and equitable distribution of foods to ensure human nutritional needs are met.

Medical Chemistry

This program combines a strong knowledge of synthetic and analytical chemistry and aspects of Biochemistry or Pharmacology. The program is designed to produce graduates whose background in both chemical and biological areas is appropriate to the requirements of employers in Australia.

Stage 1
CHEM1031, CHEM1041*
BIOS1101, BIOS1201
MATH1011 or MATH1131 or MATH1141
MATH1021 or MATH1231 or MATH1241
One Course from CHEM1000, PHYS1000, MATH1000, GEOS1000, LIFE1001
One General Education course totalling 3 units of credit
Elective courses totalling 6 units of credit

Stage 2**
CHEM2011, CHEM2021, CHEM2031, CHEM2041
BIOC2101 or BIOC2181
Choose further specialisation in either physiology, pharmacology or molecular biology
BIOC2201 or BIOC2291
elective courses totalling 6 units of credit

or

PHPH2102 and PHPH2201
FSCT2000 or LIFE2001
General Education courses totalling 6 units of credit

Stage 3
CHEM3021, CHEM3041
Further specialisation in either physiology, pharmacology or biochemistry/molecular biology

PHPH3151 and

PHPH3251 or 6 units of credit from other level III physiology courses

or

Courses totalling 12 units of credit from Level III biochemistry and MICR3041
Elective courses totalling 12 units of credit
General Education courses totalling 6 units of credit

Stage 4
CHEM4003
Joint supervision of honours projects between the School of Chemistry and the Schools of either Physiology and Pharmacology or Biochemistry are strongly encouraged.

* Students without the assumed knowledge for these courses may substitute CHEM1001 and CHEM1021

**Alternative level II courses from CHEM2817, CHEM2821, CHEM2839 or CHEM2849 may be substituted by permission from the Head of School.
New knowledge is acquired in the laboratory, the pilot plant, and the community, and then applied to the development of safe, nutritious and palatable foods, beverages and food ingredients by optimisation of processes and equipment. Foods are studied in terms of their basic constituents and structures, and the changes they undergo when subjected to handling, processing and distribution.

The food scientist and food technologist are equally concerned with the development and selection of raw materials from agricultural, horticultural, animal and marine sources.

A safe, adequate, palatable and nutritious food supply is essential to human health. The food and beverage industry is of major economic importance and in Australia is the largest sector of manufacturing industry. Internationally, food production, processing and service are among the largest and most stable industries. The challenges are to increase the availability, variety, quality and quantity of foods economically and in line with the needs of the world population. The Australian industry has a major role to play in supplying high quality foods to emerging overseas markets and there is a national and international demand for professionally trained people prepared to accept responsibility for the quality and safety of food.

The courses provide basic preparation for food science and technology careers in the food industry, the public sector, education, research, the food service industry, public health, management and marketing. Graduates may also find careers in health and environmental sciences, management of food resources and food wastes, and communication, and in areas such as dietetics after further training.

The Department of Food Science and Technology offers undergraduate training administered through the Science Student Office and in the BSc programs in Food Science and Technology (four stages full-time 3060, six stages part-time 3070). The BSc program is three stages for a Pass degree during which students can study aspects of food science and technology in combination with other courses in a relevant discipline, preferably biochemistry, microbiology, biotechnology or chemistry. The fourth Honours Stage of the BSc Program includes further formal training in food science and technology as well as an extensive research project. The BSc degree in Food Science and Technology (3060) is four Stages full-time (pass or honours).

Food Science and Technology

Stage 1
BIOS1101, BIOS1201
CHEM1031, CHEM1041*
MATH1031, MATH1041
or one of MATH1131, MATH1141
and one of MATH1231, MATH1241
LIFE1001
One General Education course totalling 3 units of credit
PHYS1111 or PHYS1201

Stage 2**
BIOS2101, BIOS2201
FOOD1230
LIFE2001
MICR2201
General Education subjects totalling 9 units of credit
Elective subjects totalling 12 units of credit
(recommended: CHEM2801, FOOD2320, FOOD2320)

Stage 3
FOOD1360, FOOD1370, FOOD1390
Elective subjects totalling 30 units of credit
(recommended: FOOD1380, FOOD1490, FOOD2330, FOOD2340, FOOD2350, FOOD2480, FOOD3440, FOOD4450)

Stage 4 (Honours)
FOOD9420
* Students without the assumed knowledge for these courses may substitute CHEM1011 and CHEM1021
** Alternative level II courses from CHEM2817, CHEM2821, CHEM2839 or CHEM2849 may be substituted with permission from the Head of School.

GENETICS

The Genetics Plan is broadly based and offers a general introduction to the discipline during the first two years of study. The Plan allows students in Stage 3 to diversify into the more specialised areas of genetics, including molecular genetics, human genetics, plant and microbial molecular biology, conservation biology, etc. The flexibility of this Plan therefore allows students the scope to combine genetics with a number of other courses offered by the different Schools within the Faculty of Life Sciences so that Stage 4 (Honours) may be completed in any of these Schools provided that suitable genetics Honours projects are offered.

Genetics*

Stage 1
BIOS1101, BIOS1201
CHEM1011, CHEM1021 or CHEM1031, CHEM1041
Choose at least 6 units of credit from:
MATH1031**, MATH1041**
Elective courses totalling 12 units of credit
(Recommended: Physics)
LIFE1001
One General Education course totalling 3 units of credit

Stage 2
BIOS2021***
LIFE2001
Choose 12 units of credit from:
BIOS2101, BIOS2201, BIOS2041, MICR2011
Elective courses totalling 24 units of credit
One General Education course totalling 3 units of credit
Note: BIOS2041 is normally a prerequisite for BIOS3151 but may be replaced with MATH2841 or another MATH or COMP course as approved by the study plan coordinators

Stage 3
BIOS3291***, BIOS3151***
Choose 6 or 12 units of credit from:
BIOS3121***, BIOS3141, MICR3021
Choose 0 or 6 units of credit from:
BIOS3301, BIOS3071, BIOT3061
Elective courses totalling 18 units of credit
General Education courses totalling 6 units of credit

Stage 4 (Honours)
BSSM4103 (F/T), BSSM4109 (P/T)
* At least two of the Stage 2 and two of the Stage 3 courses contributing to the Genetics Study Plan must be taken at the advanced level.
** Other higher Level I Mathematics courses may be substituted.
NOTE: MATH1041 is a prerequisite for BIOS2041
*** Advanced level options for these courses are proposed.
GEOLOGY

The School of Geology offers the following study plan within Advanced Science.

2503
Geophysics (Advanced Science only)

Professional geophysicists work closely with geologists and, appropriately, studies of both disciplines are undertaken in the one Department. This major is for students who intend to become professional geophysicists. Students should consult the School of Geology for program approval.

Stage 1
COMP1011
GE0L1111, GE0L1211
MATH1131 or MATH1141
MATH1231 or MATH1241
PHYS1121 or PHYS1131
PHYS1221 or PHYS1231 or PHYS1601
One course from GEOS1000, MATH1000, PHYS1000, CHEM1000, LIFE1001
One General Education course totalling 3 units of credit

Stage 2
COMP2811, COMP2011
GE0L2170, GE0L2131, GE0L2231
MATH2011 or MATH2100 and MATH2610
FSCT2000 or LIFE2001
PHYS2050
One General Education course totalling 3 units of credit
Elective courses totalling 6 units of credit
(Recommended: GE0L2121, MATH2120, MATH2130, MATH2520, PHYS2601)

Stage 3
COMP3111 or COMP3421
GEOL3170, GEOL3231*, GEOL2260
MATH3101, MATH3150
General Education courses totalling 6 units of credit
Elective courses totalling 15 units of credit
(Recommended: GEOL3101, GEOL2290, GEOL3241*, GEOL3250, PHYS3230)

Stage 4
GEOL4303* or GEOL4343*
* Includes Geological fieldwork.

MARINE AND COASTAL STUDIES

Marine Science programs allow specialisations in selected areas of marine science, yet also include adequate exposure to other pertinent disciplines.

Marine and Coastal Studies

Stage 1
BIOS1101, BIOS1201
GE0L1111, GE0L1211
MATH1041
Elective courses totalling 12 units of credit
LIFE1001, GEOS1000

Stage 2
MSCI2001, MSCI6200
BIOS2031, GEOL2100
LIFE2001 or FSCT2000
General Education courses totalling 6 units of credit
Elective courses totalling 18 units of credit

Stage 3
MSCI3001, MSCI6300
BIOS3681, BIOS3001
General Education courses totalling 6 units of credit
Elective courses totalling 18 units of credit
(Recommended: BIOS3071, BIOS3111, GEOG3025, GEOG3761, GEOG3911, GEOG3921, GEOL2290, GEOL3120, GEOL2231, MIRC3071)

Stage 4 (Honours)
MSCI4003 F/T, MSCI4009 P/T

MATERIALS SCIENCE

The School of Materials Science and Engineering are offering the following study plan within Advanced Science.

Materials Science

Stage 1
MATS1111, MATS1021
MECH0440
CHEM1011, CHEM1021
MATH1041
Elective courses totalling 12 units of credit
LIFE1001, GEOS1000

Stage 2*
MATS1142, MATS1162, MATS1072, MATS1082, MATS1112
MATH2049, MATH2059
CHEM2011, CHEM2021 or CHEM2031
LIFE2001 or FSCT2000
General Education courses totalling 6 units of credit

Stage 3*
MATS1093, MATS1163, MATS2213, MATS1213, MATS1183, MATS1283
PHYS3020 and PHYS3080, PHYS3310
FSCT2000 or LIFE2001
Elective courses totalling 12 units of credit
General Education courses totalling 6 units of credit

Stage 4
MATS4444

MATHMATICS

The School is divided into Departments of Pure Mathematics, Applied Mathematics, and Statistics. It offers an Advanced Science study plan in each of these areas and also plans in Physical Oceanography/Meteorology, in Mathematics and Computer Science (in conjunction with the School of Computer Science) and in Mathematics and Finance (in conjunction with the Faculty of Commerce).

In all these plans, except Mathematics and Finance, Stage 4 is a special Honours year. For entry to the Honours year, students will normally be required to have a credit average in their Level III Mathematics courses. They will also need to have permission from the Head of the appropriate Department or from the Head of School. In order to receive this permission, students will normally be expected to have included a significant number of higher level courses among the courses they study in the earlier stages of the
Mathematics and Computer Science

Applied Mathematics

Stage 1
MATH1081
MATH1010 or MATH1131
MATH1241 or MATH1231
MATH1212

Courses totalling 6 units of credit from Science Schools other than Mathematics
Elective courses totalling 18 units of credit
One course from MATH1000, PHYS1000, CHEM1000, GEOS1000, LIFE1001
One General Education course totalling 3 units of credit

Stage 2
MATH2011 (or MATH2110 and MATH2610)
MATH2130 or MATH2120
MATH2601 or MATH2501
MATH2520 or MATH2510
MATH2901 or MATH2801
MATH2301

Elective courses totalling 12 units of credit
FSCT2000 or LIFE2001
One General Education course totalling 3 units of credit

Stage 3
MATH3010
Level III Applied Mathematics courses totalling 24 units of credit
Further Mathematics courses totalling 9 units of credit
Elective courses totalling 8 units of credit
General Education courses totalling 5 units of credit

Stage 4 (Honours)
MATH4103 or MATH4104

Mathematics and Computer Science

Stage 1
COMP1011, COMP1021
MATH1141 or MATH1131
MATH1241 or MATH1231
MATH1081

Further level III or IV computer science courses totalling 18 units of credit
Further level III mathematics courses totalling 6 units of credit
Elective courses totalling 6 units of credit
MATH2301
MATH2901
MATH2620
MATH2601
MATH2130
MATH2011 (or MATH2110 and MATH2610)

Stage 2
MATH2011 (or MATH2110 and MATH2610)
MATH2601 or MATH2501
COMP2011, COMP2021, COMP2041
Level III computer science courses totalling 6 units of credit
FSCT2000 or LIFE2001
One General Education course totalling 3 units of credit

Stage 3
MATH3301 or MATH3101
MATH3411
Further Level III Mathematics courses totalling 6 units of credit
Level III or IV Computer Science courses totalling 18 units of credit

Stage 4 (Honours)
MATH4003 or MATH4914

Choosing electives

The following information is provided to assist students in choosing their elective courses.

Pure Mathematics

Pure Mathematics courses relevant to the mathematical aspects of Computer Science are MATH2400 and MATH2430 in Stage 2, and MATH3411 and MATH3421 in Stage 3.

Pure Mathematics courses relevant to teaching are MATH3511, MATH3521, MATH3531, MATH3560 and MATH3570 in Stage 3, or their higher equivalents.

Pure Mathematics courses relevant to the applications of mathematics in physics or engineering are MATH3531, MATH3541 and MATH3570 in Stage 3, or their higher equivalents.

Applied Mathematics

It is recommended that students in the Applied Mathematics plan should include the following among their electives.

Level II: At least two of: MATH2160, MATH2180, MATH2200, MATH2220, MATH2240.

Level III: At least three of: MATH3101, MATH3121, MATH3161, MATH3181, MATH3201, MATH3241, MATH3261, MATH3301.

In addition, the following recommendations are made for Stage 1 of the Applied Mathematics plan.

For students interested in physical sciences or for theoretical oceanography, meteorology or fluid dynamics: PHYS1121 and PHYS1221.

For students interested in social or biological sciences, at least 12 units of credit from the following: BIOS1101 and BIOS1201; PSYC1001 and PSYC1111; PHYS1121 and PHYS1221; CHEM1011 and CHEM1021.

For students interested in computational methods or computer science: COMP1011 and COMP2811.
Statistics

Stage 1
MATH1141 or MATH1131
MATH1241 or MATH1231
MATH1081
Courses totalling 6 units of credit from Science Schools other than Mathematics
Elective courses totalling 18 units of credit
One course from MATH1000, PHYS1000, CHEM1000, GEO1000, LIFE1001
One General Education course totalling 3 units of credit

Stage 2
MATH2011 (or MATH2110 and MATH2610)
MATH2130 or MATH2120
MATH2601 or MATH2501
MATH2620 or MATH2520
MATH2901 or MATH2801
MATH2910 or MATH2810
MATH2931 or MATH2831
Elective courses totalling 9 units of credit
FSCT2000 or LIFE2001
One General Education course totalling 3 units of credit

Stage 3
MATH3010
MATH3901 or MATH3801
MATH3911 or MATH3811
MATH3921
Statistics courses totalling 6 units of credit
Further Mathematics courses totalling 9 units of credit
Elective subjects totalling 6 units of credit
General Education courses totalling 6 units of credit

Stage 4 (Honours)
MATH4503 or MATH4904

Mathematics and Finance

Stage 1
ACCT1501
COMP1091
ECON1101, ECON1102
MATH1151
MATH1251
FIN1612
One course from MATH1000, PHYS1000, CHEM1000, GEO1000, LIFE1001
One General Education course totalling 3 units of credit

Stage 2
MATH2011 (or MATH2110 and MATH2610)
MATH2130 or MATH2120
MATH2601 or MATH2501
MATH2620 or MATH2520
MATH2901 or MATH2801
MATH2910 or MATH2810
MATH2931 or MATH2831
ACCT1511
FIN2613
FSCT2000 or LIFE2001
One General Education course totalling 3 units of credit

Stage 3
MATH3010
Further level III mathematics courses totalling 12 units of credit*
A further level II or III mathematics course totalling 3 units of credit*
FIN2624, FIN3616
Further level III finance courses totalling 6 units of credit
Elective courses totalling 6 units of credit
General Education courses totalling 6 units of credit

Stage 4
MATH4012
Further level III mathematics courses totalling 12 units of credit*
FIN3635
Further level III finance courses totalling 6 units of credit
Elective courses totalling 12 units of credit
* The choice of Mathematics courses in stages 3 and 4 should include at least 6 units of credit from each of the following 4 groups:
1. (computing) MATH3101, MATH3301, MATH3921
2. (discrete modelling) MATH3160, MATH3180, MATH3200, MATH3841, MATH3860
3. (continuous modelling) MATH2220, MATH3161, MATH3181, MATH3201, MATH3641, MATH3901
4. (statistics) Level III statistics

Physical Oceanography / Meteorology

Stage 1
MATH1141 or MATH1131
MATH1241 or MATH1231
MATH1081
PHYS1121 or PHYS1131, PHYS1221 or PHYS1231
Elective courses totalling 12 units of credit
One course from MATH1000, PHYS1000, CHEM1000, GEO1000, LIFE1001
One General Education course totalling 3 units of credit

Stage 2
MATH2011 (or MATH2110 and MATH2610)
MATH2130 or MATH2120
MATH2601 or MATH2501
MATH2620 or MATH2520
MATH2901 or MATH2801
MATH2910 or MATH2810
MATH2931 or MATH2831
ACCT1511
FIN2810
GEO2811
FSCT2000 or LIFE2001
One General Education course totalling 3 units of credit

Stage 3
MATH3010
MATH3121, MATH3241
MATH3261 or MATH3270
MATH3301
MSCI3001
Elective courses totalling 9 units of credit
(12 units of credit if MATH3270 is taken)
General Education courses totalling 6 units of credit

Stage 4 (Honours)
MATH4103 or MATH4104

Pure Mathematics

Stage 1
MATH1141 or MATH1131
MATH1241 or MATH1231
MATH1081
Courses totalling 6 units of credit from Science Schools other than Mathematics
Elective courses totalling 18 units of credit
One course from MATH1000, PHYS1000, CHEM1000, GEO1000, LIFE1001
One General Education course totalling 3 units of credit
**MEDICAL PHYSICS**

Medical Physics is the application of physics to diagnosis, treatment and prevention of human disease and disability. There is a continuing demand for professional physicists in this area as new physical techniques are rapidly translated into new medical instruments. There is an increasing demand for health physicists in industry and the public service to monitor environmental and occupational sources of radiation and other hazards.

This program gives an essential strong background in conventional physics including electronics and computing, a general background in the biological sciences and some specialised knowledge in biophysics and medical physics.

Honours may be awarded. The basis is a suitably weighted performance over the last three stages of this four year advanced science degree.

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**Medical Physics**

**Stage 1**

- BIOS1201, BIOS1101
- CHEM1031 or CHEM1011
- CHEM1041 or CHEM1021
- MATH1311 or MATH1141
- MATH1231 or MATH1241
- PHYS1311, PHYS1231

**Stage 2**

- BIOC2101
- MATH2011, MATH2120
- One Course from CHEM1000, GEOS1000, PHYS1000, MATH1000 or LIFE1001
- PHYS2201, PHYS2202, PHYS2203, PHYS2204, PHYS2205, PHYS2206, PHYS2241, PHYS2260
- General Education courses totalling 6 units of credit

**Stage 3**

- PHYS1601, PHYS1310, PHYS1230, PHYS1201, PHYS4410
- FSC1200 or LIFE2401
- General Education courses totalling 6 units of credit
- Plus electives chosen to make a total of 48 Units of Credit. Those in the supplementary table below are especially recommended

**Year 4**

- PHYS3030 or PHYS3230, PHYS4411, PHYS4413
- SESC4410
- Plus electives chosen to make a total of 48 Units of Credit. Those in the supplementary table below are especially recommended

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**Supplementary table**

- ANAT2511 or ANAT2111
- MATH2160
- PHYS2310, PHYS2601, PHYS3010, PHYS3050, PHYS3060
- PHYS2310, PHYS3310, PHYS3610, PHYS3630, PHYS3710, PHYS3720, PHYS3760

**MICROBIOLOGY AND IMMUNOLOGY**

Microbiology is the scientific study of the smallest forms of life namely, bacteria, viruses, archaea, fungi and protozoa. These fascinating organisms impact on our lives in many ways. On the negative side, they cause disease in humans, animals and plants, they spoil our food. However, microorganisms are also of great benefit. Indeed, microorganisms are the key participants for the turnover of nutrients and elements and they are the main producers of carbon and biomass. They turn the biological wheels on this globe and are responsible for sustainability of life. They also contribute to a better environment via recycling of organic wastes, maintenance of soil fertility and biodegradation of pollutants. Many foodstuffs, beverages, pharmaceuticals and other products of biotechnology are products of microbial action. The genetic engineering of microorganisms is a fundamental aspect of molecular biology and the way of the future.

Immunology, the study of the immune system, has contributed significantly to modern medicine in areas such as blood transfusion, organ transplantation, treatments of allergic reactions and development of vaccines, and immunity to disease. In cell biology, immunology has advanced our understanding of differentiation, cell cooperation and the triggering of proliferation and differentiation by cell surface receptors.

Both Microbiology and Immunology also provide an excellent training in the scientific method and scientific communication. We aim to provide an undergraduate training that serves as a starting point for many careers within our disciplines and beyond. An energetic honours programme provides experience of scientific research and aims to further develop a wide range of skills.

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**Microbiology**

**Stage 1**

- BIOS1101, BIOS1201
- CHEM1011, CHEM1021
- MATH1041
- Elective courses totalling 12 units of credit
- LIFE1001
- One General Education course totalling 3 units of credit

**Stage 2**

- MICR2201 or MICR2611, MICR2111
- LIFE2001
- Elective courses totalling 18 units of credit
- One General Education course totalling 3 units of credit

**Stage 3**

- MICR3011, MICR3021, MICR3071
- Elective courses totalling 18 units of credit
- One General Education course totalling 3 units of credit

**Stage 4 (Honours)**

- MICR4013 or MICR4023

* At least two of the Stage 2 and two of the Stage 3 courses contributing to the microbiology study plan must be taken at the advanced level.
Medical Microbiology and Immunology

Stage 1
BIOS1101, BIOS1201
CHEM1011, CHEM1021 or CHEM1031, CHEM1041
Choose 6 units of credit from:
MATH1031, MATH1041
Elective courses totalling 12 units of credit
LIFE1001
One General Education course totalling 3 units of credit

Stage 2
MICR2201
LIFE2001
Choose 6 units of credit from:
BIOC2101, BIOC2201, MICR2111 or MICR2611, BIOS2021, PHHP2101, PHHP2201, PATH2201
Elective courses totalling 30 units of credit
One General Education course totalling 3 units of credit

Stage 3
Choose 12 - 24 units of credit from:
MICR3041 or MICR2611, MICR3051, MICR3061, MICR3081
Choose 0 - 12 units of credit from
MICR3021, MICR3031, PHHP3121, BIOC3261, BIOC3271, PATH3205, PATH3206
General Education courses totalling 6 units of credit
Further elective courses to give a total of 48 units of credit

Stage 4 (Honours)
MICR4013 or MICR4023
* At least two of the Stage 2 and two of the Stage 3 courses contributing to the medical microbiology and immunology study plan must be taken at the advanced level.

MOLECULAR BIOLOGY

Recent advances in Molecular Biology, especially the continuing development of recombinant DNA technology, have revolutionised our understanding of the structure, function and regulation of individual genes. These advances have opened up the exciting field of Molecular Biology, one of the most rapid growth areas in biology. This marriage of Biochemistry, Microbiology, Cell Biology and Genetics provides an exciting new approach for the study of all living organisms, including the human. Molecular Biology therefore represents fundamental components of biological and medical science and they will have increasingly important roles to play in many aspects of modern medicine, genetics, evolutionary biology, bioinformatics, biotechnology and genomics.

Molecular Biology

Stage 1
BIOS1101, BIOS1201
CHEM1011, CHEM1021 or CHEM1031, CHEM1041
Choose 6 units of credit from:
MATH1031**, MATH1041**
Elective courses totalling 12 units of credit
(Recommended: Physics)
LIFE1001
One General Education course totalling 3 units of credit

Stage 2
BIOC2101, BIOC2201
BIOS2021 or BIOS2621
MICR2011 or MICR2611
LIFE2001
Elective courses totalling 18 units of credit
One General Education course totalling 3 units of credit

Stage 3
BOIC3121***, BOIC3281***, MICR3021 or MICR3621
Choose 6 units of credit from:
BOIC3111***, BOIC3271, BOIC3131, BOIC3301, BIOT3061, MICR3011 or MICR3611
Elective courses totalling 18 units of credit
General Education courses totalling 6 units of credit

Stage 4 (Honours)
BOIC4428 or MICR4013 or BIOT4073
* At least two of the Stage 2 and two of the Stage 3 courses contributing to the molecular biology study plan must be taken at the advanced level.
** Other higher level I Mathematics courses may be substituted.
Note: MATH1041 is a prerequisite for BIOS2041
*** Advanced level options for these courses are proposed.

NEUROSCIENCE

This program introduces students to the biological and behavioural aspects of the nervous system. The program is based around the neuroscience courses offered by the Schools of Anatomy, Physiology and Pharmacology, and Psychology.

Neuroscience

Stage 1
BIOS1101, BIOS1201
CHEM1011, CHEM1021
PSYC1001, PSYC1011
Choose 6 units of credit from the level I Mathematics options
LIFE1001
One General Education course totalling 3 units of credit

Stage 2
ANAT2111 or ANAT2511
BIOC2101 and BIOC2201, or
BIOC2181 and BIOC2291
PHHP2101, PHHP2201
PSYC2071, PSYC2081
LIFE2001
One General Education course totalling 3 units of credit

Stage 3
ANAT3411, ANAT3421
PHHP3521, PHHP3531
Level III Psychology courses totalling 12 units of credit with one course selected from Advanced Perceptual / Cognitive Psychology (PSYC3151, PSYC3221, PSYC3311, PSYC3321) and one course from Advanced Biological Psychology (PSYC3051, PSYC3241, PSYC3251)
An additional course totalling 6 units of credit at level II or III to complete 48 units of credit. This course might be chosen from those offered by the School in which honours study is contemplated.
General Education courses totalling 6 units of credit

Stage 4
Subject to satisfactory progress throughout the course (normally a credit average), students may proceed to the Honours Stage. Before the commencement of Stage 2 students should consult with the appropriate Schools and the Neuroscience program coordinating committee consisting of representatives from the Schools of Anatomy, Physiology and Pharmacology, and Psychology, about the courses required for a particular Honours program. Students should also note general guidelines for Advanced Science Stage 4.
PHYSICS

The Majors offered by the School of Physics reflect the importance of physics in science and technology at both the fundamental and the applied levels.

Physics

Stage 1
MATH1131 or MATH1141
MATH1231 or MATH1241
PHYS1131, PHYS1231
Elective courses totalling 18 units of credit
One course from PHYS1000, CHEM1000, MATH1000, GEOS1000, LIFE1001
One General Education course totalling 3 units of credit

Stage 2
FSCT2000 or LIFE2001
MATH2011, MATH2120, MATH2520
PHYS2010, PHYS2020, PHYS2030, PHYS2040, PHYS2050, PHYS2060, PHYS2630
Elective courses totalling 9 units of credit
One General Education course totalling 3 units of credit

Stage 3
PHYS3010 or PHYS3210, PHYS3020, PHYS3030 or PHYS3230, PHYS3050, PHYS3060, PHYS3080
Two of PHYS3040, PHYS3070, PHYS3110, PHYS3120
Level III elective courses totalling 18 units of credit
General Education courses totalling 6 units of credit

Stage 4 (Honours)
Choose one of PHYS4103, BSSM4013
"Students are encouraged to select Higher Level Mathematics courses where applicable.
"Appropriate Level I electives include COMP1001, PHYS1601, CHEM1011 and CHEM1021.
"Students interested in Biophysics may replace PHYS3050 (or PHYS3060) with PHYS3410 provided CHEM1011, CHEM1021, BIOS1101 and BIOS1201 are completed in Stage 1 and BIOC2101 and BIOC2201 are taken in Stage 2.
"Excluded PHYS2170 and PHYS2520. For students specialising in Theoretical Physics, additional mathematics courses are specified. In Stage 2 students should include MATH2501 (or MATH2601) and in Stage 3 MATH5121 and Theoretical Physics courses.

Physics and Astronomy

This program provides the basic physics essential for a career in astronomy. It will not prevent specialisation in some other field of physics if students' interests change during their studies.

There is astronomy content in each Stage of the program. There are special lectures and projects in the version of PHYS1131 and PHYS1231 for physics majors. The other astronomy courses are PHYS2160 and PHYS3160 and lecture course and projects in the Honours Stage.

Stage 1
MATH1131 or MATH1141
MATH1231 or MATH1241
PHYS1131, PHYS1231
Elective courses totalling 18 units of credit
One course from PHYS1000, CHEM1000, MATH1000, GEOS1000, LIFE1001
One General Education course totalling 3 units of credit

Stage 2
FSCT2000 or LIFE2001
MATH2011, MATH2120, MATH2520
PHYS2010, PHYS2020, PHYS2030, PHYS2040, PHYS2050, PHYS2060, PHYS2160, PHYS2630
Elective courses totalling 6 units of credit

Stage 3
PHYS3010 or PHYS3210, PHYS3020, PHYS3030 or PHYS3230
PHYS3050, PHYS3060, PHYS3080
Two of PHYS3040, PHYS3070, PHYS3110, PHYS3120
Level III elective courses totalling 15 units of credit
General Education courses totalling 6 units of credit

Stage 4 (Honours)
PHYS4103

ENGINEERING PHYSICS

This program combines a thorough knowledge of experimental physics, electronics, computing and instrumentation, optoelectronics and communications with elements of engineering practice and management. It is designed to produce graduates with skills and knowledge appropriate to the requirements of Australian industry.

An industrial project of one session's duration with an industrial sponsor of the program is included in Stage 4.

The program prepares graduates for membership of the Institution of Engineers, Australia, within two years of initial employment in an engineering field. Graduates will be accepted for membership of the Australian Institute of Physics.

Honours may be awarded. The basis is a suitably weighted performance over the last three stages.
Engineering Physics

Stage 1
CHEM1817
COMP1001
MATH1131 or MATH1141
MATH1231 or MATH1241
PHYS131, PHYS132, PHYS1601, PHYS2630,
One course from PHYS1000, CHEM1000, MATH1000,
GEOS1000, LIFE1001
One General Education course totalling 3 units of credit

Stage 2
ELEC2031
FSCT2000 or LIFE1001
MATH2011, MATH2520, MATH2120, MATH3150
PHYS2030, PHYS2040, PHYS2050, PHYS2601,
PHYS3760
One General Education course totalling 3 units of credit

Stage 3
ELEC3004, ELEC3016
MATH2839 or MATH2859
PHYS2010, PHYS2020, PHYS3060, PHYS2601,
PHYS3760
General Education courses totalling 6 units of credit

Stage 4
ELEC4010, ELEC 3013
PHYS3020, PHYS3200, PHYS3201, PHYS3030, PHYS3203,
PHYS3040, PHYS3110, PHYS3720/3710, PHYS4764

PHYSIOLOGY AND PHARMACOLOGY

Physiology, the study of the processes and mechanisms which serve and control the various functions of the body, begins at Level II. Students majoring in Physiology should note the prerequisites for Level III Physiology. There are four level III advanced physiology courses, each six units of credit:

PHPH3521 Membrane and Cellular Physiology (adv)
PHPH3531 Neurophysiology (adv)
PHPH3621 Endocrine, Reproductive and Developmental Physiology (adv)

For a major in Physiology, students must complete at least three of these courses (18 units of credit) together with at least 6 units of credit from allied disciplines specified in the study plan below. Students majoring in Pharmacology should note that there are prerequisites for level III Pharmacology. There are two level III advanced Pharmacology courses, each six units of credit:

PHPH3551 Introductory Pharmacology and Toxicology (adv)
PHPH3651 Clinical and Experimental Pharmacology (adv)

For a major in Pharmacology, students must complete both of these courses (12 units of credit) together with at least 12 units of credit from allied disciplines specified in the study plan below. Note should also be taken of the prerequisites and corequisites for the subjects taken with Physiology and Pharmacology courses.

Physiology

Stage 1
BIOS1101, BIOS1201
CHEM1011 or CHEM1031 and CHEM1021 or CHEM1041
Choose at least 6 units of credit from:
One of MATH1031, MATH1041, MATH1131, MATH1141
Elective courses totalling 12 units of credit
LIFE1001
One General Education course totalling 3 units of credit

Stage 2
PHPH2101, PHPH2201
BIOC2101 and BIOC2201, or BIOC2181 and BIOC2291
LIFE2001
Elective courses totalling 18 units of credit
One General Education course totalling 3 units of credit

Stage 3
Choose 18 units of credit from:
PHPH3521, PHPH3531, PHPH3511, PHPH3621
Choose 6 units of credit from:
level III Physiology, level III Anatomy, PHPH3551, PHPH3651, BIOC3261, BIOC3271, BIOC3111, BIOC3121, MIRC3041
MIRC3641 or MIRC3042, MIRC3051, PATH3205, PATH3206,
PATH3207
Elective courses totalling 18 units of credit
General Education courses totalling 6 units of credit

Stage 4 (Honours)
PHPH4218
Subject to satisfactory progress throughout the program (normally a credit average), students may proceed to the honours stage. Students should consult with the School of Physiology and Pharmacology, and note general guidelines for Advanced Science Stage 4.

Pharmacology

Stage 1
BIOS1101, BIOS1201
CHEM1011 or CHEM1031 and CHEM1021 or CHEM1041
Choose at least 6 units of credit from:
One of MATH1031, MATH1041, MATH1131, MATH1141
Elective courses totalling 12 units of credit
LIFE1001
One General Education course totalling 3 units of credit

Stage 2
PHPH2101, PHPH2201
BIOC2101 and BIOC2201, or BIOC2181 and BIOC2291
LIFE2001
Elective courses totalling 18 units of credit
One General Education course totalling 3 units of credit

Stage 3
PHPH3551, PHPH3651
Choose 12 units of credit from level III Physiology, Biochemistry, Chemistry, Microbiology and Immunology, Anatomy, Pathology, Biotechnology, Biological Science.
Elective subjects totalling 18 units of credit
General Education courses totalling 6 units of credit

Stage 4 (Honours)
PHPH4258
Subject to satisfactory progress throughout the program (normally a credit average), students may proceed to the honours stage. Students should consult with the School of Physiology and Pharmacology, and note general guidelines for Advanced Science Stage 4.


PSYCHOLOGY

Psychology is the scientific study of human behaviour. It is a diverse discipline that includes study of the processes of perceiving, learning and memory; the assessment of abilities and attitudes; the origins of personality and emotional states; the nature and effects of social interactions with other people; brain-behaviour relationships; and the causes of abnormal behaviour. Study in the scientific discipline of psychology provides the background necessary for further training in the application of psychology in a variety of professional contexts.

Psychologists work in clinical, correctional, counselling, legal, educational and organisational settings. People with training in psychology also pursue careers in diverse areas including academic and health research; rehabilitation; occupational health and safety; advertising and marketing; and personnel selection, training and management.

Registration as a Psychologist

In order to become a member of the professional body, the Australian Psychological Society (APS), and for registration as a psychologist in New South Wales, students first need a University bachelor degree which includes four years of approved training in psychology. Psychology in the Advanced Science (Life Sciences) degree provides four years of approved training in Psychology. Students must also follow this by completing an accredited 5th and 6th year academic degree such as one of the Master of Psychology degrees (Clinical, Forensic or Organisational) or a combined Doctor of Philosophy/Master of Psychology degree as offered by this University. An alternative of two years of supervised experience in professional practice may be undertaken for registration as a psychologist in New South Wales.

English Proficiency

A high proficiency in English is needed to pass Psychology courses.

Stage 1

LIFE1001

PSYC1001 and PSYC1011

Level I Courses from Science Schools totalling 12 units of credit

Elective courses totalling 18 units of credit*

One General Education course totalling 3 units of credit

Stage 2

LIFE 2001

PSYC2001, PSYC2061, PSYC2071, PSYC2081 and PSYC2101

Elective courses totalling 12 units of credit*

One General Education course totalling 3 units of credit

Stage 3

PSYC3001 and PSYC3011

Four Level III Psychology electives *

Elective courses totalling 6 units of credit*

General Education courses totalling 6 units of credit

Stage 4 (Honours)

PSYC4053 and PSYC4063

* Level III Psychology electives must include one course from at least three of the following four elective groups:

Advanced Perceptual/Cognitive - PSYC3151, PSYC3221, PSYC3311, PSYC3321

Advanced Biological - PSYC3051, PSYC3241, PSYC3251

Advanced Social - PSYC3121, PSYC3271, PSYC3281

Psychological Applications - PSYC3141, PSYC3201, PSYC3301, PSYC3331

* Suitable electives include courses from areas such as: Anatomy, Biological Science, Mathematics, Physiology, Science and Technology Studies, and Philosophy.
ENVIRONMENTAL SCIENCE

3988
Environmental Science Degree
BEnvSc
Full-time

The Environmental Science program allows specialisation in a number of disciplines: Biology, Marine, Microbiology, Chemistry, Geography, Geology, Oceanography (as set out in Table ENVS B). All study plans include the common core in Environmental Science (as set out in Table ENVS A).

Conditions for the Award of the Environmental Science Degree
• A student must complete 144 units of credit including 12 units of General Education in Stages 1-3 and 48 unit Honours sequence at Stage 4.
• The degree must contain the core in Environmental Science plus a specialisation in one discipline as specified in the Handbook (Tables ENVS A and ENVS B).
• A student must complete at least 36 units of credit and no more than 60 units of credit in Level I courses.
• No student may normally commence Level 2 courses until 24 units of credit Level I have been successfully completed unless approved by the program advisor or Associate Dean.
• Progression to Stages 3 and 4 is subject to academic performance. A student will be required to have attained an average of 65 or higher in courses relevant to the major area and cognate subjects in each prior stage.

Transition Rule
• Students are enrolled at all stages in the current Environmental Science Programs. New students entering in 2001 will enrol under the new Rules and Requirements. Re-enrolling students will be treated as follows:
  • Students entering Stage 2 or Stage 3 will be transferred into the new Conditions and will be required to complete 48 units of credit per year.
  • Students who are suspended or have deferred in 2000 will be required to enter under the new Conditions when they recommence.

Table ENVS A Environmental Science Program

<table>
<thead>
<tr>
<th>Stage</th>
<th>ENVS Core</th>
<th>Electives (Including Gen Ed)</th>
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</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>ENVS1011, BIOS1101, CHEM1011, GEOG1021, GEOL1011</td>
<td>Minimum 6 units of credit in each stage (may elect for additional units of credit):</td>
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<tr>
<td>Stage 2</td>
<td>ENVS2010 Population Analysis and Environment, ENVS2020 The Urban Environment, ENVS2051 Environmental Policy and Law, ECON1107 Environmental Economics, 6 units of credit of statistics (from list BIOS2341, GEOG3201, MATH2841, MATH3201 in some cases))</td>
<td>General Education subjects to total 12 units of credit in Stages 2 and 3 plus additional subjects where appropriate to make a Total of 48 units of credit for Year 2</td>
</tr>
<tr>
<td>Stage 3</td>
<td>BIOS3071 Conservation Biology and Biodiversity, CHEM3901 Environmental Toxicology, GEOG3911 Environmental Impact Assessment</td>
<td>Select additional subjects where appropriate to make a Total of 48 units of credit for Year 3</td>
</tr>
<tr>
<td>Stage 4</td>
<td>ENVS4XX4 Specialisation Honours project selected from:</td>
<td>At least 24 units of credit Honours project selected from:</td>
</tr>
</tbody>
</table>

* Where students have the necessary qualifications they are strongly encouraged to enrol in CHEM1031 and CHEM1041 instead of CHEM1011 and CHEM1021. Students may elect for additional units of credit where appropriate.
@ S1 or S2 depends on students interests and timetable.
+ Students may add Maths for Life Sciences where appropriate, or depending on assumed knowledge, ability and interests, substitute Mathematics 1A or Higher Mathematics 1A.
§ Requirements for chosen specialisation as set out by each School.
Note: Specialisation is a minimum of at least 42 (48 for Marine, Microbiology, Geography and Math) units of credit at levels 2 or 3 with at least 18 units of credit at level 3 (detail in summary).
Double counting is possible, with similar rules as proposed for Advanced Science.
• Students can elect to do the 18 units of credit of Level 3 courses (BIOS3071, CHEM3901, GEOG3911) in the ENVS Specialisation in year 4 to provide extra electives in year 3.

Students need a total of 36 units of credit Level 3 before beginning Honours project.
<table>
<thead>
<tr>
<th>ENVS units of credit</th>
<th>BIOLOGY (formerly 6861)</th>
<th>MARINE (formerly 6862)</th>
<th>MICROBIOLOGY (formerly 6863)</th>
<th>CHEMISTRY $ (formerly 6864)</th>
<th>GEOGRAPHY (formerly 6865)</th>
<th>GEOLOGY $ (formerly 6866)</th>
<th>OCEANOG'PHY (formerly 6867-9)</th>
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<tbody>
<tr>
<td>1st Stage</td>
<td>BIOS1201</td>
<td>BIOS1201</td>
<td>BIOS1201</td>
<td>CHEM1021 or MATH1031</td>
<td>GEOG1601</td>
<td>GEOL1211</td>
<td>MATH1131# MATH1231 PHYS1121 PHYS1221</td>
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<tr>
<td>36 units of credit</td>
<td>Electives 6 units of credit</td>
<td>Electives 6 units of credit</td>
<td>Electives 6 units of credit</td>
<td>Electives 6 units of credit</td>
<td>Electives 6 units of credit</td>
<td>Electives 6 units of credit</td>
<td>Electives 0 units of credit (BIOS1101 to Yr 2)</td>
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<td>*Including a total of 12 units of credit of General Education during years 2 and 3.</td>
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<td></td>
<td>* double counting courses</td>
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<td></td>
<td>MATHE1041 meets Statistics requirement for these Specialisations</td>
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<td>*Students can elect to do the 18 units of credit of Level 3 courses (BIOS3071, CHEM3901, GEOG3911) in the ENVS Specialisation in year 4 to provide extra electives in year 3.</td>
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<tr>
<td>2nd Stage</td>
<td>BIOS2011 BIOS2041# at least 6 units of credit from: BIOS2031, BIOS2051, BIOS2061</td>
<td>BIOS2011 BIOS2031 BIOS2041#</td>
<td>BIOS2201 BIOS2011 BIOS2201</td>
<td>BIOS2201 BIOS2041</td>
<td>BIOS2201 BIOS2011 BIOS2201</td>
<td>BIOS2201 BIOS2041</td>
<td>BIOS2201 BIOS2011 BIOS2201</td>
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<tr>
<td>24 units of credit</td>
<td>Electives 12* units of credit</td>
<td>Electives 12* units of credit</td>
<td>Electives 12* units of credit</td>
<td>Electives 6* units of credit</td>
<td>Electives 6* units of credit</td>
<td>Electives 6* units of credit</td>
<td>Electives 3* units of credit</td>
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<td></td>
<td><em>At least 6 units of credit from specialisation Electives 12</em> units of credit</td>
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<td>*Including a total of 12 units of credit of General Education during years 2 and 3.</td>
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<td>MATHE1041 meets Statistics requirement for these Specialisations</td>
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<td></td>
<td>*Students can elect to do the 18 units of credit of Level 3 courses (BIOS3071, CHEM3901, GEOG3911) in the ENVS Specialisation in year 4 to provide extra electives in year 3.</td>
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<tr>
<td>3rd Stage</td>
<td>BIOS3061 BIOS3071 BIOS3111</td>
<td>BIOS3071 BIOS3081 BIOS3091</td>
<td>BIOS3071 BIOS3081 BIOS3111</td>
<td>CHEM3041 CHEM3311</td>
<td>CHEM3041 CHEM3311</td>
<td>CHEM3041 CHEM3311</td>
<td>CHEM3041 CHEM3311</td>
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<td>18@ units of credit</td>
<td>at least 6 units of credit</td>
<td>at least 6 units of credit from specialisation Electives 12* units of credit</td>
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<td>*Including a total of 12 units of credit of General Education during years 2 and 3.</td>
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<td>MATHE1041 meets Statistics requirement for these Specialisations</td>
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<tr>
<td></td>
<td>*Students can elect to do the 18 units of credit of Level 3 courses (BIOS3071, CHEM3901, GEOG3911) in the ENVS Specialisation in year 4 to provide extra electives in year 3.</td>
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<tr>
<td>4th Stage</td>
<td>ENVS4104 Specialisation Hons project. 24 units of credit. Plus 24 units of credit of other courses (usually Level 3/4) or ENVS4107 Specialisation Hons project 42 units of credit plus BIOS4511 6 units of credit</td>
<td>ENVS4204 Specialisation Hons project. 24 units of credit. Plus 24 units of credit of other courses (usually Level 3/4) or ENVS4207 Specialisation Hons project 42 units of credit plus BIOS4511 6 units of credit</td>
<td>ENVS4304 Specialisation Hons project. 24 units of credit. Plus 24 units of credit of other courses (usually Level 3/4) or ENVS4308 Specialisation Hons project 48 units of credit</td>
<td>ENVS4404 Specialisation Hons project. 24 units of credit. Plus 24 units of credit of other courses (usually Level 3/4) or ENVS4408 Specialisation Hons project 48 units of credit</td>
<td>ENVS4504 Specialisation Hons project. 24 units of credit. Plus 24 units of credit of other courses (usually Level 3/4) or ENVS4508 Specialisation Hons project 48 units of credit</td>
<td>ENVS4604 Specialisation Hons project. 24 units of credit. Plus 24 units of credit of other courses (usually Level 3/4) or ENVS4608 Specialisation Hons project 48 units of credit</td>
<td>ENVS4704 Specialisation Hons project 24 units of credit. Plus 24 units of credit of other courses (usually Level 3/4) or ENVS4708 Specialisation Hons project 48 units of credit</td>
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<tr>
<td>24@ units of credit</td>
<td>Note: Students need a total of 36 units of credit at Level III before being allowed to begin their Honours project.</td>
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</table>

* Including a total of 12 units of credit of General Education during years 2 and 3. 

* double counting courses

*MATH1041 meets Statistics requirement for these Specialisations

*Students can elect to do the 18 units of credit of Level 3 courses (BIOS3071, CHEM3901, GEOG3911) in the ENVS Specialisation in year 4 to provide extra electives in year 3.
MEDIA AND COMMUNICATIONS

3993
Bachelor of Science (Communications)

BSc (Communications)

Science Communication is a new program designed to serve students interested in a career in the human and social aspects of science, from entrepreneurship in biotechnology to science journalism and from advising on environmental policy to teaching science to the public. Offered for the first time in 2000, the program leads to a 3 year Pass or 4 year Honours degree. It provides students with a strong grounding in science together with conceptual insights and practical skills in communication. Students address large scale issues, like the role of science in society, as they impact on small scale interactions, such as a conversation between a patient and her doctor. This scope of concerns makes the degree a highly interdisciplinary undertaking for the student who likes to marry theory with practice.

Conditions governing the award of the Degree

1. A student must complete 144 units of credit including 12 units of credit of General Education.
2. The degree must contain a Communications major sequence and either a second major drawn from those approved with the BSc (excluding those from the Schools of Philosophy and Science and Technology Studies) or two approved minor sequences.
3. A student must complete at least 36 and no more than 60 units of credit in Level I subjects from at least three Schools.
4. A student must complete at least 24 units of credit at Level I from Science Schools (as defined in the rules attached to the conditions for the award of the BSc excluding the Schools of Philosophy and Science and Technology Studies).
5. No student may commence Level II courses until 24 Level I units of credit have been successfully completed.
6. A student must complete a minimum of 84 units of credit from Science Schools (see 4 above).
7. For entry to Honours a student must complete at least 24 units of credit at Level III in the relevant Major sequence and have the permission of the Head of School.

Outline of program

The Communications major is under development and the information below is indicative. For details of Major and Minor sequences in Science see Table A on page 37.

Stage 1
SCOM1011 Science, Technology and Society
SCOM1021 Introduction to Science Communication
24 units of credit from two Science Schools
Electives totaling 12 units of credit

Stage 2
SCOM2011 The Structure and Politics of Australian Science
SCOM2021 Professional Science Communication
Electives in Communication totaling 6 units of credit
18 units of credit in a Science Major
6 units of credit of General Education

Stage 3
SCOM3011 Communicating Science – Theory and Practice
SCOM3021 Science Communication Internship
Electives in Communication totaling 6 units of credit
24 units of credit in a Science Major (continued for stage 2)
6 units of credit of General Education

Stage 4 (Honours)

For details consult the relevant School

3994
Bachelor of Science (Media and Communications)

BSc (Media)

The Science Media and Communication program is offered for the first time in 2000. It leads to a 3 year Pass or 4 year Honours degree aimed at producing students who have a strong grounding in science together with conceptual and practical skills in media and communication studies. Students gain creative, practical experience with digital media in the production of audiovisual and multimedia works in an advanced multimedia laboratory, together with an understanding of the history, understanding and social impacts of media technologies. This is combined with a Major or two Minors in Science.

Conditions governing the award of the Degree

1. A student must complete 144 units of credit including 12 units of credit of General Education.
2. The degree must contain a Media and Communications major sequence and either a second major drawn from those approved within the BSc (excluding those from the Schools of Philosophy and Science and Technology Studies) or two approved minor sequences.
3. A student must complete at least 36 units of credit and no more than 60 units of credit in Level 1 courses from at least three Schools.
4. A student must complete at least 24 units of credit at Level 1 from Science Schools (as defined in the conditions for the award of the BSc excluding the Schools of Philosophy and Science and Technology Studies).
5. No student may commence Level 2 courses until 24 Level 1 units of credit have been successfully completed.
6. A student must complete a minimum of 84 units of credit from Science Schools (see 4 above).
7. For entry to Honours a student must complete at least 24 units of credit at Level 3 in the relevant Major sequence and have the permission of the Head of School.

Outline of program

For details of Major and Minor sequences in Science see Table A on page 37.

Stage 1
MDCM1000 New Media Technologies A
MDCM1001 New Media Technologies B
24 units of credit from two Science Schools
Electives totaling 12 units of credit

Stage 2
MDCM2000 Media, Technology and Creativity
MDCM2002 Media Production
MDCM2003 Multimedia Production
18 units of credit in a Science major
6 units of credit of General Education

Stage 3
MDCM3000 Media Forms
MDCM3002 Advanced Media Production
MDCM3003 Advanced Multimedia in Industry Contexts
24 units of credit in a Science Major (continued from stage 2)
6 units of credit of General Education

Stage 4 (Honours)

For details consult the relevant School
MEDICAL SCIENCE

Bachelor of Medical Science
BMedSc
Full time

This three-year degree program will provide the basis for a career in biomedical research and is an appropriate first degree for students planning to enter graduate medical or paramedical programs. Medical science is the area of science which underpins the practice of medicine. It incorporates study of the structure and function of the human body (anatomy and physiology) as well as the way in which our form and function is inherited (genetics) and then develops from the fertilised ovum (embryology). It deals with the chemistry of living organisms (biochemistry) with particular reference to man, the role of bacteria, viruses and other microorganisms in disease (microbiology) as well as drugs which are used to cure human diseases (pharmacology), the natural defenses of the body (immunology), and the general process leading to disease (pathology).

Students enrolled in this program will have the opportunity to gain a broad perspective of the biomedical sciences, as well as to specialise in one or more of the above disciplines. They may have the opportunity to undertake a fourth year that involves a research program leading to an Honours degree.

Conditions for the Award of the Medical Science Degree

- A student must complete 144 units of credit including 12 units of General Education in Stages 1-3.
- Honours is available to suitably qualified students and consists of a 48 unit of credit Honours sequence at Stage 4.
- The degree must contain a sequence of study as specified in the program description
- A student must complete at least 36 units and no more than 48 units in Level 1 courses
- A student must complete before the end of Stage 3 the two 3 unit courses BSSM1110 and BSSM2220.
- No student may normally commence Level 2 courses until 24 Level 1 units have been successfully completed unless approved by the Head of School.
- Progression to Stages 3 and 4 is subject to academic performance. A student will be required to have attained an average of 65 or higher in courses relevant to the major area and cognate subjects in each prior stage.

Stage 1
BIOS1101, BIOS1201
CHEM1011 or CHEM1031 and CHEM1021 or CHEM1041
6 units of credit from MATH1031, MATH1041, MATH1131, MATH1141
BSSM1110
One General Education course totalling 3 units of credit
Elective courses totalling 12 units of credit offered by the following Schools: Computer Science, Mathematics, Physics, Science and Technology Studies, Psychology

Stage 2
BSSM 2220
Courses totalling at least 36 units of credit from the following:
ANAT2111, ANAT2200, ANAT2210,
BIOC2181 or BIOC2101**, BIOC2291 or BIOC2201**,
MICR2011*, MICR2201, PHPH2101, PHPH2201, PATH2201,
BIOS2201
One General Education course totalling 3 units of credit
Elective subjects totalling up to 6 units of credit from the above courses or from the following areas:
Biological Science, Chemistry, Computing, Mathematics, Physics, Psychology, Science and Technology.
Students anticipating doing 4th year honours program should contact the relevant Head of School for advice.
*Students taking MICR2011 are encouraged to enrol in BIOS2201. The prerequisite course, MICR2201 maybe waived with the permission of the course authority.
**Students are encouraged to enrol in the more advanced biochemistry courses, and should note that BIOC2101 and BIOC2201 are prerequisites in many Stage 3 courses.

Stage 3
Subjects totalling 42 units of credit from the following subject areas: Anatomy, Biochemistry and Molecular Genetics, Microbiology and Immunology, Pathology, Physiology and Pharmacology, Psychology, Biotechnology.
Students must nominate a major discipline by taking at least 18 units of credit in one of these subject areas and fulfilling other course requirements specified for that major.
General Education courses totalling 6 units of credit

Stage 4
Honours may be taken in the major discipline, subject to progress at credit level through the program. Intending Honours students should consult the Head or Honours coordinator of the appropriate School. Students who successfully complete Stage 4 of their program will be considered for the award of Honours.
Specialist Degrees

AVIATION

3980
Aviation Degree Course
Full Time

Bachelor of Aviation
BAv

The degree of Bachelor of Aviation is offered by the Faculty of Science and Technology with input from the Faculty of Engineering. The aim of the program is to provide an opportunity for students to prepare for a career in the aviation industry in the flying of managerial sectors, and so there are two distinct streams within the Bachelor of Aviation - Flying and Management. Each stream consists of a core subjects selected from the Faculties offering the program together with a range of options. The Flying stream additionally includes flight training to a minimum level of Commercial Pilots Licence (CPL) with additional flight training options available dependent upon student progress and requirements. In lieu of flight training, the Management stream offers a selection of subjects designed to provide students with a broad base of knowledge in managing the operational aspects of the aviation industry. It should be noted that due to the block training nature of the flight training program, teaching periods might not correspond to standard academic sessions.

A total of 144 Units of Credit including 12 Units of Credit of General Education are required for the completion of the Bachelor of Aviation (3 year degree). Subject to satisfactory progress in stage 3 courses (a credit average) students may proceed to the honours stage, on approval from the head of department.

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2001
Flying Stream

**Stage 1**
AVEN1310, AVEN1910
AVIA1100, AVIA1150, AVIA1900, AVIA1002
MATH1031, MATH1049
PHYS1149, PHYS1249
SESC1560

**Stage 2**
AVEN2920
AVIA2003, AVIA2800
MATH1059
General Education courses totalling 6 units of credit
Choose 9 units of credit from:
AVEN2910, AVEN2930, AVEN2220, AVIA2100, SESC2560
Further electives totalling 6 units of credit

**Stage 3**
AVEN3220
AVIA2700, AVIA3004 or both AVIA3101 and AVIA3201
General Education courses totalling 6 units of credit
Choose additional units of credit for a Stage 3 total of 48 from:
AVEN3230, AVIA3400, AVEN3410, AVEN3610, AVEN3710,
AVEN3930, AVIA3710, AVIA3800, AVIA3810, AVIA3851,
MATH3270, PHYS2810, PHYS2850
Electives up to 6 units of credit

**Stage 4 (Honours)**
AVIA4001 or AVIA4002

2003
Management Stream

**Stage 1**
AVEN1310, AVEN1910
AVIA1100, AVIA1150, AVIA1300, AVIA1850
AVIA1900
MATH1031, MATH1041
PHYS1149
SESC1560
Choose 6 units of credit from PHYS1229, ECON1103

**Stage 2**
AVEN2920
AVIA2400, AVIA2700
General Education courses totalling 6 units of credit
Choose 33 units of credit from:
AVEN2220, AVEN2910, AVEN2930,
AVIA2100, AVIA2500, AVIA2800, AVIA3600
PHYS2850, IROB2721, SESC2560
Elective subjects totalling 6 units of credit

**Stage 3**
AVEN3220, AVIA3101, AVIA3201, AVIA3710
General Education courses totalling 6 units of credit
Choose 24 units of credit from:
AVEN3230, AVEN3410, AVEN3610, AVEN3710, AVEN3930
AVIA3400, AVIA3800, AVIA3810, AVIA3851, MATH3270
PHYS2810
Elective subjects totalling up to 6 units of credit

**Stage 4 (Honours)**
AVIA4001 or AVIA4002
BIOTECHNOLOGY

Biotechnology can be defined as the use of various biological processes to make products and perform services. The essential feature of biotechnology therefore is the use of biological processes based on living cells and biochemical macromolecules such as proteins, DNA and RNA in a rapidly expanding range of activities of benefit to mankind. As such, biotechnology makes practical use of the recent scientific advances in areas such as molecular genetics.

The development of recombinant-DNA (r-DNA) technology has resulted in the ability to produce large quantities of any potentially useful protein. Based on this technology, a new generation of biopharmaceuticals, including hormones, vaccines, anti-hypertensive, anti-inflammatory agents, new therapies to treat cancer are being developed which have the potential to revolutionise medicine.

Microorganisms and viruses are being modified for use in controlling plant and animal diseases and pests. Diagnostic kits are being developed for use in forensic science and in product identification and quality control. In addition, genetic improvements in agriculture, plants and animals are becoming a reality, as is the control of inborn genetic disorders in humans.

Bioprocesses are also used in the extraction of minerals from low grade ores, and modified and novel bioprocesses are being developed for the treatment of waste and degradation of recalcitrant molecules, an area of vital importance in our increasingly polluted planet.

The future for expansion in all the above areas is immense, and an ability to cope with the problems of the 21st century will be heavily dependent on these advances.

Course Outline

The BSc (Biotechnology) Course is four years full-time and awarded with Honours to students who have distinguished themselves in coursework and in the final year project.

Degree Requirements

General Education Requirement

The University requires all students to complete a coherent sequence of General Education subjects. The General Education Program is an integral part of the BSc Biotechnology course and gives students the opportunity to address some of the key questions they will face as individuals, citizens and professionals.

Progression and Exclusion

Students whose performance is unsatisfactory will be asked to show cause at the end of the academic year why they should remain in their course of study. Any student who fails a subject twice, or is deemed to be making unsatisfactory progress, will be required to show cause.

Unsatisfactory progress may include:

• failure to achieve an average of 65 or higher in subjects attempted in an academic year;
• failing to pass Subjects totalling at least 24 units of credit in one year;
• failing to complete the requirements for stage one of the course in the first two years of study.

Students required to show cause will be informed of the Registrar in writing. Students who apply to show cause will be assessed in accordance with the University’s procedures. Failure to show cause can result in exclusion from a subject, the course, or transfer to the Science and Mathematics course (3970), provided that the progression requirements in that course have been met. Also see the section on progression and exclusion (‘Restrictions on Students Re-enrolling’) in the Student Guide.

Progression to Stage 4 Honours Program

Progression to Stage 4 is subject to academic performance. Students seeking to enrol in a Stage 4 honours program are required to have the approval of the Head of School and normally will be required:

• to have completed the requirements for Stages 1, 2 and 3 of the course and to have completed all General Education subjects

• to have attained an average of 65 or higher in each stage of the program.

Students who do not attain an average 65 or higher in Stage 3 of the course are normally required to transfer to the Science and Mathematics course (3970) and take out the BSc Biotechnology award at pass level.

3052 Biotechnology Full-time Course

Bachelor of Science

BSc

This program in Biotechnology offers a comprehensive education in all aspects of modern applied biology. It leads to the award of a Bachelor of Science Degree over four years full-time study, with Honours for students who perform with merit.

Graduates in Biotechnology will be able to find employment in industries and other organisations involved with biopharmaceutical production and food processing, as well as in agricultural and environmental biotechnology.

Stage 1

BIOT1011 Introductory Biotechnology
BIOS1201 Molecules, Cells and Genes
CHEM1011 Fundamentals of Chemistry 1A and
CHEM1021 Fundamentals of Chemistry 1B
MATH1031 Mathematics for Life Sciences and
MATH1041 Statistics for Life and Social Sciences or one of
MATH1011 General Mathematics 1B
MATH1131 Mathematics 1A
MATH1141 Higher Mathematics 1A
and one of
MATH1021 General Mathematics 1C
MATH1231 Mathematics 1B
MATH1241 Higher Mathematics 1B
plus elective courses totalling 12 units of credit recommended
PHYS1111 Fundamentals of Physics
PHYS1201 Life Science Physics
CHEN1020 Engineering 1CE
BIOS1101 Evolutionary & Functional Biology

Stage 2

BIOC2101 Principles of Biochemistry
BIOC2201 Principles of Molecular Biology
BIOS2011 Evolutionary and Physiological Ecology
BIOS2021 Introductory Genetics
MICR2011 Microbiology 1
MICR2201 Introductory Microbiology
plus 6 Units of Credit from:
CHEM2021 Organic Chemistry or
CHEM2041 Chemical & Spectroscopic Analysis
PHPH2101 Physiology 1A

General Education Course(s) totalling 6 units of credit
Stage 3
BIOT3011 Biotechnology A
BIOT3061 Monoclonal Antibody and Genetic Techniques in Biotechnology
BIOT3071 Commercial Biotechnology
BIOT3121 Molecular Biology of Nucleic Acids
MICR3041 Immunology 1
or
MICR3641 Immunology I (Advanced)
or
MICR3042 Principles and Applications of Immunology

plus an additional 18 units of credit to be selected from the following:

BIOC3111 Molecular Biology of Proteins
BIOC272 Cellular Biochemistry & Control
BIOC3281 Recombinant-DNA Techniques and Eukaryotic Molecular Biology
BIOT3081 Environmental Biotechnology
MICR3051 Immunology 2
MICR3071 Environmental Microbiology

General Education Course(s) totalling 6 units of credit

Stage 4
MICR3021 Microbial Genetics
BIOT3021 Biotechnology B
BIOT4053 Research Project

3055
Bioprocess Engineering - Full-time Course

Bachelor of Engineering
BE

The Bioprocess Engineering Program is designed to produce graduates with basic skills for employment in the pharmaceutical, fermentation/food, agro-industrial and environmental/waste treatment industries. In the first three stages, the Program combines core chemical engineering with the basic principles of cell biology, microbiology, biochemistry and molecular biology as well as their applications in biotechnology. In the Fourth Stage, students have a broader exposure to modern developments in biotechnology/bioprocess engineering and their commercial application. This is combined with a laboratory-based research project in one of the above areas. The BPE Program obtained Full Accreditation in 1999 with the Institution of Chemical Engineers (Australia).

Stage 1
BIOS1201 Molecules, Genes and Cells
BIOT1011 Introductory Biotechnology
CEIC1020 Introduction to Chemical Engineering
CHEM1011 Fundamentals of Chemistry 1A or
CHEM1031 Higher Chemistry 1C
CHEM1021 Chemistry 1B or
CHEM1041 Higher Chemistry 1D
MATH1131 Mathematics 1A or
MATH1141 Higher Mathematics 1B
MATH1231 Mathematics 1B or
MATH1241 Higher Mathematics 1B
PHYS1169 Physics I (Chemical & Mech. Eng.) or
PHYS1111 Fundamentals of Physics

Stage 2
LIFE2101 Introduction to Biochemistry & Microbiology
BIOC299 Fundamental of Molecular Biology
CEIC2020 Introduction to Numeric Methods
CEIC2100 Material and Energy Balances
CEIC2120 Fluid Flow
CEIC2130 Heat Transfer
CHEN2031 Heat and Mass Transfer
CHEN2050 Chemical Engineering Practice 1
CHEN2061 Introduction to Process Chemistry 1
CHEN2140 Mass Transfer
MATH2020 Mathematics 2A
MATH2030 Mathematics 2B
MATH2899 Applied Statistics CE

General Education Course(s)

Stage 3
BIOT3011 Biotechnology A
BIOT3021 Biotechnology B
CEIC3070 Process Control
CEIC3010 Reaction Engineering
CEIC3011 Thermodynamics
CHEN3021 Systems Modelling and Analysis
CHEN3062 Unit Operations and Pressure Vessels
CHEN3065 Plant & Equipment Design
CHEN3067 Process Design & Economics
CHEN3068 Process Design & Safety

General Education Course(s)

Stage 4
BIOT3061 Biopharmaceuticals or
BIOT3071 Commercial Biotechnology
BIOT4064 Research Project Theory
BIOT4065 Research Project Practice
BIOT4093 Biological Process Engineering
CEIC4120 Management and Plant Operation
CHEN4031 Environmental Management
CHEN4061 Design Project 1

General Education Course(s)
Industrial Chemistry
Full-time

Bachelor of Science
BSc

Industrial Chemistry is a four year professional (prescribed) science course that is concerned with the application of science and technology to the chemical industry. It is a well rounded course which prepared graduates for a challenging and flexible career path.

Industrial chemists are capable of fulfilling a multiplicity of roles – as research scientists, development chemists, technical representatives and as plant/company managers.

The industrial chemistry course at the University of New South Wales is the only one of its type in Australia. It has the unique advantage of being in a school which offers both science and engineering degrees. It is the only science course whose graduates are eligible for full membership of the Australian Institute of Engineers as well as the RACI. The fourth year of the course is a compulsory honours year.

Degree Program

Stage 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CEIC1010</td>
<td>Introduction to Chemical Industry</td>
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<tr>
<td>CEIC1020</td>
<td>Introduction to Chemical Engineering</td>
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<tr>
<td>CHEM1011</td>
<td>Fundamentals of Chemistry A or</td>
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<tr>
<td>CHEM1031</td>
<td>Higher Chemistry 1C</td>
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<tr>
<td>CHEM1021</td>
<td>Higher Chemistry 1B or</td>
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<tr>
<td>CHEM1041</td>
<td>Higher Chemistry 1D</td>
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<tr>
<td>MATH1131</td>
<td>Mathematics 1A or</td>
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<tr>
<td>MATH1141</td>
<td>Higher Mathematics 1A</td>
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<td>Mathematics 1B or</td>
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<td>MATH1241</td>
<td>Higher Mathematics 1B</td>
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<tr>
<td>MECH0130</td>
<td>Engineering Drawing and Solid Modelling</td>
</tr>
<tr>
<td>PHYS1621</td>
<td>Engineering Physics 1 or</td>
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<tr>
<td>PHYS1111</td>
<td>Fundamentals of Physics</td>
</tr>
<tr>
<td>CEIC1030</td>
<td>Communications and Business Skills or</td>
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<tr>
<td>PHYS1211</td>
<td>Concepts in Engineering Physics</td>
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Stage 2

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<tbody>
<tr>
<td>CEIC2011</td>
<td>Instrumental Analysis- Theory</td>
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<tr>
<td>CEIC2012</td>
<td>Instrumental Analysis- Practical</td>
</tr>
<tr>
<td>CEIC2020</td>
<td>Introduction to Numeric Methods</td>
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<td>CEIC2110</td>
<td>Material and Energy Balance</td>
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<td>CEIC2120</td>
<td>Fluid Flow</td>
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<td>CEIC2130</td>
<td>Heat Transfer</td>
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<td>CHEM2021</td>
<td>Organic Chemistry</td>
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<td>CHEM2839</td>
<td>Inorganic Chemistry</td>
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<td>IND2040</td>
<td>Physical Process Chemistry</td>
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<td>MATH2020</td>
<td>Mathematics 2A</td>
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<td>MATH2030</td>
<td>Mathematics 2B</td>
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<td>MATH2899</td>
<td>Applied Statistics CE</td>
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Stage 3

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<th>Course Code</th>
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<tr>
<td>BIOT3100</td>
<td>Fermentation Process</td>
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<tr>
<td>CEIC3070</td>
<td>Process Control</td>
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<tr>
<td>CEIC3010</td>
<td>Reaction Engineering</td>
</tr>
<tr>
<td>CEIC3110</td>
<td>Thermodynamics</td>
</tr>
<tr>
<td>CHEM3829</td>
<td>Organic Chemistry</td>
</tr>
<tr>
<td>IND2051</td>
<td>Process Chemistry and Operations</td>
</tr>
<tr>
<td>IND2011</td>
<td>Industrial and Environmental Chemistry</td>
</tr>
<tr>
<td>IND2120</td>
<td>Industrial Chemistry Practice</td>
</tr>
<tr>
<td>POLY3011</td>
<td>Polymer Science – Theory</td>
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<tr>
<td>POLY3012</td>
<td>Polymer Science – Practice</td>
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</tbody>
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Stage 4

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<td>CEIC4070</td>
<td>Automation Science</td>
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<tr>
<td>CEIC4105</td>
<td>Professional Electives</td>
</tr>
<tr>
<td>CEIC4120</td>
<td>Management and Plant Operation</td>
</tr>
<tr>
<td>IND2061</td>
<td>Process Design A</td>
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<td>IND2062</td>
<td>Process Design B</td>
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<td>IND2091</td>
<td>Research Project Theory</td>
</tr>
<tr>
<td>IND2092</td>
<td>Research Project Practice</td>
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</tbody>
</table>

General Education
Science Programs 3978 and 3979

pass program (3 years)

Conditions for the Award of the Degree

1. A student must complete 144 units of credit including 12 units of General Education.

2. The degree must contain a Major sequence of study as set out in the program descriptions below.

3. A student must complete at least 36 units and no more than 60 units in Level I courses from at least three Schools.

4. A student must complete at least 24 units at Level I from Science Schools.

5. No student may commence Level II courses until 24 Level I units have been successfully completed.

6. A student must complete a minimum of 84 units of credit from Science Schools.

7. For entry to Honours a student must complete at least 24 units at Level III in the relevant Major sequence and have the permission of the Head of School.

8. A Major sequence is defined as: at least 42 units at Level II and III in a single discipline or area of study, including at least 18 units at Level III.

* Defined as Schools in the Science Faculties plus those in other Faculties that currently provide programs under the authority of the Cross Faculty Standing Committee for Science.

Elective Courses

Students enrolled in any Science degree may take as electives any courses (subject to satisfying prerequisites) which are Specified as electives for their degree, or Available within a Major or Minor in Program 3970.

Computer Science (Program 3978)

Entry to this program is restricted to students who have been offered a place directly (UAC code 429019). Later year transfers are treated as internal program transfers.

Computer Science involves the study of the design, construction and uses of computer systems. It is concerned with the representation of data and data structures in computer systems and the design of algorithms for automatic manipulation of this information by programming languages and machine systems. It is very much concerned with the design and development of hardware and software tools by which computer applications may be developed, but not so much with the applications themselves. It is, however, noted that noncomputing elements (such as human interface or psychological aspects) can often dictate the level of success of computing systems. At the University of New South Wales, particular emphasis is given to comprehension of the basic principles behind computing tools, operating systems, compilers and translators, and computer hardware.

Students in other programs may take some Level I and Level II Computer Science courses. Level III studies in Computer Science are only available in other specified combined programs. Appropriate disciplines are Physics and Computing; Mathematics and Computer Science.

Computer Science

Stage 1

COMP1011 or COMP1711, COMP1021 or COMP1721
MATH1131 or MATH1141
MATH1231 or MATH1241
MATH1081

Elective subjects totalling 18 units of Credit points
Students who do not have a suitable background for COMP1011 are advised to take COMP1001 in session 1 and COMP1011 in session 2.

Stage 2

COMP2011 or COMP2711, COMP2021, COMP2041
Elective subjects totalling 24 units of Credit Points*
General Education courses totalling 6 units of credit

Stage 3

Level III or IV Computer Science subjects totalling 30 units of credit
Further elective subjects totalling 12 units of Credit
General Education courses totalling 6 units of credit

With the approval of the head of the School of Computer Science and Engineering, students in this program wishing to fulfill the requirements for a major in a second discipline, as well as the Computer Science requirements, may substitute a course from the other discipline for one of the Level III/IV Computer Science courses. Students may also select electives from COMP9XXX courses having met the required prerequisites. Please refer to the Engineering handbook for further details on these courses.

Students proposing to proceed to Stage 4 (Honours) must complete Level III/IV courses totalling 36 units of Credit.

Stage 4 (Honours)

COMP4914

Psychology with Computer Science (Program 3978 only)

Stage 1

COMP1011 or COMP1711 and COMP1021 or COMP1721
MATH1131 or MATH1141
MATH1231 or MATH1241
MATH1081
PSYC1001 and PSYC1011

Elective courses totalling 6 units of credit

Stage 2

COMP2011 or COMP2711 and COMP2041
PSYC2001, PSYC2071, PSYC2081 and PSYC2101
Elective courses totalling 6 units of credit from the list below*
General Education courses totalling 6 units of credit

Stage 3

COMP3111, COMP3411 and COMP3511
PSYC3001 and either PSYC3151 or PSYC3221 or PSYC3311 or PSYC3321
Elective courses totalling 12 units of credit from the list below*
General Education courses totalling 6 units of credit

Stage 4 (Honours)

COMP4913 or PSYC4053 and PSYC4063

Students proposing to proceed to the honours Stage in Psychology must take Psychology courses totalling 48 units of credit in Stages 2 and 3 (PSYC2001, PSYC2071, PSYC2081 and PSYC2101 at Level II and PSYC3001, either PSYC3151 or PSYC3221 or PSYC3311 or PSYC3321 and 2 other Psychology Level III courses).

Students proposing to proceed to the honours Stage in Computer Science must take Level III Computer Science courses totalling 24 Units of Credit.

* Elective List
Information Systems (Program 3979)

Entry to this program is restricted to students who have been offered a place directly (UAC code 429024). There is a strict quota on entry to later Stages of this program.

Information Systems is concerned with information systems analysis and design, data management, computer processing, EDP audit, management information systems and applied expert systems within business and government organisations. There is a growing maturity in the discipline as the underlying theory and associated principles become better understood and as advanced information processing techniques emerge. In many respects the development of the knowledge base which forms the discipline parallels developments in computing technology as new opportunities become apparent for the solution of information processing problems. Hence, information systems is concerned with the way in which computer systems are used within organisations – mainly business and government. The program is intended to develop conceptual and practical skills. After an introductory first Stage, students study systems design, database, communications and commercial programming in parallel with computer science, mathematics and management accounting courses. In the honours Stage, well qualified students may specialise in advanced information systems and data management topics.

See also Program 3971 – Business Information Technology

Degree Program

Stage 1
ACCT1501, ACCT1511
COMP1011, COMP1021
INFS1602, INFS1603
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021

Stage 2
MATH2801 or MATH2841
INFS2603, INFS2607
Elective courses totalling 6 units of credit from ECON1101, LEGT7711, IROB1712, ACTL1001
Elective courses totalling 18 units of credit
General Education courses totalling 6 units of credit

Stage 2 (Direct Stage 2 Entrants)*
ACCT1501, ACCT1511
COMP2811
INFS1602, INFS1603, INFS2603, INFS2607
General Education course(s) totalling 6 units of credit
* Students admitted at Level II must enrol in another Science Program for Stage 1. Transfer is based on academic performance at Level I. Students in this category are not required to complete one subject from ECON1101, LEGT7711, IROB1712, ACTL1001.

Stage 3**
INFS3605, INFS3606, INFS3608
Elective level III INFS courses totalling 6 units of credit
Elective level II/III INFS courses totalling 6 units of credit
Further elective courses totalling 30 units of credit
General Education courses totalling 6 units of credit
**Stage 2 Direct Entrants must complete MATH2801 or MATH2841 in lieu of elective courses totalling 6 units of credit

Stage 4 (Honours)
INFS4886, INFS4887, INFS4795, INFS4796
Choose 2 courses from: INFS4774, INFS4605, INFS4810, INFS4811, INFS4812, INFS4825, INFS4848, INFS4853, INFS4857, INFS4851
FOOD SCIENCE AND TECHNOLOGY

Food science and technology involves the understanding of basic sciences and the application of this knowledge to foods from the point of production, through handling, processing, preservation, distribution and marketing, up to consumption and utilisation by consumers. It is concerned with food processes, food commodities, food composition and food quality (including sensory properties, safety and nutritional value).

The study of food science and technology integrates many scientific disciplines. Its bases are in chemistry, physics, biochemistry and microbiology. Its borders merge with those of agriculture, engineering, human nutrition, public health, commerce, psychology and law. Biotechnology has a role of increasing importance in food science and technology.

The food scientist and food technologist are concerned with population food supplies and requirements, community wants and needs, and equitable distribution of foods to ensure human nutritional needs are met.

New knowledge is acquired in the laboratory, the pilot plant, and the community, and then applied to the development of safe, nutritious and palatable foods, beverages and food ingredients by optimisation of processes and equipment. Foods are studied in terms of their basic constituents and structures, and the changes they undergo when subjected to handling, processing and distribution.

The food scientist and food technologist are equally concerned with the development and selection of raw materials from agricultural, horticultural, animal and marine sources.

A safe, adequate, palatable and nutritious food supply is essential to human health. The food and beverage industry is of major economic importance and in Australia is the largest sector of manufacturing industry. Internationally, food production, processing and service are among the largest and most stable industries. The challenges are to increase the availability, variety, quality and quantity of foods economically and in line with the needs of the world population. The Australian industry has a major role to play in supplying high quality foods to emerging overseas markets and there is a national and international demand for professionally trained people prepared to accept responsibility for the quality and safety of food.

The Department offers a four-year full-time program leading to the award of Bachelor of Science. A six-year part-time program leading to the award of the degree of Bachelor of Science (Technology), and a one year full-time honours program leading to the degree of Bachelor of Science (Honours). Graduates of these programs qualify for membership of the Royal Australian Chemical Institute. The programs provide basic preparation for food science and technology careers in the food industry, the public sector, education, research, the food service industry, public health, management and marketing. Graduates may also find careers in health and environmental sciences, management of food resources and food wastes, and communication, and in areas such as dietetics after further training.

Program Outlines

3060
Food Science and Technology
Full-time Program

This program is designed to provide depth and breadth in the relevant physical and biological sciences on which food science and technology is based. It is strongly recommended that students obtain, before the completion of the program and during recess periods, as much professionally oriented or industrial experience as possible.

Stage 1
BIOS1101 Evolutionary and Functional Biology
BIOS1201 Molecules, Cells and Genes
CHEM1011 Fundamentals of Chemistry A or
CHEM1031 Higher Chemistry C
CHEM1021 Fundamentals of Chemistry B or
CHEM1041 Higher Chemistry D
FOOD1110 Introduction to Food Science
MATH1031 Mathematics for Life Sciences
MATH1041 Statistics for Life and Social Sciences
PHYS1111 Fundamentals of Physics

Stage 2
BIOC2101 Principles of Biochemistry or
BIOC2181 Introduction to Biochemistry
BIOC2201 Principles of Molecular Biology or
BIOC2291 Introduction to Molecular Biology
CHEM2921 Food Chemistry 1
FOOD3220 Nutrition
FOOD1230 Food Choice: Psychology, Preference and Acceptability
MICR2201 Fundamentals of Microbiology and Immunology

General Education (total 12 units of credit)

Stage 3
CHEM3801 Physical and Chemical Analysis of Foods
FOOD1360 Food Processing Principles
FOOD1370 Food Processing Laboratory
FOOD1380 Food Processing and Packaging
FOOD1390 Product Design and Development
FOOD2320 Food Microbiology
FOOD2330 Quality Assurance and Control
FOOD2340 Food Safety

Stage 4 Stream A

FOOD1400 Project or
FOOD1480 Minor Project
FOOD5400 Industry Liaison

Plus a combination of electives to total 30 or 36 UOC from the following list.

FOOD1470 Postharvest Technology (Not offered in 2001)
FOOD1490 Advanced Food Chemistry
FOOD2350 Forensic Food Science
FOOD2480 Advanced Food Microbiology
FOOD2490 Analytical Microbiology (Not offered in 2001)
FOOD3440 Advanced Nutrition
FOOD4450 Advanced Food Processing
ACCT9001 Introduction to Accounting A
ACCT9002 Introduction to Accounting B
BIOT3011 Biotechnology A
BIOT3021 Biotechnology B
BIOT3071 Commercial Biotechnology
ECON1101 Microeconomic Principles
ECON1102 Macroeconomic Principles
INF5160 Business Data Management
IROB2721 Managing People
or such other electives as approved by the Head of Department. 
FOOD subjects taken within the Department must total at least 36 UOC.

**Stage 4 Stream B: Industry Module Program**

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
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<td>Industry Practicum</td>
</tr>
<tr>
<td>FOOD5400</td>
<td>Industry Liaison</td>
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</tbody>
</table>

During Stages 3 and 4 of the program excursions are made to various food industries. Detailed reports of some of these visits may be required.

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**3065**

**Honours in Food Science**

**Full-time Program**

**Bachelor of Science (Honours) BSc (Hons)**

This program is designed to provide extensive research training in some aspects of food science and technology, at undergraduate level. The research orientation of the program, compared to the Graduate Diploma, facilitates entry into a research higher degree (MSc/PhD) upon completion of Honours at a satisfactory level.

Entry to the program requires satisfactory completion of a Bachelor degree, or equivalent, in an area considered relevant to food science and technology. Students who have completed a four-year Bachelor program, in which Honours has already been awarded, are specifically excluded.

The major component of the program is an extensive research project, conducted throughout one year of full time study. Candidates also take 8 units of credit of courses within the Department, or such other courses as approved by the Head of Department. Honours is awarded on the basis of performance in the research project and satisfactory completion of coursework.

**Compulsory Courses**

<table>
<thead>
<tr>
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<th>Course Name</th>
</tr>
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<tbody>
<tr>
<td>FOOD9410</td>
<td>Honours Research Project</td>
</tr>
<tr>
<td>FOODXXXX*</td>
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</tr>
</tbody>
</table>

*Courses offered by the Department of Food Science and Technology or as approved by the Head of Department and dependent upon the background of the candidate. Units of credit for coursework courses may be concentrated in one session.

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**Stage 1 and 2**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS1101</td>
<td>Evolutionary and Functional Biology</td>
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<td>Molecules, Cells and Genes</td>
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<tr>
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<td>Fundamentals of Chemistry A or</td>
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<td>CHEM1031</td>
<td>Higher Chemistry C</td>
</tr>
<tr>
<td>CHEM1021</td>
<td>Fundamentals of Chemistry B or</td>
</tr>
<tr>
<td>CHEM1041</td>
<td>Higher Chemistry D</td>
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<tr>
<td>FOOD1110</td>
<td>Introduction to Food Science</td>
</tr>
<tr>
<td>MATH1031</td>
<td>Mathematics for Life Sciences</td>
</tr>
<tr>
<td>MATH1041</td>
<td>Statistics for Life and Social Sciences</td>
</tr>
<tr>
<td>PHYS1111</td>
<td>Fundamentals of Physics</td>
</tr>
</tbody>
</table>

**Note:** Physics, Mathematics and Statistics are usually taken as Stage 1, the other courses as Stage 2

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**Stage 3**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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</thead>
<tbody>
<tr>
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<td>Principles of Biochemistry or</td>
</tr>
<tr>
<td>BIOC2181</td>
<td>Introduction to Biochemistry</td>
</tr>
<tr>
<td>BIOC2201</td>
<td>Principles of Molecular Biology or</td>
</tr>
<tr>
<td>BIOC2291</td>
<td>Introduction to Molecular Biology</td>
</tr>
<tr>
<td>CHEM2921</td>
<td>Food Chemistry 1</td>
</tr>
<tr>
<td>FOOD1230</td>
<td>Food Choice: Psychology, Preference and Acceptability</td>
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**Stage 4**

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<td>Nutrition</td>
</tr>
<tr>
<td>MICR2201</td>
<td>Fundamentals of Microbiology and Immunology</td>
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<td>General Education (12 units of credit)</td>
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**Stage 5**

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<td>Physical and Chemical Analysis of Foods</td>
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<tr>
<td>FOOD2320</td>
<td>Food Microbiology</td>
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<tr>
<td>FOOD2330</td>
<td>Quality Assurance and Control</td>
</tr>
<tr>
<td>FOOD2340</td>
<td>Food Safety</td>
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**Stage 6**

<table>
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<tr>
<th>Course Code</th>
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<tr>
<td>FOOD1360</td>
<td>Food Processing Principles</td>
</tr>
<tr>
<td>FOOD1370</td>
<td>Food Processing Laboratory</td>
</tr>
<tr>
<td>FOOD1380</td>
<td>Food Production and Packaging</td>
</tr>
<tr>
<td>FOOD1390</td>
<td>Product Design and Development</td>
</tr>
</tbody>
</table>
GEOGRAPHY

Geography is the study of human and physical spatial distributions and environmental relationships.

The cultural significance of geography lies in its contribution to an understanding of the total environment. The geographer's skills also find practical application in the conservation and planned development of resources. Increasing numbers of geographers are employed as professionals in these applications. For instance, geomorphologists and biogeographers are undertaking resource inventory surveys and environmental assessment, and human geographers are engaged as urban and regional planners.

Program outlines

The School of Geography offers a four-year full-time program (3010). This program allows specialisations in environmental systems, urban management, resource management, or special information technologies.

Themes addressed in the programs include the use and management of scarce resources, the interaction between people and environment, soil conservation, vegetation management, land use conflict, place and identity, and spatial inequalities in economic and social well-being.

First year courses involve systematic studies of the physical, human, and technological basis of geography. There is a progressive specialisation in the following years, with an emphasis on field observation, data handling, policy and management. Several units in geography include laboratory and project work.

The Geographical Society

It is hoped that students taking geography as a degree will participate in the activities organised by the Geographical Society. The Society is open to new ideas and to students who are concerned with fostering an interest in geography outside their formal studies. Informal seminars are organised on topics of interest to geographers.

Social activities have always been an important part of the Society and they have provided more than adequate opportunities for students to get to know each other and for students and staff to improve communication.

Program 3010

Program (normally, most stage 4 students graduate with honours). Progression to stage 4 is subject to achieving at least a credit average in Geography courses contained within stage 3. A student will not normally be permitted to commence stage 4 until all previous Stages have been completed.

Stage 1

All of:
GEOG1601 Australian & Global Geographies: Integration & Divergence
GEOG1701 Environmental Systems & Analysis
GEOG1801 Spatial Information Technologies

And 30 Units of Credit from other Schools (Biological Science, Built Environment, Chemistry, Computer Science, Economics, Geology, Mathematics, Physics, Social Science and Policy)

See School's Enrollment Handbook for recommended courses, and course advisers.

Stage 2

All of:
GEOG2001 Field Techniques
GEOG2101 Geographical Data Analysis, I

Select three of:
GEOG2611 The Australian City
GEOG2621 Regions, Resources & Spatial Systems
GEOG2711 Australian Climate & Vegetation
GEOG2721 Soils & Landforms
GEOG2811 Introduction to Remote Sensing
GEOG2821 Introduction to Geographic Information Systems

Select 12 Units of Credit from Geography or other Schools (Biological Science, Built Environment, Chemistry, Computer Science, Economics, Geology, Mathematics, Social Science and Policy).

Select 6 Units of Credit from General Education courses.

Stage 3

All of:
GEOG3101 Geographical Data Analysis II
GEOG3901 Australian Natural Resources

Select three of:
GEOG3411 Special Topic
GEOG3611 Surveys and Interviewing in Geography
GEOG3621 Place and the Politics of Identity
GEOG3631 Population Geography
GEOG3671 Transport and Land Use
GEOG3711 Biogeography
GEOG3721 Pedology
GEOG3761 Environmental Change
GEOG3771 Geomorphology
GEOG3811 Remote Sensing Applications & Digital Image Analysis
GEOG3821 Geographic Information Systems Applications
GEOG3861 Computer Mapping
GEOG3911 Environmental Impact Assessment
GEOG3921 Coastal Resource Management

Select 12 Units of Credit from Geography or other Schools (Biological Science, Built Environment, Chemistry, Computer Science, Economics, Geology, Mathematics, Physics, Social Science and Policy). See School advisors for recommended courses.

Select 6 Units of Credit from General Education courses.

Stage 4

GEOG4001 Fieldwork for Consultants
GEOG4301 Professional Practice in Geography
GEOG4404 Thesis in Applied Geography (over 2 sessions)

Select 12 Units of Credit from:
GEOG4631 Analysis in Medical Geography
GEOG4721 Soil Degradation and Conservation
GEOG4811 Advance Techniques in Remote Sensing
GEOG4871 Transportation Applications of GIS
GEOG4911 Vegetation Management

Or other courses from other Schools with permission from Head of School
GEOLOGY

Geology is 'the science of the Earth', and as such covers a broad spectrum of knowledge on the constitution and evolution of our planet. Applied geology involves a specific interest in the use of earth science for the benefit of humanity, including, for example, the search for and evaluation of metallic ore-bodies, accumulations of fossil fuels and groundwater resources or the application of geological knowledge to a range of engineering and environmental problems.

The Student Geological Society (Rock Soc) exists to provide further interaction between students and staff. The society organises a number of events during the year including field trips and an annual dinner.

Course Outlines

The Applied Geology course provides a comprehensive education in all aspects of earth science. It leads to the award of a Bachelor of Science (BSc) degree in four stages normally taken over four years full-time study, with Honours for students who perform with merit throughout the course program. The fourth stage can be taken part time over two years, normally Years 4 and 5.

Students learn the fundamental principles of geology through lectures, laboratory work, projects and field tutorials. At the same time they gain the practical skill and knowledge of geological applications necessary for employment in research, industry or government.

Graduates are prepared by the course to enter any branch of the geological profession, or to undertake further studies leading to a higher degree. They are also well equipped to change their field of employment as different opportunities arise.

No previous knowledge of geology is required to enter this course but a sound background in mathematics together with at least one other science subject is recommended.

A major or minor in Geology is also available in the Science degree program (3970). This allows students to combine geology with studies in chemistry (geochemistry), physics and mathematics (geophysics), biological sciences (palaeontology), marine science, geography or environmental systems. These programs are all of three years full-time duration, leading to a BSc at Pass level. An optional fourth year leading to Honours is available for students achieving a good academic standing.

These programs are all of three years full-time duration leading to a BSc at Pass level. An optional fourth year leading to Honours is available for students achieving a good academic standing.

Advanced Science programs are also available in geophysics and Marine and Coastal Studies. Geology can be taken as a specialisation in the Environmental Science degree program.

3000
Applied Geology Full-time

Bachelor of Science
BSc

Stage 1

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
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<tr>
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<td>Fundamentals of Chemistry B</td>
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<td>Higher Chemistry C</td>
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<td>Higher Chemistry D</td>
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<td>GEOL1111</td>
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<td>MATH1011</td>
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</tr>
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Stage 2

<table>
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<th>Subject Code</th>
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<tbody>
<tr>
<td>GEOL2100*</td>
<td>Field Studies: Sedimentology and Palaeontology</td>
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<tr>
<td>GEOL2110</td>
<td>Mineralogy</td>
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<tr>
<td>GEOL2120</td>
<td>Sedimentary Processes and Environments</td>
</tr>
<tr>
<td>GEOL2131*</td>
<td>Geomapping 1</td>
</tr>
<tr>
<td>GEOL2170</td>
<td>Earth Structures 1</td>
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<tr>
<td>GEOL2180</td>
<td>Introduction to Igneous and Metamorphic Rocks</td>
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<tr>
<td>GEOL2200*</td>
<td>Field Studies: Petrology, Structure and Field Mapping</td>
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<td>GEOL2220</td>
<td>Sedimentary Rocks and Clay Minerals</td>
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<td>GEOL2231*</td>
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<td>GEOL2240</td>
<td>Engineering &amp; Environmental Geology</td>
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<tr>
<td>GEOL2260</td>
<td>Geomapping 2</td>
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<tr>
<td>GEOL2290</td>
<td>Groundwater Hydrology</td>
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Stage 3

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<tr>
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<td>Ore Deposits</td>
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<tr>
<td>GEOL3110</td>
<td>Igneous and Metamorphic Processes</td>
</tr>
<tr>
<td>GEOL3120</td>
<td>Stratigraphy and Palaeontology</td>
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<td>GEOL3131*</td>
<td>Field Studies: Stratigraphy, Structure and Geologic Mapping</td>
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<td>GEOL3170</td>
<td>Earth Structures 2</td>
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<td>GEOL3201*</td>
<td>Field Studies: Ore Deposits, Structural and Metamorphic Geology</td>
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<td>GEOL3231*</td>
<td>Exploration Geophysics</td>
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<td>GEOL3241*</td>
<td>Sedimentary Basin Resources</td>
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<td>GEOL3280*</td>
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<td>GEOL4102*</td>
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<td>GEOL4204*</td>
<td>Field Project</td>
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Stage 4 (full-time)

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<td>GEOL4130</td>
<td>Evaluation of Geological Data</td>
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<tr>
<td>GEOL4140</td>
<td>Project Management</td>
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<tr>
<td>GEOL4180</td>
<td>Analysis of Natural Materials</td>
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<tr>
<td>GEOL4102*</td>
<td>Special Topics in Applied Geology</td>
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<td>GEOL4203*</td>
<td>Field Project (P/T)</td>
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Stage 4 (Part-time) – Year 1

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<tr>
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<td>Field Project (P/T)</td>
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Stage 4 (Part-time) – Year 2

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<td>GEOL4100</td>
<td>Geological Communication</td>
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<td>GEOL4130</td>
<td>Evaluation of Geological Data</td>
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<tr>
<td>GEOL4140</td>
<td>Project Management</td>
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<tr>
<td>GEOL4180</td>
<td>Analysis of Natural Materials</td>
</tr>
<tr>
<td>GEOL4203*</td>
<td>Field Project (P/T)</td>
</tr>
</tbody>
</table>

*Includes Geological Fieldwork
The field of Materials Science and Engineering offers unlimited possibilities for innovation and development. Attention is being focussed on developing and processing metals, ceramics, polymers and composites with improved properties.

The activities of the materials engineer range from materials production, including their extraction from ores and their refining, to the design, development, processing and recycling of materials for use in aerospace, transportation, electronics, energy conversion and biomedical systems.

Advanced materials can provide a major competitive advantage in virtually every part of a country's manufacturing industry. Because Australia is a country rich in minerals, materials science has been designated as a priority area for research and development. Examples of recent and significant developments include the emergence of environmentally friendly and economical metal processing methods, advanced surface coatings, biomedical materials, electrical ceramics, engineering polymers, and advanced composites.

The School of Materials Science and Engineering provides education and training for students to prepare them for a significant and important career in the materials and other industries. The School of Materials Science and Engineering is in a good position to provide the increased numbers of graduates necessary for development of these new initiatives in materials. It is the only school in Australia that offers professional courses in ceramic engineering, metallurgical engineering and materials engineering as well as providing postgraduate specialisation in these fields.

The School is extremely well equipped with a wide range of advanced computing, thermal analysis, mechanical testing, X-ray and optical and electron microscopy facilities.

Ceramic Engineering and Ceramics

The ceramic industry produces an enormous volume and variety of products used in engineering applications, building construction and in our everyday life. As well as the traditional bricks, roof tiles, sheet and container glass and tableware, ceramics have been found essential as abrasives, refractories, enamels and in electrical and electronic applications. In many of these cases, ceramic articles make possible the manufacture of other products by either being a key component, such as an electronic or magnetic part, or by forming the material of construction of, for example, a blast furnace or an abrasive wheel.

Modern ceramics comprise such a varied and complex group of materials that a high level of training is required to control their manufacture with the required precision and to supervise their proper use.

Ceramic engineers are needed in increasing numbers both in Australia and overseas countries and the School offers the only degree course in Ceramic Engineering in Australasia. This course trains students in the relation between the structure and the properties of ceramic materials, the engineering and process chemistry of their manufacture and the design principles of their use.

Careers open to graduates fall into three broad categories. Some go initially into activities associated directly with production, i.e. the design and layout of plants, supervision of their construction and control of their operations. Others move into research and development in industrial laboratories or research institutions. The final group enters fields outside of Ceramic Engineering directly, where the graduate's background in materials and engineering is utilised. In all cases, graduates with organising ability frequently move into management if they have an interest in this side of the industry.

In Australia, a number of government research organisations are active in ceramic research, e.g. the Australian Nuclear Science and Technology Organisation and the Divisions of Materials Science and Building Research of the CSIRO. Investigations with more immediate applications are carried out in industrial laboratories.

Metallurgical Engineering

The metallurgical profession has developed in importance in keeping with growth of Australian metal and mineral industries. These industries are recognised as being important to the Australian economy and there is a strong demand for professional metallurgists in all sectors of these industries, as well as in the manufacturing industry.

Graduate metallurgists have a wide choice of type of employment and location. They may work in production, technical control or development, in metal or mineral producing plants in locations such as Newcastle, Port Kembla, Broken Hill, Mt Isa, Townsville, Gladstone, Port Pirie, Whyalla, Kwinana, Kalgoorlie or Pilbara; or in manufacturing plants, including the automobile, aircraft, and construction industries located mainly in the population centres.

In the metal industry, opportunities for a career in management are excellent, since it is a tradition in this industry that management should be in the hands of technical people. If graduates are inclined towards research and development, they will find considerable scope in various government, university, and industrial research laboratories.

The undergraduate courses in metallurgical engineering and metallurgy are broadly-based on engineering and physical sciences and have been designed to prepare graduates for employment in any field of metallurgy within the metal and manufacturing industries or in research institutions.

Graduates in Metallurgical Engineering are eligible for membership of the Institution of Engineers, Australia, the Australasian Institute of Mining and Metallurgy and the Institute of Materials Engineering Australasia. Students are required to have gained at least twelve weeks of approved industrial experience before graduation. Industrial experience is usually obtained during the long recess periods.

Materials Engineering

Materials Engineering is a new and broad-ranging discipline which applies the principles of science and engineering to the design and development of metallic, ceramic and plastic materials and, to their manufacture into goods and their subsequent performance in service.

Materials Engineering is founded on the relationship between structure and properties, an understanding of which permits materials to be engineered to specific end use requirements. Virtually every man-made material is now the subject of study of the Materials Engineer.

Due to an increasing demand for optimised materials, graduates in Materials Engineering are presented with an outstanding range of job opportunities.

Many graduates pursue an industrial career either in the materials producing industries, the utilities, or manufacturing sector. Materials and process development and selection, supervision of manufacturing and production processes, technical trouble shooting and testing, are areas in which Materials Engineers are commonly engaged. Alternatively, graduates may pursue a research career, working in laboratories run by materials producing companies,
and statutory Commonwealth and State government departments. Graduates with an organising ability frequently move into management both in industry and research. Since materials engineering is a broadly-based scientific/engineering discipline, there is considerable flexibility in career selection.

Graduates in Materials Engineering are eligible for membership of the Institution of Engineers, Australia.

Students are required to have gained at least twelve weeks of professionally oriented or industrial experience in an area of industrial setting involving processing, production, characterisation, analysis, testing etc.

### Ceramic Engineering and Ceramics

A four-year full-time course in Ceramic Engineering leading to the award of the BE degree and a six-year part-time course in Ceramics leading to the award of the BSc (Tech) degree are offered within the School.

### 3025 Ceramic Engineering Full-time Program

Bachelor of Engineering

BE

#### Stages 1 and 2 shown above

#### Stage 3

FUEL0040 Fuel and Energy Engineering for Materials Processing

MATS1093 Thermodynamics of Materials 2

MATS1163 Chemistry of the Solid State

MATS1243 Management 1

MATS2153 Ceramic Processing Laboratory

MATS2183 Refractories

MATS2203 Physico-Chemical Ceramics Laboratory

MATS2213 Diffusion

MATS2223 Phase Transformations

MATS2313 Chemistry of Ceramics

MATS2343 Ceramic Processing and Design 1

MATS2353 Ceramic Processing and Design 2

MATS4333 Fracture Mechanics

MATS3323 Modelling in Materials Engineering 1

Ceramic Engineering Electives

Technical Electives

General Education courses

#### Stage 4

MATS1244 Management 2

MATS1254 Design Project

MATS1464 Professional Communication and Presentation

MATS3524 Project

Ceramic Engineering Electives

Technical Electives

General Education Courses

### Ceramic Engineering Electives

#### Stage 3 and 4

MATS1163 Chemistry of the Solid State

MATS1294 Electrical Ceramics

MATS2153 Ceramic Processing Laboratory

MATS2203 Physico-Chemical Ceramics Laboratory

MATS2263 Sintering of Ceramics

MATS2294 Thermal and Mechanical Properties of Ceramics

MATS2314 Glass-Based Ceramics

#### Technical Electives

#### Stage 3 and 4

FUEL0040 Fuel and Energy Engineering for Materials Processing

CEIC3070 Process Control

MATS1093 Thermodynamics of Materials 2

MATS1183 Non-Ferrous Physical Metallurgy

MATS1213 Design for Corrosion Control

MATS1214 Welding and Other Joining Processes

MATS1243 Management 1

MATS1283 Ferrous Physical Metallurgy

MATS1414 Surface Treatment and Wear

MATS1584 Specialty Alloys

MATS3443 Polymer Science and Engineering

### Courses Common to all Materials Programs

**Stage 1**

- CHEM1011 Fundamentals of Chemistry 1A
- CHEM1021 Fundamentals of Chemistry 1B
- MATH1131 Mathematics 1A or MATH1231 Mathematics 1B or MATH1241 Higher Mathematics 1A or MATH1241 Higher Mathematics 1B
- MATHS1021 Computing in Materials Science
- MATS1111 Materials Science 1
- MECH0130 Engineering Drawing and Descriptive Geometry
- PHYS1121 Physics 1A
- PHYS1221 Physics 1B

**Stage 2**

- CHEM2818 Physical Chemistry
- MATH2049 Mathematics and Statistics for Materials Science A
- MATH2059 Mathematics for Materials Science B
- MATS1002 Materials Engineering 1B
- MATS1072 Physics of Materials
- MATS1082 Thermodynamics of Materials 1
- MATS1092 Materials and Design 1
- MATS1112 Phase Equilibria
- MATS1132 Materials Engineering 1A
- MATS1142 Crystallography and X-ray Diffraction
- MATS1162 Mechanical Properties of Materials
  - General Education

**Courses with Elective Components (Stage 4)**

Each of the following subject areas has particular objectives, but specific topics are chosen by students for study and research in the fourth Stage of the program.

- MATS1244 Management 2
- MATS1254 Design Project
- MATS1464 Professional Communication & Presentation
- MATS3524 Project
Metallurgical Engineering

A four-year full-time program in metallurgical engineering leading to the award of the BMetE degree (Physical Metallurgy or Process Metallurgy Major) and a six-year part-time program in metallurgy leading to the award of the BSc(Tech) degree are offered within the School.

3125
Metallurgical Engineering Full-time Course

Bachelor of Metallurgical Engineering
BMetE

Students entering the Bachelor of Metallurgical Engineering program may elect to major in either Process metallurgy or Physical Metallurgy. Selection of these alternative study programs may be deferred until the end of the second year of full-time study.

The Process Metallurgy option is designed to produce graduates with training appropriate to the primary metallurgy industry while the Physical Metallurgy option provides a training more suited to the manufacturing industry.

Year 1 of the program consists of physics, chemistry, mathematics and engineering courses and is essentially the same as that for a number of other engineering and science programs offered in the Faculty of Science and Technology.

Year 2 introduces Materials Science and Materials Engineering courses supported by chemistry and mathematics and is common with Year 2 in the full-time Ceramic Engineering and materials Engineering programs.

Physical Metallurgy and Metallurgical Engineering are introduced in Years 3 and 4. In Year 3 the major strands are supported by other engineering courses and in Year 4 by a thesis project, seminar and professional electives.

Students are required to have gained at least twelve weeks of approved industrial experience before graduation, and to have submitted satisfactory reports on such work. Industrial experience is usually obtained during the long recess periods at the ends of Stages 2 and 3.

During the course, visits are made to various metallurgical works, and students are required to submit reports on some of these. Students may complete the first one or two years of their degree at their local university engineering school, and then transfer with advanced standing to UNSW.

Physical Metallurgy Major

Stages 1 and 2 shown above

Stage 3
MATS1093 Thermodynamics of Materials 2
MATS1283 Ferrous Physical Metallurgy
MATS2213 Diffusion
MATS2313 Chemistry of Ceramics
MATS3443 Polymer Science and Engineering
MATS4613 Deformation of Metals & Strengthening Mechanisms
MATS5323 Modelling in Materials Engineering 1
Physical Metallurgy Electives
Technical Electives
General Education Courses

Stage 4
MATS1244 Management 2
MATS1254 Design Project
MATS1464 Professional Communication and Presentation
MATS3524 Project
Physical Metallurgy Electives
Technical Electives
General Education Courses
Physical Metallurgy Electives

Stage 3 and 4
MATS1183 Non-Ferrous Physical Metallurgy
MATS1213 Design for Corrosion Control
MATS1243 Management 1
MATS2223 Phase Transformations
MATS4113 Fractographic Analysis and Non-destructive Testing
MATS4333 Fracture Mechanics
MATS4623 Metal Forming Processes and Thermomechanical Processing of Metals
MATS1214 Welding and Other Joining Processes
MATS1364 Composites and Electronic Materials
MATS1414 Surface Treatment and Wear
MATS1584 Specialty Alloys
MATS5424 Modelling in Materials Engineering 2
MATS9650 Pyrometallurgical Processes

Technical Electives
Stage 3 and 4
FUEL0040 Fuel and Energy Engineering for Materials Processing
CEIC3070 Process Control
MATS1163 Chemistry of the Solid State
MATS1333 Pyrometallurgy 1
MATS2153 Ceramic Processing Laboratory
MATS2183 Refractories
MATS2203 Physico-Chemical Ceramics Laboratory
MATS2263 Sintering of Ceramics
MATS2294 Thermal and Mechanical Properties of Ceramics
MATS2314 Glass-Based Ceramics
MATS2343 Ceramic Processing and Design 1
MATS2353 Ceramic Processing and Design 2
MATS3564 Polymer Engineering 1
MATS3574 Polymer Engineering 2
MATS2223 Phase Transformations
MATS5253 Metallurgical Reaction Engineering
MATS5394 Air Pollution Control in Material Processing
Any Physical Metallurgy Stage 3 or 4 Electives

3125
Metallurgical Engineering Full-time Program

Bachelor of Metallurgical Engineering
BMetE

Process Metallurgy Major

Stages 1 and 2 Shown above

Stage 3
MATS1093 Thermodynamics of Materials 2
MATS1283 Ferrous Physical Metallurgy
MATS2723 Extractive Metallurgy
MATS2731 Kinetics and Mass Transfer in Metallurgical Processes
MATS5323 Modelling in Materials Engineering 1
Process Metallurgy Electives
Technical Electives
General Education Courses

Stage 4
MATS1244 Management 2
MATS1254 Design Project
MATS1464 Professional Communication and Presentation
MATS3524 Project
Process Metallurgy Electives
Technical Electives
General Education Courses

Process Metallurgy Electives

Stage 3 and 4
MATS1183 Non-Ferrous Physical Metallurgy
MATS1213 Design for Corrosion Control
MATS1214 Welding and Other Joining Processes
MATS1243 Management 1
MATS1333 Pyrometallurgy 1
MATS1344 Pyrometallurgy 2
MATS1414 Surface Treatment and Wear
MATS5253 Metallurgical Reaction Engineering
MATS5424 Modelling in Materials Engineering 2

Technical Electives
Stage 3 and 4
CEIC3070 Process Control
MATS1163 Chemistry of the Solid State
MATS1364 Composite and Electronic Materials
MATS1534 Design with Brittle Materials
MATS1584 Specialty Alloys
MATS2153 Ceramic Processing Laboratory
MATS2183 Refractories
MATS2203 Physico-Chemical Ceramics Laboratory
MATS2223 Phase Transformations
MATS2263 Sintering of Ceramics
MATS2294 Thermal and Mechanical Properties of Ceramics
MATS2314 Glass-Based Ceramics
MATS2343 Ceramic Processing and Design 1
MATS3443 Polymer Science and Engineering
MATS4113 Fractographic Analysis and Non-Destructive Testing
MATS4333 Fracture Mechanics
MATS4613 Deformation of Metals and Strengthening Mechanisms
MATS4623 Metal Forming Processes and Thermomechanical Processing of Metals
Any Process Metallurgy Stage 3 or 4 Electives

3130
Metallurgy – Part-time Course

Bachelor of Science (Technology)
BSc(Tech)

This program is designed for students who are employed in the metallurgical and manufacturing industries and extends over six part-time years of study. Some of the course/s of stages 3, 4, 5 and 6 may be available on day-time classes, and one day or more of release from industry per week may be required.

The course essentially covers the same subject matter as the first three years and part of Year 4 of the full-time Metallurgical Engineering course and involves the same major strands of study in Metallography and Metallurgical Engineering.

In the later stages of the course, there is less emphasis on primary metallurgy than in the full-time course and there is more emphasis on secondary Metallurgical Engineering which is developed to Year 4 level, while Metallography is taken to Year 3 level.

Students are required to complete an approved program of industrial training of not less than twelve months prior to the award of the degree.

Industrial training should normally be completed concurrently with attendance in the course, but with approval of the Head of School may be completed after completion of the prescribed course of study.

Stage 1
MATH1131 Mathematics 1A or MATH1141 Higher Mathematics 1A
MATH1231 Mathematics 1B or MATH1241 Higher Mathematics 1B
PHYS1121 Physics 1A
PHYS1221 Physics 1B
Materials Engineering

A four-year full-time course in materials engineering leading to the award of the BMatE degree is offered within the School.

3615
Materials Engineering Full-time Program

Bachelor of Materials Engineering
BMatE

Stages 1 and 2 Shown above

Stage 3
MATS1093 Thermodynamics of Materials 2
MATS1283 Ferrous Physical Metallurgy
MATS2213 Diffusion
MATS2313 Chemistry of Ceramics
MATS3443 Polymer Science and Engineering
MATS4613 Deformation of Metals and Strengthening Mechanisms
MATS4623 Metal Forming Processes and Thermomechanical Processing of Metals
General Education course/s

Stage 4
MATS1244 Management 2
MATS1464 Design Project
MATS1564 Professional Communication and Presentation
MATS3924 Project
Materials Engineering Electives
Technical Electives
General Education Courses

Materials Engineering Electives

Stage 3 and 4
MATS1183 Non-Ferrous Physical Metallurgy
MATS1213 Design for Corrosion Control
MATS1243 Management 1
MATS1244 Management 2
MATS1254 Composites and Electronic Materials
MATS1414 Surface Treatment and Wear
MATS2223 Phase Transformations
MATS2314 Glass-Based Ceramics
MATS3564 Polymer Engineering 1
MATS3574 Fractographic Analysis and Non-Destructive Testing
MATS4333 Fracture Mechanics
MATS4623 Metal Forming Processes and Thermomechanical Processing of Metals
MATS5424 Modelling in Materials Engineering 2

Technical Electives

Stage 3 and 4
FUEL0040 Fuel and Energy Engineering for Materials Processing
CEIC3070 Process Control
MATS1163 Chemistry of the Solid State
MATS1333 Pyrometallurgy 1
MATS1584 Special Alloys
MATS2153 Ceramic Processing Laboratory
MATS2183 Refractories
MATS2203 Physico-Chemical Ceramics Laboratory
MATS2253 Sintering of Ceramics
MATS2294 Thermal and Mechanical Properties of Ceramics
MATS2343 Ceramic Processing and Design 1
MATS2353 Ceramic Processing and Design 2
MATS5253 Metallurgical Reaction Engineering
MATS5394 Air Pollution Control in Materials Processing
Any Materials Engineering Stage 3 or 4 Electives

Department of Textile Technology

Head of Department
Professor MT Pailthorpe

Note: Programs in Textile Technology are not offered in 2001. Please contact the Dean of the Faculty of Science and Technology.
Optometry Degree Program

Bachelor of Optometry
BOptom

The School provides a four Stage full-time program in Optometry leading to the award of the degree of Bachelor of Optometry, at either the Pass or Honours level. Professional training including clinical optometry is interwoven with basic studies of visual and ocular science over the four Stages of the program. The only entry point into Optometry will be at Stage 1 level.

### Degree Program

#### Stage 1
- BIOS1401 Biology (Optometry)
- CHEM1819 Biological Chemistry for Optometry A
- CHEM1829 Biological Chemistry for Optometry B
- OPTM1105 Optics and the Eye 1
- OPTM1201 Ocular and Visual Science 1
- OPTM1202 Clinical Optometry 1
- OPTM1205 Optics and the Eye 2
- OPTM1207 Foundations of Hygiene and Infectious Disease in Optometric Practice
- PHYS1999 Physics (Optometry)

#### Stage 2
- OPTM2101 Ocular and Visual Science 2A
- OPTM2102 Clinical Optometry 2A
- OPTM2105 Optics and the Eye 3
- OPTM2201 Ocular and Visual Science 2B
- OPTM2202 Clinical Optometry 2B
- OPTM2206 Pathology for Optometry
- PHPH2121 Principles of Physiology A
- PHPH2221 Principles of Physiology B

General Education subjects totalling 6 units of credit

#### Stage 3
- OPTM3102 Clinical Optometry 3A
- OPTM3108 Ocular Disease
- OPTM3202 Clinical Optometry 3B
- OPTM3203 Clinical Optometry 3C
- OPTM3209 Environmental Optometry
- PHPH3302 Pharmacology for Optometry
- PSYC3516 Psychology for Optometry

General Education subjects totalling 6 units of credit

#### Stage 4
- MDCN8001 Principles of Medicine for Optometry Students
- OPTM4114 Optometry and the Professional Environment A
- OPTM4210 Research Project
- OPTM4214 Optometry and the Professional Environment B
- OPTM4311 Clinical Optometry 4A
- OPTM4312 Clinical Optometry 4B
- OPTM4313 Clinical Optometry 4C

### Combined Science / Optometry Program

**BSc BOptom**

Conditions for the combined program leading to the award of the degrees of BSc BOptom

1. Undergraduates* of The University of New South Wales who have satisfied the examiners in at least the first two Stages of the Optometry degree program may be admitted to the Science degree program with advanced standing for the purpose of qualifying for the award of the two degrees of BSc BOptom. Such undergraduates’ performance shall have been of a high standard and their admission shall be subject to the approval of the Dean of the Faculty of Science and Technology.

2. In order to qualify for the award of the degree of BSc, students so admitted shall be required to complete the appropriate general studies courses and no less than 21 units of credit of either Level II or Level III and a further 21 units of credit from other Level III courses, in accordance with the Science and Mathematics Program regulations. The courses submitted for the award of the Bachelor’s degree under these regulations must include at least 21 units of credit from Level III courses chosen from related disciplines in accordance with the Science program regulations.

3. In order to qualify for the award of the degree of BOptom, students so admitted shall complete the requirements of the Optometry degree program.

*In Rule 1, the word 'undergraduates' includes graduands, ie persons may be admitted under these rules if they have met all requirements for a first degree which has not yet been conferred and admission under these rules shall be no bar to the subsequent award of the first degree.
The four-stage full-time program leads to the degree of Bachelor of Psychology. The degree is designed to provide the student with (1) a sound understanding of psychological theory, research skills, and psychological techniques, (2) Psychology elective studies in areas of individual interest, (3) supporting studies in science disciplines, and (4) the opportunity to study courses in other faculties including Arts and Social Sciences, and Commerce and Economics.

Registration as a Psychologist
In order to become a member of the professional body, the Australian Psychological Society (APS), and for registration as a psychologist in New South Wales, students first need a university bachelor degree which includes four years of approved training in psychology. The BPsyschol degree provides four years of approved training in psychology. Students must also follow this by completing an accredited 5th and 6th year academic degree such as one of the Master of Psychology Degrees (Clinical, Forensic, Organisational) or a combined Doctor of Philosophy / Master of Psychology Degree as offered by this University. An alternative of two years of supervised experience in professional practice may be undertaken for registration as a psychologist in New South Wales.

Degree Program

Stage 1
PSYC1001, PSYC1011 and PSYC1021
Courses from Science Schools totalling 12 units of credit
18 elective units of credit selected from:
- Arts and Social Sciences, Commerce and Economics, and Science or other approved.

Stage 2
PSYC2001, PSYC2061, PSYC2071, PSYC2081, and PSYC2101
12 Level II units of credit following on from one of the Level I non-psychology courses
6 units of credit of General Education

Stage 3
PSYC3001, and PSYC3011
Select 1 course from each of the following four areas and 1 other Level III Psychology course:
- Advanced Perceptual / Cognitive – PSYC3151, PSYC3221, PSYC3311, PSYC3321; Advanced Biological – PSYC3051, PSYC3241, PSYC3251; Advanced Social – PSYC3121, PSYC3271, PSYC3281; Psychological Applications – PSYC3141, PSYC3201, PSYC3301, PSYC3331
6 units of credit of General Education

Stage 4
PSYC4053 and PSYC4063

Prerequisites and Corequisites
Before enrolling in any course (or equivalent units of a course) the student shall have attended the classes and shall have satisfied the examiners in all relevant prerequisite courses. The student should refer to the appropriate Faculty Handbook for a statement of course prerequisites and/or corequisites.

Study Load
This is a four-stage full-time program. In any one year students must enrol in the full load specified for a particular stage. Only in exceptional circumstances will students be allowed to enrol in a reduced program for a stage, and this requires the permission of the Head of School of Psychology.

Progression and Exclusion
Students will be required to maintain a high level of performance for progression. Any student who fails to achieve an average of 65 percent or higher in psychology courses taken in any stage (based on the first attempt result for each course) will be deemed to be falling below that level of performance. This will be drawn to the attention of the student and they may be interviewed by the Head of School (or nominee) to discuss the reasons for poor performance. This interview may lead to a recommendation to undertake special studies to assist learning. Students whose performance remains below the required level at the end of Stage 2 or 3 may be required to transfer to the Bachelor of Science or another degree and/or to show cause why such transfer should not be required.

Students required to show cause will be informed by the Registrar in writing. Students who apply to show cause will be assessed in accordance with the University's procedures. Failure to show cause will result in exclusion from the degree. Students should also see the section on progression and exclusion ('Restrictions on Students Re-enrolling') in the Student Guide.

Award of the Degree
In order to graduate students must satisfy requirements for the award by passing all courses specified for the degree.

The final grading for the degree is based on performance in all Psychology courses excluding PSYC1001, PSYC1011 and PSYC1021 taken over the four stages. The degree may be awarded at either Pass level or with Honours.
SAFETY SCIENCE

Safety and its management has been a significant growth area for the past fifteen years. Everyone is more conscious of safety and more concerned about issues such as industrial health and safety, environmental health and child safety, traffic safety, public safety and product safety. Safety Science is evolving as a discipline with its own jargon, and common approaches to the study of safety problems and their solution involving risk assessment and risk management. At the same time safety impacts on so many aspects of commercial and community life that a wide range of activities are possible and a wide range of undergraduate study areas are relevant.

Career prospects in the Safety area are excellent. Organisations are becoming more aware of their legal and social responsibilities for safety and for the environment and it is increasingly recognised that these areas are not easy to manage and need specialist training. The majority of jobs in safety science involve health and safety at work. The role of the industrial safety officer has evolved into an occupational health and safety professional whose responsibilities encompass all activities relating to people's health and safety. Increasingly the career will involve environmental risk management and perhaps broadening into general risk management areas. Graduates can work in a number of fields such as: Safety, Ergonomics, Biomechanics, Occupational Hygiene, Risk Management, Toxicology, Safety and Environmental Management and Safety Engineering.

Program Outline

This four year program provides the basis for a career in safety, health and environmental (SHE) management or for entry to one of the more specialist areas such as ergonomics or toxicology. The program takes four years with the first three years covering the basic sciences and management issues and the fourth year involving more advanced study in specialist sub disciplines and a major project. Although all students must cover both the scientific and management aspects of safety, health and the environment, it is possible to select subjects to give more emphasis to either aspect. The fourth year project is normally carried out within a workplace. The program thus provides work experience as well as a good grounding in the knowledge and skills required for a career in SHE.

3877
Safety Science Full/Part-time

Bachelor of Science
BSc

Stage 1
A total of 48 UOC are required including SESC1001, 12 units of credit of mathematics and at least 24 units of credit from other schools in the Faculty of Science and Technology or Life Sciences

Students should note that specialisation in later years of the program will be dependent on the choice of stage 1 courses. Students are encouraged to consult the school regarding the choice of stage 1 courses

Stage 2
- ANAT2151 Introduction to Functional Anatomy or
- ANAT2111 Introductory Anatomy or
- ANAT2511 Fundamentals of Anatomy
- GEOG1711 Environmental Systems and Analysis
- SESC2091 Safety Health and Environmental Hazards
- SESC2100 Workplace Hazards
- SESC2800 Fundamentals of Toxicology (For students who did not study Chemistry in stage 1)
- SESC6110 Physical Principles of Safety (For students who did not study Physics in stage 1)

Any level 2 Statistics course (students who completed MATH1041 may select an alternative course)

General Education
Electives to bring total to 48 Units of Credit

Stage 3
- SESC3601 Occupational Health and Safety
- SESC3200 Hazard and Risk Assessment
- SESC3541 Assessment of the Workplace Environment
- GEOG3911 Environmental Impact Assessment
- Either
  - PSYC3141 Behaviour in Organisations
  - IROB2721 Managing People

General Education
Electives to complete 48 units of credit

Stage 4
- SESC4310 Management of Health Safety and the Environment
- SESC4820 Chemical Safety and Toxicology
- SESC4900 Project Research Methods
- SESC4310 Ergonomics 2
- SESC4924 Project
Electives to complete 48 Units of credit

Electives throughout the program may be selected to allow students to follow different specialisations within safety health and environmental science. Some examples of courses which are recommended for different specialisations are shown below

Toxicology
BIOC2101, BIOC2201 Any Stage 2 Chemistry Subjects, BIOC3121, BIOC 3261 Any stage 3 Chemistry MICR 2201, SESC3901 SESC3620 SESC4850

Environmental Safety
BIOS2011, GEOG2711, GEOL2231, PHYS2801 or PHYS2810, MATS3394, MATH2240 GEOG3901, GEOG3761

Safety Health and Environmental Management
IROB1701, ECON1107, PSYC2061, PSYC2071, PSYC3281, ENV2801, PSYC3141, SESC4850, SESC4211

Ergonomics
PSYC2071, PSYC2061, SESC2451, PSYC3141, SESC3451, SESC4410, SESC541

Industrial Safety
PHYS2850, PHYS2310, SESC4410, SESC4820
Combined degrees with Science

Combined Programs including Science

Students seeking to complete the Science component of a combined degree would normally be expected to complete a minimum of 84 units of credit in Science courses at Levels I-III, including a major as specified for program 3970. It may be difficult to undertake some plans as part of combined degree structures due to timetable constraints.

Combined Programs including Advanced Science

Students seeking to complete the Science component of a combined degree program at Advanced level would normally be expected to complete the full Honours program for the science study plan in which they are enrolled, in addition to a minimum of 96 units of credit in relevant Science courses at Levels I-III. In practice, it may be difficult to undertake some plans as part of combined degree structures. Subject to timetable constraints, students may undertake the science component of most approved combined degree program involving science, at Advanced Level. In general, students will be restricted in the number of science courses that they can undertake in such combined degrees. Where these are insufficient to allow the student to complete the recommended study plan as outlined in the Advanced Science section of the handbook, students are advised to consult the relevant Head of School.

3930
Combined Science/Arts

3931
Combined Advanced Science/Arts

BSc BA

The double degree of BSc/BA normally requires an additional Stage of study, and enables students to complete a major sequence from those available in Table A for Science (see Program 3970) and in a School, Department, or Program of the Faculty of Arts and Social Sciences. Students are required to undertake courses totaling 84 units of credit from both the Science and the Arts components of this combined degree. The remaining 24 units of credit may be from either area.

For admission to the program, students must satisfy the entry requirements to Science or Advanced Science as well as to the Faculty of Arts and Social Sciences. In addition to the requirements of the BSc program being undertaken, students must complete a minimum of 84 units of credit in courses offered by Schools, Departments or Programs within the Faculty of Arts and Social Sciences, including an approved major sequence of 42 units of credit (refer to Lists A and B of the Faculty of Arts and Social Sciences rules in the Faculty handbook).

Students should enrol in at least 24 Level 1 units of credit and no more than 36 Level 1 within the Arts component of the program.

This degree is administered by the Science Student Office.

3935
Combined Science/Social Science

3936
Combined Advanced Science/Social Science

BSc BSoSc

In addition to the minimum requirements of the BSc program (84 units of credit), students must complete a minimum of 84 units of credit in the Faculty of Arts and Social Sciences. This includes the Social Science core program of 48 units of credit:

SLSP1000 Social Science and Policy 6

or

SLSP1002 Introduction to Policy Analysis 6

and

SLSP1001 Research and Information Management 6

SLSP2000 Economy and Society 6

SLSP2001 Applied Social Research 1 6

SLSP2002 Policy Analysis Case Studies 6

SLSP3000 Social Theory and Policy Analysis 6

SLSP3001 Applied Social Research 2 6

SLSP3002 Social Science and Policy Project 6

and an additional 36 units of credit from an approved sequence in a particular social science discipline (List F in the Faculty handbook).

Students may complete a major (42 units of credit) in a social science discipline from List F in the Arts and Social Sciences Faculty by completing an additional elective course as part of the remaining 24 units of credit required for the program.

This degree is administered by the Science Student Office.

4075
Science/Education Program

Bachelor of Science Bachelor of Education

BSc BEd

This combined, four year, degree requires the completion of a BSc degree with a major and minor in two HSC teaching subjects, plus at least one semester of first year level courses in another two teaching disciplines. Additionally Education courses are commenced in the first year (two courses), with an additional course in second and third years, and a full complement of teaching method, practice teaching, professional courses and an educational theory course in the fourth year.

A) Students intending to become science teachers, or wishing to graduate in the natural sciences (excluding mathematics), will be required to complete:

i) A major in one of the teaching disciplines – Physics, Chemistry, Biological Sciences, Earth and Environmental Sciences (54 units of credit). This will include at least 42 units of credit at level two and three of the discipline, of which 18 units of credit must be from level three. The major sequence excludes the upper-level General Education courses offered in the disciplines.

ii) A minor in one of the teaching disciplines – Physics, Chemistry, Biological Sciences, Earth and Environmental Sciences (36 units of credit). The minor sequence excludes the upper-level General Education courses offered in the disciplines.
iii) At least 6 units of credit at level one in each of the main teaching disciplines — Physics, Chemistry, Biological Sciences, Earth and Environmental Sciences — and at least 12 units of credit at level one in either Chemistry or Physics. That is a total of 12 units of credit beyond those first year units completed in the major and minor disciplines. The level one physics course can be ‘Physics for Health and Life Scientists’.

iv) Completion of 72 units of credit in Education. The normal pattern is two courses in the first year (12 units of credit) one course (6 units of credit) in each of second and third years, and 48 units of credit in fourth year, which include educational theory, practice teaching, teaching method, and professional courses.

v) Completion of 12 or 18 (depending on choice of major) other units of credit from any university discipline, at levels one, two or three.

Note: Upper level physics and chemistry courses require completion of at least 12 units of credit of first year mathematics. Some level three physics courses require a further 6 units of credit of level two mathematics. For students doing a major or minor in physics or chemistry, the mathematics prerequisites will need to come out of these 12 or 18 ‘other’ units of credit.

For entry to honours (fourth year) in one of the science disciplines, at least 24 units of credit need to be taken at level three in the discipline, and approval needs to be obtained from the head of the relevant science school.

B) Students wishing to become mathematics teachers, or graduate in mathematics, will be required to:

i) Complete 72 units of credit in Mathematics. These Mathematics courses must be chosen so as to fulfill the requirements for a Mathematics major in the science degree program 3970, and include the courses MATH3560 ‘History of Mathematics’ and MATH3570 ‘Foundations of Calculus’.

ii) Completion of at least 6 units of credit of computing courses, which can be taken from a variety of different schools in the university.

iii) Completion of 72 units of credit in Education. The normal pattern is two courses in the first year (12 units of credit) one course (6 units of credit) in each of second and third years, and 48 units of credit in fourth year, which include educational theory, practice teaching, teaching method, and professional courses.

iv) Completion of the balance of 192 units of credit by taking courses from any school that offers either a major or minor in Science.

Note: All prospective Mathematics teachers need to do the BScBEd combined degree. They can no longer (from 2000) do the BABEd degree.

Science and the Faculty of Medicine

3820 Combined Science and Medicine Course

Bachelor of Science Bachelor of Medicine Bachelor of Surgery
BSc MB BS

For details of the Combined Science/Medicine Program refer to the Faculty of Medicine Handbook.

Science and the Faculty of Commerce and Economics

3529 Combined Commerce/Science Course

Bachelor of Commerce Bachelor of Science
BCom BSc

For details of the Combined Science/Commerce Programs refer to the Faculty of Commerce and Economics Handbook.

Science and the Faculty of Law

4770 Combined Science/Law Course

Bachelor of Science Bachelor of Laws
BSc LLB

For details of the combined Science/Laws program, refer to the Faculty of Law Handbook.
Please note all courses are measured in whole units of credit. The normal workload expectations are 25 - 30 hours per semester for each unit of credit, including class contact hours, preparation and time spent on all assessable work. A full-time enrolment for one year is defined as 48 units of credit (24 per semester). A course has the same units of credit value and generates the same load for HECS and fees irrespective of the program or stage in which it is taken.

Undergraduate Study

Descriptions of all courses are presented in alphanumeric order within organisational units. For academic advice regarding a particular course consult with the contact for the subject as listed. A guide to abbreviations and prefixes is included in the chapter 'Handbook Guide', appearing earlier in this book.

Notes: Some courses that appear in this section may be restricted to students for whom the course comprises a compulsory part of their program. Other courses are electives in a range of programs. Please note all courses are measured in whole credit points. The normal workload expectations are 25 – 30 hours per semester for each unit of credit, including class contact hours, preparation and time spent on all assessable work. A full-time enrolment for one year is defined as 48 units of credit (24 per semester). A course has the same unit of credit value and generates the same load for HECS and fees irrespective of the program or stage in which it is taken.

Accounting

Accounting Level I

ACCT1501
Accounting and Financial Management 1A
Staff Contact: School Office
UOC6 HPW3.5 S1 S2
This is the first course in a sequence of courses dealing with the profession and practice of accounting and the literature associated with it. It illustrates the analysis and design of a financial accounting system which processes financial data and produces financial reports geared to the information needs of interested parties. It introduces students to the design of accounting systems based on double-entry book-keeping and incorporating other internal controls; also, to the problems of accounting for cash, debtors, inventories and property plant and equipment. It also provides a critical introduction to the ideas underlying accounting practice and to issues associated with the uses and limitations of traditional financial reports. In so doing it introduces students to the practice of literature evaluation.

ACCT1511
Accounting and Financial Management 1B
Staff Contact: School Office
UOC6 HPW3.5 S1 S2
Prerequisite/s: ACCT1501
This is the second course in a sequence of accounting courses and includes financial accounting topics such as an examination of the regulatory environment of financial reporting; the definition and recognition of assets, liabilities, revenues and expenses; and accounting for corporations. Aspects of managerial and investor decision-making are covered including financial statement and cash flow analysis, and examination of cost/volume/profit relationships in a single product firms, and short term budgeting.

Accounting Level II

ACCT2522
Management Accounting: Process Improvements and Innovation
Staff Contact: School Office
UOC6 HPW3 S1
Prerequisite/s: ACCT1511
Excluded: ACCT2532
This course examines management accounting, directed towards the effective use of organisational resources. Organisations create value through the use of resources, and can enhance such value by focusing and reconfiguring their internal processes in various ways; that is, by changing the ways in which they conduct business and perform work. It is argued that, in world class organisations, the management of time, flexibility, quality, integration, variability and interdependencies is critical to sustained value generation. This course explains how management accounting supports such value generation, within changing organisational processes.

ACCT2542
Corporate Financial Reporting and Analysis
Staff Contact: School Office
UOC6 HPW3.5 S2
Prerequisite/s: ACCT1511
Excluded: ACCT2532
This intermediate financial accounting course builds on the foundation laid in ACCT1501 and ACCT1511. It is intended for students who will be involved in the preparation or use of financial statements whether as accountants, financial executives, auditors, financial analysts or legal advisors. The effort to establish an agreed conceptual framework. The contracting cost framework for the analysis of financial reporting. Accounting for capital instruments. More advanced aspects of the definition, recognition and measurement of assets and liabilities. Lease accounting. Tax effect accounting. An introduction of consolidated accounts. Published financial reports including analysis of the current regulatory requirements. Accounting for the extractive industries, superannuation.

Accounting Level III

ACCT3563
Issues in Financial Reporting and Analysis
Staff Contact: School Office
UOC6 HPW3.5 S1 S2
Prerequisite/s: ACCT2542
Excluded: ACCT3573
This is the final financial reporting course following ACCT1501, ACCT1511 and ACCT2542. This course examines accounting reporting and legal problems associated with the preparation of consolidated accounts for complex structures, significant investments in joint arrangements and other inter-corporate holdings, generic trust designs, securitisation structures, cross-border forex dealings and translations, off-balance sheet
mechanisms and structures, business ethics, green accounting, the gender issue, Mabo and Wik determinations, cultural and heritage assets, and new generation financial instruments (derivatives).

ACCT3583
Stakeholder Value Management
Staff Contact: School Office
UOC6 HPW3 S1 S2
Prerequisite/s: ACCT2522
Excluded: ACCT3593

This course is concerned with the ways in which tangible and intangible resources are combined and leveraged in order to deliver stakeholder value in contemporary organisational contexts. The ways in which these resources are managed affects the ability of organisations to deliver value to various stakeholders, such as shareholders, customers, employees, suppliers, the community and the natural environment, both in the short and long-terms. A strategic challenge for organisations is to achieve a balance between these different forms of stakeholder value in the present and the future. This course examines the ways in which a set of practices that bear the label of 'management accounting' constrains and enables processes of stakeholder value management. The course will draw upon a variety of readings and cases to explore these issues.

Anatomy

Anatomy Level II
ANAT2111
Anatomy
Staff Contact: Dr B Freeman
UOC6 HPW6 S1
Prerequisite/s: BIOS1101, BIOS1201

Introduction to gross anatomy of the whole body, based on a study of prospected specimens. General topographical and systematic anatomy, musculoskeletal, cardiovascular, respiratory, gastrointestinal, genitourinary and nervous systems. This course is designed for students who wish to proceed to Level III studies, or a major, in Anatomy.

ANAT2151
Functional Anatomy
Staff Contact: Associate Professor K Ashwell
UOC3 HPW3 S1

Overview of basic human anatomy and physiology with an emphasis on structures and systems which are most vulnerable to chemical and physical trauma under industrial conditions, such as the eye, ear and skin. Other systems studied include the musculoskeletal system, central and peripheral nervous systems, circulatory, respiratory, gastrointestinal, endocrine and urogenital systems. Offered as a distance-education course, or on campus if enrolments are sufficient.

ANAT2200
Basic Histology
Staff Contact: Professor P Waite
UOC3 HPW3 S1
Prerequisite/s: BIOS1101, BIOS1201

The course provides an overview of the structure of mammalian cells and their organisation into tissues. Topics include the use of the light microscope, the preparation of tissues and the recognition of artefacts. Morphology of epithelial, connective, muscular and nervous tissues will be compared with emphasis on the practical recognition of cell types and the correlation or structure and function.

ANAT2210
Systems Histology
Staff Contact: Professor P Waite
UOC3 HPW3 S2
Prerequisite/s: ANAT2200 or ANAT2511

The course includes the histological examination of the major body systems: cardiovascular, respiratory, lymphatic, integumentary, digestive, endocrine, urinary, reproductive and nervous systems. Emphasis is on integrating the microscopic structure of organs with their function and with abnormalities, which occur in common disease processes.

ANAT2300
Vertebrate Development A
Staff Contact: Dr M Hill
UOC3 HPW3 S1
Corequisite/s: ANAT2200, ANAT2111 or ANAT2511

This course will cover the morphological and molecular mechanisms of segmentation and patterning responsible for organising the vertebrate body plan in the embryo. Topics will include the molecular, genetic and cellular approaches to the study of human embryology using four main vertebrate systems: frog, fish, chick and mouse.

ANAT2310
Vertebrate Development B
Staff Contact: Dr M Hill
UOC3 HPW3 S2
Prerequisite/s: ANAT2300

This course will cover fetal development through to birth, including the developmental anatomy of the organ systems. The course will examine the common principles and differences that underlie normal and abnormal development of vertebrates; specifically, the roles of cell differentiation, proliferation and migration, target recognition, interaction in the nervous system, axial polarity, cell adhesion, cell fate and signalling in development. Emerging technologies, such as genomic analysis and the use of transgenic and dysfunctional mouse mutants in research, will be covered.

ANAT2511
Fundamentals of Anatomy
Staff Contact: Dr E Tancred
UOC6 HPW6 S2
Excluded: ANAT2111, ANAT2200, ANAT2151

This course provides an introduction to the fundamental principles of human structure. It includes an introduction to the histology of basic tissues; an overview of the functional anatomy of the major body systems; human development, growth and aging; human evolution; body imaging. This course is designed for students who do not plan to major in Anatomy, but may be used as a prerequisite for ANAT3411 Neuroanatomy and, in exceptional circumstances, for ANAT3121 Visceral Anatomy.

Anatomy Level III

ANAT3121
Visceral Anatomy
Staff Contact: Associate Professor K Ashwell
UOC6 HPW6 S2
Prerequisite/s: ANAT2111

A detailed study of the visceral system, including autonomic nervous system, head and neck regions, and the cardiovascular, respiratory, gastrointestinal and genitourinary systems. Tutorials include clinical cases and surface and radiological anatomy.

ANAT3131
Functional Anatomy 1
Staff Contact: Dr P Pandey
UOC6 HPW6 S1
Prerequisite/s: ANAT2111

Functional anatomy of the musculoskeletal system in the head, neck and upper limb, includes biomechanics of connective tissue; in particular bone, cartilage and tendon. Tutorials involve study of prospected specimens, X-rays and surface anatomy; students will also carry out their own dissections of the upper limb.
ANAT3141
Functional Anatomy 2
Staff Contact: Dr D Vu
UOC6 HPW6 S2
Prerequisite/s: ANAT3131
Functional anatomy of the musculoskeletal system in the trunk and lower limb. Includes functional aspects of muscle and a discussion of the mechanics and energetics of walking and running. Tutorials involve study of prosected specimens, X-rays and surface anatomy; students will also carry out their own dissections of the lower limb.

ANAT3231
Cell Biology
Staff Contact: Dr M Hill
UOC6 HPW4 S1 S2
Prerequisite/s: ANAT2200
To develop an understanding of the anatomy and biology of the cell. Cell biology combines traditional anatomical methods with recent cell and molecular biology techniques. Key concepts will include developmental differentiation of the cell, its polarity, motility, cytoskeleton, signal transduction mechanisms and outcomes. An introduction to concepts of cell and extracellular matrix interactions will also be covered. Session in which course will run to be determined.

ANAT3411
Neuroanatomy
Staff Contact: Dr E Tancred
UOC6 HPW6 S1
Prerequisite/s: ANAT2200, ANAT2111, ANAT2511
Provides an overview of the anatomical organisation of the central nervous system. Topics covered include: cytoarchitecture of brain and spinal cord; functional anatomy of sensory and motor systems and higher cerebral functions such as language and emotions; blood supply of the central nervous system; cerebrospinal fluid and meninges.

ANAT3421
Neuroscience Research Seminars
Staff Contact: Dr P Carrive
UOC6 HPW3 S1 S2
Prerequisite/s: ANAT3411 or PHPH3531
Focuses on selected areas of contemporary neuroscience research interest. Includes: brain development and axon guidance, peripheral nerve regeneration, spinal cord injury, pain pathways, central control of cardiovascular function, cortical plasticity, brain imaging, mechanisms of learning and memory, motor systems and the neuropathology of degenerative disorders. The course is organised in seminar format with discussion of original research papers. It is ideal for students considering doing Honours as it provides a background to current research problems and the opportunity to undertake a small project.

ANAT3531
Functional Anatomy 1 (Adv)
Staff Contact: Dr P Pandey
UOC6 HPW6 S1
Prerequisite/s: ANAT2111
Functional anatomy of the musculoskeletal system in the head, neck and upper limb, includes biomechanics of connective tissue; in particular bone, cartilage and tendon. Tutorials involve study of prosected specimens, X-rays and surface anatomy; students will also carry out their own dissections of the upper limb. This course will include an assessable detailed dissection program, incorporating submission of a report based on drawings of the student's work and a review of literature within the subject area.

ANAT3541
Functional Anatomy 2 (Adv)
Staff Contact: Dr D Vu
UOC6 HPW6 S2
Prerequisite/s: ANAT3531
Functional anatomy of the musculoskeletal system in the trunk and lower limb. Includes functional aspects of muscle and a discussion of the mechanics and energetics of walking and running. Tutorials involve study of prosected specimens, X-rays and surface anatomy; students will also carry out their own dissections of the lower limb. This course will include an assessable research affiliation program, incorporating discussion and evaluation of a research project, and submission of a research report based on literature within the subject area.
AVIA1150
Air Traffic Control
Staff Contact: Mr John Guselli
UOC3 HPW2 S1
Excluded: AVIA1103
This course is concerned with the history, development and practical application of Air Traffic Services and their relationship to the commercial and regulatory aspects of commercial aviation. The topics are focussed on both operational and administrative structures within the industry. Emphasis is placed on the role of ATC from the perspective of a service provider. Topics include ATC history, structure, legal aspects and implications. Other significant aspects include communications, safety, noise abatement and the development of future systems.

AVIA1300
Aeronautical Knowledge
Staff Contact: Professor Jason Middleton
UOC3 HPW2 S2
Designed for management students who may not have or intend to gain, any flying experience, this course provides a broad-based cross-section of the fundamental theory of flight operation similar to that addressed within the initial training component for stage 1 flying stream students. Topics include basic theory of flight, aircraft systems and performance, regulations and navigation.

AVIA1850
Airport Management 1
Staff Contact: Mr Rod Sullivan
UOC3 HPW4 S2
This course provides an introduction to issues concerning management of an airport, including definitions of an airport's functions and facilities, describing the overall regulatory requirements, managing the airport as a business, managing the operations, both landside and airside, managing the development of an airport and consideration of community relations.

AVIA1900
Aviation Economics
Staff Contact: Mr Rodger Robertson
UOC3 HPW4 S2
Excluded: PROF0203
This course covers the economics of an airline and how the management of economic problems are analysed. Demand analysis and its relation with price and economic conditions covers revenue issues. Costs and supply are studied with reference to available airline costing information. The interaction of demand and supply are then studied and how airlines manage this aspect.

AVIA2003
Flying Training 2
Staff Contact: Mr Gregory Clynick
UOC18 HPW12 S1
Prerequisite/s: AVIA2003
Excluded: AVIA2000
Notes: Restricted to Program 3980 Flying Stream.
Ground training and associated theory for Stage 2 of the Bachelor of Aviation (Flying). Covering theory requirements for the issue of a Commercial Pilot Licence (CPL), Night Visual rating (NVFR) and multi-engine endorsement. This course encompasses ground training phases 6, 7 and 8 as detailed in the UNSW Manual of Flight Training, and the Civil Aviation Safety Authority's Day VFR syllabus (Aeroplane), and Civil Aviation Regulations. Practical flight training to CPL with NVFR and multi-engine endorsement are highly recommended adjuncts to this course.

AVIA2100
Crew Resource Management 2
Staff Contact: Capt John Faulkner
UOC3 HPW2 S2
Prerequisite/s: AVIA1100
Excluded: PROF0202
The interrelationships between Captain and crew will be used to illustrate the principle of the hierarchy of command. Effective teamwork will be developed through negotiation of the principles of communications and effective decision management. This course will build on the principles illustrated in CRM 1.

AVIA2400
Aviation Regulations 1
Staff Contact: Mr Ron Bartsch
UOC3 HPW2 S1
Excluded: AVIA2403
Aviation Regulations 1 introduces the Laws and regulations under which an aviation operation functions. Beginning with regulatory authority and source, this course develops an understanding and awareness of both the direct operational aspects of regulations and the commercial considerations that they demand. The emphasis is that of routine implications of the Civil Aviation Act, Civil Aviation regulations and orders.

AVIA2500
Airline Marketing
Staff Contact: Mr Rodger Robertson
UOC3 HPW2 S1
Excluded: PROF0201
This course uses the classic approach to marketing management strategies but is mostly entirely focussed on how this is achieved in the industry. The approach is of a practical nature. The course studies airline market research, marketing strategy development, product development, pricing strategies and yield management, distribution and promotion strategies. The course encourages and emphasises current airline marketing behaviour as examples of the theory.

AVIA2700
Flight Safety 1
Staff Contact: Capt John Faulkner
UOC3 HPW2 S1
Excluded: PROF0201
Subjects covered include the use of quick access recorders for fleet performance monitoring, corporate structures for safety departments and accident/incident analysis. Safety auditing, emergency planning and in-flight security will be studied.

AVIA2800
Management of General Aviation
Staff Contact: Ms S Davis
UOC3 HPW2 S1
This course covers a broad range of the management decisions faced by the airlines. This course introduces the aviation environment within which the airline management functions and makes economic decisions. Revenue issues are studied with demand analysis, and an airline's ability to manage price and to predict loads. The key elements of supply and cost are analysed by reference to available airline data. The final aspect studied is the combination of the demand and supply issues.

AVIA3004
Advanced Flying Training
Staff Contact: Mr Gregory Clynick
UOC24 HPW16 S2
Prerequisite/s: AVIA2003
Excluded: AVIA3000
Notes: Restricted to Program 3980 Flying Stream.
Ground training and associated theory for Stage 3 of the Bachelor of Aviation (Flying). Covering theory requirements for the issue of a Command Instrument Rating (CIR), Grade 3 Instructor Rating (QFI), an Air Transport Pilot Licence (ATPL), and multi-crew operations. This course encompasses ground training phases 9, 10, 11 and 12 as detailed in the UNSW Manual of Flight Training, and Civil Aviation Safety Authority's ATPL syllabus (Aeroplane). Practical flight training for CIR and QFI is a highly recommended adjunct to this course; students may also select from options of airline entry training or advanced aircraft endorsement in place of the QFI rating.
AVIA3101
Airline Management
Staff Contact: Mr Rodger Robertson
UOC6 HPW4 S1
Prerequisite/s: AVIA1900, AVIA2003 or AVIA2400
Corequisite/s: AVIA2700
Excluded: AVIA3002
This course considers the main facets of corporate airline management, and begins with airline organisational practice, management's visions and objective setting. It proceeds with the main corporate processes of business planning, schedule planning, fleet planning and external relationships such as outsourcing. Financial aspects and global alliance matters are introduced.

AVIA3201
Airline Resource Management
Staff Contact: Mr Rodger Robertson
UOC6 HPW4 S2
Prerequisite/s: AVIA3101
Excluded: AVIA3002
This course follows AVIA3101 and introduces management of airline activities at an operational level. Issues include engineering and maintenance, crew planning and scheduling, airport planning for airlines, operations control issues, emergency procedure management, and freight and punctuality management.

AVIA3400
Aviation Regulations 2
Staff Contact: Mr Ron Bartsch
UOC3 HPW2 S2
Prerequisite/s: AVIA2400
Excluded: AVIA2413
Aviation Regulations 2 builds on the fundamental concepts introduced in Aviation Regulations 1. The emphasis of this course is the legal ramifications for pilots and operations managers imposed by the Civil Aviation Act and associated regulations. Specific case studies will form a large part of this course.

AVIA3600
Simulations Application
Staff Contact: Mr Gregory Clynick
UOC3 HPW2 S2
Excluded: AVIA2603
This course addresses the broad application of simulation to the aviation industry. While the emphasis will be on aircraft simulations, aspects of operations systems simulations will also be covered. The perspective of this course will be that of end user application, particularly from management and training of human resource basis.

AVIA3710
Air Transport Safety 2
Staff Contact: Dr Graham Braithwaite
UOC6 HPW4 S2
Prerequisite/s: AVIA2700
Excluded: PROF3001, AVIA3700
The course develops the knowledge of aviation safety, which has been gained by students in both Flight Safety 1, and Crew Resource Management 1 & 2 lectures. It will emphasise the development of analytical research skills for the investigation of aviation safety occurrences and problems. The course will cover both the development of research and report writing skills in the context of air transport safety, and contemporary aviation safety issues with specific reference to technical, human and organisational factors. Each student will be required to undertake a structured, supervised research project on an aviation safety issue to be agreed with the lecturer-in-charge.

AVIA3800
Management of Regional Airlines
Staff Contact: Mr Alan Terrell
UOC3 HPW2 S1
A further development to AVIA2800, this course will provide students with the information pertinent to business and corporate operations with the regional airlines sectors of the industry. Aspects covered include requirements for low capacity airlines OACs and current state and national requirements for such operations.

AVIA3810
Airport Management and Security
Staff Contact: Mr Ron Armstrong
UOC3 HPW2 S2
Excluded: AVIA3703
This is an industry based course which brings the generalities of large management into the specific context of senior airport authorities. Aviation regulations and local government issues that pertain will also be covered.

AVIA3851
Airport Management 2
Staff Contact: Mr Rod Sullivan
UOC6 HPW4 S1
Prerequisite/s: AVIA1850
This course follows AVIA1850 and provides an in-depth coverage of the key elements outlined in Airport Management 1. Issues include the regulatory environment, including licensing and obligations, an evaluation of various ownership models, the economics of running the airport as a business, including costs, revenues, subsidies and performance indicators, client relations and services, and general airport administration. Airside operations include practical operational requirements as well as necessary documentation. Other planning issues include managing terminal and landside operations, emergency and crisis management, infrastructure development, socio-economic impacts on the community, and environmental impacts.

AVIA4001
Aviation Honours - Full Time
Staff Contact: Dr Graham Braithwaite
Enrolment requires School approval
UOC48
This course introduces students to major research areas through a course of advanced lectures and a major research thesis of 20,000 words. Through the taught component of this course, students will critically examine academic and industry developments within aviation with particular emphasis towards the chosen area of their thesis. The research thesis will examine an area of research significance as approved by the Head of Department.

AVIA4002
Aviation Honours - Part Time
Staff Contact: Dr Graham Braithwaite
Enrolment requires School approval
UOC48
Undertaken over two years, this course introduces students to major research areas through a course of advanced lectures and a major research thesis of 20,000 words. Through the taught component of this course, students will critically examine academic and industry developments within aviation with particular emphasis towards the chosen area of their thesis. The research thesis will examine an area of research significance as approved by the Head of School.

Banking and Finance

Banking and Finance Level II
FINS1612
Capital Markets and Institutions
Staff Contact: School Office
UOC6 HPW3 S1 S2
Corequisite/s: ECON1101, ECON1202
This course focuses on the major financial markets, including the equity, money, bond, exchange rate and derivatives markets. Students will learn about the basics of financial instruments in these markets, such as bank bills, treasury bonds, futures and options. In addition, students are exposed to the tools of analyses and the roles and innovations of major financial institutions. These include the banks and non-banks, such as finance companies, building societies and credit unions, life and insurance companies as well as funds management companies.
Biochemistry and Molecular Genetics

Head of School: Associate Professor A Bagnara
Coordinator of Undergraduate Studies: Associate Professor M Edwards
School Secretary: Ms G McWhinney

Registration for Laboratory Classes in Biochemistry

It is essential for all students to register for a laboratory class for each biochemistry course. This is normally done through the pre-enrolment process by completing the appropriate registration form (Form BIOC/REG/01) during the pre-enrolment. Failure to do this may prejudice your chances of obtaining a place for your preferred laboratory class.

Note: Some courses that appear in this section may be restricted to students for whom the course comprises a compulsory part of their plan.

Biochemistry Level II

BIOC2101
Principles of Biochemistry (Advanced)
Staff Contact: Dr I McFarlane
UOC6 HPWS S1
Prerequisite/s: BIOC1319, BIOS1201, CHEM1101, CHEM1201 or CHEM1031 and CHEM1041
Excluded: BIOC1319, BIOC2181, CHEM2929
Notes: Enrolment in this course may be subject to quota restrictions. Such restrictions will only apply to students taking this course as an elective part of their program.

Introduces modern biochemistry, covers fundamental aspects of the structure-function relationships of proteins and an overall coverage of intermediary metabolism. Major topics covered include: the nature and function of proteins and enzymes; the metabolic working of cells, tissues and organs; the interrelationships between the pathways of carbohydrate, lipid and amino acid metabolism; the vital role of hormones in metabolic regulation; the energy-trapping mechanisms of animals and plants; interesting variations on the central metabolic pathways in various life forms. Practical work to complement the lectures and to introduce the principles of biochemical analysis.

BIOC2181
Fundamentals of Biochemistry
Staff Contact: Associate Professor Kevin Barrow
UOC6 HPW6 S1
Prerequisite/s: BIOS1101, BIOS1201, CHEM1101 and CHEM1201 or CHEM1031 and CHEM1041
Excluded: BIOC1319, BIOC2181, CHEM2929
Notes: This course provides a comprehensive introduction to Biochemistry as an alternative to BIOC2101 for students who do not intend to proceed to Level III Biochemistry. It does not fulfill the prerequisite requirements for Level III Biochemistry but the Head of School may give approval for students with a grade of credit to enrol in Level III courses.

Introduces modern biochemistry, covers fundamental aspects of the structure-function relationships of proteins and an overall coverage of intermediary metabolism. Major topics covered include: the nature and functions of enzymes; the metabolic working of cells, tissues and organs; the interrelationships between pathways of carbohydrate, lipid and amino acid metabolism; the vital roles of enzymes and hormones in catalysis and metabolic regulation; the energy trapping mechanisms of animals and plants; interesting variations on the central metabolic pathways in various life forms. Practical work to complement the lectures and to introduce the principles of biochemical analysis. This subject covers essentially the same material as in BIOC2101 Principles of Biochemistry (Advanced), but in less detail and with more emphasis on the function of organisms and less emphasis on some of the underlying chemical mechanisms.
Principles of Molecular Biology (Advanced)

Staff Contact: Associate Professor Vincent Murray

Prerequisite/s: BIOS1101, BIOS1201, CHEM1101, CHEM1201

Excluded: BIOCC2291

Note/s: Enrolment in this course may be subject to quota restrictions. Such restrictions will only apply to students taking this course as an elective part of their plan.

Provides an introduction to modern molecular biology and covers the molecular mechanisms of gene expression and the fundamental aspects of recombinant DNA technology. The major topics covered include: The structure and function of DNA and RNA. The replication and transcription of DNA. Translation of the genetic code into an amino acid sequence during protein synthesis. Regulation of gene expression. Manipulation of DNA including: recognition enzymes, cloning of DNA fragments into vectors, hybridization analysis and principles of DNA sequencing. Protein structure and function, protein engineering and site-directed mutagenesis. Amplification of DNA by the polymerase chain reaction (PCR). Practical work to complement the lectures.

BIOC2291

Fundamentals of Molecular Biology

Staff Contact: Mr Halim Shooory

Prerequisite/s: BIOS1101, BIOS1201, CHEM1101 and CHEM1201 or CHEM1031 and CHEM1041

Excluded: BIOCC2291

Note/s: This course provides a comprehensive introduction to Molecular Biology as an alternative to BIOC2201 for students who do not intend to proceed to Level III Biochemistry. It does not fulfill the prerequisite requirements for Level III Biochemistry but the Head of School may give approval for students with a grade of credit to enrol in Level III courses.

Provides an introduction to modern molecular biology and covers the molecular mechanisms of gene expression and the fundamental aspects of recombinant DNA technology. The major topics covered include: the structure and function of DNA and RNA; the replication and transcription of DNA; translation of the genetic code into an amino acid sequence during protein synthesis; regulation of gene expression. Manipulation of DNA including: fragmentation by restriction enzymes; cloning of DNA fragments into vectors; hybridization analysis and principles of DNA sequencing. Protein structure and function. Amplification of DNA by the polymerase chain reaction (PCR). Practical work to complement the lectures. This course covers essentially the same material as in BIOC2201 Principles of Molecular Biology (Advanced), but in less detail and with more emphasis on the general applications and less emphasis on some of the underlying mechanisms.

Biochemistry Level III

BIOC3111

Molecular Biology of Proteins

Staff Contact: Dr Garry King

Prerequisite/s: BIOC2101, BIOC2201, CHEM2021 or CHEM2041

Modern aspects of the structure function relationships of proteins including discussion of the latest techniques of protein characterisation. Topics include: separation and analytical procedures; determination of amino acid sequence data; the nature of protein and protein ligand interactions including aspects of substrate binding, enzyme kinetics and enzyme mechanisms; the molecular architecture of proteins from the standpoint of the relationships among primary, secondary, tertiary and quaternary structures; aspects of protein engineering. Practical work illustrates and complements the lectures and provides experience with modern techniques of protein molecular biology.

BIOC3121

Molecular Biology of Nucleic Acids

Staff Contact: Dr Louise Lutze-Mann

Prerequisite/s: BIOC2101, BIOC2201

Detailed analysis of gene structure and function including: structure and properties of polynucleotides such as DNA and RNA; structure of chromatin; mechanisms and regulation of gene replication, transcription and translation; recombinant DNA technology, nucleic acid sequencing, DNA-DNA and DNA-RNA hybridisation; important tools of modern molecular biology; protein production using recombinant DNA systems. Practical work illustrates and complements the lectures and provides experience with contemporary molecular techniques.

BIOC3131

Biochemistry and Genetic Engineering of Plants

Staff Contact: Dr Ian McFarlane

Prerequisite/s: BIOC2101, BIOC2201

This techniques of recombinant DNA technology and plant tissue culture with their application to the modification and improvement of plant productivity. Plant organ, tissue and cell culture, organogenesis, embryo-genesis and clonal plant propagation. The long term preservation of germplasm and plant genetic resources. Useful products from plant cultures and the technology of plant cell culture. Structure and expression of plant genes. Plant molecular biology including cloning plant genes and vectors for gene cloning. Genetic manipulation of plants to improve their natural resistance to pests, disease and environmental stress. Practical work provides training in the basic techniques of plant tissue culture with application of selected techniques to plant genetic engineering.

BIOC3151

Genetics and the Analysis of Individual Variation

Staff Contact: Professor Ian Dawes, Dr Bill Sherwin

Prerequisite/s: BIOC2201

Corequisite/s: BIOS2041 or MATH2841

This course aims to develop a student's abilities to use molecular and traditional genetic data to solve genetic problems that arise in a variety of applications, from industry and human biology, to wildlife management. Computer simulations and projects with Industries will be used extensively. Natural or recombinant genes interact with one another and the environment to produce whole organisms and the variation between them. This course will present modern methods for investigating the molecular basis of heritable characteristics as diverse as morphology and behaviour, in a variety of species, at levels from the family to the population. Identification of quantitative trait loci and variation will be examined including natural selection, artificial selection, forensics and ethical issues.

BIOC3261

Human Biochemistry

Staff Contact: Associate Professor Mike Edwards

Prerequisite/s: BIOC2101, BIOC2201

Covers the aspects of metabolism that are of particular relevance to the human. The major topics covered will be other selected areas of human nutrition. Specialised aspects of endocrinology and neurochemistry including prostaglandins, leukotrienes, enkephalins and endorphins. The interrelation of purines, pyrimidines, folate and cobalamin metabolism in humans. Xenobiotics: the metabolism of foreign compounds by humans. Biochemical aspects of genetic disease including the use of recombinant DNA techniques for prenatal diagnosis and carrier detection. Molecular studies of malaria and other parasites of the human. Practical work to amplify the lectures.
BIOC3271
Molecular Cell Biology
Staff Contact: Dr Louise Lutze-Mann
UOC6 HPW6 S2
Prerequisite/s: BIOC2101, BIOC2201

Cell biology from a molecular viewpoint. Biochemical aspects of cellular organisation. The arrangement of the component molecules of organelles, their function in integrated cellular metabolism and the molecular interactions between the cells of multicellular organisms. The biochemistry of the cytoskeleton, carriers and intracellular transport systems. The regulation of cellular processes at the molecular endocrine level. Growth and differentiation. Aspects of cancer metabolism, the biochemistry of cell to cell communication and the structure and function of the extracellular matrix. Practical work amplifies the lectures.

BIOC3281
Recombinant DNA Techniques and Eukaryotic Biology
Staff Contact: Dr Noel Whitaker
UOC6 HPW6 S2
Prerequisite/s: BIOC3121

The organisation of the genomes of higher organisms derived mainly from the application of recombinant DNA technology and related techniques. Methods used for the isolation, identification and characterisation of eukaryotic genomes in terms of the organisation of single copy and repeated sequences and of coding and non-coding sequences and of several gene clusters, e.g. the alpha and beta globin gene cluster. Mechanisms known to operate in the control of eukaryotic gene expression, both at the DNA level and at the level of RNA processing. Review of several specialised genetic systems in plants and animals such as mitochondria, chloroplasts and RNA and DNA tumour viruses. Practical work provides training in the use of sterile techniques and in working with polynucleotides under nuclease-free conditions, using basic techniques such as hybridisation and DNA sequencing.

BIOC3291
Genes, Genomes and Evolution
Staff Contact: Dr Alan Wilton, Dr Bill Sherwin
UOC6 HPW6 S2
Prerequisite/s: BIOS2021

Current concepts and theories in genetics concentrating on eukaryotes including humans. The generation of variation examined at the molecular level for fundamental genetic processes of mutation, recombination and repair. The evolution of the genome, maintenance of variation, the effects of mutations and their relevance to disease. Ecological genetics and molecular evolution, genetics of cellular division process and developmental genetics. Practical uses of genetics including the use of transposable elements to manipulate genetic stock, transgenesis, genetics of cancer, pedigree analysis, disease gene mapping, gene therapy, cytogenetics. Unusual genetic mechanisms. Perspectives on genetics, history and future. Practical work and exercises to complement the lecture.

BIOC3301
Biochemistry Laboratory Project (Advanced)
Staff Contact: Associate Professor Aldo Bagnara
Enrolment requires School approval
UOC6 HPWO S1 S2
Notes/s: This course is restricted to Advanced Science students enrolled in Biochemistry, Genetics or Molecular Biology Plans.

The course involves directed reading, laboratory work and use of World Wide Web resources. Students will work on a research project under the supervision of a member of the academic staff. It is designed to introduce students to research methodology, and to stimulate critical and lateral thinking in the context of problem solving. Enrolment in this course is by invitation and is based on academic performance. Interested students should contact the Head of School.

BIOC3521
Molecular Biology of Nucleic Acids (Advanced)
Staff Contact: Dr Louise Lutze-Mann
UOC 6 HPW6 S1
Prerequisite/s: BIOC2101, BIOC2201
Excluded: BIOC3121

This advanced course is designed to suit students who plan to pursue research careers in molecular biology or related disciplines. The syllabus is an enhanced version of that described above for BIOC3121 and comprises a detailed analysis of gene structure and function which includes: structure and properties of polynucleotides such as DNA and RNA; structure of chromatin; mechanisms and regulation of gene replication, transcription and translation; DNA repair and the molecular biology of cancer induction; recombinant DNA technology; nucleic acid sequencing; DNA-DNA and DNA-RNA hybridisations important tools of modern molecular biology; protein production using recombinant DNA system. Practical work provides extensive experience with contemporary molecular techniques; literature surveys and web-based research will also be used to enhance the theoretical and practical aspects of the syllabus.

BIOC3571
Molecular Cell Biology (Advanced)
Staff Contact: Dr Louise Lutze-Mann
UOC 6 HPW6 S2
Prerequisite/s: BIOC2101, BIOC2201
Excluded: BIOC3271

A molecular approach to understanding the complex, dynamic interactions that comprise cellular function. Concepts drawn from biochemistry, genetics and molecular biology together with classical cell biology will be integrated to produce a contemporary interpretation of cellular life. Topics to be covered include the structure and function of the cell: membranes, organelles and cytoskeleton; communication within and between cells; the regulation of cell cycling and the differentiation of cells from single cell to whole organism. The theoretical coverage will be extended by the addition of self-paced exercises which will require the students to survey the latest developments in this area. Practical work illustrates and complements the lectures, provides extensive experience with contemporary molecular cell techniques and will be enhanced by the inclusion of leading-edge technologies. This advanced course is designed to suit students who plan to pursue research careers in molecular cell biology or related disciplines.

Biochemistry Level IV

BIOC4318
Biochemistry 4 Honours Full-Time
Staff Contact: Associate Professor Aldo Bagnara
Enrolment requires School approval
UOC48 HPWO S1 S2
Advanced training in selected areas of biochemistry including a supervised research program that places emphasis on the use of specialised techniques relevant to the research area. A written thesis on the research is required. The Honours program includes a formal component of seminars, an essay and participation in discussion groups.

BIOC4428
Molecular Biology 4 Honours Full-Time
Staff Contact: Associate Professor Aldo Bagnara
Enrolment requires School approval
UOC48 HPWO S1 S2
Advanced training in selected areas of molecular biology including a supervised research program that places emphasis on the use of specialised techniques relevant to the research area. A written thesis on the research is required. The Honours program includes a formal component of seminars, an essay and participation in discussion groups.
These are courses taught within programs offered by other faculties. For further information regarding the following courses see the Faculty of Medicine Handbook.

**BIOC1319**  
Biochemistry for Medical Students

**BIOC2329**  
Medical Biochemistry and Genetics

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### Biological Science Registration Centre

(for courses offered by the School of Biological Science)

Registration will be held in Room G21, Biological Sciences Building as follows:

- **14-15 Feb** (Mon-Thurs) 10.00am-3.00pm
- **19-23 Feb** (Mon-Thurs) 10.00am-4.00pm

Students must obtain practical slots at that time for:

- BIOS2011 Evolutionary and Physiological Ecology
- BIOS2621 Genetics (Advanced Level)
- BIOS2051 Flowering Plants
- BIOS3061 Vertebrate Zoology
- BIOS3071 Conservation Biology and Biodiversity
- BIOS3671 Conservation Biology and Biodiversity (Advanced Level)
- BIOS3111 Population and Community Ecology
- BIOS3611 Population and Community Ecology (Advanced Level)

Pre-enrolment or enrolment in another faculty does not automatically entitle you to a place in your chosen practical time. You must obtain a seat from the Biological Science Registration Centre.

Students enrolling in other Biological Science courses not listed above, do not need to sign on at the Biological Science Registration Centre but must attend the first lecture of the relevant course for practical assignments and further details.

The location and timetable of lectures and practicals for all courses in the School of Biological Science can be obtained from the notice boards on the fifth floor of the Biological Sciences Building.

**BIOS1101**  
Evolutionary and Functional Biology  
**Staff Contact:** Associate Professor Paul Adam  
**UOC6 HPW5 S2**

**Notes:** Practical and tutorial seat assignments must be obtained at the Biological Science Student Office (Room G27 Biological Sciences Bld) BEFORE Session 2 starts. The Course Guide is available for purchase during enrolment week. Equipment required for practical classes is listed in the Course Guide and must be purchased before session starts. Students must consult it for details of the course and assessments. The course commences in Week 1.

The course is concerned with the basic characteristics of all life. The chemistry of life is covered with emphasis on the ways in which living things construct and break down macromolecules. The way in which the genetic code controls these processes depends to a great extent on the structure and function of cell components, and cell biology is a major component of the course. The final topic is genetics - the way in which the genetic code is inherited and the ways in which it can be modified.

**BIOS1401**  
Biology (Optometry)  
**Staff Contact:** Associate Professor Paul Adam  
**UOC4 HPW4 S1**

**Notes:** Available only to students in Optometry programs 3950 and 3951.

The course covers the basic principles of cellular and animal biology. Includes practical work.

**BIOS2011**  
Evolutionary and Physiological Ecology  
**Staff Contact:** Dr Rob Brooks  
**UOC6 HPW5 S1**  
**Assumed Knowledge:** BIOS1101 and BIOS1201  
**Notes:** Students must enrol at the Biological Science Registration Centre, Room G21, Biological Sciences Building.

Introduction to functional relationships between living organisms and the environments in which they live. Emphasis on interactions within and between populations, ecological energetics, ecophysiology, and the theory of evolution by natural selection. Plants, animals and microbes are covered. Also serves as an introduction to the process of scientific enquiry.

**BIOS2021**  
Genetics  
**Staff Contact:** Dr William Sherwin  
**UOC6 HPW5 S2**  
**Excluded:** BIOS2621  
**Assumed Knowledge:** BIOS1101 and BIOS201, CHEM1011 or CHEM1101  
**Notes:** Enrolment in this course may be subject to quota restrictions. Such restrictions will only apply to students taking this course as an elective. Students must enrol at the Biological Science Registration Centre, Room G21, Biological Sciences Building.


**BIOS2031**  
Biology of Invertebrates  
**Staff Contact:** Associate Professor Peter Greenaway  
**UOC6 HPW5 S2**  
**Assumed Knowledge:** BIOS1101 and BIOS1201  
**Notes:** Enrolment in this course may be subject to quota restrictions. Such restrictions will only apply to students taking this course as an elective. There is a compulsory field camp during mid session break.

A comparative study of morphology, taxonomy, functional biology and evolutionary relationships of invertebrates. Emphasis on major phyla and marine forms. Practical work includes anatomy of living and preserved specimens (including dissections), the pragmatic use of identification keys and how animals adapt to the environment. Personal expenses will be incurred.

**BIOS1201**  
Molecules, Cells and Genes  
**Staff Contact:** Associate Professor Paul Adam  
**UOC6 HPW5 S1**  
**Assumed Knowledge:** HSC Exam Score: Physics 53-100, or Chemistry 53-100, or Geology 53-100, or Biology 53-100, or 3 unit Science 90-150, or 4 unit Science 1-50  
**Notes:** Assumed knowledge for BIOS1201 is minimal. If you believe that your academic background is not appropriate, but would like to do Biology, please consult the Director. Practical and tutorial seat assignments must be obtained at the Biology Enrolment Centre on the day of enrolment. The course guide is available for purchase during enrolment week. Equipment required for practical classes is listed in the Course Guide and must be purchased before session starts. Students must consult it for details of the course and assessments. The course commences in Week 1.
BIOS2041
Biometry
Staff Contact: Associate Professor Ross McMurtrie
UOC6 HPW5 S1
Assumed Knowledge: BIOS1101, BIOS1201 and MATH1041

BIOS2051
Flowering Plants
Staff Contact: Professor Anne Ashford
UOC6 HPW5 S2
Assumed Knowledge: BIOS1101 and BIOS1201
Note/s: Enrolment in this course may be subject to quota restrictions. Such restrictions will only apply to students taking this course as an elective. Students must enrol at the Biology Enrolment Centre, Room G21, Biological Sciences Building.
Basic plant biology including cell structure, plant morphology and anatomy, water and sugar transport, seed structure and physiology, plant growth and development, reproduction, leaves and photosynthesis, roots, micro-organisms and nutrition, evolution of land plants and plant taxonomy. Practical work: plant anatomy and light microscopy, plant identification.

BIOS2061
Vertebrate Zoology
Staff Contact: Dr Peter Banks
UOC6 HPW5 S1
Assumed Knowledge: BIOS1101 and BIOS1201
Note/s: Practical class allocations must be obtained during re-enrolment week from room G21, Biological Science Building. Enrolment in this course may be subject to quota restrictions. Such restrictions will only apply to students taking this course as an elective.
Comparative study of the Chordata, with particular reference to the vertebrates, including morphology, systematics, evolution and natural history, with reference to selected aspects of physiology and reproduction. Practical work to supplement lectures.
BIOS3091
Marine and Aquatic Ecology
Staff Contact: Dr Alistair Poore
UOC6 HPWS S2
Assumed Knowledge: BIOS2011 or BIOS2041

Ecology of marine and freshwater systems, emphasising benthic communities. Population and community dynamics of these systems. Evolution of life histories in the light of constraints of aquatic systems. Emphasis on experimental approaches to aquatic ecology. Special topics considered include chemical ecology, plant/herbivore ecology, and applied aspects of the topic such as mariculture. A section on the biology and taxonomy of marine algae (seaweeds) is included. Fieldwork is an important component of the course.

BIOS3111
Population and Community Ecology
Staff Contact: Professor Barry Fox
UOC6 HPWS S2
Excluded: BIOS3611
Assumed Knowledge: BIOS1101, BIOS2011 and MATH1041 (or higher level of statistics)

Factors regulating dynamics of interacting populations, renewable resource management, ecosystem stability, cycles and chaos, simulation modelling in ecology, niche theory, competition, habitat selection, community structure, species diversity, island biogeography, ecological gradients. Succession following disturbance (fire, mining, or logging). Practical work is essential and may involve a field component.

BIOS3121
Evolution in the Australian Flora
Staff Contact: Associate Professor Christopher Quinn
UOC6 HPWS S1
Assumed Knowledge: BIOS2051

Techniques of plant systematics, including the recognition and classification of species, genera and higher order taxa. Assessment of evolutionary relationships using molecular and other data, and the use of computer models to reconstruct and test hypothetical phylogenies, illustrated by applications to some of the major groups. Traces some important lineages in the Australian land flora and examines the relationships of these beyond Australia.

BIOS3161
Life in Arid Lands
Staff Contact: Dr David Croft
UOC6 HPW5
Assumed Knowledge: BIOS2051 and BIOS2031 or BIOS2061 or equivalent knowledge of the systematics and morphology of animals and plants.

Forty-four percent of Australia is desert and a further 37% is semi-arid grassland or shrub communities. These and lands contribute much to our unique biodiversity. We examine the history of the formation of the Australian arid lands, their characteristics relative to other arid parts of the world, the evolutionary history of the flora and fauna, adaptations of plants and animals to arid environments, the major arid lands ecosystems and conservation of biodiversity. We apply biological knowledge to issues of land degradation, salination of soils, dryland farming, feral animal control and wildlife management for a sustainable future. A field trip to Western NSW is an essential part of the course and students will incur expenses.

BIOS3301
Population and Community Ecology for Environmental Engineers
Staff Contact: Professor Barry Fox
UOC3 HPW3 S2
Notes: Restricted to Environmental Engineering Programs.

Factors regulating dynamics of interacting populations, renewable resource management, ecosystem stability, cycles and chaos, simulation modelling in ecology, niche theory, competition, habitat selection, community structure, species diversity. Plant and animal succession following disturbances such as fire, mining and logging. Rehabilitation and restoration procedures following disturbance. Appropriate tutorial topics.

BIOS3601
Advanced Field Biology
Staff Contact: Dr Peter Banks
UOC6 HPW45 S1
Assumed Knowledge: Familiarity with principles of systematics and with major taxa of plants.
Note/s: Available to students in 3990 (Advanced Science, Life Sciences) with unfilled places available to students in courses 3976 (Enironmental Science, Biological Environments) and 3970 (Biological Science and Ecology Majors with a credit average).

An advanced practical training in diversity, systematics, biology and identification of terrestrial animals and plants. The course is run principally as an intensive 1 week course at Smith's Lake Field Station during the Easter break. Students will receive theoretical and practical training in current methods of trapping, collecting and identifying animals and plants, estimation of population size, biodiversity, the conduct of animal surveys, and data analyses. The course coverage will include both vertebrate and invertebrate animals and plants.

BIOS3611
Population and Community Ecology (Advanced)
Staff Contact: Professor Barry Fox
UOC6 HPW6 S2
Excluded: BIOS3611
Assumed Knowledge: BIOS1101, BIOS2011, BIOS2041 and MATH1041 (or higher level of statistics)
Notes: Available to students in 3990 (Advanced Science, Life Sciences) and, subject to availability of places, to students in BEpvironSci (Biology and Marine) and in 3970 (Biological Science, Ecology and Biological Oceanography Majors with a credit average or better in BIOS courses).

Factors regulating dynamics of interacting populations, renewable resource management, ecosystem stability, cycles and chaos, simulation modelling in ecology, niche theory, competition, habitat selection, community structure, species diversity, island biogeography, ecological gradients, succession following disturbance (fire, mining or logging). Students will be required to undertake and write a report on, an approved research project, as part of their assessment in this subject. The topics for these studies will be drawn from the lecture content. Participation in a field component of practical work will be an integral part of this subject and will complement an advanced level of data analysis using a variety of different computer packages.

BIOS3671
Conservation Biology and Biodiversity (Advanced Level)
Staff Contact: Dr William Sherwin
UOC6 HPW6 S1
Excluded: BIOS3071
Assumed Knowledge: BIOS1101 and BIOS1201
Notes: Available to students in 3990 (Advanced Science, Life Sciences) and, subject to availability of places, to other high performing students. Students must enrol at the Biology Enrolment Centre, Room G21, Biological Sciences Building. Applications of community biology, population ecology and genetics to management of environmental problems in nature and artificial ecosystems, including Australian examples. Nature and importance of global diversity, management and design of programs for the conservation of species and ecosystems, including reserves, off site conservation, and computer simulations. Field excursions are compulsory and will involve expense to individual students. Current conservation issues will be addressed in small group projects.

BIOS3681
Ocean Biology & Fisheries (Advanced Level)
Staff Contact: Dr Iain Suthers
UOC6 HPWS S1
Excluded: BIOS3081
Assumed Knowledge: BIOS2031, BIOS2041
Notes: Available to students in 3990 (Advanced Science, Life Sciences) and, subject to the availability of places, to students in BEpvironSci (Biology and Marine) and in 3970 (Biological Science Ecology and Biological Oceanography Majors with a credit average or better in BIOS courses).
credit average or better in BIOS courses). A compulsory field trip will be held during the mid-seesional.

Marine pelagic and estuarine habitats. The practical application of theory to the ocean environment and its effect on the life of marine organisms. Emphasis on the biology of phytoplankton, zooplankton and fish, together with the study of fisheries. Includes management, marine technology, computer simulations, conservation, other marine vertebrates, aquaculture and environmental concerns. Technical skills, taxonomy and sampling design. Personal expenses will be incurred. The Advanced Level has fewer laboratories, but includes a tutorial, use of specialised equipment, as well as a seminar series.

Biological Science Level IV
Two types of Honours plan are offered at Level 4 with four disciplinary streams in each. Stream A is research oriented and includes a 42 Units of Credit research project and training in associated research skills. Strand B offers a broader training and includes 24 Units of Credit project and 24 Units of Credit course work.

Strand A
Full year (42UOC) research project and "Essential Skills for Biology Honours".
Required course material comprises:
BIOS4511 Essential skills for Biology Honours
and one 42UOC project course from the list below
BIOS4517 (BIOS4513 if PT) Biological Science Honours A
BIOS4527 (BIOS4523 if PT) Botany Honours A
BIOS4537 (BIOS4533 if PT) Zoology Honours A
BIOS4547 (BIOS4543 if PT) Ecology Honours A
Staff Contact: A/Prof C Quinn
S1, S2
Prerequisite/s: Completion of requirements for Stages 1-3 of the Advanced Science Plan in Ecology of Biological Science, or a Major in Ecology or Biological Science with 36 Units of Credit in stage 3 courses at a credit average or better.
Note/s: If enrolment for Stage 4 is part-time, students must complete the course work requirements in year 1 and the research project in year 2.

Strand B
Half year (24UOC) research project and 24UOC of course work.
Required course material comprises:
BIOS4511 Essential skills for Biology Honours
BIOS4521 Special topics in Biology
One 24UOC project course from the list below:
BIOS4514 (BIOS4512 if PT) Biological Science Honours B
BIOS4524 (BIOS4522 if PT) Botany Honours B
BIOS4534 (BIOS4532 if PT) Zoology Honours B
BIOS4544 (BIOS4542 if PT) Ecology Honours B
and 12 UOC biology courses at Stage 3 (that have not been completed previously) or other science courses approved by the Honours Coordinator.
Staff Contact: Associate Professor C Quinn
Prerequisite/s: Completion of requirements for Stages 1-3 of the Advanced Science Plan in Ecology or Biological Science or a major in Ecology or Biological Science with a credit average or better in stage 3 courses.
Note/s: If enrolment for Stage 4 is part-time, students must complete the course work requirements in Year 1 and the research project will be conducted in Year 2.

BIOS4511
Essential Skills Biology Honours
Staff Contact: Associate Professor Christopher Quinn
Enrolment requires School approval
UOC6 S1 S2
Prerequisite/s: Completion of requirements for Honours in Biology or other discipline area.
Corequisite/s: An honours research project in biology or related discipline area.
The course covers essential skills needed for the Honours project and any subsequent degree as well as in outside employment. Principal topics covered include presentation skills (written, oral and audiovisual including computer-aided presentations), database and library usage, information retrieval and usage of major computer packages as well as more specific research skills which may be tailored to particular interest groups.

BIOS4521
Special Topics in Biology
Staff Contact: Associate Professor Christopher Quinn
Enrolment requires School approval
UOC6 S1 S2
Note/s: Available to students enrolled in Strand B of BIOS Honours, Strands B and C of ENVS Honours and other Honours students in a biological discipline as approved by the Honours Coordinator.

Literature research and presentation assignments in areas of biology not specifically covered in other courses in the program. The program is designed to expand coverage of biological topics and to integrate material present in earlier BIOS courses; Provide experience in location, presentation and discussion of biological information.

BIOS0006
Special Program (Biological Science)
Staff Contact: School Office
Enrolment requires School approval
UOC6 S1 S2
Note/s: Individually designed project courses generally available only to overseas students.

BIOS0007
Special Program (Biological Science)
Staff Contact: School Office
Enrolment requires School approval
UOC12 S1 S2
Note/s: Individually designed project courses generally available only to overseas students.

BIOS0008
Special Program (Biological Science)
Staff Contact: School Office
Enrolment requires School approval
UOC18 S1 S2
Note/s: Individually designed project courses generally available only to overseas students.

BIOS0009
Special Program (Biological Science)
Staff Contact: School Office
Enrolment requires School approval
UOC24 S1 S2
Note/s: Individually designed project courses generally available only to overseas students.
Biotechnology

Biotechnology Level I

BIOT1011 Introductory Biotechnology
Staff Contact: Dr Dianne Glenn
UOC6 HPW4 S2

This course will focus on the overview of the impact of biotechnology in the achievement of contemporary objectives in the field of medicine, plant and animal science, in food, marine and environmental sciences and draw comparisons with conventional technologies. The concepts of bioethics, patenting and other regulatory issues will also be introduced. The subject is intended to cover the broad concept of biotechnology, its historical and contemporary relevance.

Biotechnology Level III

BIOT3011 Biotechnology A
Staff Contact: Dr Dianne Glenn
UOC6 HPW8 S1
Prerequisite/s: BIOT3011

The basic principles involved in the operation of microbial processes on an industrial scale. Includes: the selection, maintenance and improvement of microorganisms using conventional and recombinant genetics; the influence of physical and chemical factors on the microbial environment; the control of environmental factors; the effects of operational patterns on batch and continuous flow cultivation; aeration and agitation; scaleup of microbial processes; air and media sterilisation; the harvesting, purification and standardisation of products; the principles involved in microbial processes for chemical, pharmaceutical and food production. The laboratory component includes manipulation of industrially important microorganisms, and laboratory scale fermenter operation, and may include industrial seminars. A review of current research directions in biotechnology.

BIOT3021 Biotechnology B
Staff Contact: Professor Peter Rogers
UOC6 HPW6 S2
Prerequisite/s: BIOT3011

Application of principles of biotechnology to the analysis and design of microbial processes of industrial relevance (ethanol, single cell protein, fermented foods and beverages, amino acids and vitamins, microbial polysaccharides, microbial enzymes, secondary metabolites including antibiotics, products of mammalian cell culture, waste treatment processes, microbial leaching and metal recovery from low grade minerals). Emphasis on quantitative approach: mass and heat balance calculations, kinetic and thermodynamic analysis, equipment design and specification, process design, process simulation, plant location, application of optimisation techniques. The economics of microbial processes are considered and comparison made with alternative modes of production or treatment. The economics of agroindustry in Australia using microbial processes. Marketing of fermentation products, clinical trials required, legal constraints, patent rights. Technical and economic feasibility studies. A design project is included based on experimental data.

BIOT3061 Biopharmaceuticals
Staff Contact: Dr Stephen Mahler
UOC6 HPW6 S2
Prerequisite/s: BIOT2101, BIOT2201

The human health care industry is entering an exciting new era, with a wide range of biopharmaceuticals now approved for human use. The sequencing of the human genome, the evolution of new methods for the production of recombinant biopharmaceuticals, the ability to produce human antibodies and recent developments in gene therapy have seen biopharmaceutical discovery and production become a major global focus of research activity. The course is designed to give students a detailed insight into techniques in biopharmaceutical discovery, isolation and characterization. The practical work includes production of a model recombinant biopharmaceutical by cell culture, including downstream processing and characterization using modern techniques analytical biotechnology including mass spectrometry. On-line bioinformatics tutorials and assignments associated with model biopharmaceuticals are included in the practical program.

BIOT3071 Commercial Biotechnology
Staff Contact: Professor Peter Gray
UOC6 HPW4 S2

This subject covers aspects important to the commercialisation of biotechnology and related industries and includes: The definition, generation and protection of intellectual property (IP), and protection of patents in Australia and overseas, trademarks and copyright, role of confidentiality in protecting non-patentable IP; licensing arrangements and trading in IP. Innovation Management, planning and management of R&D programs, preparation and assessment of business plans. Sources of funding for biotechnology R&D, both corporate and government, establishment of business ventures, joint ventures and strategic alliances. Regulatory and legislative aspects of genetically modified organisms (GMOs) and environmental considerations and concerns, policies in Australia, USA and Europe regarding their use in agricultural, food and pharmaceutical industries. Introduction to the concepts of good manufacturing practice (GMP) for therapeutic goods; regulatory procedures for biotechnology derived therapeutics, process validation. Marketing, licencing and business case studies.

BIOT3081 Environmental Biotechnology
Staff Contact: Dr John Foster
UOC6 HPW6 S2

This course discusses the commercial applications of bioprocesses to environmental problems. The principles of microbial sensing and adaption to extreme environments, as discussed in Environmental Microbiology (MICR3071), are expanded in the bioremediation of polluted environments and the recovery of important minerals and precious metals. Similarly, the application of microorganisms in other key environmental areas of viodeterioration, biomineralogy, biodegradable plastics, waste and water treatment and biocntrol are also discussed in this subject.

BIOT3100 Fundamentals of Biotechnology
Staff Contact: Dr Frances Foong, Dr John Foster
UOC3 HPW2 S1 S2
Note/s: Restricted to programs 3055, 3100 and 3040.

This subject introduces important fundamental principles of biotechnology including fermentation and biocatalysis, protein synthesis and engineering and recombinant DNA technology. The applications of these principles are then explored in a series of lectures focusing on environmental biotechnology, drug recovery and production, plant biotechnology, bioresources and the economics of bioprocesses. The subject is designed to provide an understanding of the principles and applications of biotechnology both in its own and as alternatives to chemical synthesis.

BIOT3611 Biotechnology A (Advanced)
Staff Contact: Dr Dianne Glenn
UOC6 HPW6 S1
Prerequisite/s: BIOT2101, BIOT2201

This course is available to Advanced Science students or as an advanced option to students in other appropriate science programs. The advanced course differs from Biotechnology A (BIOT3011) by providing greater opportunities for self-directed learning, separate laboratory practicals, and for research planning under the guidance of mentors from the academic or research staff. The lecture component of the course assessment differs from that in BIOT3011 in the number and content of lecture and laboratory exams.
The goal of the course is to build on the fundamentals acquired in previous courses and develop an understanding of the commercial applications of biological systems. The course will consider the principles involved in microbial processes for chemical, pharmaceutical and food production on a commercial scale. The lecture component will address the nature of the genetic tools used to optimise product formation; the influence of environmental factors on microbial productivity; biodiversity issues; bioprocesses; the nature of industrially important cell types from prokaryotic to higher eukaryotic cells; and the commercial and marketing issues inherent in biotechnological processes. Lectures are supplemented by industrial presentations. The laboratory component includes manipulation of industrially important microorganisms. The development of team skills in a critical review of current research areas is a feature of the course. The course is intended for students interested in the commercial and multidisciplinary perspectives of processes using microbial and other cell types.

**BIOT3621 Biotechnology B : Biotechnology and Bioprocessing (Advanced)**

**Staff Contact:** Professor Peter Rogers  
**Prerequisite/s:** BIOT3011

The course covers the bioprocessing and economic principles involved in the operation, development and design of large scale biotechnology-based processes. It includes analysis of fermentation kinetics, batch and continuous modes of operation, bioprocess optimisation, principles of fermentor scale up, downstream processing and bioprocess design as well as principles of economic feasibility analysis. Selected bioprocesses will be examined in detail, including ethanol from renewable resources, amino acid production, antibiotics, large scale manufacture of plasmid DNA, production of viral vectors for gene therapy and the manufacture of therapeutic recombinant proteins from bacterial, yeast and mammalian hosts. Laboratory sessions and case studies will supplement lecture material.

The Advanced Course in Biotechnology B will cover the same core material as Biotechnology B, but will have a more extensive laboratory/research component integrated with a technical/economic feasibility evaluation and business plan for a new recombinant product.

**Biotechnology Level IV**

**BIOT4053 Research Project - Biotechnology**

**Staff Contact:** Dr Stephen Mahler  
**Enrolment requires School approval**  
**UOC36 HPW18 S1 S2**  
**Note/s:** Restricted to programs 3052.

The experimental investigation of some aspects of biotechnology.

**BIOT4063 Research Project - Bioprocess Engineering**

**Staff Contact:** Professor Peter Rogers  
**Enrolment requires School approval**  
**UOC12 HPW6 S1 S2**  
**Note/s:** Restricted to programs 3055.

The experimental investigation of some aspects of bioprocess engineering.

**BIOT4064 Research Project Theory**

**Staff Contact:** Professor Peter Rogers, Dr Chris Marquis  
**UOC3 S1**

The course requires that the student elect a topic in Bioprocess Engineering, undertake a literature survey on that topic and produce a report.

**BIOT4065 Research Project Practice**

**Staff Contact:** Professor Peter Rogers, Dr Chris Marquis  
**UOC6 S2**

The experimental investigation of some aspects of Bioprocess Engineering.

**BIOT4073 Biotechnology Honours Full-Time**

**Staff Contact:** Dr Dianne Glenn  
**Enrolment requires School approval**  
**UOC48 S1 S2**

Advanced formal training in selected areas of biotechnology and participation in one of the School's research projects. 
**Note:** Restricted to programs 3990.

**BIOT4083 Biotechnology Honours Part-Time**

**Staff Contact:** Dr Dianne Glenn  
**Enrolment requires School approval**  
**UOC24 S1 S2**

**Note/s:** Restricted to Program 3990.

Advanced formal training in selected areas of biotechnology and participation in one of the School's research projects.

**BIOT4093 Biological Process Engineering**

**Staff Contact:** Dr Chris Marquis  
**Prerequisite/s:** MICR2201  
**Note/s:** Restricted to programs 3055.

This course includes coursework in bioprocess engineering principles, aspects of food engineering and modern biotechnology techniques. Also incorporated in this subject is a practical component. Bioprocess engineering principles covered include basic metabolic pathways, stoichiometry and kinetics of growth and product formations, heat balances, secondary metabolic productions and structural kinetic models, sterilisation, oxygen mass transfer, mixing, instrumentation, down- stream processing, legal and ethical issues related to biotechnology products. Food engineering areas covered include the application of modelling techniques to drying and heat transfer. Modern biotechnology methods covered include a variety of methods to generate and characterise production of monoclonal antibodies including hybridoma production, recombinant methods and phage display of antibodies.

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**Cross Faculty Courses**

**BSSM1110 Perspectives in Medical Science 1**

**Staff Contact:** Dr Susan Hardy  
**UOC3 HPW2 S2**

**Note/s:** This course is only available for students in Program 3991 Bachelor of medical Science and Program 3821 Science/Medicine. Assessment includes essay, tutorial paper, open book class test and participation.

In this course we examine the historical background to the advent of scientific medicine in the 19th and 20th centuries, looking particularly at the intellectual climate which made such innovations possible.

**BSSM2220 Perspectives in Medical Science 2**

**Staff Contact:** A/Prof J Carmody, Dr B Freeman  
**UOC3 S2**

This course is based on a series of colloquia given by visiting specialists on topics of historical, philosophical and contemporary relevance in medical science. The course is only available for students enrolled in program 3991 Bachelor of Medical Science and program 3821 Science/Medicine. For further information regarding this course, please contact the School of Physiology and Pharmacology or the School of Anatomy.
Board of Studies in Science and Mathematics Level IV

BSSM4013
Combined Geology Physics Honours Full-Time
Staff Contact: Associate Professor M Ashley
Enrolment requires School approval
UOC24 S1 S2
Combines Geology and Physics in Program 0100, made by arrangement with the Heads of the two Schools.

BSSM4023
Ecology 4 Honours Full-Time
Staff Contact: School Office
Enrolment requires School approval
UOC24 S1 S2

BSSM4103
Genetics 4 Honours Full-Time
Staff Contact: School Office
Enrolment requires School approval
UOC24 S1 S2
The General Education requirements are met by participation in the program offered by the supervisor's School.

Chemistry

Chemistry Level I

CHEM1000
Chemistry at the Cutting Edge
Staff Contact: Dr Grainne Moran
UOC6 HPW6 S1 S2
Assumed Knowledge: A basic knowledge of chemistry (equivalent to one year of high school chemistry)

CHEM1011
Fundamentals of Chemistry 1A
Staff Contact: Dr Peter Chia
UOC6 HPW6 S1 S2
Assumed Knowledge: A basic knowledge of chemistry (equivalent to one year of high school chemistry)

CHEM1021
Fundamentals of Chemistry 1B
Staff Contact: Dr Peter Chia
UOC6 HPW6 X1 S2
Prerequisite/s: CHEM1011

CHEM1031
Higher Chemistry 1C
Staff Contact: Dr Peter Chia
UOC6 HPW6 S1
Assumed Knowledge: Equivalent to a good standard in high school chemistry (HSC 2 unit chemistry [75 - 100] or equivalent).

Higher Chemistry 1D
Staff Contact: Dr Peter Chia
UOC6 HPW6 S2
Prerequisite/s: CHEM1031


Chemistry Level II

CHEM2011
Physical Chemistry
Staff Contact: Dr Neil Duffy
UOC6 HPW6 S2
Prerequisite/s: CHEM1101 and CHEM1201 or CHEM1011 and CHEM1021 or CHEM1031 and CHEM1041 and MATH1031 or MATH1231 or MATH1241

CHEM2021
Organic Chemistry
Staff Contact: Dr Neil Duffy
UOC6 HPW6 S2
Prerequisite/s: CHEM1101, CHEM1201, CHEM1011 and CHEM1021 or CHEM1031 and CHEM1041

CHEM2031
Inorganic Chemistry and Structure
Staff Contact: Dr Neil Duffy
UOC6 HPW6 S1
Prerequisite/s: CHEM1101, CHEM1201, CHEM1011 and CHEM1021 or CHEM1031 and CHEM1041

CHEM2041
Chemical and Spectroscopic Analysis
Staff Contact: Dr Neil Duffy
UOC6 HPW6 S1
Prerequisite/s: CHEM1101 and CHEM1201 or CHEM1011 and CHEM1021 or CHEM1031 and CHEM1041 and MATH1031 or MATH1231 or MATH1241

CHEM2839

CHEM2849

Note/s:

Alternative courses are available to avoid timetable clashes. Please consult with School of Chemistry.


CHEM2849

Note/s:

Alternative courses are available to avoid timetable clashes. Please consult with School of Chemistry.

Principles and applications of chemical and analytical spectroscopy. Statistical treatment of data. Titrimetric and potentiometric analysis. Separation techniques.
CHEM2817
Physical Chemistry
Staff Contact: Dr Neil Duffy
UOC6 HPW6 S1
Prerequisite/s: CHEM1101 and CHEM1201 or CHEM1011 and CHEM1021 or CHEM1031 and CHEM1041 and MATH1231 or MATH1241 or MATH1021
Excluded: CHEM2011, CHEM2818

CHEM2821
Biological Organic Chemistry
Staff Contact: Dr Neil Duffy
UOC6 HPW6 S1
Prerequisite/s: CHEM1101, CHEM1201 or CHEM1011 and CHEM1021 or CHEM1031 and CHEM1041
Note/s: A satisfactory performance in CHEM2821 may be accepted as a prerequisite for CHEM3021. Consult the School of Chemistry.

CHEM2839
Inorganic Chemistry
Staff Contact: Dr Neil Duffy
UOC6 HPW6 S2
Prerequisite/s: CHEM1101, CHEM1201 or CHEM1011 and CHEM1021 or CHEM1031 and CHEM1041
Excluded: CHEM2031
Electronic structure of atoms and molecules structure, energetics and banding in the solid state. Principles of co-ordination chemistry. Occurrence, preparation, properties and reactions of selected compounds of transition and main group elements.

CHEM2849
Analytical Chemistry
Staff Contact: Dr Neil Duffy
UOC6 HPW6 S2
Prerequisite/s: CHEM1101 and CHEM1201 or CHEM1011 and CHEM1021 or CHEM1031 and CHEM1041 and MATH1231 or MATH1241 or MATH1021 or MATH1041
Excluded: CHEM2041

CHEM2921
Food Chemistry 1
Staff Contact: Dr Neil Duffy
UOC6 HPW6 S2

Chemistry Level III
Note/s: All courses are available only if there is sufficient demand.

CHEM3011
Physical Chemistry
Staff Contact: Dr Grainne Moran
UOC6 HPW6 S1
Prerequisite/s: 6 units of credit of Level 1 PHYS courses and CHEM2011 and CHEM2031 or CHEM2839 and CHEM2041
Elements of symmetry and group theory appropriate to molecular structure and spectroscopy. Quantum chemistry; atomic and molecular spectroscopy - principles and applications.

CHEM3021
Organic Chemistry
Staff Contact: Dr Grainne Moran
UOC6 HPW6 S1
Prerequisite/s: CHEM2021
Synthesis and reactions of the principal types of aromatic heterocyclic systems. Stereochemistry. Synthesis and reactions of carbocyclic systems. Application of spectroscopic methods, eg nuclear magnetic resonance, mass spectrometry, the determination of organic structures.

CHEM3031
Inorganic Chemistry
Staff Contact: Dr Grainne Moran
UOC6 HPW6 S1
Prerequisite/s: CHEM2031 or CHEM2839
Descriptive chemistry and bonding, stereochemistry, magnetic and spectroscopic properties, stabilities of complexes of normal and inner transition series elements. Stabilisation of oxidation states. Aspects of the chemistry of p-block elements including the inert pair effect.

CHEM3041
Analytical Chemistry
Staff Contact: Dr Grainne Moran
UOC6 HPW6 S2
Prerequisite/s: CHEM3011 or CHEM3021 or CHEM3031 or CHEM3041
Instrument design, theory and operating principles for the following instrumental areas: electrochemical, atomic and molecular spectroscopy, chromatography, mass spectrometry, automated analysis.

CHEM3101
Project Laboratory in Chemistry
Staff Contact: Dr Grainne Moran
UOC6 HPW6 S2
Prerequisite/s: CHEM3011 or CHEM3021 or CHEM3031 or CHEM3041
Group projects in instrumental and synthetic chemistry. Students choose two 7-week projects, one in each area. The course includes familiarisation with literature and database searching, project planning and risk assessment, preparation of oral and written project reports.

CHEM3201
Topics in Contemporary Chemistry A
Staff Contact: Dr Grainne Moran
UOC6 HPW6 S2
Prerequisite/s: CHEM3011 or CHEM3021 or CHEM3031 or CHEM3041
Note/s: Re CHEM3201 and CHEM3202 Topics in Contemporary Chemistry: A wide range of topics will be offered each year (8 - 12 depending on availability and interest). Students can select 4 topics (6UOC) or 8 topics (12UOC).

An interdisciplinary course emphasising the latest advances in chemistry. A diverse range of topics will be offered each year from which students will select four. Topics will vary depending on availability and interest. Indicative Topics: supramolecular chemistry and molecular recognition; synthetic strategies in organic chemistry; molecular modelling and drug design; organometallic chemistry; surface chemistry and analysis; solid-state chemistry; polymer structure and characterisation; introduction to chemometrics; mass spectrometry.

CHEM3202
Topics in Contemporary Chemistry B
Staff Contact: Dr Grainne Moran
UOC12 HPW6 S2
Prerequisite/s: CHEM3011 or CHEM3021 or CHEM3031 or CHEM3041
Note/s: Re CHEM3201 and CHEM3202 Topics in Contemporary Chemistry: A wide range of topics will be offered each year (8 - 12 depending on availability and interest). Students can select 4 topics (6UOC) or 8 topics (12UOC).

An interdisciplinary course emphasising the latest advances in chemistry. A diverse range of topics will be offered each year from...
which students will select eight. Topics will vary depending on availability and interest. Indicative Topics: supramolecular chemistry and molecular recognition; synthetic strategies in organic chemistry; molecular modelling and drug design; organometallic chemistry; surface chemistry and analysis; solid-state chemistry; polymer structure and characterisation; introduction to chemometrics; mass spectrometry.

CHEM3301
Chemistry in Biological Systems
Staff Contact: Dr Grainne Moran
UOC6 HPW6 S2
Prerequisite/s: CHEM3021
Aspects of bioorganic, bioinorganic and bioanalytical chemistry including: Natural products chemistry, antibiotics and drugs, herbicides and pesticides. The occurrence, coordination and role of metals in biology, enzyme and immunosassays in chemical analysis, biosensors.

CHEM3311
Environmental Chemistry
Staff Contact: Dr Grainne Moran
UOC6 HPW6 S2
Prerequisite/s: CHEM3041
Selected topics in advanced environmental chemistry. Topics will be offered from a list including: heavy metals, detoxification mechanisms and inorganic speciation; sampling and strategies for environmental analytical chemistry; atmospheric chemistry and pollution mechanisms; case studies of organic pollutants and remediation mechanisms. The laboratory component includes environmental project work and an introduction to regulatory requirements.

CHEM3801
Physical and Chemical Analysis of Food
Staff Contact: Dr Grainne Moran
UOC6 HPW6 S1
Prerequisite/s: CHEM2921 or CHEM2021 and CHEM2801 or CHEM2041 or CHEM2949

CHEM3901
Environmental Toxicology
Staff Contact: Dr Grainne Moran
UOC6 HPW6 S2
Prerequisite/s: CHEM1101, CHEM1201 or CHEM1011 and CHEM1021 or CHEM1031 and CHEM1041
Note/s: Available only in the Environmental Science Degree. Students enrolled in other programs may seek permission to include this course.
Classification and properties of toxic substances. Biological properties of important classes of chemical compounds. Fate of xenobiotics in the human body, including detoxification and bioactivation. Chemical transformations of pollutants in the environment; air, water and soil pollution. Analysis of environmental pollutants at trace levels.

Chemistry Level IV

CHEM4003/CHEM4004
Advanced Chemistry 4 (Honours)
Staff Contact: Dr Gavin Edwards
UOC48 S3 or S2, S1
Prerequisite/s: Completion of an approved plan leading to a major in Chemistry in the Advanced Science degree, including at least 36UOC of Level III Chemistry.
Designed for those with a higher level of preparedness in Chemistry. A multifaceted course that will give students a high level of basic research skills, especially in critical evaluation of data and communication of results, but with a specialised focus on Chemistry. Consists of a selection of lectures and seminars on advanced topics in Chemistry and a research project.

CHEM4005
Chemical Sciences 4 (Honours)
Staff Contact: Dr Gavin Edwards
UOC48 S3
Prerequisite/s: Completion of an approved plan leading to a major in Chemistry in the 3 year Science degree, including at least 24UOC of Level III Chemistry.
Designed for those with broad interests in Science but with a wish to specialise in Chemistry. A varied program that will give students a high level of basic research skills, with emphasis on the critical evaluation of data and communication of results. Consists of a limited series of lectures and seminars on advanced topics in Chemistry, a literature review and a research project on a major topic outside the review area.

Servicing Courses
These are courses taught within programs offered by other Faculties or Schools.

CHEM1817
Chemistry 1ME
Staff Contact: Dr Peter Chia
UOC3 HPW3 S2
Excluded: CHEM1101, CHEM1201
Note/s: Restricted to Plan 3610, 3663, 3680, 3685, 3700 and 3985 program 0176. Alternative courses are available to avoid timetable clashes. Please consult with School of Chemistry.

CHEM1819
Biological Chemistry for Optometry Students A
Staff Contact: Dr Peter Chia
UOC6 HPW6 S1
Assumed Knowledge: A good knowledge of Chemistry (corresponding to HSC 2 Unit Chemistry 65-100)
Note/s: Restricted to program 3950.

CHEM1829
Biological Chemistry for Optometry Students B
Staff Contact: Dr Peter Chia
UOC6 HPW6 S2
Prerequisite/s: CHEM1819
Note/s: Restricted to program 3950.
Chemical Engineering Level I

COMP1001 Introduction to Computing
Staff Contact: Mr Anthony Papagelis
UOC6 HPW6 X1 S1 S2

Introduction to computing and basic skills training for competence with personal computers. Foundational concepts of hardware and software. History of computers, leading to modern practice in data processing, sound, graphics, animation, interfaces, the use of applications, programming languages and networks including the Internet. Practical training in MS Office applications and other software tools for the IBM PC, for graphic manipulation, Web page design, word processing, database, spreadsheet and elementary Visual Basic programming. Introduction to social and ethical issues of computer crime. The discriminating use of such technologies for a better world.

COMP1011 Computing 1A
Staff Contact: Mr Richard Buckland
UOC6 HPW6 S1 S2

Corequisite/s: MATH1131 or MATH1141
Excluded: COMP1811
Assumed Knowledge: HSC Maths: 2 units (90-100), or 2 and 3 unit (100-150), or 3 and 4 unit (100-200) or COMP1001

Defining problems, reasoning about and solving problems using Logic, Abstraction, Specification, Algorithms and Data Structures. Exposure to a functional programming language (Haskell) for practical experience with these concepts. Introduction to software engineering and professional ethics. Lab: programming assignments.

COMP1021 Computing 1B
Staff Contact: Dr Andrew Taylor
UOC6 HPW6 X1 S1 S2

Corequisite/s: COMP1101
Excluded: COMP1821, COMP2811

The objective of this course is for students to develop proficiency in programming in a high level imperative language and to develop a background of relevant knowledge and skills on which to base further study of computing. Topics covered include: fundamental data structures and algorithms, program testing and debugging and the structure of computer systems. Practical experience of these topics is supplied by laboratory programming exercises and assignments.

COMP1091 Computing with C
Staff Contact: Dr Kai Eneyelhardt
UOC6 HPW6 S1
Prerequisite/s: COMP1001
Excluded: COMP1011

Introduction to computers as workplace tools: operating systems, spreadsheets, databases, web searching and authoring, professional ethics in using computers. Introduction to problem solving via computers; defining problems, reasoning about problems, designing and testing solutions. Introduction to programming (in the C language): data, control, functions, libraries, fundamental algorithms. Practical work: laboratories and programming assignments.

COMP1711 Higher Computing 1A
Staff Contact: School Office
Enrolment requires School approval
UOC6 HPW7

Assumed Knowledge: There is no specific assumed knowledge. This course should be taken by those with HSC mark 2 and 3 unit Maths (145-150) or 3 and 4 unit Maths (186-200) or UAI > 97. As for COMP1011 but in greater depth.

COMP1721 Higher Computing 1B
Staff Contact: School Office
Enrolment requires School approval
UOC6 HPW7
As for COMP1021 but in greater depth and breadth.

Computer Science and Engineering Level II

COMP2011 Data Organisation
Staff Contact: Mr Ashesh Mahidadia
UOC6 HPW5 S1 S2
Prerequisite/s: COMP1021 or COMP1821

Data types and data structures: abstractions and representations; dictionaries, priority queues and graphs; AVL trees, splay trees, B-trees, heaps. File Structures: storage device characteristics, keys, indexes, hashing. Memory management. Lab: programming assignments including group project.

COMP2021 Digital System & Structures
Staff Contact: Dr Jingling Xue
UOC6 HPW5 S1 S2
Prerequisite/s: COMP1021 or COMP1821
Excluded: ELEC2012

This course aims to provide students with a knowledge of problem solving with digital systems (computer systems) and digital circuits. The basic building blocks of combinational and sequential circuits are introduced to develop circuit solutions to problems and to understand the design and operation of hardware models of digital and computer systems. The mapping of high level programming constructs (programs and data structures) through intermediate levels of abstraction to the hardware level of a computer system will be introduced.

COMP2711 Higher Data Organisation
Staff Contact: School Office
Enrolment requires School approval
UOC6 HPW7
Prerequisite/s: COMP1021 or COMP1821
As for COMP2011 but in greater depth and breadth.
The objective of this course is for students to develop proficiency in programming in a high level imperative language and to develop a background of relevant knowledge and skills on which to base further study of computing. Topics covered include: fundamental data structures and algorithms, program testing and debugging and the structure of computer systems. Practical experience of these topics is supplied by laboratory programming exercises and assignments.

Computer Science and Engineering Level III

COMP3111 Software Engineering
Staff Contact: Dr Albert Nymeyer
UC06 HPWS S1 S2
Prerequisite/s: COMP2011
Excluded: COMP9008
Informal specification: Data flow diagram methodology, analysis, design, testing, management and documentation of software. Formal specification: set theory, logic, schema calculus, case studies. The Z specification notation. Managing the project life cycle. CASE tools. A major group project is undertaken.

COMP3121 Algorithms and Programming Techniques
Staff Contact: Dr Richard Buckland
UC06 HPW5 S2
Prerequisite/s: COMP2011
Excluded: COMP9010, COMP3120

COMP3131 Parsing and Translation
Staff Contact: Dr Jingling Xue
UC06 HPW5 S2
Prerequisite/s: COMP2011
Excluded: COMP9102

COMP3211 Computer Architecture
Staff Contact: Dr Hossam Elgindy
UC06 HPW5 S2
Prerequisite/s: COMP2021 or ELEC2012
Excluded: COMP9211
Combinatorial and sequential circuit design; synchronisation, communication and arbitration; register transfer specification (Modal). Arithmetic Design Strategies. Memory Organisation: physical and virtual address space; operating system and compiler support; memory mapping and caching. Communications Organisation: shared memory, memory mapping; network systems. Processor Design: the instruction pipeline; hardwired and micro-programmed control; instruction sets; RISC and object-based processor organisation. Error Detection/Correction and Fault Tolerance; coding theory. Lab: major design project.

COMP3221 Microprocessors and Embedded Systems
Staff Contact: Dr William Matheson
UC06 HPW5 S2
Prerequisite/s: COMP2021
Excluded: ELEC2041, ELEC3020, COMP9221
The concept of a microprocessor system, busses, address spaces, memory devices, bus timing, bus standards, the VME bus, I/O device interfacing, polling, interrupts, DMA interfaces, the 68000 processor family, the C programming language, device drivers, the device driver software environment, other microprocessors, advanced topics. Laboratory work involves interfacing to and programming MC68000-series microprocessor-based systems. Lab: experimental work involving hardware and software.

COMP3231 Operating Systems
Staff Contact: Dr Jayasoniah
UC06 HPW5 S1 S2
Prerequisite/s: COMP2011, COMP2021
Excluded: COMP9201

COMP3311 Database Systems
Staff Contact: Dr Boualem Benatallah
UC06 HPW5 S1 S2
Prerequisite/s: COMP2011
Excluded: COMP9311, INFS3608

COMP3331 Computer Networks and Applications
Staff Contact: Dr Sanjay Jha Dr Hassan
UC06 HPW5 S1 S2
Prerequisite/s: COMP2011
Excluded: COMP9331, ELEC4352
Networking technology overview. Protocol design and validation using the finite state automata in conjunction with time-lines. Overview of the IEE802 network data link protocol standards. Addressing at the data link and network layers. Network layer services. Introduction to routing algorithms such as Distance Vector and Link State. Congestion control mechanisms. Internetworking issues in connecting networks. The Internet Protocol Suite overview. The Internet protocols IPv4 and IPv6. Address resolution using ARP and RARP. Transport layer: issues, transport protocols TCP and UDP. Application level protocols such as: File Transfer Protocol (FTP), Domain Name System (DNS) and Simple Mail Transfer Protocol (SMTP). There is a substantial network programming component in the assessable material.

COMP3411 Artificial Intelligence
Staff Contact: Dr Achim Hoffmann
UC06 HPW5 S1
Prerequisite/s: COMP2011
Excluded: COMP9414
learning. Philosophical and psychological issues. Lab: logic programming assignments.

COMP3421
Computer Graphics
Staff Contact: Dr Timothy Lambert
UOC6 HPW5 S1
Prerequisite/s: COMP2011
Excluded: COMP9415, COMP9701


COMP3511
Human Computer Interaction
Staff Contact: Dr Daniel Woo
UOC6 HPW5 S2
Prerequisite/s: COMP2011
Excluded: COMP9511

Provides an introduction to user-system interactions, both analysis and design. The approach is cognitive, focusing on matching user goals with computer technologies. Topics: the human information processing system, models of interaction, strategies for and process of design and evaluation. Project work is emphasised.

Computer Science and Engineering Level IV

COMP4001
Object-Oriented Software Development
Staff Contact: School Office
UOC6 HPW4 S1
Assumed Knowledge: Competency in C.
Note/s: Quota Applies.

This course will cover object-oriented design and implementation methods for complex software systems. Topics covered include: object-oriented program design techniques, object-oriented programming in C++, software reuse and designing for reuse, design patterns and styles, object persistence and distribution. Examples from a wide range of application areas will be used at all stages to illustrate concepts and techniques. Assessment will involve two short assignments and one substantial programming project to be carried out in small groups.

COMP4415
Logical Foundations of Artificial Intelligence
Staff Contact: School Office
Enrolment requires School approval
UOC6 HPW4 S1
Excluded: COMP4412
Note/s: Permission of Instructor required.

This course is a rigorous introduction to the logics that have been shown to be useful for knowledge representation and a wide range of reasoning in formal computer science. The first part covers the syntax and semantics of first-order logic. This syntactic component embodies a computable calculus for inference, while the semantic component shows how one may define the notion of "truth". A sound calculus is one in which no inference is untrue, while a complete calculus is one which is capable of inferring all truth. We prove soundness and completeness for a popular version of first-order logic. Then we use a consequence of this, called Modal Logic. See the instructor if you wish to find out details.

COMP4903
Industrial Training (BE)
Staff Contact: School Office
UOC0 HPW0 S1 S2
Prerequisite/s: CVEN2021

S1 or S2 Students enrolled in courses 3645, 3722, 3726 and 3728 must complete a minimum of 60 days industrial training. At least some of this should be obtained in Australia. Students are required to submit to the School evidence from their employers confirming completion of the prescribed training and a report, typically 2000 words long, summarising the work done and training received. Students will formally enrol in the subject in Year 4, although they are strongly encouraged to complete as much industrial experience as possible in the breaks between the early years of the course.

COMP4914
Computer Science 4 Honours Full Time
Staff Contact: School Office
UOC48 HPW0 S1 S2
Prerequisite/s: Computer Science Honours Program.

Current course description and notes provided by the Faculty of Engineering.

Economics

Economics Level I

ECOH1301
Australia in the International Economy in the Twentieth Century
Staff Contact: School Office
UOC6 HPW3 X1 S1 S2
Note/s: HSC minimum mark required - 2 unit Contemporary English (70-100), or 2 unit General English (60-100) or 2 unit English (50-100) or 3 unit English 1.

This course looks at the international economy at the end of the 19th century (trade, factor flows, and payments arrangements); problems of the international economy between the wars; the impact of World War II and the international economy in the post-war era; and Australian economic development and its relationship with the international economy in terms of economic fluctuations, problems of the inter-war period, growth of manufacturing, government policy and action, the importance of the mining industry, economic development and the distribution of income and wealth.

ECO1101
Microeconomics 1
Staff Contact: School Office
UOC6 HPW3 S1 S2
Note/s: HSC minimum mark required - 2 unit Contemporary English (70-100) or 2 unit General English (60-100) or 2 unit English (50-100) or 3 unit English 1 and 2 unit Mathematics 60 or 3 unit Mathematics 1 or 4 unit Mathematics 1.

Introduces economics as a social science: scarcity, resource allocation and opportunity cost; introductory analysis of consumer behaviour; the economics of firms and markets; production and costs; the classification and analysis of markets; efficiency concepts and market failure; the gains from international trade and the impact of trade restrictions; economic growth and structural change.

ECO1102
Macroeconomics 1
Staff Contact: School Office
UOC6 HPW3 S1 S2
Provides an introduction to the analysis of aggregate output, employment and economic growth and their relationship to the policy issues of unemployment, inflation and the balance of payments. Other topics include: social accounting and aggregate income and expenditure analysis; macroeconomic models of income determination; consumption and investment functions; the
role of money and financial institutions; interactions between goods and money markets in equilibrium and disequilibrium situations; and an analysis of recent Australian macroeconomic experience.

ECON1107
Elements of Environmental Economics
Staff Contact: School Office
UOC6 HPW3 S1
Excluded: ECON1101
This course provides an introduction to environmental issues, market failure, conservation and preservation of environment, discounting, sustainable economic growth and zero growth, measuring benefits and costs on environment, methods of controlling pollution, and management of environment.

Economics Level II

ECON2103
Business and Government
Staff Contact: School Office
UOC6 HPW3 S2
Prerequisite/s: ECON1101 or ECON1103
Examines how government affects the business environment at the microeconomic level. The case for intervention and the benefits of deregulation and privatisation are analysed, with reference to particular industries. The effects on business of government instrumentalities such as the Productivity Commission and the Australian Consumer and Competition Commission are examined. Issues relating to microeconomic reform, economic rationalism, market failure and government business enterprises are explored.

ECON2104
Applied Macroeconomic
Staff Contact: School Office
UOC6 HPW3 S1
Prerequisite/s: ECON1102 or ECON1104
Examines economic growth and fluctuations and the effect this has on the business environment and the community. Explains the main macroeconomic tools and techniques used by governments and the central bank to implement fiscal, monetary and incomes policies. The implications for inflation, unemployment, interest rates and exchange rates, and foreign debt are discussed.

ECON2127
Environmental Economics
Staff Contact: School Office
UOC6 HPW3 S2
Prerequisite/s: ECON1101 or ECON1103
Considers the main elements of environmental economics and cost benefit analysis as it relates to the assessment of environmental issues. Topics include: pollution and pollution policy; environmental cost-benefit analysis and economic methods for measuring costs and benefits; species extinction and irreversibility; environmental ethics and discounting; the environment and developing countries; and the sustainable economy.

Economics Level III

ECON3206
Econometrics of Finance
Staff Contact: School Office
UOC6 HPW3
Prerequisite/s: ECON2206
This course is concerned with the special statistical characteristics that arise when modelling time series data, such as commodity prices, interest rate exchange rate data, that have been collected at high frequency (such as daily or hourly). Topics include: modelling time varying volatility (ARCH models), generalised method of moments estimators (GMM), and non-normality issues.

Electrical Engineering

Electrical Engineering Level I

ELEC1011
Electrical Engineering 1
Staff Contact: Dr R Ramer
UOC6 HPW6 S1 S2
Prerequisite/s: PHYS1131
Excluded: ELEC2032

Electrical Engineering Level II

ELEC2031
Circuits and Systems A
Staff Contact: Dr Kevan Daly
UOC3 HPW3 S1 S2
Prerequisite/s: ELEC1011
Excluded: ELEC2032
Revision of basic circuit theory; RLC circuits; sinusoidal circuit response; mutual inductance and transformers; operational amplifiers; computer aided circuit design; state space circuit representations and time responses; homogeneous and particular solutions for first and second order linear differential equations; computer aided analysis of signals and systems, including state space representations; continuous time signals, sinusoids and signal norms; convolution, impulse and step responses; phasors; AC circuits (transient and steady state responses); complex power; frequency responses of circuits and systems; three-phase circuits.

ELEC3004
Signal Processing and Transform Methods
Staff Contact: Dr Andrew Bradley
UOC6 HPW4 S1
The mathematics of signals and linear systems. Fourier series, Fourier and Laplace transforms, discrete Fourier and Z transforms. Processing and analysis of continuous (analogue) and discrete-time (digital) signals. Analogue filters: approximation theory, Butterworth, Bessel, Chebyshev and elliptic filters. Filter impulse and frequency responses, stability, and sensitivity. Sampling continuous signals: the sampling theorem, reconstruction, and aliasing. The discrete Fourier transform (DFT) and the fast Fourier transform (FFT). Fundamentals of the design and realisation of finite impulse response (FIR) and infinite impulse response (IIR) digital filters. Digital processing of analog signals, including applications of digital signal processing (DSP) and programmable DSP chips. The representation and modelling of non-deterministic (random) signals, correlation functions, and power density spectra.

ELEC3006
Electronics A
Staff Contact: Dr Andrew Dzurak
UOC6 HPW4 S1
Prerequisite/s: ELEC2032

ELEC3016
Electronics B
Staff Contact: Dr Andrew Dzurak
UOC6 HPW4 S2
Prerequisite/s: ELEC3006
Operating principles and fabrication technologies of devices used in electronic circuits and the resulting impact on circuit operation.
and design. Devices covered include pn junctions, BJTs & MOSFETs in analogue and integrated circuits (TTL, ECL, CMOS etc) LEDs, lasers and optical waveguides as used in communication systems and microwave devices.

**ELEC4010**
Introduction to Management for Electrical Engineers
Staff Contact: School Office
UOC3 HPW3 S1
Prerequisite/s: 96 units of credit

The purpose of this subject is to introduce students to key management concepts and techniques in the context of electrical engineering. Topics to be discussed will be taken from accounting, economics, finance, marketing, decision-making techniques, operations research, project and strategic management, human resources, industrial relations and law.

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**Environmental Science**

**Environmental Science Level I**

ENVS1011
Environmental Science 1
Staff Contact: Associate Professor Paul Adam
UOC6 HPW6 S1

Note/s: Restricted to the Environmental Science Programs 6861-6869.

An overview of some of the many problems encountered by Environmental Scientists: climatic change, disturbance events (such as logging, fire and mining), management and conservation of marine and terrestrial resources, water management and pollution are considered. These problems are placed in perspective with regional case studies to highlight specific issues using seminars, workshops, field excursions and group projects. Special emphasis is placed on the political aspects and values inherent in environmental issues.

**Environmental Science Level II**

ENVS2010
Population Analysis and Environment
Staff Contact: Associate Professor Paul Adam
UOC3 HPW3 S2
Prerequisite/s: ENVS1011

The impact of human population growth on all aspects of resource management in the environment. Limiting resources, time lags, survivorship and the relation to their effects on demographic processes in human populations. The impact of the world population on global-scale environmental problems in terms of different cultures and developmental levels is compared to the Australian situation.

ENVS2020
The Urban Environment
Staff Contact: Associate Professor Paul Adam
UOC3 HPW3 S2
Prerequisite/s: ENVS1011

Consideration of the special impacts which urbanisation has on the environment and of the urban public as a component of the environment. The impacts of industrial and residential activities, conflicts between these, and government regulatory mechanisms.

ENVS2001
Aspects of Environmental Policy and Law
Staff Contact: Associate Professor Paul Adam
UOC6 HPW4 S2
Prerequisite/s: ENVS1011

This course examines the legal issues likely to be encountered by an environmental scientist and addresses the question: Is the adversary system the most appropriate method of dealing with conflict in determining the appropriate use of resources? The difficulties encountered with the multiplicity of authorities and interactions between local government regulations, state and federal laws and international law are considered. Case studies examined at each of these levels are used to provide a brief overview of current environmental law in Australia and the World, with examples.

**Environmental Science Level IV**

Three types of honours projects (A, B or C) may be taken in stage 4 of the Environmental Science Program 3988. These are set out for each of the specialisations:

- **ENVS4104**
  Environmental Science 4 Biology B (Honours)
  - Full-time*

- **ENVS4204**
  Environmental Science 4 Marine B (Honours)
  - Full-time*

- **ENVS4304**
  Environmental Science 4 Microbiology B (Honours)
  - Full-time*

- **ENVS4404**
  Environmental Science 4 Chemistry B (Honours)
  - Full-time*

- **ENVS4504**
  Environmental Science 4 Geography B (Honours)
  - Full-time*

- **ENVS4604**
  Environmental Science 4 Geology B (Honours)
  - Full-time*

- **ENVS4704**
  Environmental Science 4 Mathematics B (Honours)
  - Full-time*

* Staff Contact: Associate Professor Paul Adam
UOC24 S1 S2
Prerequisite/s: Completion of 144UOC (with credit average) of appropriate Environmental Science program
Half year research project and thesis.
Food Science and Technology

FOOD1110  Introduction to Food Science  
Staff Contact: Dr JM Cox  
UOC6 HPW6 S2

This course will provide students with an introduction to the Department and the breadth of food science and technology, as well as provide knowledge of and practical opportunities to develop generic skills in oral and written communication required by students in their career within and beyond the University environment. Topics to be covered in food science and technology include: an introduction to the principles of food production and consumption; food in history, society, economics and politics; development of the food industry in Australia; nutritional, physiological and psychological roles of food; role of microbiology and biotechnology in production of innovative, yet safe, nutritious, quality food products. Topical issues include: food irradiation - risk versus benefit; genetic engineering and biotechnology - new food sources; food additives - necessary evils?; environmental impact of food processing; food marketing and education - who should the consumer believe? Coverage of generic skills will include: approaches to oral communication; creating visual aids; academic argument/debate; writing of reports; public communication; anatomy, search and critique of scientific literature; working in teams; time management; experimental design.

Food Choice: Psychology, preference and acceptability
Staff Contact: Associate Professor M Wootton, Dr JE Paton  
UOC 6 HPW6 S2

This course considers factors that influence the choice of foods and eating patterns by consumers, and provides a rational basis for the design, development, and marketing of new food products and new processing technologies. It is aimed at students with interests in food and human behaviour, for example marketing, advertising, food service/hospitality and psychology, as well as students in food science and technology. Topics covered include: physiology of taste and smell; the sensory acceptability of foods in terms of flavour, appearance and texture and its measurement (sensory evaluation); psychological, physiological, cultural, religious, environmental and genetic factors that affect food preference and consumption patterns and behaviour; eating disorders (e.g. anorexia, bulimia); diet and consequences for physical and mental acuity (e.g. Sports diets); implications for food product development, process development, marketing, advertising and diet design.

FOOD1310  Food Preservation  
Staff Contact: Professor KA Buckle  
UOC6 HPW6 S1

Students will take a series of selected lectures, integrated with practical classes, providing them with the theory and practice of food preservation. Topics to be covered include: an introduction to food preservation - control of safety and quality by traditional and modern techniques; technology of preservation by heating, chilling, freezing, drying and dehydration; use of salt, sugar, acid and chemical preservatives, ionising radiations and modified atmospheres; chemical and microbial stability of foods; packaging requirements for preserved foods; water relationship in foods.

FOOD1360  Food Processing Principles  
Staff Contact: Dr JL Paterson, Dr RH Dricoll  
UOC6 HPW6 S1

This course is presented as a series of lectures and some discussion groups that cover methods of preservation and processing used in the food industry. Preservation principles and technologies covered include: heat, chilling, freezing, dehydration, salt, sugar, acids, chemical preservatives, ionising radiations and novel methods. Basic principles of processing covered are mass and energy balances, heat transfer, fluid flow. Methods of
processing include refrigeration, evaporation, dehydration, fermentation, extrusion, chemical and physical separation, and particle size reduction. The course is run in conjunction with a laboratory course (FOOD 1370) designed to demonstrate key principles in a practical context.

**FOOD1370**
*Food Processing Laboratory*
*Staff Contact:* Dr JE Paton, Dr JL Paterson
*UOC6* HPW6 S1

Corequisite/s: FOOD1360

This course is presented as an integrated lecture-laboratory program that covers production principles of a number of primary food commodities including dairy, marine and meat products, fruits and vegetables, sugars and cereal products. The laboratory component demonstrates the effect of processing on aspects of food such as functionality and quality.

**FOOD1380**
*Food Processing and Packaging*
*Staff Contact:* Dr RH Driscoll, Dr JL Paterson
*UOC6* HPW6 S2

Prerequisite/s: FOOD1360, FOOD1370

This course is presented as an integrated lecture-laboratory program that covers production principles of a number of primary food commodities including dairy, marine and meat products, fruits and vegetables, sugars and cereal products. The laboratory component demonstrates the effect of processing on foods such as functionality and quality. In addition aspects of plant design such as factory layout, hygienic design and operation, cleaning in-place and application and comparison of HACCP and HAZOP, and introduction to new technologies such as high pressure processing and ohmic heating are covered. This course also provides fundamental principles of packaging including properties of packaging materials, selection and evaluation of packaging materials and systems.

**FOOD1390**
*Product Design and Development*
*Staff Contact:* Associate Professor M Wootton, Dr JE Paton
*UOC6* HPW6 S2

Prerequisite/s: FOOD1360, FOOD1370

Corequisite/s: FOOD1380

This course provides a series of lecture and laboratory classes that cover the basic theoretical and practical concepts associated with the design and development of new food products and processes. The product development process: the need for new products, types of new products, the development team, idea generation, steps in the product development process; the role and specific tasks of market research, market research techniques, target markets, limitations of market research. Roles of advertising and supermarkets in new product success; product lifecycles, reasons for new product failure and preventative strategies. Ingredient and additive behaviour and contributions in foods: properties of the major food components in relation to food properties, storage stability and nutritional properties of foods. Impact of new technology. Sensory analysis: basic sensory analysis techniques, expert vs consumer panels, interpretation and implementation of sensory testing data, sensory rankings from different target markets.

**FOOD1400**
*Project*
*Staff Contact:* Associate Professor M Wootton
*UOC12* HPW0 S1 S2

Prerequisite/s: CHEM3801, FOOD1360, FOOD1370, FOOD1380, FOOD1390, FOOD2320, FOOD2330, FOOD2340

Notes: Restricted to program 3060.

The student undertakes an individual project involving a literature survey, an experimental investigation, the preparation of a detailed report on a selected topic in food science and technology, and presentation of seminars on a literature review and experimental results.

**FOOD1470**
*Postharvest Technology of Foods*
*Staff Contact:* School Office
*UOC6* HPW6 S1

Prerequisite/s: FOOD1380


**FOOD1480**
*Minor Project*
*Staff Contact:* Associate Professor M Wootton
*UOC6* HPW6 S1

Prerequisite/s: CHEM3801, FOOD1360, FOOD1370, FOOD1380, FOOD1390, FOOD2320, FOOD2330, FOOD2340

The student will be required to undertake a literature-based study of a research problem, submit a project thesis and present seminars arising from the project.

**FOOD1490**
*Advanced Food Chemistry*
*Staff Contact:* Associate Professor M Wootton
*UOC6* HPW6 S2

Prerequisite/s: CHEM3801

Chemistry and analysis of food flavours. Measurement, fractionation and structural determination of proteins, starch and its derivatives, non-starch polysaccharides, dietary fibre constituents and lipids. Detection and measurement of mycotoxins. Analysis of selected vitamins. Application of advanced separation techniques to food components.

**FOOD2320**
*Food Microbiology*
*Staff Contact:* Professor GH Fleet
*UOC6* HPW6 S1

Prerequisite/s: MICR2201

This is a lecture-laboratory course that introduces the basic concepts of food microbiology, covering the ecology, biochemistry, isolation, enumeration and identification of bacteria, yeasts, fungi and viruses associated with foods and beverages. Food spoilage: specific food microorganism associations; taxonomy and biochemistry of major spoilage species; chemical and physical changes to food properties; spoilage of specific commodities. Foodborne microbial disease: foods as vectors of disease and food poisoning; statistics and epidemiology; ecology and taxonomy of foodborne pathogenic microorganisms; control and prevention by hygiene, microbiological standards and legislation. Food fermentation: microbial ecology and biochemistry of fermentations; fermentations of alcoholic beverages, bakery products, dairy products, meats, vegetables, cocoa beans, soy sauce; production of food ingredients and processing aids by fermentation. Microbiological examination of foods: sample preparation and sampling plans; sublethal injury; standard methods for determination of total plate counts, indicator organisms, foodborne pathogenic species, principal spoilage species. Microbiological quality assurance: specifications and standards; decision criteria; hazard analysis and critical control point (HACCP) concept; cleaning and sanitation.

**FOOD2330**
*Quality Assurance and Control*
*Staff Contact:* Dr JM Cox
*UOC6* HPW6 S2

This course aims to provide students with a knowledge base of concepts in quality assurance (QA) and quality control (QC) in the context of the food industry. What are quality, QA, QC? Organisation-wide quality management, quality costs, Total Quality Management and ISO9000-based Quality Management Systems. Tools in quality management, brainstorming and other qualitative tools, benchmarking. Production-level QA and QC, HACCP, risk analysis and management, statistical quality/process control, sampling and sampling plans, cleaning and sanitation. QA in the laboratory, accreditation, metrology, proficiency testing. Regulatory aspects of QA/QC. Auditing quality. Staff training.
FOOD2340
Food Safety
Staff Contact: Professor KA Buckle
UOC6 HPW6 S1 S2
This course presents a package of information and exercises designed to demonstrate (i) the public health risk associated with food safety; (ii) the strategies adopted by industry, government and consumers to manage and control these risks. Topics covered include: chemical risks - natural, additives and residues; microbiological risks - bacterial, fungal, viral, algal, parasites, prions; nutrition - diet and health; genetically modified foods - concepts and specific safety issues; management of food safety by industry - TQM, HACCP, ISO; management of food safety by government - food law, national and international regulation and issues; legal and insurance issues; consumer concerns - education, social, moral and ethical issues.

FOOD2350
Forensic Food Science
Staff Contact: Professor GH Fleet
UOC6 HPW3 S2
This course consists of a series of lectures, discussions and assignments that examine a range of techno-legal issues which frequently confront companies involved in the manufacture and service of foods and beverages. A portfolio of case studies are used to demonstrate the fundamental and practical aspects of the investigative process: defining the cause of the problem; acquisition of appropriate information and analytical evidence; loss assessment; reporting; communication with solicitors, barristers and insurance companies; appearance at court. Topics covered include: the legal process; prosecution for breach of food safety, quality and labelling regulations; prosecution for fraud, deception and adulteration; compensation disputes between companies when products or processes do not meet contractual specifications; compensation claims for consumers who have experienced foodborne illness; food composition and labelling authenticity, including religious certification for halal and kosher foods, genetic modification using recombinant DNA technology, species homogeneity; sabotage, deliberate adulteration, tampering; protection of intellectual property, patents. The course is aimed at students in food science and technology, but its content and structure are designed to accommodate students with a broader background in science and technology, as well as practicing professionals in the food/beverage industries, government regulatory agencies and consulting companies.

FOOD2480
Advanced Food Microbiology
Staff Contact: Professor GH Fleet
UOC6 HPW6 S2
Prerequisite/s: FOOD2320
This course consists of a series of lectures, discussion groups and visits to local food companies that takes food microbiology from its basic concepts to advanced consideration of current issues on food spoilage, foodborne microbial disease, food and beverage fermentations and the use of microorganisms as processing aids and sources of food ingredients and additives. With a focus on commodity groups it considers industry structure, food properties and processing operations that impact on the growth, survival and biochemical activity of microorganisms as they relate to spoilage, safety and desirable fermentations. Commodities considered include dairy products, fruit and vegetables, meat products (red meats, poultry, seafoods) and alcoholic beverages. Advanced concepts of microbial taxonomy, biochemistry, physiology, detection and enumeration are covered as well as the use of microorganisms as sources of colours, flavours, polysaccharides, vitamins, amino acids and as probiotic and biocontrol agents.

FOOD2490
Analytical Microbiology
Staff Contact: Dr JM Cox
UOC6 HPW6 S2
Prerequisite/s: FOOD2320
The aim of this course is to provide students with an understanding of the underlying principles of and practical experience to modern and rapid methods for microbiological analysis, with specific reference to foods. The course begins with a history of the development of methods of analysis and criteria for the evaluation of methods. Methods considered include improved and advanced cultural methods, automated biochemical identification systems, ATP and lux bioluminescence, methods for assessing hygiene, ice nucleation, impedance technology, immunoassay, electrophoretic and chromatographic techniques for strain characterisation and identification, nucleic acid probes, PCR and genechip technology.

FOOD3220
Nutrition
Staff Contact: Dr J Arcot
UOC6 HPW6 S1
Prerequisite/s: BIOC2101 or BIOC2181
This course consists of a series of lectures and practical exercises that provide students with knowledge about the occurrence of nutrients in foods and their role in human physiology, health and disease. Structure, properties and sources of nutrients. Role of nutrients in human structure and function. Introduction to food groups, tables of food composition, food labels, dietary recommendations. Food guides. Nutrition in health and disease. Nutritional needs of vulnerable groups: infants, pregnant and lactating women, the aged. Dietary intolerance, disorders related to the affluent diet including coronary heart disease, dental caries, diabetes, hypertension and cancer. Problems of undernutrition including protein, energy, mineral and vitamin deficiencies. Physiological and nutritional aspects of dietary fibre, alcohol. Assessment of nutritional status using dietary and anthropometric techniques. Practical exercises on anthropometric techniques and measurement of nutrient intake using computer systems on an individual and group basis.

FOOD3440
Advanced Nutrition
Staff Contact: Dr J Arcot
UOC6 HPW6 S2
Prerequisite/s: FOOD3220
This course consists of lecture and discussion classes that build on the basic concepts of nutrition with respect to the food supply, giving advanced treatment of the following topics. Food and nutrition policy: structure of the population. Food supplies, food consumption, nutritional epidemiology. Population dietary references. Food programs such as food fortification, supplementary feeding schemes, nutritional rehabilitation, nutritionally modified foods, nutritional regulations and standards, nutrition education, dietary and nutrition interventions (ORT, family planning, infection control, growth monitoring). Principles, practice and evaluation of applied nutrition programs. Advanced assessment methods in nutrition: nutrient bioavailability studies, nitrogen balance tests, vitamin load tests, sodium and potassium excretion, creatinine excretion, fitness assessment, biochemical assessment, design and evaluation of nutritional epidemiology studies, food intake studies.

FOOD4450
Advanced Food Processing
Staff Contact: Dr RH Driscoll
UOC6 HPW6 S1
This course consists of lectures and discussion groups covering advanced aspects of modern food processing and preservation. This includes food bulk and thermal properties, rheological properties and models of heat transfer (analytical, graphical and numerical methods, computer packages, microwave, infrared, and radio frequency irradiation), process modelling and control, dehydration, evaporation and distillation.

FOOD5400
Industry Liaison
Staff Contact: Professor KA Buckle
UOC6 HPW6 S1
Prerequisite/s: CHEM3801, FOOD1360, FOOD1370, FOOD1380, FOOD1390, FOOD2320, FOOD2330, FOOD2340
This course involves structured inspections of a variety of food processing establishments, production areas and food research institutes and stations within Sydney, NSW and interstate. The aim is to strengthen student understanding of the structure, practical
operation and management of the local food industry and to demonstrate how theoretical concepts in food science and technology are applied in a commercial situation. The important linkage between the technical aspects of food production and commercial requirements of food companies will be explained.

**FOOD5410 Industry Practicum**
*Staff Contact: Professor KA Buckle*
UOC24 HPW24 S1
Prerequisite/s: CHEM3801, FOOD1360, FOOD1370, FOOD1380, FOOD1390, FOOD2320, FOOD2330, FOOD2340

This course involves a structured program of activity within food processing or related company as approved by the course coordinator. The aim is to provide a detailed insight into aspects of company structure and activity through project work, reports and seminars.

**FOOD9410 Honours Research Project**
*Staff Contact: Dr JM Cox*
Enrolment requires School approval
UOC42 HPW0 S1 S2

An extensive research project on some aspects of food science and technology, including preparation of a literature review, conduct of laboratory-based research, presentation of two seminars, and submission of a thesis based on the results of the research project. Candidates will undertake corequisite formal coursework as approved by the Head of Department.

**FOOD9420 Food Science and Technology (Honours)**
*Staff Contact: Professor KA Buckle*
Enrolment requires School approval
UOC48 HPW0 S1 S2

Advanced training in selected areas of Food Science and Technology: a formal component consisting of lectures, seminars, tutorials and written assignments plus a supervised research program in a specified area of food science and technology. Students intending to do this program should consult with the Department about selection of courses in earlier years.

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**Geography**

**Geography Level I**

**GEOG1601 Australian and Global Geographies: Integration and Divergence**
*Staff Contact: Dr Dunn*
UOC6 HPW4 S1
Excluded: GEOG1621, GEOG1062, GEOG1064


**GEOG1701 Environmental Systems and Analysis**
*Staff Contact: Mr David Edwards*
UOC6 HPW5 S1 S2
Excluded: GEOG1721, GEOG1031, GEOG1073

An introduction to the role of environmental processes in shaping the patterns of the physical environment. The operation of global environmental systems. Emphasis on the interaction of humans with their environment and the causes of environmental crises. Topics include water resources, circulation of the atmosphere and oceans, weather and climate, the formation of the Earth, fluvial and coastal landforms, land degradation, the biosphere and ecosystems, Australian biotic patterns, human impact on natural systems. Instruction is given on methods used to analyse climatic patterns and climate change, soils and landscape relationships, vegetation patterns, land degradation, and human impacts on the environment.

**GEOG1801 Spatial Information Technologies**
*Staff Contact: Professor Anthony Milne*
UOC6 HPW5 S2

A foundation course relating to the integration and computer processing of a wide range of spatial data. Introductory topics include earth shape and coordinate systems, map projections, Global Positioning System (GPS), aerial photography, photogrammetry, and cartographic mapping and representation. Follow-on topics include vector and raster data, topology and basic analysis procedures within Geographical Information Systems (GIS), the acquisition and processing of broad band optical, hyperspectral, thermal and radar remote sensing, and 3-dimensional digital domain analyses. Applications relating to physical and human geography and the environmental sciences are reviewed. Computer skills experience with a wide range of image processing (ERDAS Imagine, IDL ENVI) and GIS (ArcView, ArcInfo) software will be acquired.

**Geography Level II**

**GEOG2001 Field Techniques**
*Staff Contact: Dr Dunn*
UOC6 HPW4 S2
Prerequisite/s: 12 UOC Level I Geography;
Excluded: GEOG2000, GEOG2052

An introduction to the field techniques used in geography. Usually composed of a five day field trip in the mid-semester break. Field methods and skills in both physical and human geography. Workshops in report writing, critical analysis, and research practice.

**GEOG2101 Geographical Data Analysis, I**
*Staff Contact: Mr Stephen Filan*
UOC6 HPW4 S1
Prerequisite/s: 12 UOC Level I Geography;
Excluded: GEOG2013.

The exploration, description, understanding and presentation of data used within the sub-fields of geography. Subject matter is taught in a contextual and applied manner, with a specific focus on problem solving. Introduction to hypothesis testing and sampling in geography. Computing literacy for human and physical geographers. Includes the use of the SPSS and Excel software packages.

**GEOG2611 The Australian City**
*Staff Contact: Dr Kevin Dunn*
UOC6 HPW4 S1
Prerequisite/s: GEOG1601 or GEOG1621 or GEOG1062 or GEOG1064;
Excluded: GEOG2092.

Explanations for social and economic change in Australia’s cities. Issues of planning and social policy in cities like Sydney. Outlines both traditional and contemporary perspectives on the city. A
comparison of theories of urbanisation, urban-based conflict and social well-being in the city. Examines the origin of contemporary urban social theory.

GEOG2621
Regions, Resources and Spatial Systems
Staff Contact: Dr Chris Gibson
UOC6 HPW4 S2
Excluded: GEOG2051, GEOG3192
This course introduces students to basic concepts and theories in economic geography. These will include theories of location and regional development, spatial interaction, uneven development, and structural change. Course will focus on economic and regional problems in Australia. Computer-based workshops will be used to develop practical skills in regional and spatial analysis.

GEOG2711
Australian Climate and Vegetation
Staff Contact: Dr Scott Mooney
UOC6 HPW4 S2
Prerequisite/s: GEOG1701 or GEOG1721 or GEOG1031 or GEOG1073
Excluded: GEOG2025, GEOG3062
Notes: Consult Staff Contact prior to enrolling.
Characteristics of the Australian climatic region. The nature of climate change with particular emphasis on the Quaternary. The development of a distinct Australian biogeography. Patterns and processes in the distribution of Australian vegetation types. Classification, ordination and mapping of vegetation.

GEOG2721
Soils and Landforms
Staff Contact: Dr Jesmond Sammut
UOC6 HPW4 S1
Prerequisite/s: GEOG1701 or GEOG1721 or GEOG1031 or GEOG1073;
Excluded: GEOG2051, GEOG3011, GEOG3025.
The physical and chemical properties of soil, and the processes and factors of soil formation. Soil classification schemes. The relationship between soils and the landforms on which they form. The evolution of landforms in fluvial, arid and coastal environments. Emphasising current processes and Quaternary history.

GEOG2811
Introduction to Remote Sensing
Staff Contact: Professor Anthony Mine
UOC6 HPW4 S1
Excluded: GEOG2021
An essential knowledge base for future work and study in remote sensing. Topics include electromagnetic theory, principles of remote sensing, field and laboratory measurement of energy, aerial photography and photogrammetry, past, present and future sensors, and practical remote sensing using course resolution optical sensors, hyperspectral and thermal sensors, altimeters and radar. Computer-based laboratories use a wide range of images and provide familiarity with ERDAS Imagine and IDL ENVI and experience in image pre-processing, analysis and interpretation techniques.

GEOG2821
Introduction to Geographic Information Systems
Staff Contact: Mr Stephen Filan
UOC6 HPW4 S2
Excluded: GEOG3122, GEOG3123, GEOG3142
An introduction to Geographic Information Systems (GIS). Emphasis on raster-based GIS for resource mapping and case study evaluation. Topics include cartographic output and mapping, spatial statistics and various raster analysis techniques such as overlay analysis.

GEOG3101
Geographical Data Analysis II
Staff Contact: Mr Stephen Filan
UOC6 HPW4 S2
Prerequisite/s: GEOG2011 or BIOS2041
Intermediate topics in exploration, analysis and presentation of geographic data. Emphasis on applications based on Chi-square tests, correlation, regression, analysis of variance; and on research design including use of sampling methods in geography.

GEOG3111
Professional Geography
Staff Contact: Dr Bruno Parolin
UOC6 HPW4 S2
Prerequisite/s: Successful completion of a Stage 2 program in Science, Arts or Social Science
Notes: This course is available only to students who will be completing a pass degree with a major in Geography. Seminars with practitioners in the fields of urban, regional and environmental studies. Project management (consultancy work, government projects, preparation of proposals, grant capture, justification of budgets). Career planning and applying for positions.

GEOG3411
Special Topic
Staff Contact: Associate Professor Ian Burnley
Enrolment requires School approval
UOC6 HPW4 S1 S2
Excluded: GEOG3333
Admission by permission to suitable students with credit levels and above in least four courses at Upper Level. Individually supervised reading and assignments as an approved topic in Geography not otherwise offered.

GEOG3611
Surveys and Interviews in Geography
Staff Contact: Dr Kevin Dunn
Excluded: GEOG1062 or GEOG1064 or GEOG1601 or GEOG1621
An introduction to sample surveys and interview techniques. Construction of questionnaires and interview guides. Census data collection. The collection, assembly, analysis (NUD.IST) and presentation of qualitative data.

GEOG3621
Place and Politics of Identity
Staff Contact: Dr Kevin Dunn
Excluded: GEOG3101
An introduction to sample surveys and interview techniques. Construction of questionnaires and interview guides. Census data collection. The collection, assembly, analysis (NUD.IST) and presentation of qualitative data.

GEOG3631
Population Geography
Staff Contact: Associate Professor Ian Burnley
Excluded: GEOG3101
A geographical examination of population change in an economic, social and environmental context. Contemporary and future trends in World population growth and population trends in Australia. Attention to fertility, mortality, migration, ageing and inequalities in well being. Reference to investigations at different scales.
GEOG3671
Transport and Land Use
Staff Contact: Dr Bruno Parolin
UOC6 HPW4 S1
Prerequisite/s: GEOG2092 or GEOG2621 or GEOG2611 or PLAN1011
Excluded: GEOG2071, GEOG3181
Introduction to the complex interactions between transport, land use, and the environment in urban areas. Special focus on the long term environmental consequences of transport decisions. Introduction to the various methods used to analyse and predict the consequences of policy changes. Australian cities as case studies.

GEOG3711
Biogeography
Staff Contact: Dr Scott Mooney
UOC6 HPW4 S2
Prerequisite/s: GEOG1701 or GEOG1711 or GEOG1721 or BIOS1101 and BIOS1201
Excluded: GEOG2025

GEOG3721
Pedology
Staff Contact: Associate Professor Mike Melville
UOC6 HPW4 X1 WK52
Prerequisite/s: GEOG2711 or BIOS1101 and BIOS1201 or GEOL1111 and GEOL1211
Excluded: GEOG3011
Soil physical and chemical properties and their interrelationships. Clay mineral structure and behaviour, soil solution chemistry, soil water movement. Soil properties in natural, rural, urban landscapes. Assessment of soil fertility, swelling, dispersibility, erodibility and aggregate stability. Laboratory analysis with emphasis on properties associated with land capability assessment.

GEOG3731
Geomorphology
Staff Contact: Dr Robert Brander
UOC6 HPW4 S2
Prerequisite/s: GEOG2051 or GEOG2721
Excluded: GEOG3025
Drainage basin and coastal processes including: weathering, the production of runoff and sediment, sediment tracing, sediment budgets and denudation histories. Coastal and land forms, morphometrics and limnological processes. There will be an emphasis on the application of geomorphic principles to land management.

GEOG3751
Environmental Change
Staff Contact: Dr Scott Mooney
UOC6 HPW4 S1
Prerequisite/s: 96 Units of Credit
Excluded: GEOG3062

GEOG3811
Remote Sensing Applications & Digital Image Analysis
Staff Contact: Professor Anthony Milne
UOC6 HPW4 S2
Prerequisite/s: GEOG2811 or GEOG2021
Excluded: GEOG3032
Using a diverse range of case studies, this course demonstrates broad remote sensing applications in forestry, agriculture, natural resource management, wildlife conservation, environmental change, pedology, oceanography, geology, meteorology, and politics. Specific applications relate to the assessment of tropical and sub-tropical land cover change, ecosystem dynamics and biogeochemical cycles, vegetation biophysical properties, wetlands management and monitoring, fire, pollution, urban studies and cold region hydrology. Computer-based laboratories allow the student to explore a range of optical, thermal and radar data appropriate to particular applications, and provide exposure to practical image processing and interpretation techniques including classification, change detection, formulation of indices and derivation of empirical relationships. Practical experience with IDL, ENVI and Erdas Imagine is provided, radiometric, geometric and atmospheric correction of remotely sensed data, image classification.

GEOG3821
Geographic Information Systems Applications
Staff Contact: Dr Bruno Parolin
UOC6 HPW4 S2
Prerequisite/s: GEOG2821 or GEOG3122 or GEOG3123
Excluded: GEOG3142
Emphasis on vector-based GIS for resource and environmental management and urban and regional analysis. Topics include spatial data bases, data attributes, networks, spatial analysis and modelling and data visualisation with application-oriented laboratories.

GEOG3831
Geographic Information Systems
Staff Contact: Mr Steve Filan
UOC6 HPW4 S2
Prerequisite/s: Successful completion of at least one year of a program in Computer Science, Environmental Engineering, Environmental Science, Information Systems or Mathematics, or by permission from the Head of School.
Excluded: GEOG3166, GEOG2821, GEOG3123
Note/s: All enrolments must be approved by the Head, School of Geography, or representative.
An introduction to geographic information systems with special reference to computer-based systems for resource evaluation. Case study evaluation, application of the MAP and other GIS software.

GEOG3861
Computer Mapping
Staff Contact: Professor Barry Garner
UOC6 HPW4 S1
Prerequisite/s: 6 units of credit in GEOG courses
Excluded: GEOG3161
Introduction to theoretical and practical problems in displaying data graphically and constructing thematic maps by computer using the MapInfo desktop mapping package. The emphasis is on developing skills in automated cartography through hands-on experience culminating in the preparation of a folio of maps of selected census data. No previous computing expertise is required.

GEOG3901
Australian Natural Resources
Staff Contact: Dr Morgan Sant
UOC6 HPW4 S1
Prerequisite/s: GEOG1601 or GEOG1621 and GEOG1701 or GEOG1721; or by permission from the Head of School
Excluded: GEOG3000
The problems of exploiting Australia's biological, water and land resources. A synthesis of human and physical geography. Land degradation, habitat loss and fragmentation. Introduction to environmental auditing, state-of-the environment reporting, and policy changes. Field and analytical techniques applicable to resource management.
GEOG3911
Environmental Impact Assessment
Staff Contact: Dr Jesmond Sammut
UOC6 HPW4 S1
Prerequisite/s: 12 UOC Level II Geography; Excluded: GEOG3042.


GEOG3921
Coastal Resource Management
Staff Contact: Dr Jesmond Sammut
UOC6 HPW4 S2
Prerequisite/s: 6 units of credit in GEOG courses, or by permission from Head of School


Geography Level IV
GEOG4001
Field Work for Consultants
Staff Contact: Dr Robert Brander
UOC6 HPW4 S2
Prerequisite/s: Completion of a three year program, including a major and minor in Geography

Note/s: Available only to BSC Applied Geography 3010 students.

Develop skills in problem formulation and team-based field work. Preparation and presentation of professional quality reports of applied geographical analysis. Problem definition and research strategy design. Five day field trip.

GEOG4301
Professional Practice in Geography
Staff Contact: Dr Bruno Parolin
UOC6 HPW4 S2
Prerequisite/s: Completion of a three year program, including a major and minor in Geography

Note/s: Available only to BSC Applied Geography 3010 students.

Seminars with practitioners in the fields of urban, regional and environmental studies. Project management (consultancy work, government projects, preparation of proposals, grant capture, justification of budgets). Career planning and applying for positions. Ethical and political issues in research.

GEOG4404
Thesis in Applied Geography
Staff Contact: Dr Bruno Parolin
UOC24 S1 S2
Note/s: The deadline for submission of project reports is the end of Week 9 of Session 2.

Independent and original research project. Formulation under the direction of a supervisor; preparation of a project report.

GEOG4418
Honours Geography
Staff Contact: Dr Bruno Parolin
UOC48 S1 S2
Students are required: 1. To undertake an original piece of work extending throughout the year and to submit a thesis based upon it. 2. To participate in seminars and fieldwork as notified by the School of Geography. Seminars include workshops on professional practice in geography and ethical issues in research.

GEOG4422
Combined Honours Geography P/T
Staff Contact: Dr Bruno Parolin
UOC12 S1 S2

GEOG4424
Combined Honours Geography
Staff Contact: School Office
UOC24 S1 S2

GEOG4531
Analyses In Medical Geography
Staff Contact: Associate Professor Ian Burnley
UOC6 HPW4 S1
Prerequisite/s: Completion of a three year program
Excluded: CMED9591

Spatial and differential aspects of mortality and health variation. Reference to epidemiological and health transition theory. Precise targeting of populations at risk and where they are located. Identification of possible environmental factors in disease incidence. Role of social and economic inequalities in health variation.

GEOG4721
Soil Degradation and Conservation
Staff Contact: Dr David Eldridge
UOC6 HPW4 WKS14S2
Prerequisite/s: Completion of a three-year program
Excluded: GEOG4320

Note/s: Contact hours include some fieldwork which forms a compulsory part of this course. Students will incur some personal costs for fieldwork.

Identification, assessment and analysis of the main process of soil degradation, including the role of climate, vegetation, geomorphology and pedology in controlling the processes. Discussions of appropriate management strategies for reducing degradation for reclaiming degraded landscapes. Topics include: surface wash, gully erosion, wind erosion, soil acidification, soil structure decline, salinisation, accumulation of toxins and desertification.

GEOG4811
Advanced Techniques in Remote Sensing
Staff Contact: School Office
UOC6 HPW4 S1
Note/s: Consult School before enrolling.

Advanced image processing techniques and applications in remote sensing.

GEOG4871
Transport Applications of Geographical Information Systems
Staff Contact: Dr Bruno Parolin
UOC6 HPW4 S2
Prerequisite/s: GEOG3671 or GEOG2071

Introduction to the concepts and applications of Transport Information Systems (GIS-T). Topics covered include network structures, data structures, transportation related referencing systems. Applications of urban transport planning models, vehicle routing and logistics. Location and allocation analysis.

GEOG4911
Vegetation Management
Staff Contact: Dr Scott Mooney
UOC6 HPW4 S1
Prerequisite/s: GEOG3901, GEOG2711, GEOG3711
Excluded: GEOG4300

Field tutorials are an essential part of some of these courses, and are held during weekends and/or recesses. Dates and costs are available during the first week of the course. Attendance is compulsory.

Geology Level I

GEOL0004
Special Programme (Geology)
Staff Contact: Dr Alistair Dunlop
UOC48 S1 S2
Note/s: For programs 8720.1002 and 8720.1003

GEOL1111
Earth Systems and Dynamics
Staff Contact: Dr David Cohen
UOC6 HPW5 S1
Excluded: GEOL1101
Note/s: Two days of field work is a compulsory part of this course and students will incur personal costs. Details will be provided in the first week of the course.


GEOL1211
Earth Environments and Resources
Staff Contact: Dr David Cohen
UOC6 HPW5 S2
Excluded: GEOL1201
Note/s: Three days of field work is a compulsory part of this course and students will incur personal costs. Details will be provided during the first week of the course.


Geology Level II

GEOL2100
Field Studies: Sedimentology and Palaeoecology
Staff Contact: Associate Professor Colin Ward
UOC3 HPW3 S1 S2
Corequisite/s: GEOL2120
Excluded: GEOL2031
Note/s: Geological field work up to five days in total is an essential part of this course. Students will incur personal costs. Geological studies of sediments, fossils and sedimentary rock strata in selected coastal and inland locations, to illustrate features imparted by different depositional environments; introduction to geological data gathering and field measurement techniques applicable to sedimentary successions, and to regional integration of such data in palaeogeographic interpretations.

GEOL2110
Mineralogy
Staff Contact: Dr Alistair Dunlop
UOC3 HPW3 S1
Prerequisite/s: GEOL1111 or GEOL1211
Excluded: GEOL2011, GEOL7223
Principles of optical crystallography and the use of the polarising microscope to identify minerals and rocks. Rock-forming minerals: physical properties in hand specimen and under the microscope, crystal chemistry, stability and occurrence.

GEOL2120
Sedimentary Environments and Processes
Staff Contact: Associate Professor Colin Ward
UOC3 HPW3 S1
Prerequisite/s: GEOL1111 or GEOL1211
Excluded: GEOL2031, GEOL7233, GEOL7321, GEOL8220
Mechanisms of sediment transport and deposition; nature and origin of depositional structures. Analysis of depositional environments including: fluvial deposits, deltaic and estuarine deposits, marine sediments including shoreline, shelf and deep sea carbonate and reef deposits; lacustrine deposits; glacial and desert sediments; and volcaniclastic sediments. Sedimentary facies and facies successions; introduction to sequence stratigraphy. Practicals in sediment analysis, drill core studies and sedimentary strata interpretation.

GEOL2131
Geomapping 1
Staff Contact: Associate Professor Geoffrey Taylor
UOC6 HPW5 S1
Excluded: GEOL2062, GEOL8380
Note/s: Field work of up to 2 days is a compulsory part of this course for which students may incur personal costs. Details are provided during the first week of the course.


GEOL2170
Earth Structures 1
Staff Contact: Dr Paul Lennox
UOC3 HPW3 S2
Prerequisite/s: GEOL1111 or GEOL1211;
Excluded: GEOL2022

Interpretation of geological structures observed at outcrop scale within the context of the geological history of an area. Understanding brittle and some ductile structures using stereographic projection techniques, including use of computer methods. Application of the techniques in practical field situations.

GEOL2180
Introduction to Igneous and Metamorphic Rocks
Staff Contact: Dr Alistair Dunlop
UOC3 HPW3 S1
Prerequisite/s: GEOL1111 or GEOL1211
Corequisite/s: GEOL2110
Excluded: GEOL2011, GEOL2022, GEOL8201
GEOL2200

Field Studies: Petrology, Structure and Field Mapping

Staff Contact: Dr Paul Lennox
UOC3 HPW3 S2

Corequisite/s: GEOL2170 and GEOL2180

Notes: Geological field work of up to five days in total is an essential part of this course. Students will incur personal costs.

GEOL2220

Sedimentary Rocks and Clay Minerals

Staff Contact: Associate Professor Colin Ward
UOC3 HPW3 S2

Prerequisite/s: GEOL2110
Excluded: GEOL2022, GEOL7223

Sedimentary Petrology: Textures and composition of sandstones, limestones, tuffs, phosphorites, cherts, evaporites and other sedimentary rocks; chemical, physical and biological processes, before, during and after sediment deposition; microscopic and other studies of sedimentary materials. Clay Mineralogy: Crystal structure, composition and properties of the clay minerals: X-ray diffraction and other methods of clay analysis; clay-water systems; ion exchange, flocculation and dispersion; role of chemical weathering, transport and diagenesis in the formation and distribution of clay minerals.

Geology Level II/III

GEOL2231

Environmental Geophysics

Staff Contact: Mr Palmer
UOC6 HPW5 S2

Excluded: GEOL2051, GEOL6221

Notes: Field work up to 5 days is a compulsory part of this course, and it is usually carried out on and near the UNSW campus. Students may incur personal costs. Details are provided in the first week of the course.

An introduction to the theory of geophysical methods with an emphasis on the near surface applications to environmental and urban studies, as well as the related areas of groundwater and geotechnical investigations. The methods covered include gravity, magnetics, electrical, seismic and radar. The course content and presentation are also designed to accommodate those students with interests in environmental subjects but not necessarily with strong backgrounds in mathematics or physics.

GEOL2240

Engineering and Environmental Geology

Staff Contact: Mr Jankowski
UOC3 HPW3 S2

Prerequisite/s: GEOL1111 or GEOL1211 or ENVS1101
Excluded: GEOL3072, GEOL3250


GEOL2260

Geomapping 2

Staff Contact: Associate Professor Geoffrey Taylor
UOC3 HPW3 S2

Prerequisite/s: GEOL2131


GEOL2290

Groundwater Hydrology

Staff Contact: Mr Jankowski
UOC3 HPW3 S1

Excluded: GEOL2072

The hydrologic cycle; saturated and unsaturated zones; porosity and permeability; water table; flow; unconfined and confined aquifers; geological activity of groundwater; thermal springs and geysers; alteration of groundwater systems; drilling methods; well design and completion; coastal aquifers; karst and carbonate terrain; saline environments; sedimentary, fractured, multilayered and crystalline aquifers; groundwater chemistry - chemical reactions and processes; contamination and water quality; types and sources of contamination; geotechnical problems; flow system a microbial population; resources - development, exploration and management; modelling; groundwater and economic mineralisation; groundwater in Australia - principal hydrogeological divisions; environmental problems and resources.

Notes: Field work of 1 day is a compulsory part of this course for which students may incur personal costs. Details are provided during the first week of the session.

Geology Level III

GEOL3101

Ore Deposits

Staff Contact: Dr Alistair Dunlop
UOC6 HPW5 S1

Prerequisite/s: GEOL2180

Geological setting, characteristics and genesis of the major categories of metallic and non-metallic ore deposits. Laboratory study of hand specimens, thin sections and polished sections from these deposit types.

GEOL3110

Igneous and Metamorphic Processes

Staff Contact: Dr Alistair Dunlop
UOC3 HPW3 S1

Prerequisite/s: GEOL2180 or GEOL2022

Excluded: GEOL2031

The genesis of silicate melts; partial melting in the crust and upper mantle of the Earth. The use of major and trace elements, and radiogenic and stable isotopes, in the study of fractionation processes of magmas. The chemical evolution of the crust and upper mantle through geological time. Stability relations of mineral assemblages as a function of pressure, temperature and fluid activity. Geobarometry and thermometry. Static and dynamic metamorphism during orogenic processes. The role of fluids and deformation in metamorphic reactions. Practical: Case studies of igneous and metamorphic provinces.

GEOL3120

Stratigraphy and Palaeontology

Staff Contact: Associate Professor Colin Ward
UOC3 HPW3 S1

Prerequisite/s: GEOL1111 or GEOL1211

Excluded: GEOL3031

Classification of sedimentary basins; depositional systems; role of tectonics, sea-level and other changes in development of basin sequences; application of lithostratigraphic, biostratigraphic, chronostratigraphic and magneto-stratigraphic principles; geophysical well logging; lithofacies and palaeocurrent analysis; introduction to sequence stratigraphy; provenance studies in sedimentary basins; morphology, evolution and use of key invertebrate fossil groups; geological development of Australian sedimentary basins and fold-belt sequences.
GEOL3131
Field Studies: Stratigraphy, Structure and Geological Mapping
Staff Contact: Dr Alistair Dunlop
UOC6 HPW5 S1
Prerequisite/s: GEOL3120
Note/s: Geophysical field work of up to four days duration is a compulsory part of this course. Students may incur personal costs.

GEOL3170
Earth Structures 2
Staff Contact: Dr Paul Lennox
UOC3 HPW3 S1
Prerequisite/s: GEOL2170 or GEOL222; Excluded: GEOL3082.

GEOL3201
Field Studies: Ore Deposits, Structural and Metamorphic Geology
Staff Contact: Dr Alistair Dunlop
UOC6 HPW5 S2
Corequisite/s: GEOL3101
Note/s: Geophysical field work of up to nine days duration is a compulsory part of this course. Students will incur personal costs.

GEOL3231
Exploration Geophysics
Staff Contact: Dr Alistair Dunlop
UOC6 HPW5 S2
Prerequisite/s: GEOL2051 or GEOL2231 or GEOL 6221
Excluded: GEOL3052, GEOL3330
Note/s: Field work up to 3 days is a compulsory part of this course. Students may incur personal costs. Details are provided in the first week of the course.

GEOL3280
Exploration and Environmental Geochemistry
Staff Contact: Dr Alistair Dunlop
UOC3 HPW3 S2
Excluded: GEOL3092
Note/s: Geophysical field work of up to one day duration is a compulsory part of this course. Students may incur personal costs.

Note/s:

Excluded:

GEOL4100
Geological Communications
Staff Contact: Dr Alistair Dunlop
UOC3 HPW10 S1 S2
Prerequisite/s: GEOL302

Note/s: Some field work may be involved; students may need to meet personal costs.

Instruction by lectures, tutorials and assignments in advanced aspects of geological science and its applications. Initial students will select four modules from a list prepared for each year by the School. These modules will cover a number of specialised fields including mineral exploration, mine geology, sedimentary basin studies, geophysics, engineering and environmental geology, as well as fundamental geology topics. Some modules may be delivered at other universities through the Sydney Universities Consortium of Geology and Geophysics.

GEOL4110
Interpretation of Geological Data
Staff Contact: Dr David Cohen
UOC3 HPW3 S1
Prerequisite/s: GEOL2131

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GEOL7404
Earth Environments Honours (P/T)
Staff Contact: Dr Paul Lennox
Enrolment requires School approval
UOC24 HPW10 S1 S2
Note/s: Field work is a compulsory part of this course and students will incur personal expenses. Details will be provided in the first week of the course.

Subject to the approval by the Program advisor, students will undertake a project that involves the writing of a thesis.

Geology Servicing Courses

GEOL5211
Geology for Mining Engineers 1
Staff Contact: Dr Paul Lennox
UOC4 HPW3 S2
Note/s: Field work of up to one day is a compulsory part of this course. Students will incur personal costs.


GEOL5301
Introduction to Petroleum Geology
Staff Contact: Dr Paul Lennox
UOC3 HPW3 S1
Note/s: Field work of up to 2 days is a compulsory part of this course. Students will incur personal costs.

Introduction to earth sciences nature and properties of rocks and minerals; sedimentation, sedimentary structures and sedimentary environments; stratigraphy and the geological time scale; geological maps and structures; introduction to plate tectonics. Nature and geological properties of petroleum; petroleum generation, migration, entrapment and degradation; sedimentology of petroleum-bearing sequences; primary and secondary porosity; structural and stratigraphic traps; formation waters; coal-bed methane, oil shale and other unconventional petroleum sources; geological and geophysical methods in petroleum exploration and development; regional geology of selected petroleum basins.

GEOL5412
Special Topics in Petroleum Geoscience
Staff Contact: Associate Professor Colin Ward
UOC8 HPW6 S2
Prerequisite/s: GEOL5301

Instruction by lectures, tutorials and assignments in aspects of geoscience and their application to the petroleum industry. Individual students will select modules, in consultation with the Head, School of Geology, covering topics such as sedimentary rocks and clay minerals, groundwater hydrology, geophysics, coastal monitoring and environmental assessment, complemented by a relevant project task.

Information Systems

Information Systems Level II

INFS1602
Computer Information Systems
Staff Contact: School Office
UOC6 HPW3 S1 S2

This course provides students with a basic understanding of the content of information systems; the types of information systems; the current roles of information systems in organisations; and the opportunities for and limitations of information systems within organisations and society. The course also provides an overview of the tools, techniques and frameworks used to analyse information systems; the range of information Technologies used to support information systems and to explain their use; the alternative approaches for the development and implementation of information systems; the current technologies for the development of personal information systems and for information searches from a range of sources; and the ethical responsibilities of both the Information System professional and the private user of information.

INFS1603
Business Data Management
Staff Contact: School Office
UOC6 HPW3 S1 S2

This course provides an introduction to the concepts, design techniques and technology for the storage and management of data. Students gain the required knowledge and practical skills to model data including the use of entity/relationship models and object models; design simple databases in an organisational environment; understand the role of data in business; and understand the quality assurance issues in collecting, storing and using data. Students acquire and exercise skills in a number of data modelling and design techniques as well as develop a simple system using Microsoft Access.

INFS2603
Systems Analysis and Design
Staff Contact: School Office
UOC6 HPW3 S1 S2
Prerequisite/s: INFS1602, INFS1603

This course examines system analysis and design: requirements analysis and specification; logical and physical design of business systems. More specifically, the object-oriented (OO) methodology and structured methodology (SDLC) are covered. Hands-on experience with CASE tools used by information systems practitioners is provided (ie MetaEdit and RationalRose).
INFS2607
Business Data Networks
Staff Contact: School Office
UOC6 HPW3 S2
Prerequisite/s: INFS1602
Excluded: INFS2617
This course provides students with an understanding of data communication and distributed data processing in a business environment; and an understanding of the management issues associated with telecommunication systems. Main topics include data communication concepts; computer networks; reference to international standards and common industry communications software packages; local/metropolitan/wide area networks; network management; telecommunications services; and data security.

INFS2609
Software Implementation
Staff Contact: School Office
UOC6 HPW3 S1
Prerequisite/s: INFS1602, INFS1603
This course covers programming in the business context with a commercial object-oriented programming language; defining problems and designing structured programs to solve problems; use of data types, selection, iteration, functions, arrays and data structures in procedural programs; and the use of an interactive development environment.

INFS2611
Requirements Elicitation
Staff Contact: School Office
UOC3 HPW1.5 S2
Prerequisite/s: INFS1602
Students learn how to establish and verify user requirements for information systems; become familiar with the instruments for requirements definition and the criteria for requirements quality assessment; and refine analytical skills for the evaluation of customer needs.

INFS2617
Global Data Networks
Staff Contact: School Office
UOC6 HPW3 S2
Prerequisite/s: INFS1602
Excluded: INFS2607
Data communications concepts, computer networks, reference to international standards and common industry communications software packages; local/metropolitan/wide area networks; network management; tele-communications services and other options; data security.

Information Systems Level II/III

INFS2691
Industrial Training 1
Staff Contact: School Office
UOC6 HPW3 S1
Prerequisite/s: INFS1602, INFS1603
Note/s: Available only in Program 3971 to BSc BIT (Co-op) students.
A practical treatment of the characteristics of commercial information systems. Topics include analysis of an existing information system; development of overview documentation of the system; evaluation of the interface design; consideration of the role of security and control mechanisms.

Information Systems Level III

INFS3603
Business Intelligence Systems
Staff Contact: School Office
UOC6 HPW3 S1
Prerequisite/s: INFS1602, INFS1603
This course examines the process of decision making and work group activity by professional and managerial people; the tools and techniques available in information technology to support these processes and when they can be advantageously used; some of the reasons why so many executive support systems do not achieve their intended objectives; and the cultural and organisational issues involved in the use of Information Technology tools and techniques.

INFS3604
Information Technology Management
Staff Contact: School Office
UOC6 HPW3 S2
Prerequisite/s: INFS2603
This course introduces the strategic and operational management issues involving information systems and software. Consideration is given to both quantitative and qualitative management techniques, including the practical application of tools and concepts for software project management, as well as material on software metrics and software quality. In addition, techniques are covered for strategic planning of information systems and ensuring business contribution.

INFS3605
Implementation Workshop
Staff Contact: School Office
UOC6 HPW3 S1
Prerequisite/s: INFS2609 or COMP1021 or COMP1821 or COMP2611
Students implement an information systems project using a commercial object-oriented programming language in a workshop environment. Topics include advanced program design; computer aided software engineering techniques; a comparison of a range of programming languages; test data specification; implementation procedures; interfacing an application with a commercial database such as Oracle; the production of system documentation; and the production of quality software.

INFS3606
Telecommunications for Electronics Commerce
Staff Contact: School Office
UOC8 HPW3 S2
Prerequisite/s: INFS2607
Excluded: INFS3618
This course considers the strategic issues in telecommunications in business; current and emerging technologies for data networking; and the specification of corporate networks including local and wide area networks; a detailed understanding of the Internet protocol suite; TCP/IP - IP version 4, subnets, TCP, UDP, inter-router protocols, multicasting, IP version 6; security threats, Internet application security issues, firewalls, encryption, digital signatures, network management; and an understanding of non TCP/IP peer to peer networking protocols.

INFS3608
Advanced Database Systems
Staff Contact: School Office
UOC6 HPW3 S1
Prerequisite/s: INFS1602, INFS1603
This course provides students with an in-depth understanding of database application design and database management for large and small businesses; practical experience using formal database design methodologies in systems development; and an understanding of the technological issues of database systems in a modern IT infrastructure. The main topics include advanced modelling of business applications, database logical design, normalisation through decomposition and synthesis, physical
design, concurrency, security, and transaction management issues, 
contemporary issues of object-oriented databases, advanced 
database applications, multimedia databases, data warehousing, 
data mining, OLAP; and client/server design on the Internet.

INFS3611
Design Workshop
Staff Contact: School Office
UOC6  HPW3  S2
Prerequisite/s: INFS2603
This course consists of a real-life systems development project, 
conducted in a workshop environment. It provides practical 
experience in the application of object-oriented methods for the 
specification and design of commercial business systems. 
Requirements definitions, system specifications and logical designs 
are developed to a professional standard (using automated tools).

INFS3616
Commercial Programming Principles
Staff Contact: School Office
UOC6  HPW3  S2
Prerequisite/s: INFS3605
Note/s: Available only in Program 3971 to BSc BIT (Co-op) 
students (1998 and 1999 entry only).
This course focuses on the advanced treatment of the practice of 
implementing commercial systems. Topics include: the use of library 
code; program design for performance; project control and reporting 
practice; programming standards; interactive interface; software 
testing; CASE tools; documentation; security and control and 
maintenance.

INFS3618
Advanced Global Data Networks
Staff Contact: School Office
UOC6  HPW3  S2
Prerequisite/s: INFS2607 or INFS2617
Excluded: INFS3606
Strategic issues in telecommunications in business. Current and 
emerging technologies in data networking. Specification of corporate 
networks including local and wide area networks.

INFS3621
Alternative System Design Methodologies
Staff Contact: School Office
UOC3  HPW1.5  S1
Prerequisite/s: INFS2603
This course reviews current systems analysis methodologies, 
including the process-driven approach, data-driven approach, 
object-oriented approach and general approaches such as Soft 
Systems Methodology. It examines the foundations and 
philosophies, lifecycle stages and resource demands, applied 
modeling tools and beneficial applications of each approach.

INFS3622
Distributed Application Design and Implementation
Staff Contact: School Office
UOC3  HPW1.5  S1
Prerequisite/s: INFS2603
This course considers the design and implementation of distributed 
and client/server applications. Specific topics include the design, 
coding, testing and implementation of distributed applications; 
middleware (eg. CORBA) and its impact on the application design; 
and distributed computing environments.

INFS3623
Multimedia Systems Design
Staff Contact: School Office
UOC3  HPW1.5  S2
Prerequisite/s: INFS2603
This course teaches the cognitive principles, concepts and design 
techniques required in implementing multimedia information 
systems. Students also gain practical experience with the use of 
commercial multimedia design software.
INFS4796  
Thesis Part B  
*Staff Contact: School Office*

**Note/s:** Available only to Year 4 Honours students.

The thesis is undertaken during the Honours year. Students undertake directed research work in an approved area under the guidance of a member of the lecturing staff. This course represents the submitted thesis.

INFS4805  
Information Systems Auditing  
*Staff Contact: School Office*

**Prerequisite/s:** INFS1602 and admission to BSc degree course at Honours level majoring in Information Systems plus approval from the Head of School of Information Systems, Technology and Management.

Management of information systems audit and the evaluation of IT management. Analysis and review of internal controls in contemporary computer installations and applications. Use of basic and advanced information systems audit techniques and methodologies, including audit software, integrated test facility, and concurrent auditing techniques. Technology audit reviews of the audit requirements for such technologies as LANs, EDI, and expert systems. Legal and professional requirements and computer abuse/fraud auditing. Review of future IS audit techniques, methodologies, research and social implications.

INFS4810  
Advanced Data Management  
*Staff Contact: School Office*

**Prerequisite/s:** INFS6P3, INFS2603. Admission to Honours degree course at Honours level majoring in Information Systems, plus approval of the Head of School of Information Systems, Technology and Management.

The principle and practice of data administration in a large organisation. Design, redesign and tuning of database. Distributed databases and database management systems. Reliability, security and integrity of the database.

INFS4811  
Knowledge Management Systems and Technology  
*Staff Contact: School Office*

**Prerequisite/s:** INFS4857. Admission to BSc degree course at Honours level majoring in Information Systems plus approval of the Head of School of Information Systems, Technology and Management.

The objective of this course is to provide the student with an understanding of the business of managing the generation, formulation, dissemination, retention, storage, measurement, application, distribution, archival and disposal of corporate knowledge. It considers various systems and technology supporting knowledge management. It also addresses knowledge discovery in databases and corporate data warehouses, by identifying understandable patterns in data.

INFS4812  
Software Engineering Management  
*Staff Contact: School Office*

**Prerequisite/s:** INFS2603. Admission to BSc degree course at Honours level majoring in Information Systems, plus approval of the Head of School of Information Systems, Technology and Management.

Software engineering management and measurement of complex systems, software development maturity, project planning and management, estimation models and techniques, project scheduling, software quality, reliability, assurance, software productivity models.

INFS4848  
Information Systems Project Management  
*Staff Contact: School Office*

**Prerequisite/s:** INFS1602. Admission to BSc degree course at Honours level majoring in Information Systems plus approval of the Head of School of Information Systems, Technology and Management.

An introduction to the central concepts and issues of project management and the practical benefits of project planning and management together with resource management. Practical sessions in project planning and the use of a computer based management tool. Additional topics include customer focus, lifecycle customisation, work packages, progress monitoring, risk evaluation, quality management, people skills, and negotiation skills. Case studies of and examples from software development projects will be used as illustrations.

INFS4853  
Information Systems Management  
*Staff Contact: School Office*

**Prerequisite/s:** INFS1602, INFS1603. Admission to BSc degree course at Honours level majoring in Information Systems plus approval of the Head of School of Information Systems, Technology and Management.

This course aims to assist students to develop their knowledge and understanding of important issues involved in the management of information systems in organisations and their ability to critically analyse these issues. Management of information systems will be considered at strategic, tactical and operational levels. Particular emphasis will be given to the management of enterprise-wide and inter-organisational systems and planning for their strategic use. Students without knowledge of and experience in management or the use of IS in organisations may wish to take the course INFS4848/INFS5848 before this course.

INFS4857  
Information and Decision Technology  
*Staff Contact: School Office*

**Prerequisite/s:** Admission to BSc degree course at Honours level majoring in Information Systems plus approval of the Head of School of Information Systems, Technology and Management.

To examine - The role of information and models in managerial decision making and prediction. The role of information systems in decision making. Assessing the value of information systems and the contribution of information in decision making under uncertainty. The role of information in managerial prediction and forecasting. The development of computer based models to support tactical management.

INFS4886  
Research Topics in Information Systems 1  
*Staff Contact: School Office*

**Prerequisite/s:** Admission to BSc degree course at Honours level majoring in Information Systems.

The development of science. Alternative social science research methodologies - case study, normative, laboratory, field studies and field tests. The research process. Judgment in research. Statistical analysis of research data and interpretation of results. Writing the research report.

INFS4887  
Research Topics in Information Systems 2  
*Staff Contact: School Office*

**Prerequisite/s:** Admission to BSc degree course at Honours level majoring in Information Systems.

The objective of this course is to enable the students of information systems research to carry out data analysis using statistical tools for empirical research. It examines both the theoretical aspects of scientific data and statistical analysis and introduces the student to a statistical data analysis package.
Japanese and Korean Studies

In addition to its core language program, the Department of Japanese and Korean Studies in the Faculty of Arts and Social Sciences offers a range of Japanese and Korean language and non-language area studies elective courses to students, including courses in Japanese and Korean cultural studies, business and management and technical language.

For students with HSC or other Japanese and Korean language studies, a multiple entry system operates and, subject to an individual placement test, students will be allocated to the most suitable course level.

Notes: For students admitted in their first year of studies to JAPN2000 or KORE2000 or higher on the grounds of ability and/or previous study, such courses will be counted as Level 1 courses in terms of degree regulations. No student will be permitted to enrol in courses carrying more than 12 upper level units of credit in any School/area of studies under this provision.

JAPN1000
Japanese Communication 1A
Staff Contact: Ms Iida
UOC6 HPW5 S1
Introduction to modern Japanese interactive skills, i.e. listening, speaking, reading, writing, rules of communication, and socio-cultural knowledge of present-day Japan and local Japanese community, essential to basic survival interaction with Japanese. Emphasis on conversational skills. Hiragana, katakana and approximately 50 kanji are introduced.

JAPN1001
Japanese Communication 1B
Staff Contact: Mr William Armour
UOC6 HPW5 X1 S2
Prerequisite/s: JAPN1000
Further development of interactive skills in basic Japanese, regarding everyday non-technical topics. Introduction of approximately 150 new kanji.

JAPN2000
Japanese Communication 2A
Staff Contact: Ms Okamoto
UOC6 HPW5 X1 S1
Prerequisite/s: JAPN1001
Further development of beginners' Japanese interactive skills. Prepares students to become competent in anticipated Australia-Japan contact situations and basic survival situations in Japan. Continued emphasis on oral-aural skill acquisition. Approximately 100 new kanji are introduced.

JAPN2001
Japanese Communication 2B
Staff Contact: School Office
UOC6 HPW5 X1 S2
Prerequisite/s: JAPN2000
Consolidation of oral-aural skills up to intermediate level. Development of reading and writing skills, with another 150 kanji introduced.

IBUS2103
Japanese Business
Staff Contact: School Office
UOC6 HPW3 S2
Prerequisite/s: 48 units of credit in Arts & Social Sciences, Law, Science or Commerce & Economics.
Recent Japanese business and economic performance; corporate strategy; organisational strategy and human resource management practices; impact of culture on management style and decision making; industrial organisation and business groups; corporate finance and governance; role of small and medium size enterprises quality control and just-in-time production; information structures in the Japanese firm; subcontracting and assembler-supplier relations; FDI and overseas production; human resource management transfer; government-business relations.

JAPN2300
Professional Japanese Communication
Staff Contact: School Office
UOC6 HPW3 S1
Prerequisite/s: JAPN1001
Excluded: JAPN3001, JAPN4000
Students develop communicative competence in spoken and written professional Japanese at early intermediate level, relevant to a variety of business and commercial situations. The course emphasises professional language use including both linguistic and para-linguistic politeness.

JAPN2500
Japanese Society, Culture and Economy
Staff Contact: School Office
UOC6 HPW3 S1
An introduction to Japanese society, history, culture, politics and economy. Topics include social stratification, the role of women, demographic change, the education system, electoral politics, interest-group representation, Japan's economic growth, agriculture and industrial development, the role of the state, Japan's underworld Yakuza and traditional Kabuki theatre.

JAPN2600
Hospitality Japanese
Staff Contact: School Office
UOC6 HPW3 S2
Prerequisite/s: JAPN2000
Excluded: JAPN4000, JAPN4100
This course aims to develop interactive competence in spoken Japanese for the hospitality industry, particularly in professional situations relating to tourism and leisure. Includes finance and banking, hotel, advertising, restaurant and other work situations. Emphasises comparative cultural aspects, covering honorifics and etiquette as well as non-linguistic aspects of interaction between hospitality personnel and tourists.

JAPN2000
Japanese Communication 2A
Staff Contact: Ms Okamoto
UOC6 HPW5 X1 S1
Prerequisite/s: JAPN1001
Further development of beginners' Japanese interactive skills. Prepares students to become competent in anticipated Australia - Japan contact situations and basic survival situations in Japan. Continued emphasis on oral-aural skill acquisition. Approximately 100 new kanji are introduced.

JAPN2001
Japanese Communication 2B
Staff Contact: School Office
UOC6 HPW5 X1 S2
Prerequisite/s: JAPN2000
Consolidation of oral-aural skills up to intermediate level. Development of reading and writing skills, with another 150 kanji introduced.

IBUS2103
Japanese Business
Staff Contact: School Office
UOC6 HPW3 S2
Prerequisite/s: 48 units of credit in Arts & Social Sciences, Law, Science or Commerce & Economics.
Recent Japanese business and economic performance; corporate strategy; organisational strategy and human resource management practices; impact of culture on management style and decision making; industrial organisation and business groups; corporate finance and governance; role of small and medium size enterprises quality control and just-in-time production; information structures in the Japanese firm; subcontracting and assembler-supplier relations; FDI and overseas production; human resource management transfer; government-business relations.

JAPN2300
Professional Japanese Communication
Staff Contact: School Office
UOC6 HPW3 S1
Prerequisite/s: JAPN1001
Excluded: JAPN3001, JAPN4000
Students develop communicative competence in spoken and written professional Japanese at early intermediate level, relevant to a variety of business and commercial situations. The course emphasises professional language use including both linguistic and para-linguistic politeness.

JAPN2500
Japanese Society, Culture and Economy
Staff Contact: School Office
UOC6 HPW3 S1
An introduction to Japanese society, history, culture, politics and economy. Topics include social stratification, the role of women, demographic change, the education system, electoral politics, interest-group representation, Japan's economic growth, agriculture and industrial development, the role of the state, Japan's underworld Yakuza and traditional Kabuki theatre.

JAPN2600
Hospitality Japanese
Staff Contact: School Office
UOC6 HPW3 S2
Prerequisite/s: JAPN2000
Excluded: JAPN4000, JAPN4100
This course aims to develop interactive competence in spoken Japanese for the hospitality industry, particularly in professional situations relating to tourism and leisure. Includes finance and banking, hotel, advertising, restaurant and other work situations. Emphasises comparative cultural aspects, covering honorifics and etiquette as well as non-linguistic aspects of interaction between hospitality personnel and tourists.
JAPN3000
Japanese Communication 3A
Staff Contact: Dr Chihiro Thomson
UOC6 HPW5 S1
Prerequisite/s: JAPN2001
Equips students with solid linguistic skills at intermediate level, with increasing emphasis on reading and writing. Introduction to a variety of local Australia-Japan contact situations and expanding practical usage of students' interactive skills. Approximately 150 new Kanji are introduced.

JAPN3001
Japanese Communication 3B
Staff Contact: Dr Chihiro Thomson
UOC6 HPW5 S2
Prerequisite/s: JAPN3000
Further development of communicative skills and competence attained in JAPN3000. Students use Japanese in a wider context, thereby increasing vocabulary and knowledge of grammatical structures. Another 150 Kanji are introduced.

JAPN3500
Business Japanese
Staff Contact: Ms Okamoto
UOC6 HPW3 S2
Prerequisite/s: JAPN3000
Excluded: JAPN4100, JAPN4200
Concentrates on interactive skills for business situations, including reading and writing. Introduction to technical language of accounting, finance, economics and marketing and develops skills needed in typical formal and informal business contact situations, such as business introductions and meetings, business conversation, written channels of communication and business etiquette.

JAPN3900
Introduction to Japanese Studies (Advanced)
Staff Contact: School Office
UOC6 HPW3
Introduces a wide range of areas in Japanese Studies, such as society, history, politics, economy, law, culture, and language. Explores topics such as ageing society, gender roles, the education system, Japan's current economic restructuring, with an emphasis on critical examination of research in these fields.

JAPN3901
Special Topics in Japanese (Advanced)
Staff Contact: School Office
UOC6 HPW3 S1
Provides students with a framework for analysing problems in the field of Japanese Studies, including a theoretical framework and types and sources of problems. Where possible, students carry out empirical data collection and are guided through the analysis of and search for possible solutions to these problems.

JAPN3902
Readings in Japanese Studies (Pre-Honours)
Staff Contact: School Office
UOC6 HPW3 S2
Students read Japanese and English writings in selected fields of Japanese Studies. Students intending to enter Honours program read extensively in the area of their research fields. They develop ability to read academic writings proficiently and critically, acquire comprehensive understanding of the fields and produce an annotated bibliography of their reading.

JAPN4000
Japanese Communication 4A
Staff Contact: Ms Masumi-So
UOC6 HPW5 S1
Prerequisite/s: JAPN3001
Concentrates on acquisition of late-intermediate to early-advanced interactive skills in Japanese with continued emphasis on reading and writing. Introduction to basic linguistic features of advanced level Japanese and provides opportunities to practise skills needed in typical formal and informal Australia-Japan contact situations. Approximately 150 Kanji are introduced.

JAPN4001
Japanese Communication 4B
Staff Contact: Ms Masumi-So
UOC6 HPW5 S2
Prerequisite/s: JAPN4000
Prepares students in acquisition of well-rounded linguistic and communicative competence necessary for advanced learners. Further extension and systematic practice of interactive skills. Another 150 Kanji are introduced.

JAPN4100
Japanese Communication 5A
Staff Contact: Mr Teruya
UOC6 HPW5 S1
Prerequisite/s: JAPN4001
Focuses on mid-advanced Japanese interactive skills. Increasing emphasis is placed upon further development of reading and writing abilities. Autonomous learning is encouraged and assisted in acquisition of more advanced interactive skills. Students are given opportunities to improve on competence in professional and business settings. Approximately 250 new Kanji are introduced.

JAPN4101
Japanese Communication 5B
Staff Contact: Mr Teruya
UOC6 HPW5 S2
Prerequisite/s: JAPN4100
Honning of reading and writing skills attained in JAPN4100. Continued instruction in more advanced conversational and grammatical structures and useful vocabulary for the purpose of business / professional and related areas of communication. A further 250 Kanji are introduced.

JAPN4200
Japanese Communication 6A
Staff Contact: Mr Teruya
UOC6 HPW5 S1
Prerequisite/s: JAPN4101
Concentrates on further acquisition of interactive skills required in a wider variety of Australia-Japan contact situations. Continued emphasis on autonomous learning and self-monitoring of problem areas in interactive skills. Approximately 250 new Kanji are introduced.

JAPN4201
Japanese Communication 6B
Staff Contact: Mr Teruya
UOC6 HPW5 S2
Prerequisite/s: JAPN4200
Refining of linguistic and communicative skills acquired in JAPN4200. Another 250 Kanji are introduced, ie. the remaining Jooyoo Kanji.

JAPN4300
Advanced Reading in Japanese A
Staff Contact: Mr Teruya
UOC6 HPW5 S1
Prerequisite/s: JAPN4201
Provides opportunity for advanced learners of Japanese with intensive and extensive reading in the language on selected topic(s). Accumulation of Kanji, vocabulary and idiomatic expressions is emphasised.

JAPN4301
Advanced Reading in Japanese B
Staff Contact: Mr Teruya
UOC6 HPW5 S2
Prerequisite/s: JAPN4300
Leaders are required to continue reading on the selected topic(s) from JAPN4300, prepare a paper and give a formal oral presentation to a group of native Japanese speakers.
Major Sequence in Korean Studies

A major sequence in Korean Studies comprises 42 units of credit, including 36 units of credit from Korean language courses plus IBUS2104 Korean Business.

KORE1000 Korean Communication 1A  
Staff Contact: Mr Shin  
UOC6 HPW5 S1  
Assumed Knowledge: Some background knowledge of the Korean language.  
Prerequisite/s: None

Further development of communicative skills in introductory Korean, with emphasis on a variety of real life situations. New communicative functions, vocabulary and grammatical structures are progressively added to knowledge and skills acquired in KORE1000.

KORE1100 Introductory Korean for Background Speakers A  
Staff Contact: Mr Shin  
UOC6 HPW5 S1  
Assumed Knowledge: Some background knowledge of the Korean language.  
Prerequisite/s: None

Designed to meet the needs of Korean background speakers wishing to develop their language proficiency. Aims to further develop and extend students existing linguistic knowledge and communicative skills, with a greater emphasis on written language. Also aims to enhance understanding and use of written and spoken Korean in different styles and contexts. A wide range of texts and authentic materials from the Korean media and relating to business transactions are used. Selected Hanja (Sino-Korean characters) are introduced to develop reading and comprehension skills for modern Korean mixed script.

KORE1101 Introductory Korean for Background Speakers B  
Staff Contact: Mr Shin  
UOC6 HPW5 S2  
Assumed Knowledge: Some background knowledge of the Korean language.  
Prerequisite/s: None

Further consolidation and development of language skills acquired in KORE1100. A wider range of texts and authentic materials are used. Approximately 150 new Hanja are introduced.

KORE2000 Korean Communication 2A  
Staff Contact: Mr Shin  
UOC6 HPW5 S1  
Prerequisite/s: KORE1000

Further development of communicative skills on the groundwork covered in introductory-level Korean. Allows students to build upon their spoken and written language skills, enabling them to interact in a wider range of communicative situations.

KORE2001 Korean Communication 2B  
Staff Contact: Mr Shin  
UOC6 HPW5 S2  
Prerequisite/s: KORE2000

Consolidates and further expands knowledge and skills developed in the previous courses as well as laying the foundation for students who wish to proceed to a third year program. A number of selected Hanja, Sino-Korean characters, is introduced to further enhance the students skills to read and comprehend modern Korean mixed script.

KORE2600 Modern Korean Society  
Staff Contact: School Office  
UOC6 HPW3  
Prerequisite/s: 36 units of credit

Examines Korea's development from the end of the Chosun dynasty to a contemporary democratic society. Topics include Japanese occupation, Korean War, economic plans and 'miracle of Han River', social structure, social changes, role of education, employment, main political parties and government institutions, Korea as a powerhouse in Asia and recent developments in inter-Korean relations.

KORE3000 Korean Communication 3A  
Staff Contact: Mr Shin  
UOC6 HPW5 S1  
Prerequisite/s: KORE2001

Consolidation of students communicative skills in both spoken and written Korean at intermediate level, with increasing emphasis on reading and writing. It introduces a wider range of communicative topics, vocabulary and grammatical structures and further expands practical usage of students knowledge and interactive skills. Approximately 100 new Hanja are also introduced.

KORE3001 Korean Communication 3B  
Staff Contact: Mr Shin  
UOC6 HPW5 S2  
Prerequisite/s: KORE3000

Further development of communicative skills attained in KORE3000 and a new orientation to specific needs in everyday business situations. It equips students with a variety of practical language skills and background information necessary not only for everyday conversation but also for Korean-Australian business situation. Includes systematic practice of communicative skills in the classroom and some field work at the real-life situations in the Sydney Korean business community. Another 150 Hanja are introduced.

KORE3400 Korean Communication 4A  
Staff Contact: School Office  
UOC6 HPW5  
Prerequisite/s: KORE3000

Caters for both Korean background speakers and non-background speakers. It focuses on further development of communicative skills based on the groundwork covered in the background introductory courses, KORE1101 or non-background KORE3001 level. Concentrates on general reading and writing skills, aspects of language styles, complex grammar, translating techniques, interpretation of texts and cultural aspects in Korean-speaking contexts. A wide range of texts and other authentic materials is used. Approximately 100 new Hanja are introduced.
KORE3401
Korean Communication 4B  
Staff Contact: School Office  
UOC6  HPW5  
Continuation of the work done in KORE3400. Further development of written language skills. Concentrates on general reading and writing skills, aspects of language styles, complex grammar, translating techniques, interpretation of texts and cultural aspects in Korean-speaking contexts. A wide range of texts and authentic materials are used. Approximately 100 new Hanja are introduced.

KORE3500
Korean Communication 5A  
Staff Contact: School Office  
UOC6  HPW5  
Further consolidates and expands students' written language skills at an advanced level. Concentrates on advanced reading and professional writing skills, aspects of language styles, complex grammar, para-professional level of translation, interpretation of texts and cultural aspects in Korean-speaking contexts. Includes a 1 hour seminar each week on cross-cultural communication. A wide range of texts and other authentic materials is used. Approximately 100 new Hanja are introduced.

KORE3501
Korean Communication 5B  
Staff Contact: School Office  
UOC6  HPW5  
Continues on from KORE3500. Further consolidates and expands students' written language skills at an advanced level. Concentrates on advanced reading and professional writing skills, aspects of language styles, complex grammar, para-professional level of translation, interpretation of texts and cultural aspects in Korean-speaking contexts. Includes a 1 hr seminar each week on cross-cultural communication. A wide range of texts and authentic materials are used. Approximately 100 new Hanja are introduced.

KORE3600
Korean Communication 6A  
Staff Contact: School Office  
UOC6  HPW5  
An introduction to professional translation at a NAATI level. Aimed at providing native speaker level students with foundations of professional translation techniques. Deals with thematic areas most common in Australia and international (Korean) contexts such as welfare, social security, medical and legal. Addresses crucial translation and linguistic problems relevant to translation: problems of vocabulary, equivalents, syntax, grammar and speech register. Includes the acquisition of translator’s practical skills and looks at professional ethics.

KORE3601
Korean Communication 6B  
Staff Contact: School Office  
UOC6  HPW5  
Continuation of KORE3600. Aimed at providing native speaker level students with foundations of professional translation techniques at a NAATI Translator level. Deals with thematic areas most common in Australia and international (Korean) contexts such as welfare, social security, medical and legal. Addresses crucial translation and linguistic problems relevant to translation: problems of vocabulary, equivalents, syntax, grammar and speech register. Includes the acquisition of translator’s practical skills and looks at professional ethics.

KORE3900
Introduction to Korean Studies  (Advanced)  
Staff Contact: School Office  
UOC6  HPW3  
Introduces a wide range of topic areas in Korean Studies, such as history, politics, economics, business, society, culture, language and literature, with a particular focus on the rapid changes in the twentieth century and the strength and continuity of Korean culture. Also focuses on critical examination of research in these areas.

IBUS2104
Korean Business  
Staff Contact: School Office  
UOC6  HPW3  S2  
Prerequisite/s: 48 units of credit in Arts & Social Sciences, Law, Science or Commerce & Economics.  
An introduction to Korean Economy and Business practice. Topics include: Korea’s economic development and growth; economic policies; government-business relations; corporate structure and enterprise groupings; Chaebol; industry system; workplace practices; decision-making procedures; business negotiations and; socio-cultural elements in business and management.

Business Law and Taxation

Business Law and Taxation Level I

LEGT1711
Legal Environment of Commerce  
Staff Contact: School Office  
UOC6  HPW3  S1 S2  
The entire fabric of commerce is woven from a complex legal regime, judicial and statutory, which regulates all commercial activity. This subject deals with the Australian legal system; the Constitution and Commonwealth/State relations; Parliament and statute law; the courts and case law; the executive and administrative law; the legal process and alternative dispute resolution. Areas of substantive law relevant to commerce are examined including property law (with particular reference to intellectual property), torts law (with particular reference to negligence), contract law, criminal law, commercial entities and transactions, competition and consumer protection.

LEGT1715
International Business Law  
Staff Contact: School Office  
UOC6  HPW3  S1 S2  
Business today increasingly operates in an international market place. This course provides an introduction to the legal and commercial considerations affecting the conduct of business at an international level. Various types of international business activities and the more appropriate structures for them are considered, as are basic questions of finance, transport, property, intellectual property, fair trading and dispute resolution.

LEGT1730
Business, Ethics and the Law  
Staff Contact: School Office  
UOC6  HPW3  S2  
Society increasingly demands ethical and social responsibility. This course provides an ethical dimension to the conduct of contemporary commerce in Australia. Although ethics exists independently of the law, legislative and common law developments are increasingly imposing higher standards of commercial morality. This course examines the conceptual basis of ethical behaviour, and the increasing attempts by the law to prescribe ethical behaviour, through a series of case studies drawn from disciplines within the Faculty’s jurisdiction.

LEGT1731
Marketing and Distribution Law  
Staff Contact: School Office  
UOC6  HPW3  S1  
The marketing and distribution of goods and services operates within a comprehensive regulatory framework. This course examines that framework. Topics include restrictive trade practices implications of distribution with special reference to collusive activity, exclusive dealing, resale price maintenance and abuse of market power; consumer protection and fair trading implications of sales promotion with particular reference to misleading or deceptive
conduct and other unfair practices; advertising self regulation; product liability; protection of intellectual property; franchising, licensing and character merchandising.

LEGT1761
Law of Banking and Finance
Staff Contact: School Office
UOC6 HPW3 S2
This course examines the regulatory environment for banking and finance with particular reference to lending transactions and the securities taken by all financial institutions that lend for profit. Topics include legal concepts underlying the bank-customer relationship and duties of banker and customer; foreign currency loans; consumer issues in lending; electronic banking; use and regulation of negotiable instruments (cheques, promissory notes and bills of exchange); corporate fund raising; domestic and international methods of fund raising.

Business Law and Taxation Level II

LEGT7721
Business Transactions
Staff Contact: School Office
UOC6 HPW3 S1 S2
Prerequisite/s: LEGT1711
Contract law forms the basis of all important commercial transactions and is essential to a proper understanding of more specialised areas of commercial law. This course examines the general principles of contract law and how they are developed and expanded in relation to specialised commercial transactions including agency, contracts for the sale of goods, guarantees, bankruptcy, negotiable instruments, securities and insurance law. Relevant areas of consumer protection and competition law are also discussed. The common contractual themes in which these areas are grounded will be highlighted, along with the different requirements attaching to the rights and obligations of parties to the transaction in such areas.

LEGT7771
Information Technology Law
Staff Contact: School Office
UOC6 HPW3 S1 S2
Prerequisite/s: LEGT1711 or INFS1602
The laws governing information technology. The topics examined include intellectual property law - patents, copyright and confidential information; licensing; technology contracts; tortious liability; product liability; computer crimes; data protection and privacy; and current issues.

Business Law and Taxation Level III

LEGT7741
Business Entities
Staff Contact: School Office
UOC6 HPW4 S1 S2
Prerequisite/s: LEGT7721
The law relating to the legal structures available for business including partnerships, joint ventures, trusts and companies. The primary focus is on the modern company and its operation under the Corporations Law. Topics include the nature of the corporate entity; establishing the company and fund raising; shares and dividends; the rights and duties of directors; the position of management; shareholders' rights and remedies for their enforcement; insolvency and liquidation.

LEGT7751
Business Taxation
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: LEGT7721
The complexity and comprehensiveness of the Australian taxation system means that tax considerations must be taken into account in most business decisions. An understanding of the structure of the Australian taxation system and of the policy factors that guide legislators is essential to professional business advisors. This subject concentrates on income taxation in Australia. Topics include: concepts of income; allowable deductions; tax accounting; taxation of partnerships, trusts and corporations; anti-avoidance provisions; tax administration; capital gains tax; fringe benefits tax.

LEGT7791
International Business Taxation
Staff Contact: School Office
Enrolment requires School approval
UOC6 HPW3 S1
Prerequisite/s: LEGT1711
This course discusses the principles relevant to international taxation and uses Australian international tax rules to highlight possible international tax policy choices and problems. Special emphasis is given to tax strategies relevant to international direct investment.

LEGT7811
Corporations: Law, Tax and Strategy
Staff Contact: School Office
UOC6 HPW3 S2
Prerequisite/s: LEGT7741, LEGT7751
What are the legal and tax implications of the different financing alternatives available to corporations? Are all the different methods of profit distribution from a company equally tax effective? What are the different strategies available to a takeover bidder and when should they be used? How should a corporate reorganisation be structured? This course will examine these and similar questions, relating to the interaction between legal and tax questions in corporate governance, through a series of case studies and simulation games.

LEGT7812
Corporate Fraud and Crime
Staff Contact: School Office
UOC6 HPW3 S2
Prerequisite/s: LEGT7721
Corequisite/s: LEGT7741
Corporate fraud costs Australian business tens of billions of dollars every year. This subject examines aspects of fraud and corporate crime in their legal and commercial contexts. Topics include the analysis of the various laws relating to theft, fraud and other white collar crimes; the detection and investigation of fraud and associated issues including the powers of employers and law enforcement agencies, surveillance, and privacy; strategies for minimising legal exposure to fraud.

Faculty of Life Sciences

LIFE1001
Life Science Advanced Seminar 1
Staff Contact: 1st Year Biology Officer
UOC3 HPW2 S2
Notes: Restricted to Advanced Science students.
An introduction to key advances that have taken place in research across the broad range of Life Sciences, and their impacts on their fields. Examples of the latest research and future directions from a broad range of disciplines will be examined critically, with fields covered including biomedical science, environmental science, biotechnology and psychology. Library and WWW searches will consolidate material, which will focus on research activities and facilities within the University, including laboratory visits, and discussions with laboratory staff.

LIFE2001
Life Science Advanced Seminar 2
Staff Contact: Mr Paul March
UOC3 HPW2 S1
Notes: Restricted to Advanced Science Students
An introduction to the nature of research in the life sciences, theories of research process, research ethics, the nature of creativity in
research and the concepts of discovery and innovation. Literature and electronic information resources for research and written communication of science are introduced. Critical evaluation of scientific data and its presentation is discussed. Small group analysis of a specialised and innovative aspect of research.

Marine Science

Note: Some subjects that appear in this section may be restricted to students for whom the subject comprises a compulsory part of their program.

Marine Science Level II

MSCI2001
Introductory Marine Science
Staff Contact: Centre for Marine and Coastal Studies
UOC6 HPW4 S1 S2
Note/s: Field work.
Ocean basins, sediments, properties of seawater, ocean circulation, coasts and coastal processes. Marine biology and ecology, primary and secondary productivity. Personal expenses will be incurred.

MSCI2051
Coral Reef: Environment and Ecology
Staff Contact: Centre for Marine and Coastal Studies
UOC3 HPW0 X1 S1 S2
Note/s: Available February and July.
Basic oceanographic processes and how these apply in the Great Barrier Reef, the characteristics of the waters of the Great Barrier Reef; the types and development of reefs, corals and reef communities, environmental damage to corals and exploitation of the reef, management by Great Barrier Reef Marine Park Authority. Laboratory classes include a study of the reef flat, its inhabitants, their distributions and interactions, the reef environment and its measurement. Personal expenses will be incurred.

MSCI6200
Coastal Monitoring Techniques
Staff Contact: Associate Professor Alberto Albani
UOC6 HPW5 S2
Excluded: GEOL6231
Note/s: Field work of up to 4 days is a compulsory part of this course. Students will incur personal costs.

Mathematics

1. Many courses in the School of Mathematics are offered at two levels. The higher level caters for students with superior mathematical ability. Where both levels are offered, the proportion of Distinction and High Distinction grades is lower in the ordinary level. The proportion is lower still in the General Mathematics courses.

2. Students proceeding to Year 4 (Honours) in Mathematics may be required to take some of their Mathematics courses at the higher level. However, students should not think that the higher level courses are intended only for those who are proposing to do Honours. Any student with the ability to undertake higher courses benefits from so doing.

3. Where a course is mentioned at the ordinary level, the equivalent course at the higher level (if any) may be substituted. The higher equivalent of MATH2011 is the pair of courses MATH2110 and MATH2610.

Mathematics Level I

Students whose program requires them to take Mathematics courses in later years must take the standard first year courses MATH1131 Mathematics 1A and MATH1231 Mathematics 1B or their higher equivalents MATH1141 Higher Mathematics 1A and MATH1241 Higher Mathematics 1B. The higher versions cover all of the material in MATH1131 and MATH1231, often at greater depth, and are intended for students who have obtained very high marks in the 3 or 4 unit Mathematics courses of the Higher School Certificate.

Students who do not intend studying Mathematics beyond Year 1 may instead take the courses MATH1011 General Mathematics 1B and MATH1021 General Mathematics 1C or the courses MATH1301 Mathematics for Life Sciences and MATH1304 Statistics for Life and Social Sciences. However, students who select these courses should weigh seriously the implications of their choice because only a limited number of further Mathematics courses will be available to them. (See also the note above on grades awarded.) The single course MATH1011 is also available to students seeking an alternate prerequisite for MATH1131 in cases where they do not meet the normal HSC prerequisites.
Students should note, however, that only one of MATH1011 and MATH1131 can be counted in their degree.

The course MATH1081 Discrete Mathematics is an additional Level I course which is highly recommended for all students who intend to major in Mathematics. It may be taken in Stage 1 or Stage 2, depending on the mathematical background of the student.

The course MATH1090 Discrete Mathematics for Electrical Engineers is restricted to students in Electrical Engineering and Telecommunications programs.

MATH1000
Modelling Real World Phenomena

Staff Contact: School Office

UC03 HPW2 S2

Note/s: Restricted to students in Advanced Science.

Introduction to the process of constructing mathematical models of real-world processes and situations. The emphasis is on seeking reasonable solutions to open-ended problems, not on the application of particular mathematical techniques. Examples will be taken from biology, finance, operations management, computer science, meteorology and other fields. Students will research a large project in teams and present a written and oral report on their results.

MATH1011
General Mathematics 1B

Staff Contact: School Office

UC06 HPW6 S1 S2

Excluded: MATH1031, MATH1131, MATH1141, MATH1151, ECON1202, ECON2291

Assumed Knowledge: A level of knowledge equivalent to achieving a mark of at least 60 in HSC 2 unit Mathematics. This refers to the 2 unit Mathematics subject which is related to the 3 unit Mathematics subject. Students who have taken 2 unit Mathematics in Society or Mathematics in Practice will not have achieved the level of knowledge which is assumed in this course.

Functions (and their inverses), limits, asymptotes, continuity; differentiation and applications; integration, the definite integral and applications; inverse trigonometric functions; the logarithmic and exponential functions and applications; sequences and series; mathematical induction; the binomial theorem and applications; introduction to probability theory; introduction to 3-dimensional geometry; introduction to linear algebra.

MATH1021

General Mathematics 1C

Staff Contact: School Office

UC06 HPW6 S2

Prerequisites: MATH1011 or MATH1131 or MATH1141

Excluded: MATH1031, MATH1231, MATH1241, MATH1251, ECON1202, ECON2291

Techniques for integration, improper integrals; Taylor’s theorem; first order differential equations and applications; introduction to multivariable calculus; conics; finite sets; probability; vectors, matrices and linear equations.

MATH1031

Mathematics for Life Sciences

Staff Contact: School Office

UC06 HPW6 S1

Excluded: MATH1011, MATH1021, MATH1131, MATH1141, MATH1151, MATH1231, MATH1241, MATH1251, ECON1202, ECON2291

Assumed Knowledge: A level of knowledge equivalent to achieving a mark of at least 60 in HSC 2 unit Mathematics. This refers to the 2 unit Mathematics subject which is related to the 3 unit Mathematics subject. Students who have taken 2 unit Mathematics in Society or Mathematics in Practice will not have achieved the level of knowledge which is assumed in this course.


MATH1041

Statistics for Life and Social Sciences

Staff Contact: School Office

UC06 HPW6 S2

Excluded: MATH2819, MATH2870, MATH2889, ECON1203, ECON2292

Assumed Knowledge: As for MATH1031


MATH1049

Statistics for Aviation A

Staff Contact: School Office

UC03 HPW6 S2 WKS1-7

Excluded: MATH1041, MATH2819, MATH2870, MATH2889, ECON1203, ECON2292

Assumed Knowledge: As for MATH1031

Note/s: Available only to students in the Aviation program. Its content is the first half of MATH1041.

MATH1059

Statistics for Aviation B

Staff Contact: School Office

UC03 HPW6 S2 WKS8-14

Prerequisite/s: MATH1049

Excluded: MATH1041, MATH2819, MATH2870, MATH2889, ECON1203, ECON2292

Note/s: Available only to students in the Aviation program. Its content is the second half of MATH1041.

MATH1081

Discrete Mathematics

Staff Contact: School Office

UC06 HPW6 S1 S2

Corequisite/s: MATH1131 or MATH1141

Excluded: MATH1090

Assumed Knowledge: HSC 3 unit Mathematics. Students will be expected to have achieved a combined mark of at least 100 in 2 unit and 3 unit Mathematics.


MATH1090

Discrete Mathematics for Electrical Engineers

Staff Contact: School Office

UC03 HPW3 S1

Corequisite/s: MATH1131 or MATH1141

Excluded: MATH1081

Assumed Knowledge: HSC 3 unit Mathematics. Students will be expected to have achieved a combined mark of at least 100 in 2 unit and 3 unit Mathematics.

Note/s: Not available in the Science program unless specified as part of a combined degree program.

The role of proof in mathematics, logical reasoning and implication, different types of proofs. Sets, algebra of sets, operations on sets, mathematical logic, truth tables, syntax, induction. Recursion, recursive logic, recurrence relations.
MATH1131
Mathematics 1A
Staff Contact: School Office
UOC6 HPW6 S1 S2
Excluded: MATH1011, MATH1031, MATH1141, MATH1151, ECON11202, ECON2291
Assumed Knowledge: HSC 3 unit Mathematics. Students will be expected to have achieved a combined mark of at least 100 in 2 unit and 3 unit Mathematics.
Complex numbers, vectors and vector geometry, linear equations, matrices and matrix algebra, determinants. Functions, limits, continuity and differentiability, integration, polar coordinates, logarithms and exponentials, hyperbolic functions, functions of several variables. Introduction to computing and the Maple symbolic algebra package.

MATH1141
Higher Mathematics 1A
Staff Contact: School Office
UOC6 HPW6 S1
Excluded: MATH1011, MATH1031, MATH1131, MATH1151, ECON11202, ECON2291
Assumed Knowledge: HSC 4 unit Mathematics. Students will be expected to have achieved a combined mark of at least 186 in 3 unit and 4 unit Mathematics.
As for MATH1131 but in greater depth.

MATH1151
Mathematics for Actuarial Studies and Finance 1A
Staff Contact: School Office
UOC6 HPW6 S1
Excluded: MATH1011, MATH1031, MATH1131, MATH1141, ECON11202, ECON2291
Assumed Knowledge: HSC 3 or 4 unit Mathematics. Students will be expected to have achieved a combined mark of at least 140 in 2 and 3 unit Mathematics or 180 in 3 unit and 4 unit Mathematics.
Vectors and vector geometry, linear equations, matrices and matrix algebra, basic input-output linear models, determinants, least squares approximation, probability and statistics, continuous and differentiable functions, mean value theorem, fundamental theorem of calculus, functions of several variables, Lagrange multipliers, introduction to Matlab.

MATH1231
Mathematics 1B
Staff Contact: School Office
UOC6 HPW6 X1 S2
Prerequisite/s: MATH1131 or MATH1141
Excluded: MATH1021, MATH1031, MATH1241, MATH1251, ECON11202, ECON2291

MATH1241
Higher Mathematics 1B
Staff Contact: School Office
UOC6 HPW6 S2
Prerequisite/s: MATH1131 CR or MATH1141
Excluded: MATH1021, MATH1031, MATH1231, MATH1251, ECON11202, ECON2291
As for MATH1231 but in greater depth.

MATH1251
Mathematics for Actuarial Studies and Finance 1B
Staff Contact: School Office
UOC6 HPW6 S2
Prerequisite/s: MATH1151
Excluded: MATH1021, MATH1031, MATH1231, MATH1241, ECON11202, ECON2291
Complex numbers, vector spaces, polynomial interpolation, linear transformations, Markov processes, eigenvalues and eigenvectors, exact and numerical solution of ordinary differential equations, sequences.

Mathematics Level II
The courses MATH2029 Engineering Mathematics 2A, MATH2039 Engineering Mathematics 2B and MATH2019 Engineering Mathematics 2CE are servicing courses for some Engineering programs and are not available for students in the Science program except where specified as part of a combined degree program.
The courses MATH2020 Mathematics 2A and MATH2030 Mathematics 2B are available for students in the Science program who wish to take no more than 6 units of credit in Level II Mathematics.

MATH2011
Several Variable Calculus
Staff Contact: School Office
UOC6 HPW4 S1 S2
Prerequisite/s: MATH1231 or MATH1241 or MATH1251;
Excluded: MATH2100, MATH2110, MATH2510, MATH2610.
Functions of several variables, limits and continuity, differentiability, gradients, surfaces, maxima and minima, Taylor series, Lagrange multipliers, chain rules, inverse function theorem, Jacobian derivatives, double and triple integrals, iterated integrals, Riemann sums, cylindrical and spherical coordinates, change of variables, centre of mass, curves in space, line integrals, parametrised surfaces, surface integrals, del, divergence and curl, Stokes' theorem, Green's theorem in the plane, applications to fluid dynamics and electrodynamic, orthogonal curvilinear coordinates, arc length and volume elements, gradient, divergence and curl in curvilinear coordinates.

MATH2019
Engineering Mathematics 2CE
Staff Contact: School Office
UOC6 HPW5 S2
Prerequisite/s: MATH1021 CR or MATH1231 or MATH1241 or MATH1251
Excluded: MATH2009, MATH2029, MATH2039
Note/s: Not available in the Science program unless specified as part of a combined degree program.
Partial differentiation and applications, vector algebra, double integrals, ordinary differential equations, introduction to vector field theory, extrema of functions of 2 variables, matrices and their applications, Laplace transforms, Fourier series, partial differential equations and their solution for selected physical problems.

MATH2020
Mathematics 2A
Staff Contact: School Office
UOC3 HPW2 S1
Prerequisite/s: MATH1021 (CR) or MATH1231 or MATH1241 or MATH1251
Note/s: MATH2020 and MATH2030 are intended for students who want to take no more than 6 units of credit in Level II Mathematics. If any other Level II courses in Mathematics other than Statistics courses are taken then neither MATH2020 nor MATH2030 will be counted. Taught by the Keller self-paced learning method.
Revision of integration, differential equations, use of Laplace transforms, solutions by series.

MATH2029
Engineering Mathematics 2A
Staff Contact: School Office
UOC6 HPW6 S1
Prerequisite/s: MATH1021 (CR) or MATH1231 or MATH1241 or MATH1251
Note/s: Not available in the Science program unless specified as part of a combined degree program.
MATH2030
Mathematics 2B
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH1021 (CR) or MATH1231 or MATH1241 or MATH1251
Notes: MATH2020 and MATH2030 are intended for students who want to take no more than 6 units of credit in Level II Mathematics. If any other Level II courses in Mathematics other than Statistics courses are taken then neither MATH2020 nor MATH2030 will be counted. Taught by the Keller self-paced learning method.

Fourier series; multiple integrals, matrices and their applications to the theory of linear equations, eigenvalues; introduction to numerical methods.

MATH2039
Engineering Mathematics 2B
Staff Contact: School Office
UOC3 HPW3 S2
Prerequisite/s: MATH1231 or MATH1241
Notes: Not available in the Science program unless specified as part of a combined degree program.

Multiple integrals, vector calculus, extrema of functions of several variables.

MATH2049
Mathematics and Statistics for Materials Science A
Staff Contact: School Office
UOC3 HPW3 S1
Prerequisite/s: MATH1231 or MATH1241
Notes: Available only to students for whom it is specifically required as part of their program.

Statistics: graphical data analysis, random variables and their properties, normal and binomial distributions, functions of random variables and their simulation using computers, one and two sample inference methods, simple and multiple linear regression.

Mathematics: functions of two variables, double integrals.

MATH2059
Mathematics for Materials Science B
Staff Contact: School Office
UOC3 HPW3 S2
Prerequisite/s: MATH1231 or MATH1241
Notes: Available only to students for whom it is specifically required as part of their program.


Applied Mathematics Level II

MATH2110
Higher Vector Analysis
Staff Contact: School Office
UOC3 HPW2 S1
Prerequisite/s: MATH1231 or MATH1241 or MATH1251
Excluded: MATH2101, MATH2100

Properties of vectors and tensors; divergence, gradient, curl of a vector; line, surface and volume integrals. Gauss and Stokes theorems. Curvilinear coordinates.

MATH2120
Mathematical Methods for Differential Equations
Staff Contact: School Office
UOC3 HPW2 S1 S2
Prerequisite/s: MATH1231 or MATH1241 or MATH1251
Excluded: MATH2130

Introduction to qualitative and quantitative methods for ordinary and partial differential equations. The following topics are treated by example. Ordinary differential equations: linear with constant coefficients, first-order systems, singularities, boundary-value problems, eigenfunctions, Fourier series. Bessel's equation and Legendre's equation. Partial differential equations: characteristics, classification, separation of variables methods, applications of Bessel functions and Legendre polynomials.

MATH2130
Higher Mathematical Methods for Differential Equations
Staff Contact: School Office
UOC3 HPW2.5 S2
Prerequisite/s: MATH1231 or MATH1241 or MATH1251 each with a mark of 70
Excluded: MATH2120

As for MATH2120 but in greater depth.

MATH2160
Linear Programming
Staff Contact: School Office
UOC3 HPW2 S1
Prerequisite/s: MATH1231 or MATH1241 or MATH1251
Corequisite/s: MATH2501 or MATH2601

A first course in mathematical modelling and solution techniques for linear problems. The revised simplex and dual simplex methods, theory and application of sensitivity analysis, duality theory. Networks, transportation and assignment problems. Examples, applications and computing methods are prominent features.

MATH2180
Operations Research
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH2130

Modelling and solution techniques for optimization problems of interest to business and industry. Topics are selected from linear programming, integer programming, (discrete) dynamic programming, project scheduling, game theory, queuing theory, inventory theory and simulation. Software packages are used to solve realistic problems.

MATH2200
Discrete Dynamical Systems
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH1231 or MATH1241 or MATH1251
Corequisite/s: MATH2501 or MATH2601

The study of dynamical systems whose states change at discrete points in time. Difference equations, general properties. Linear systems, stability, oscillations, Z-transforms. Nonlinear systems, critical points, periodic cycles, chaotic behaviour. Applications selected from engineering, biological, social and economic contexts.

MATH2220
Continuous Dynamical Systems
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH1231 or MATH1241 or MATH1251

The study of continuous dynamical systems. One-dimensional systems, kinematic waves, applications include traffic flow and waves in fluids. An introduction to the modelling of physical, biological and ecological systems, stability, oscillations and resonance.

MATH2240
Introduction to Oceanography and Meteorology
Staff Contact: School Office
UOC3 HPW2 S1
Prerequisite/s: MATH1231 or MATH1241 or MATH1251

An introduction to mathematical models for the circulation of the atmosphere and oceans. The equations of motion are exploited so as to provide simplified models for phenomena including: waves, the effects of the Earth's rotation, the geostrophic wind, upwelling, storm surges. Feedback mechanisms are also modelled; the land/sea breeze, tornadoes, tropical cyclones. Models for large-scale phenomena including El Nino and the East Australian Current will be discussed as well as the role of the atmosphere-ocean system in climate change.
MATH2301
Mathematical Computing A
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: MATH1231 or MATH1241 or MATH1251
An introduction to mathematical computing, programming and visualization using Matlab, with a focus on mathematical modelling and simulation. Introduction to Matlab, floating point arithmetic, difference equations, nonlinear equations, numerical differentiation and integration, initial value problems.

Pure Mathematics Level II

MATH2400
Finite Mathematics
Staff Contact: School Office
UOC3 HPW2 S2 S1 S2
Prerequisite/s: MATH1081 or MATH1231 or MATH1241
Note/s: MATH1081 Discrete Mathematics is recommended.
Positional number systems, floating-point arithmetic, rational arithmetic, congruences, Chinese remainder theorem, Fermat's theorem, applications to computer arithmetic. Polynomial arithmetic, division algorithm, factorization, interpolation, finite field. Codes, error correcting codes, public-key cryptography.

MATH2430
Symbolic Computing
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH1231 or MATH1241 or MATH1251
Note/s: MATH1081 Discrete Mathematics is recommended.
Principles of, uses of and algorithms underlying symbolic computing systems. Applications in pure and applied mathematics using a variety of symbolic computing systems.

MATH2501
Linear Algebra
Staff Contact: School Office
UOC6 HPW5 S1 S2
Prerequisite/s: MATH1231 or MATH1241 or MATH1251
Excluded: MATH2509, MATH2601

MATH2509
Linear Algebra for Engineers
Staff Contact: School Office
UOC3 HPW3 S2
Prerequisite/s: MATH1231 or MATH1241
Excluded: MATH2501, MATH2601
Note/s: Not available in the Science program unless specified as part of a combined degree program.

MATH2510
Real Analysis
Staff Contact: School Office
UOC3 HPW2.5 S1 S2
Prerequisite/s: MATH1231 or MATH1241
Excluded: MATH2011, MATH2610
Multiple integrals, partial differentiation. Analysis of real valued functions of one and several variables.

MATH2520
Complex Analysis
Staff Contact: School Office
UOC3 HPW2.5 S1 S2
Prerequisite/s: MATH1231 or MATH1241 or MATH1251
Excluded: MATH2620
Analytic functions, Taylor and Laurent series, integrals. Cauchy's theorem, residues, evaluation of certain real integrals.

MATH2601
Higher Linear Algebra
Staff Contact: School Office
UOC6 HPW5 S2
Prerequisite/s: 70% in any of MATH1231 or MATH1241 or MATH1251 each with a mark of 70
Excluded: MATH2501, MATH2509
As for MATH2501, but in greater depth, and with additional material on unitary, self-adjoint and normal transformations.

MATH2610
Higher Real Analysis
Staff Contact: School Office
UOC3 HPW2.5 S2
Prerequisite/s: MATH1231 or MATH1241 or MATH1251 each with a mark of 70
Excluded: MATH2011, MATH2510
As for MATH2510 but in greater depth.

MATH2620
Higher Complex Analysis
Staff Contact: School Office
UOC3 HPW2.5 S2
Prerequisite/s: MATH1231 or MATH1241 or MATH1251 each with a mark of 70
Excluded: MATH2520
As for MATH2520 but in greater depth.

Statistics Level II

The courses MATH2829, MATH2839, MATH2859 and MATH2899 are not available to Science students unless specified as part of a combined degree program. The course MATH2841 Statistics SS is available for students who wish to take no more than 6 units of credit in Level II Statistics. It cannot be followed by any Level III Statistics courses.

MATH2801
Theory of Statistics
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: MATH1021 CR or MATH1231 or MATH1241 or MATH1251
Excluded: MATH2819, MATH2841, MATH2870, MATH2901, BIOS2041
Probability, random variables, standard distributions, bivariate distributions, transformations, central limit theorem, sampling distributions, point estimation, interval estimation, hypothesis testing.

MATH2810
Statistical Computing for Categorical Data
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH2801 or MATH2901
Excluded: MATH2910
This course will focus on the statistical computing tools appropriate for discrete-valued data. Exploratory and graphical analysis of data using modern statistical packages. Data visualisation. Analysis of cross-tabulated data. Logistic and Poisson regression for analysis of binary and count data. Log-linear models for contingency tables.
MATH2829
Statistics SU
Staff Contact: School Office
UOC3 HPW3 S1
Prerequisite/s: MATH1231 or MATH1241
Note/s: Not available to Science students except where specified as part of a combined degree program.

Introduction to probability theory, random variables and distribution functions, sampling distributions, including those of chi-square, t and F. Estimation procedures, including confidence interval estimation with an emphasis on least squares and surveying problems, and computer based exercises.

MATH2831
Linear Models
Staff Contact: School Office
UOC6 HPW4 S2
Prerequisite/s: MATH2801 or MATH2901;
Excluded: MATH2931, BIOS2041.


MATH2839
Statistics SM
Staff Contact: School Office
UOC3 HPW3 S2
Prerequisite/s: MATH1021 or MATH1231 or MATH1241
Excluded: MATH1041, MATH2841, MATH2870, MATH2801, MATH2901
Note/s: Not available in the Science program unless specified as part of a combined degree program.

Graphical data analysis. Review of probability, random variables and their properties. The normal and binomial distributions, the central limit theorem. Applications to statistical quality control. Theory of statistical inference including confidence intervals and hypothesis testing with applications to one and two sample problems based on the t- and F- test. Simple and multiple linear regression including data transformations to normality. Design and analysis of experiments, analysis of variance, introduction to factorial designs. Applications will be drawn primarily from the fields of chemical, bioprocess and petroleum engineering. Statistical computing will be based on Matlab.

MATH2841
Statistics SS
Staff Contact: School Office
UOC6 HPW4 S2
Prerequisite/s: MATH1021 or MATH1231 or MATH1241
Excluded: MATH2801, MATH2870, MATH2901, MATH2819, MATH2901
Note/s: Statistics MATH2841 is included for students desiring to attempt only 8 units of credit in Level II Statistics.

An introduction to the theory of probability, with finite, discrete and continuous sample spaces. The standard univariate distributions: binomial, Poisson and normal, an introduction to multivariate distributions. Standard sampling distributions, including those of chi-square, t and F. Estimation by moments and maximum likelihood (including sampling variance formulae, and regression); confidence interval estimation. The standard tests of significance based on the above distributions, with a discussion of power where appropriate. An introduction to experimental design: fixed, random effect models.

MATH2859
Probability, Statistics and Information
Staff Contact: School Office
UOC3 HPW3 S1 S2
Prerequisite/s: MATH1231 or MATH1241
Excluded: MATH1041, MATH2841, MATH2870, MATH2801, MATH2901
Note/s: Not available in the Science program unless specified as part of a combined degree program.

Sample spaces, probability, random variables and probability distributions. Examples of discrete and continuous distributions.


MATH2899
Applied Statistics for Chemical Engineers
Staff Contact: School Office
UOC3 HPW3 S2
Prerequisite/s: MATH1231 or MATH1241
Note/s: Not available to Science students except where specified as part of a combined degree program.

Graphical data analysis. Review of probability, random variables and their properties. The normal and binomial distributions, the central limit theorem. Applications to statistical quality control. Theory of statistical inference including confidence intervals and hypothesis testing with applications to one and two sample problems based on the t- and F- test. Simple and multiple linear regression including data transformations to normality. Design and analysis of experiments, analysis of variance, introduction to factorial designs. Applications will be drawn primarily from the fields of chemical, bioprocess and petroleum engineering. Statistical computing will be based on Matlab.

MATH2901
Higher Theory of Statistics
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: MATH1231 or MATH1241 or MATH1251;
Excluded: MATH2819, MATH2841, MATH2870, MATH2801, BIOS2041.

As for MATH2801 but in greater depth.

MATH2910
Higher Statistical Computing for Categorical Data
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH2901;
Excluded: MATH2810.

As for MATH2810 but in greater depth.

MATH2931
Higher Linear Models
Staff Contact: School Office
UOC6 HPW4 S2
Prerequisite/s: MATH2901;
Excluded: MATH2831, BIOS2041.

As for MATH2831 but in greater depth

Mathematics Level III

Students taking a Mathematics major must take MATH3010 unless the professional education requirement is being met in the other discipline of a double major; Normally MATH3010 is taken in Stage 3, but it may be taken in Stage 2 with permission of the Head of School.

Not all Level III courses in Mathematics and Statistics are offered every year. Contact the School for details.

Students proceeding to Year 4 (Honours) in some area of Mathematics should consult with the relevant Department before making a final choice of Level III courses.

MATH3000
Mathematics/Statistics Project
Staff Contact: School Office
Enrolment requires School approval
UOC3 HPW2 S1 S2
Prerequisite/s: 12 units of credit in Level 2 Maths courses.

Under supervision of an academic staff member of the School of Mathematics a student will undertake a course in reading and/or research on a topic in mathematics or statistics or on applications...
of mathematics or statistics to other disciplines such as physical, biological or social sciences, economics, finance, computing, etc. The student is expected to write an essay summarising the results of their project.

MATH3001
Mathematics/Statistics Project
Staff Contact: School Office
Enrolment requires School approval
UOC6 HPW4 S1 S2
Prerequisite/s: 12 units of credit in Level 2 Maths courses.
Under supervision of an academic staff member of the School of Mathematics a student will undertake a course in reading and/or research on a topic in mathematics or statistics or on applications of mathematics or statistics to other disciplines such as physical, biological or social sciences, economics, finance, computing, etc. The student is expected to write an essay summarising the results of their project.

MATH3002
Mathematics/Statistics Project
Staff Contact: School Office
Enrolment requires School approval
UOC12 HPW8 S1 S2
Prerequisite/s: 12 units of credit in Level 2 Maths courses.
Under supervision of an academic staff member of the School of Mathematics a student will undertake a course in reading and/or research on a topic in mathematics or statistics or on applications of mathematics or statistics to other disciplines such as physical, biological or social sciences, economics, finance, computing, etc. The student is expected to write an essay of approximately 12,000 words summarising the results of their project.

MATH3010
Professional Issues and Ethics in Mathematics
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: 36 units of credit of Mathematics

MATH3041
Mathematical Modelling for Real World Systems
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: 12 units of credit in Level 2 Maths courses.
Why are no two snowflakes alike? When will the next major stock market collapse occur? Which is the greatest sporting nation on earth? Addressing real world problems involves the steps of formulating a mathematical description of the problem, solving the mathematical model, interpreting the mathematical solution and critically evaluating the model. Motivated by real world problems, the course will survey mathematical techniques for: achieving the best possible outcomes, predicting future events and dealing with uncertainties. The course will provide introductions to popular mathematical resources for algebraic manipulation, numerical simulation and presentation. As part of the course requirements, students will be expected to work in groups on mathematical modelling projects and they will be expected to prepare a group report, both written and oral, describing the project. The course aims to equip students with the modelling skills and presentation skills for dealing with real world problems.

Applied Mathematics Level III
Before attempting any Level III Applied Mathematics course, a student must have completed at least 12 units of credit in Level II Mathematics, including the prerequisites specified for individual courses.
Skill in practical numerical computing is highly recommended for students majoring in Applied Mathematics, so they are encouraged to take MATH2301, or an equivalent course, if they have not already done so.

The course MATH3141 is not available to Science students unless specified as part of a combined degree program.

MATH3101
Computer Methods for Differential Equations
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: At least 12 units of credit of Level 2 Math courses
Excluded: MATH3141
Note/s: This course includes a substantial computing component, and assumes some familiarity with Matlab.
Most mathematical models in engineering, finance and science are based on differential equations. In general these equations cannot be solved analytically. This course introduces computational methods for solving, to high accuracy, systems of both initial and boundary value problems for ordinary differential equations. There is a substantial computing component involving implementation of the methods and simulation of some mathematical models using the MATLAB software package on UNIX and Windows-based computer systems. Introduction to approximation of functions based on global interpolation and splines. Explicit and implicit computer methods for non-stiff and stiff initial value problems for ordinary differential equations. Introduction to the shooting, finite difference and orthogonal collocation numerical methods for boundary value problems. Direct computer algebra methods for matrix equations. Implementation of the modern computer methods using MATLAB Spine Toolbox and Ode Suite Package.

MATH3121
Mathematical Methods
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: MATH2120 or MATH2130 and at least 12 units of credit in Level 2 Math courses
Excluded: MATH3141, MATH3150
Note/s: MATH2520 or MATH2620 recommended

MATH3141
Mathematical Methods EE
Staff Contact: School Office
UOC6 HPW4 S2
Prerequisite/s: MATH2501 or MATH2601 or MATH2509 and MATH2100 or MATH2110 or MATH2510 or MATH2610 or MATH2101
Excluded: MATH2120, MATH2130, MATH3101
Note/s: Not available in the Science program unless specified as part of a combined degree program.

MATH3150
Transform Methods
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH2520 or MATH2620 and at least 12 units of credit in Level 2 Math courses.
The mathematics of signals and linear systems. General Fourier series. Fourier, Laplace and related transforms. Delta and other distributions and their transforms. Discrete Fourier and Z-
transforms. Applications to spectral analysis, autocorrelation, uncertainty and sampling, linear analog and digital filters, partial differential equations.

MATH3161 Optimization Methods
Staff Contact: School Office
UOCS HPW4 S1
Prerequisite/s: MATH2501 or MATH2601 and MATH2011 or MATH2100 or MATH2110 or MATH2510 or MATH2610 and at least 12 units of credit in Level 2 Math courses.

Development, analysis and application of methods for optimization problems. Theory of multivariable optimization; including necessary and sufficient optimality conditions, stationary points, Lagrange multipliers, Kuhn-Tucker conditions, convexity and duality. Numerical methods for one dimensional minimization, unconstrained multivariable minimization (including steepest descent, Newton, quasi-Newton and conjugate gradient methods) and constrained multi-variable minimization (including linear programming and quadratic programming).

MATH3181 Optimal Control
Staff Contact: School Office
UOCS HPW4 S2
Prerequisite/s: MATH2011 or MATH2100 or MATH2110 or MATH2510 or MATH2610 and at least 12 units of credit from Level 2 Math courses.

An introduction to the optimal control of dynamical systems. Mathematical descriptions of dynamical systems. Stability, controllability, and observability. Optimal control. Calculus of variations. Dynamic programming. Examples and applications are selected from biological, economical and physical systems.

MATH3201 Dynamical Systems and Chaos
Staff Contact: School Office
UOCS HPW4 S2
Prerequisite/s: MATH2120 or MATH2130 or MATH3541 or MATH3641 and at least 12 units of Level 2 Math courses.

Regular and irregular behaviour of nonlinear dynamical systems. A selection from topics developing the theory of nonlinear differential and difference equations, with applications to physical, biological and ecological systems. Topics from: stability and bifurcation theory, Floquet theory, perturbation methods, Hamiltonian dynamics, resonant oscillations, chaotic systems, Lypunov exponents, Poincare maps, homoclinic tangles.

MATH3241 Fluid Dynamics
Staff Contact: School Office
UOCS HPW4 S1
Prerequisite/s: MATH2101 or MATH2100 or MATH2110 and MATH2120 or MATH2130 and at least 12 units of credit from Level 2 Math courses.

The mathematical modelling and theory of problems arising in the flow of fluids. Cartesian tensors, kinematics, mass conservation, vorticity, Navier-Stokes equation. Topics from inviscid and viscous fluid flow, gas dynamics, sound waves, water waves.

MATH3261 Atmosphere-Ocean Dynamics
Staff Contact: School Office
UOCS HPW4 S2
Prerequisite/s: MATH2011 or MATH2100 or MATH2110 and MATH2120 or MATH2130 and at least 12 units of credit from Level 2 Math courses

Excluded: MATH3270

The dynamics underlying the circulation of the atmosphere and oceans are detailed using key concepts such as geostrophy, the deformation radius and the conservation of potential vorticity. The role of Rossby waves, shelf waves, turbulent boundary layers and stratification is discussed. The atmosphere-ocean system as a global heat engine for climate variability is examined using models for buoyant forcing, quasi-geostrophy and baroclinic instability.

MATH3301 Mathematical Computing B
Staff Contact: School Office
UOCS HPW4 S2
Prerequisite/s: MATH2120 or MATH2130, MATH2301 and at least 12 units of credit of Level 2 Math courses.

The design and use of computer programs to solve practical mathematical problems. Introduction to Fortran90, partial differential equations, heat equation, iterative methods for linear systems, sparse matrix techniques, mathematical software libraries, code optimization and high performance computing.

MATH3311 Mathematical Computing for Finance
Staff Contact: School Office
UOCS HPW4 S2
Prerequisite/s: MATH2130, MATH2601 and 6 units of credit of Level II Statistics

Excluded: MATH3301

In the end, finance is concerned with making definite numerical recommendations which frequently can only be made by analyzing sophisticated models using high-speed computers. This course studies the design, implementation and use of computer programs to solve practical mathematical problems of relevance to finance, insurance and risk management. A review of MATLAB, floating point numbers, rounding error and computational complexity. A selection of topics from: approximation and parameter estimation, Fourier series and the FFT, finite difference approximations, partial differential equations (heat equation), sparse linear systems, non-linear algebraic equations, trees, Monte Carlo methods and simulation, random numbers and variance reduction, numerical integration. Computing environments for mathematical finance. Practical examples and programming assignments using MATLAB.

Pure Mathematics Level III
Before attempting any Level III Pure Mathematics course except MATH3411 or MATH3421, students must have completed at least 12 units of credit in Level II Mathematics, including the prerequisites specified for individual courses. For higher courses, the average performance in the above 12 units of credit should be at distinction level, but this requirement may be relaxed with permission of the Head of Department.

Students wishing to enrol in Level III Higher Pure Mathematics courses should consult with the Pure Mathematics Department before enrolling. The courses MATH3680, MATH3740 and MATH3780 are normally offered only in even numbered years and the courses MATH3670, MATH3730 and MATH3770 only in odd numbered years.

MATH3411 Information, Codes and Ciphers
Staff Contact: School Office
UOCS HPW4 S2
Prerequisite/s: MATH1081 or MATH1231 or MATH1241 or MATH1251

Note/s: MATH1081 Discrete Mathematics is recommended.

Discrete communication channels: information theory, compression and error control coding, cryptography.

MATH3421 Logic and Computability
Staff Contact: School Office
UOCS HPW4 S1

Note/s: MATH1081 Discrete Mathematics is recommended.

Software is written in the language of logic, and logic is the science on which computing is based. This course develops the classical mathematics of propositional and predicate logic and automata, which inspired the founders of computing such as Turing and von Neumann. Topics include Propositional calculus; formal proofs and the Deduction theorem; consistency, completeness, compactness, independence of axioms. Predicate calculus: interpretations; axiomatisations; soundness, completeness and compactness theorems; nonstandard analysis; Peano arithmetic and Godel's incompleteness theorems. Automata: deterministic and non-deterministic finite automata, regular languages, Kleene's theorem,
Pumping Lemma, Myhill-Nerode theorem. Computability: algorithms; Turing machines, computable and uncomputable functions; Church's thesis, different formalisations of computation; Godel numbering, universal machines, unsolvable problems; recursive functions.

MATH3511
Transformations, Groups and Geometry
Staff Contact: School Office
UOC6 HPW4 S2
Prerequisites: At least 12 units of credit of Level 2 Math courses
Excluded: MATH3710, MATH3780
Euclidean geometry, geometry of triangles, transformations, groups, symmetries, projective geometry.

MATH3521
Algebraic Techniques in Number Theory
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisites: At least 12 units of credit of Level 2 Math courses
Excluded: MATH3710, MATH3740
The integers, residue class arithmetic, theorems of Lagrange, Fermat and Euler, groups of units, Chinese remainder theorem, primitive roots, Gaussian integers, division algorithm and principal ideals in Z[], quadratic residues, algebraic number fields, extensions, Eisenstein's test, ruler and compass constructions.

MATH3531
Topology and Differential Geometry
Staff Contact: School Office
UOC6 HPW4 S2
Prerequisite/s: MATH2011 or MATH2510 or MATH2610 and at least 12 units of credit of Level 2 Math courses
Excluded: MATH3760
Elementary combinatorial topology of surfaces, classification of surfaces, Euler characteristic, curves and surfaces in space, Gaussian curvature, Gauss theorem, Gauss-Bonnet theorem.

MATH3541
Differential Equations
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisites: MATH2501 or MATH2601, MATH2520 or MATH2620 and at least 12 units of credit of Level 2 Math courses
Excluded: MATH3641
Initial value problems, linear systems, variation of parameters, applications to physical and biological systems, autonomous nonlinear systems, Lyapunov's method, linear approximations, plane autonomous systems, cycles and bifurcations, the Poincare-Bendixon theorem, introduction to first order PDEs, classification and normal forms for second order equations, the Cauchy-Kowalewski Theorem, Dinieliet and Neumann problems associated with the Laplace operator in two variables.

MATH3560
History of Mathematics
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisites: At least 12 units of credit of Level 2 Math courses.
Topics from the history of mathematics, with emphasis on the development of those ideas and techniques used in undergraduate courses. Students are expected to read widely and to present written material based on their readings.

MATH3570
Foundations of Calculus
Staff Contact: School Office
UOC3 HPW2 S1
Prerequisites: At least 12 units of credit of Level 2 Math courses
Excluded: MATH3610
Properties of the real numbers, convergence of sequences and series, properties of continuous and differentiable functions of a real variable.
MATH3720
Higher Algebra 2
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH3710
Galois theory, additional group theory, representations and characters of finite groups.

MATH3730
Higher Advanced Algebra
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH3710
Note/s: Offered in odd numbered years only.
Topics from: rings, commutative rings, factorisation theory, modules, associative and Lie algebras, Wedderburn theory, category theory.

MATH3740
Higher Number Theory
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: At least 12 units of credit of Level 2 Math courses
Excluded: MATH3521
Note/s: Offered in even numbered years only.
Topics from: elementary number theory, prime numbers, number theoretic functions, Dirichlet series, prime number theorem, continued fractions, Diophantine approximation, quadratic reciprocity, algebraic number theory, class number theorem.

MATH3760
Higher Topology and Differential Geometry of Surfaces
Staff Contact: School Office
UOC3 HPW2 S1
Prerequisite/s: MATH2601 or MATH2501CR and MATH2610 or MATH2011CR or MATH2510CR and at least 12 units of credit of Level 2 Math courses
Excluded: MATH3531
Classification of surfaces: homotopy, homology, Euler characteristic. Embedded surfaces: differential geometry, Gauss-Bonnet and de Rham theorems.

MATH3770
Higher Calculus on Manifolds
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH3760
Note/s: Offered in odd numbered years only.
Manifolds, vector fields, flows, introduction to Morse theory, differential forms, Stokes theorem, de Rham cohomology.

MATH3780
Higher Geometry
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH3710
Excluded: MATH3511
Note/s: Offered in even numbered years only.
Axiomatic geometry, affine geometry, Desargues theorem, projective geometry, spherical and hyperbolic geometry.

Statistics Level III

Not all level III statistics subjects are offered every year. Contact the department of statistics for details.

MATH3801
Probability and Stochastic Processes
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: MATH2501 or MATH2601 and MATH2011 or MATH2510 or MATH2610 and MATH2801 or MATH2901
Excluded: MATH3901

MATH3811
Statistical Inference
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: MATH2831 or MATH2931
Excluded: MATH3840, MATH3850, MATH3911, MATH3940, MATH3950

MATH3821
Statistical Modelling and Computing
Staff Contact: School Office
UOC6 HPW4 S2
Prerequisite/s: MATH2831 or MATH2931, MATH2810 or MATH2910
Excluded: MATH3800, MATH3810

MATH3830
Design and Analysis of Experiments
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH2831 or MATH2931
Excluded: MATH3930
Principles of good experimental design with a focus on industrial quality improvement. Factorial designs and their analysis. Response surface designs for product and process optimisation. Random effects models and components of variance.

MATH3831
Statistical Methods in Social and Market Research
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: MATH2801 or MATH2901
Excluded: MATH2840, MATH2940, MATH3931

MATH3841
Statistical Analysis of Dependent Data
Staff Contact: School Office
UOC6 HPW4 S2
Prerequisite/s: MATH3811 or MATH3911
Excluded: MATH3820, MATH3870, MATH3920, MATH3941, MATH3970
Development of statistical methods for analysis of dependent data arising in multivariate observations, time series and spatial processes. Multivariate normal distribution, Hotelling's T-squared,

MATH3800
Advanced Probability
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH3801 or MATH3901
Excluded: MATH3980

MATH3890
Special Topics in Statistics
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH2831 or MATH2931
New developments in statistical science theory and methods.

MATH3901
Higher Probability and Stochastic Processes
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: MATH2501 or MATH2601 and MATH2011 or MATH2510 or MATH2610 and MATH2901
Excluded: MATH3801
As for MATH3801 but in greater depth.

MATH3911
Higher Statistical Inference
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: MATH2931
Excluded: MATH3811, MATH3840, MATH3850, MATH3940, MATH3950
As for MATH3811 but in greater depth.

MATH3930
Higher Design and Analysis of Experiments
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH2901
Excluded: MATH3830
As for MATH3830 but in greater depth.

MATH3931
Higher Statistical Methods in Social and Market Research
Staff Contact: School Office
UOC6 HPW4 S1
Prerequisite/s: MATH2901
Excluded: MATH2840, MATH2940, MATH3831
As for MATH3831 but in greater depth.

MATH3941
Higher Statistical Analysis of Dependent Data
Staff Contact: School Office
UOC6 HPW4 S2
Prerequisite/s: MATH3911
Excluded: MATH3820, MATH3870, MATH3841, MATH3920, MATH3970
As for MATH3841 but in greater depth.

MATH3980
Higher Advanced Probability
Staff Contact: School Office
UOC3 HPW2 S2
Prerequisite/s: MATH2901
Excluded: MATH3880
As for MATH3880 but in greater depth.

Mathematics Level IV
To enter Mathematics Level IV, students must have completed a MATH major in the Science program, including at least 30 units of credit in Level III Mathematics, or have completed Stage 3 of one of the MATH plans in the Advanced Science program. In addition, students must have permission from the Head of the appropriate Department.

Students will normally be required to have a credit average in their Level III Mathematics courses and to have shown some evidence of the ability to undertake independent study. In special cases, other courses may be substituted for the Mathematics courses. Students should discuss their selection of Level III courses with the Head of the appropriate Department. For Honours Pure Mathematics, some higher level Mathematics courses should normally be included at Levels II and III.

Courses MATH4003/MATH4004, MATH4103/MATH4104, MATH4603/MATH4604 and MATH4903/MATH4904 lead to the award of an Honours degree.

The Mathematics and Finance plan in the Advanced Science program is a four year plan in which honours may be awarded based on a weighted average of all the courses studied in the plan.

MATH4003
Mathematics and Computer Science Honours (Full Time)
Staff Contact: School Office
Enrolment requires School approval
UOC48 HPW2 S1 S2
Note/s: See the preamble for Mathematics Level IV.
Undergraduate thesis in Applied Mathematics or Pure Mathematics together with advanced lectures on topics chosen half from MATH4103 or MATH4603, and half from Computer Science.

MATH4004
Mathematics and Computer Science Honours (Part Time)
Staff Contact: School Office
Enrolment requires School approval
UOC24 HPW2 S1 S2
Note/s: See the preamble for Mathematics Level IV.
Undergraduate thesis in Applied Mathematics or Pure Mathematics together with advanced lectures on topics chosen half from MATH4103 or MATH4603, and half from Computer Science.

MATH4012
Mathematics and Finance Thesis Project
Staff Contact: School Office
Enrolment requires School approval
UOC12 HPW5 S1 S2
Under the supervision of a member of the academic staff of the School of Mathematics a student will undertake a major project in mathematics and finance. The project could range from reading and/or research on theoretical aspects to financial engineering involving implementation of a practical model in C/C++. Research interaction with the finance industry is encouraged. The student will write a thesis summarising the result of their project and make a presentation of it.

MATH4103
Applied Mathematics Honours (Full Time)
Staff Contact: School Office
Enrolment requires School approval
UOC48 HPW2 S1 S2
Note/s: See the preamble for Mathematics Level IV.
Skill in practical numerical computing is highly recommended for students taking this subject. Those students who have not already taken a suitable computing subject may be required to take a short bridging course. Undergraduate thesis together with advanced lectures on topics chosen from the following fields: advanced mathematical methods for applied mathematics, advanced optimization, numerical analysis, theory of linear and non linear dynamical systems, optimal control, operations research, functional analysis and applications, mathematics of economic models and of economic prediction, fluid mechanics, oceanography, micro- hydrodynamics, and analytical and numerical solution of partial differential equations. May also include advanced lectures given by other Departments or Schools.
MATH4104
Applied Mathematics Honours (Part Time)
Staff Contact: School Office
Enrolment requires School approval
UOC24 HPW12 S1 S2
Note/s: See the preamble for Mathematics Level IV.
Skill in practical numerical computing is highly recommended for students taking this subject. Those students who have not already taken a suitable computing subject may be required to take a short bridging course. Undergraduate thesis together with advanced lectures on topics chosen from the following fields: advanced mathematical methods for applied mathematics, advanced optimization, numerical analysis, theory of linear and non linear dynamical systems, optimal control, operations research, functional analysis and applications, mathematics of economic models and of economic prediction, fluid mechanics, oceanography, micro-hydrodynamics, and analytical and numerical solution of partial differential equations. May also include advanced lectures given by other Departments or Schools.

MATH4603
Pure Mathematics Honours (Full Time)
Staff Contact: School Office
Enrolment requires School approval
UOC48 HPW24 S1 S2
Note/s: See the preamble for Mathematics Level IV.
Undergraduate thesis together with advanced lectures on topics chosen from the fields of current interest in Pure Mathematics. May also include advanced lectures given by other Departments or Schools.

MATH4604
Pure Mathematics Honours (Part Time)
Staff Contact: School Office
Enrolment requires School approval
UOC24 HPW12 S1 S2
Note/s: See the preamble for Mathematics Level IV.
Undergraduate thesis together with advanced lectures on topics chosen from the fields of current interest in Pure Mathematics. May also include advanced lectures given by other Departments or Schools.

MATH4903
Statistics Honours (Full Time)
Staff Contact: School Office
Enrolment requires School approval
UOC48 HPW24 S1 S2
Note/s: See the preamble for Mathematics Level IV.
Undergraduate thesis together with advanced lectures on topics chosen from the following fields: mathematical basis, experimental design, response surfaces, stochastic processes, theories of inference, sequential analysis, nonparametric methods, multivariate analysis, mathematical programming, information theory, discrete distributions. May also include advanced lectures given by other Departments or Schools.

MATH4904
Statistics Honours (Part Time)
Staff Contact: School Office
Enrolment requires School approval
UOC24 HPW12 S1 S2
Note/s: See the preamble for Mathematics Level IV.
Undergraduate thesis together with advanced lectures on topics chosen from the following fields: mathematical basis, experimental design, response surfaces, stochastic processes, theories of inference, sequential analysis, nonparametric methods, multivariate analysis, mathematical programming, information theory, discrete distributions. May also include advanced lectures given by other Departments or Schools.

Materials Science and Engineering

MATS1002
Microstructure Analysis
Staff Contact: Dr Peter Krauklis
UOC3 HPW3 S1 S2
Note/s: Restricted to Combined degree course 3681.

MATS1021
Introduction to Computing
Staff Contact: Dr Mark Hoffman
UOC3 HPW3 S2
The aim of the course is to gain a basic understanding of the computing applications and practices that are relevant to materials engineering degrees and industry practice. Topics covered are: a brief overview of the place of computing in materials engineering; use of common materials software packages; using the internet as a part of the degree; search engines; email; website composition; and computer programming to solve materials based problems involving heat transfer and stress analysis.

MATS1052
Materials Engineering 1B
Staff Contact: Associate Professor Aibing Yu
UOC4 HPW3 S2
Heat applications of principles of steady and unsteady heat transfer in the production and application of materials. Course examples are drawn from materials engineering practice in the broadest sense. Heat flow in materials processing involving high temperature solid, liquid and gaseous phases. Thermal properties of dense and porous materials. Heat treatment, casting, sintering, corrosion, etc. Computer programs for calculating heat flow in materials.

MATS1072
Physics of Materials
Staff Contact: Dr Michael Ferry
UOC4 HPW3 S1
Prerequisite/s: PHYS1002 or PHYS1221 or PHYS1231
Interatomic bonding in solid materials. Types of interatomic bonds, metallic, covalent, ionic. Introductory quantum mechanics in one dimension, free electron theory, effects of periodic potential, density of states curves. Effect of electron to atom ratio on conductivity and crystal structure; semiconductors; intrinsic, extrinsic. Exchange energy; ferromagnetism, antiferromagnetism. Elementary perturbation theory, covalent bond; crystal structures, properties. Ionic bond, force models, properties.

MATS1082
Thermodynamics of Materials 1
Staff Contact: Associate Professor Oleg Ostrovski
UOC4 HPW3 S2

MATS1092
Materials and Design 1
Staff Contact: Associate Professor Alan Croskey
UOC3 HPW2 S2
An appreciation of the relationships between the properties of materials, component design, manufacturing and product performance. Materials selection as an integral part of successful design. Long-term potential for materials improvement and substitution.
MATS1093
Thermodynamics of Materials 2
Staff Contact: Associate Professor Oleg Ostrovski
UOC3 HPW2 S1 S2
Prerequisite/s: MATS1082

MATS1111
Materials Science 1
Staff Contact: Associate Professor Veena Sahajwalla
UOC3 HPW3 S1

MATS1112
Phase Equilibrium
Staff Contact: Professor Chris Sorrell
UOC3 HPW2 S2

MATS1132
Materials Engineering 1A
Staff Contact: Associate Professor Veena Sahajwalla
UOC4 HPW4 S1
Unit 1 Fluid Flow: Fluid flow in materials processing. Application of the principles of fluid flow in the production and application of ceramic and metallic materials. Examples are drawn from ceramic, materials and metallurgical engineering practices in the broadest sense.
Unit 2 Materials Process Principles: Fluid flow in materials processing. Application of the principles of fluid flow in the production and application of ceramic and metallic materials. Examples are drawn from ceramic, materials and metallurgical engineering practices.

MATS1142
Crystallography and X-Ray Diffraction
Staff Contact: Dr Peter Krauklis
UOC3 HPW3 S2

MATS1152
Mechanical Properties of Materials
Staff Contact: Dr Peter Krauklis
UOC4 HPW3 S1
MATS1254
Design Project
Staff Contact: Associate Professor Alan Crosky
UOC4 HPW4 S1 S2
This project will cover the design of a selected piece of processing equipment or an engineering component. It will involve selection and specification of materials and other relevant aspects covered within the undergraduate program.

MATS1282
Ferrous Physical Metallurgy
Staff Contact: Dr Peter Krauklis
UOC3 HPW3 S1
Binary and ternary iron-carbon equilibria. Carbon steel, phase transformation, microstructures, heat treatment and mechanical properties. Microstructure and properties of grey, white, malleable, ductile and alloy cast irons.

MATS1294
Electrical Ceramics
Staff Contact: Dr Owen Standard
UOC4 HPW3 S1 S2

MATS1333
Pyrometallurgy 1
Staff Contact: Associate Professor Oleg Ostrovski
UOC6 HPW6 S2
Unit 1 Refractories HPW2 Prof C Sorrell Classification of refractories. Chemical and physical properties of refractories. Introduction to raw materials and manufacturing technology. A detailed study of chemical reactions occurring between refractories and solid, liquid and gas phases in ferrous and non-ferrous metal industry. Review of phase equilibria.

MATS1344
Pyrometallurgy 2
Staff Contact: Associate Professor Oleg Ostrovski
UOC8 HPW6 S1 S2
Prerequisite/s: MATS5273

Unit 2 Air Pollution Control in Materials Processing HPW2 S2 A/Prof V Sahajwalla Pollutants from different materials processing routes. Technical principles and equipment to control the emission of pollutants. Examples from the metallurgical and ceramic industries.

Unit 3 Pyrometallurgical Process 3 HPW2 S2 A/Prof O Ostrovski Selective topics in ironmaking, steelmaking and non-ferrous metallurgy, particularly, electrometallurgy of steel, ferroalloys and aluminium; casting and solidification; and structure and properties of metallic melts.

MATS1364
Composite and Electronic Materials
Staff Contact: Associate Professor Alan Crosby
UOC4 HPW3 S2

Unit 2 Electronic Materials. Semiconductor devices: materials, principles, properties, fabrication and applications.

MATS1414
Surface Treatment and Wear
Staff Contact: Dr Peter Krauklis
UOC3 HPW2 S2

MATS1464
Professional Communication and Presentation
Staff Contact: Professor Chris Sorrell
UOC3 HPW1 S1 S2

MATS1534
Design with Brittle Materials
Staff Contact: Dr Mark Hoffman
UOC4 HPW3 S2
Incorporates MATS4333 Fracture Mechanics plus effects of composition, microstructure, and physical properties on the mechanical properties of ceramics, design approaches for ceramics, inspection and non-destructive testing of ceramics, and case studies.

MATS1584
Specialty Alloys
Staff Contact: Dr Peter Krauklis
UOC4 HPW3 S2
Prerequisite/s: MATS1283


Unit 3 Alloy Steels. Effects of alloying elements on phase equilibrium, kinetics of transformation and microstructure. Hardenability and tempering of quenched steels. Embrittlement during tempering. Alloy engineering (or constructional) steels, tool and die steels, corrosion and heat resistant steels, high strength low alloy steels.

MATS2153
Ceramic Processing Laboratory
Staff Contact: Dr Owen Standard
UOC3 HPW3 S2
Laboratory program illustrating processing and engineering aspects of ceramic technology. Students are required to take part in a series of factory inspections.

MATS2183
Refractories
Staff Contact: Professor Chris Sorrell
UOC3 HPW2 S2
Classification of refractories. Chemical and physical properties of refractories. Introduction to raw materials and manufacturing technology. A detailed study of chemical reactions occurring between refractories and solid, liquid and gas phases in ferrous and nonferrous metal industries. Review of phase equilibria.
MATS2203
Physico-Chemical Ceramics Laboratory
Staff Contact: Professor Chris Sorrell
UOC4 HPW3 S1
Laboratory program illustrating the physical and chemical properties associated with the processing and performance of ceramic materials. Students are required to take part in a series of factory inspections.

MATS2213
Diffusion
Staff Contact: Professor David Young
UOC3 HPW2 S1

MATS2223
Phase Transformation
Staff Contact: Dr Michael Ferry
UOC4 HPW3 S2

MATS2263
Sintering of Ceramics
Staff Contact: School Office
UOC3 HPW2 S1

MATS2294
Thermal and Mechanical Properties of Ceramics
Staff Contact: Professor Chris Sorrell
UOC4 HPW3 S2
Heat capacity, measurement of heat capacity and factors affecting heat capacity. Thermal expansion, measurement of thermal expansion and factors affecting thermal expansion. Thermal conductivity, thermal diffusivity, measurement of thermal conductivity and thermal diffusivity, factors affecting thermal transport, phonon and photon conductivity and factors affecting phonon and photon conductivity. Thermal stresses and thermal shock. Influence of structure and composition of pure materials on thermal conductivity of multiphase materials. Effects of composition, microstructure and physical properties on the mechanical properties of ceramics, design approaches for ceramics, inspection and non-destructive testing for ceramics, and case studies.

MATS2314
Glass-Based Ceramics
Staff Contact: Dr Owen Standard
UOC3 HPW2 S2

MATS2343
Ceramic Processing and Design 1
Staff Contact: Dr Owen Standard
UOC3 HPW3 S1
MINET241 Mineral Process Engineering (HPW2) and Introduction to the Ceramic Processing (HPW1) which consists of the nature of ceramics; scope of the ceramic industry and overview of unit operations; preparation of raw materials; powder processing; body formulation; objectives of ceramic forming methods; particle packing.

MATS2353
Ceramic Processing and Design 2
Staff Contact: Dr Owen Standard
UOC4 HPW3 S2
Prerequisite/s: MATS2343

MATS3443
Polymer Science and Engineering
Staff Contact: Dr Sri Bandyopadhyay
UOC3 HPW3 S1

MATS3524
Project
Staff Contact: Dr Veena Sahajwalla
UOC12 HPW6 S1 S2
An experimental or technical investigation or design related to some aspects of materials engineering in the specific discipline (ceramic engineering, metallurgical engineering or materials engineering).

MATS3564
Polymer Engineering 1
Staff Contact: Dr Sri Bandyopadhyay
UOC4 HPW3 S2
Prerequisite/s: MATS3443
MATS3574
Polymers Engineering 2  
Staff Contact: Dr Bandyopadhyay  
UOC3 HPW3 S2  
Prerequisite/s: MATS3443  

MATS4113
Fractographic Analysis and Non-Destructive Testing  
Staff Contact: Associate Professor Alan Crosby  
UOC4 HPW4 S2  
Unit 1 Fractographic Analysis S2 HPW3 Classification of macroscopic and microscopic fracture mechanisms. Initiation and propagation of ductile brittle, fatigue, stress corrosion and corrosion fatigue fractures. Effect of material defects, design deficiencies and incorrect processing on the origin and cause of fracture. Analysis of various modes of fracture using fractographic techniques involving optical microscopy and scanning and transmission electron microscopy.  

MATS4333  
Fracture Mechanics  
Staff Contact: Dr Mark Hoffman  
UOC3 HPW2 S2  

MATS4613  
Deformation of Metals and Strengthening Mechanisms  
Staff Contact: Associate Professor Paul Munroe  
UOC3 HPW3 S1  
Unit 1 Deformation of Metals. Atomic and molecular description of deformation. Introduction to dislocation theory and its application to mechanical properties.  
Unit 2 Strengthening Mechanisms in Metals. Strengthening mechanisms, creep, fracture, grain size dependence of strength. Introduction to generation of deformation and recrystallisation textures. Measurements of age-hardening, activation energy of strain ageing.

MATS4623  
Metal Forming Processes and Thermomechanical Processing of Metals  
Staff Contact: Associate Professor Alan Crosby  
UOC3 HPW3 S2  
Prerequisite/s: MATS4613  

MATS5273
Extractive Metallurgy  
Staff Contact: School Office  
UOC8 HPW6  
Unit 2 Hydrometallurgical Processes Staff Contact: School of Chemical Engineering and Industrial Chemistry, S1 HPW2 Application of principles of aqueous thermodynamics, electrochemistry, chemical and electrochemical kinetics to hydrometallurgical processes: leaching of mineral and concentrates, solution purification, precipitation, and other separation processes, ion-exchange and liquid-liquid extraction, electrowinning and electrorefining.  

MATS5313
Kinetics and Mass Transfer in Metallurgical Processes  
Staff Contact: Associate Professor Aibing Yu  
UOC8 HPW6 S1  
Unit 1 Kinetics of Metalurgical Processes S1 HPW4 A/Prof A Yu Kinetics and mass transfer in metallurgical processes. Kinetics of interphase transfer in metallurgical systems. Single particle, fluid/ solid reactions, topochemical reactions, reactions of porous solids. Application to reduction of iron oxides. Reaction between liquid metals and gases, reactions involving drops and bubbles. Reaction between liquid metals and slags, mass transfer at bubble stirred interfaces. Application to metal refining process. Vacuum degassing and refining processes.  
Unit 2 Heat, Fluid and Mass Flow in Materials Processing S1 HPW2 A/Prof V Sahajwalla In-depth understanding of fundamental principles dictating transport phenomena in materials processing. Development of governing equations related to the transfer of fluid, energy and mass and their inter-dependence based upon fundamentals to analyse and solve problems encountered in current metallurgical operating environments. Application of understanding developed to the emerging new technologies for metals processing such as direct reduction and smelting for iron making and near net shape casting.

MATS5323
Modelling in Materials Engineering 1  
Staff Contact: Dr Mark Hoffman  
UOC3 HPW2 S2  
Prerequisite/s: MATH1131 or MATH1141 or MATH1231 or MATH1241, MATS1021, MATH2021, MATS1092, MATS1132 and MATS1163  
The course introduces a range of numerical and analytical modelling techniques and then applies them to situations faced in materials science and engineering. Initially the pre-requisite knowledge is reviewed. Topics then covered are finite difference modelling and finite element modelling. These techniques are then applied to stress analysis, fluid flow and heat transfer. A number of commercial software packages are introduced as well as designing computer programs to suit specific situations.

MATS5394
Air Pollution Control in Materials Processing  
Staff Contact: Associate Professor Veena Sahajwalla  
UOC3 HPW2 S2  
Pollutants from the different industrial processes. Technical principles and equipment to control the emission of pollutants. Examples of various processes in the metallurgical, ceramic and chemical industries. Pollution control legislation specific to industry and compliance case studies.
MATS5424  
Modelling in Materials Engineering 2  
*Staff Contact: Associate Professor Aibing Yu*

UOC3  HPW2  S1  
Prerequisite/s: MATH1131 or MATH1141 or MATH1231 or MATH1241, MATH2021, MATS1021, MATS1092, MATS1132, MATS1163, MATS5323

The course introduces a range of numerical and analytical modelling techniques and then applies them to situations faced in materials science and engineering. Initially the pre-requisite knowledge is reviewed. Topics then covered are dimensional analysis and surface response methodology. These techniques are then applied to fluid flow, process modelling and heat transfer. Commercial software packages are also introduced.

MATS9410  
Materials for Mining Engineers  
*Staff Contact: Dr Peter Krauklis*

UOC3  HPW4  S1


MATS9520  
Engineering Materials  
*Staff Contact: Associate Professor Alan Crosby*

UOC3  HPW3  S1

Microstructure and structure-property relationships of the main types of engineering materials (metals, polymers, ceramics and composites). Micromechanisms of elastic and plastic deformation. Fracture mechanisms for ductile, brittle, creep and fatigue modes of fracture. Phase equilibria of alloys; microstructural control by thermomechanical processing and application to commercial engineering materials. Laboratory and tutorial work includes experiments on mechanical testing, cast and recrystallised structures, ferrous and non-ferrous microstructures, and fracture and failure analysis.

MATS9530  
Materials Engineering  
*Staff Contact: Professor Chris Sorrell*

UOC3  HPW3  S2  
Prerequisite/s: MATS9520

Materials used in Mechanical Engineering and related fields (Manufacturing Engineering Management, Aerospace Engineering, Naval Architecture) are discussed with emphasis on the dependence of properties and performance on microstructure. Aspects of materials selection during the design of engineering components that affect the service performance in applications, where failure can occur by brittle fracture, corrosion, creep or fatigue, will also be discussed.

MATS9650  
Pyrometallurgical Processes  
*Staff Contact: Associate Professor Oleg Ostrovski*

UOC3  HPW2  S2

Principles and development of pyrometallurgical processes and a review of the unit operations,roasting, sintering, smelting and refining for the treatment of ferrous and non-ferrous minerals.

MATS9712  
Materials and Techniques in Design Craft 1  
*Staff Contact: Professor Chris Sorrell*

UOC4  HPW3  S1

An introduction to the science and technology of materials, emphasizing relationships between structure, composition and properties. Introduction to processing of metallic, ceramic and fibrous materials. Materials recognition and design possibilities are discussed.

MATS9722  
Materials and Techniques in Design Craft 2B  
*Staff Contact: Professor Chris Sorrell*

UOC4  HPW3  S2

Metals: casting, working, and surface finishing of metals and alloys; soldering, brazing and welding. Gemstones: survey of gem materials (crystalline, massive, organic) and identification methods. Enamels: practical considerations and skills.

MATS9732  
Materials and Techniques in Design Craft 2C  
*Staff Contact: Professor Chris Sorrell*

UOC4  HPW3  S2


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**Mechanical and Manufacturing Engineering**

**Mechanical and Manufacturing Engineering Level I**

**AVEN1310**  
Basic Mechanics  
*Staff Contact: School Office*

UOC3  HPW2  S1

**AVEN1910**  
Introduction to Aircraft Engineering  
*Staff Contact: School Office*

UOC3  HPW2  S1

**MANF1130**  
Introduction to Manufacturing  
*Staff Contact: School Office*

UOC6  HPW7  S2  
Excluded: MANF1100, MANF1110, MANF1200

**Notes:** Protective items eg safety glasses, safety boots, overalls or dustcoat, etc are required for the practical training in order to comply with the Occupational Health and Safety Act. Students must possess these items before commencing this course. Students who have done appropriate technology-based courses at school or who have an appropriate trade or certificate qualification or are suitably employed, may seek an exemption for the practical training classes.

The relationship between product design and manufacturing processes is introduced with theoretical and practical classes. Description and elementary analysis of manufacturing processes such as forming from liquid or solid and material removal. Introduction to non-metallic materials processing. Introduction to drawing techniques for engineering communication which includes freehand sketching and orthogonal projections. Use of computer graphics for modelling and production of detailed drawings of components. Elementary functional analysis of product design for manufacturing and performance. Practical training of approximately 33 hours will involve processes such as welding, fitting and machining as well as introduction to safety in a manufacturing environment.

**MECH1120**  
Design and the Engineering Profession  
*Staff Contact: School Office*

UOC3  HPW3  S1

To introduce the engineering profession; to assess abilities in written expression, to develop a consciousness of the importance of written, pictorial and oral expression in engineering life and to begin to develop these skills; to begin to develop an awareness of the professional attitude. Introduction to engineering hardware and components; geometry, function, manufacture and reasons for
various configurations. The design process, problem identification, search for solution concepts, non-technical considerations in design, decision techniques, detail.

MECH1300
Engineering Mechanics 1
Staff Contact: School Office
UOC6 HPW4 S1 S2
Corequisite/s: MATH1131 or MATH1141;
Excluded: MECH0330.


MECH1400
Mechanics of Solids 1
Staff Contact: School Office
UOC6 HPW4 S1 S2
Corequisite/s: MECH1300 or MECH0330 or MECH0440;
Excluded: MECH0430.

Resultants and equilibrium in three-dimensions; stress and strain; internal forces; stresses, deformation and strain energy due to axial loading, bending and torsion; helical springs.

MECH1500
Computing 1M
Staff Contact: School Office
UOC3 HPW3 S1
Introduction: history, applications, hardware, software, a model of a computer system, editors, operating systems. Networking and the internet. Program design and development: programming objectives, data structures, algorithms, symbolic names, translation of algorithms, steps in programming, programming style, errors and debugging. Data: data types, declarations, input output, file control. Programming constructs: arithmetic expressions, assignments, relational and logical expressions, selection. Application in sorting, word processing, graphics and plotting, simultaneous linear algebraic equations.

Mechanical and Manufacturing Engineering Level II

AVEN2220
Aviation Engineering Experimentation 1
Staff Contact: School Office
UOC3 HPW2 S2

AVEN2910
Aviation Technologies 1
Staff Contact: School Office
UOC3 HPW2 S2

AVEN2920
Aviation Technologies 2
Staff Contact: School Office
UOC3 HPW2 S2

AVEN2930
Aviation Technologies 3
Staff Contact: School Office
UOC3 HPW2 S2

MECH2411
Mechanics of Solids 2A
Staff Contact: School Office
UOC3 HPW3 S1 S2
Prerequisite/s: MATH1231 or MATH1241;
Corequisite/s: MECH1400;
Excluded: MECH2401.

Revision of Statics. The variation with orientation of stress at a point in 2D, Mohr's circle. The variation with orientation of stress at a point in 3D given one principal stress. The variation with orientation of stress at a point in the general 3D case. Octahedral stresses. Strain energy stored in a linearly elastic body resulting from volume change and from distortion. Yield criteria. Fatigue, stress concentrations, Miner's rule. Material properties and testing.

MECH2412
Mechanics of Solids 2B
Staff Contact: School Office
UOC3 HPW3 S2
Prerequisite/s: MECH2411;
Excluded: MECH2402.


Mechanical and Manufacturing Engineering Level III

AVEN3220
Aviation Engineering Experimentation 2
Staff Contact: School Office
UOC3 HPW2 S1

AVEN3230
Aviation Systems and Avionics
Staff Contact: School Office
UOC3 HPW2 S1

AVEN3410
Airframe Analysis and Maintenance
Staff Contact: School Office
UOC3 HPW2 S1

AVEN3610
Aerodynamics, Stability and Control
Staff Contact: School Office
UOC3 HPW2 S1

AVEN3710
Aircraft Propulsion
Staff Contact: School Office
UOC3 HPW2 S1

AVEN3930
Aircraft Evalu. & Design Appraisal
Staff Contact: School Office
UOC3 HPW2 S2

Medicine

MDCN8001
Principles of Medicine for Optometry Students
Staff Contact: Associate Professor Leon Simons
UOC2 HPW3 S1
Note/s: Students normally take the course in Stage 4 of program 3950. Restricted to program 3950.

An overview of historical, epidemiological, pathophysiological, diagnostic, therapeutic and public health aspects of disease in man and the various clinical categories of practice. Specific topics in eye health are also covered.
Microbiology and Immunology

Microbiology and Immunology Level II Subjects

Students must enrol in practical classes for level II Microbiology and Immunology subjects. Enrol for MICR2201 practical classes at the start of session 1, enrol for MICR2011 practical class at the start of session 2. To enrol come to The Microbiology and Immunology School Office on the Friday immediately preceding week 1 of classes.

MICR2011

**Microbiology 1**

*Staff Contact: Dr Paul March*

UOC6 HPW6 S2

**Prerequisite/s:** BIOS1101, BIOS1201, MICR2201

**Corequisite/s:** BIOC2201, BIOS2021

This course is for students majoring in microbiology and who wish to enlarge their knowledge and skills in microbiology beyond those obtained in Fundamentals of Microbiology & Immunology or equivalent subjects at other institutions. The biology, diversity and function of bacteria. Modern approaches to bacterial diversity through the use of bioinformatics. Comparative aspects of microbial growth. Bacterial nutrition and biosynthetic pathways. Microbial survival and global responses to environmental stimuli. Theory and practice of sterilization. Action of antimicrobial agents. Introduction to microbial ecology, medical and industrial microbiology.

MICR2201

**Fundamentals of Microbiology and Immunology**

*Staff Contact: Dr Iain Couperwhite*

UOC6 HPW6 S1

**Prerequisite/s:** BIOS1101, BIOS1201

This course is designed to give undergraduate and post graduate students a solid background in fundamentals of microbiology and immunology. The course introduces the student to the fascinating world of microorganisms: their ubiquity, peculiarities and the three domains of life i.e. Eubacteria, Archaea and Eucarya. Most of the course will consider bacteria, fungi, yeasts and viruses in our every day life and how their activities impinge on our well being. Metabolism and growth, microbial death & microbial genetics will be introduced to the students. Practical aspects of microbiology will be considered such as food intoxication, infection, spoilage and food fermentation. The immune system & the study of microbial death & microbial genetics will be achieved by linking lectures and laboratories to an understanding of how modern endeavours are approached. This goal will be achieved by linking lectures and laboratories to contemporary research in microbial physiology. Lectures will address molecular mechanisms involved in: determining microbial cell shape, cell division, sensing and responding to environmental signals, strategies for survival in extreme environments, and regulation of the synthesis of gene products. The lecture series also contains a module outlining the commercialisation of scientific discoveries.

MICR3021

**Microbial Genetics**

*Staff Contact: Dr Ricardo Cavicchioli*

UOC6 HPW6 S1

**Prerequisite/s:** BIOS2021, BIOC2201, MICR2011

**Excluded:** BIOT3031

**Notes:** Replaces BIOT3031

This course provides a broad coverage of material describing the fundamentals of microbial genetics. The course differs from MICR3621 Microbial Genetics (Advanced) by requiring less contact time in terms of laboratory practicals and tutorials, and laboratory and lecture assessment. The course is intended for students interested in gaining a background in molecular biology/ genetics and those considering Molecular Biology, Microbiology, Medical Microbiology and Immunology and Genetics majors. Main topics include genetics of bacteriophage, bacteria and yeasts, mutation and repair, plasmids, gene transfer, transposable genetic elements, gene cloning (genetic engineering) and two component regulatory systems. The practical component includes a range of contemporary microbial genetics experiments that complement lecture material. They may include experiments involving bacteria, archaea, or yeast involving transposon mutagenesis, gene library construction, gene complementation using recombinant plasmids, gene expression and regulation studies, UV mutagenesis and DNA repair, restriction/modification systems, promoter rescue experiments, and a variety of gene exchange techniques. The socioeconomic impact of microbial genetics is also discussed.

MICR3301

**Eukaryotic Microbiology (UTS)**

*Staff Contact: Dr Hazel Mitchell*

UOC6 HPW6 S2

**Prerequisite/s:** MICR2011

**Notes:** Enrolment limited to 20 students. If oversubscribed, placements awarded according to achievements in Level 1, 2 and 3 courses.

This course provides an opportunity for students interested in a broad education in medical microbiology to undertake studies in the areas of parasitology and mycology. The unit is offered by agreement with the University of Technology, Sydney, and is taught at the Gore Hill Campus of UTS. The course offers students training in the principals and practices of medical laboratory parasitology and mycology. The parasitology component covers the identification of parasitic worms, insects and protozoa. Mechanisms of disease is also covered. The mycology component examines pathogenic yeasts and fungi, their identification and mechanisms of disease. The course is supported by a comprehensive laboratory program.

MICR3041

**Immunology 1**

*Staff Contact: Dr Margaret Cooley*

UOC6 HPW6 S1

**Prerequisite/s:** BIOC2101 or BIOC2181

**Excluded:** MICR3641, MICR3042

This course provides a broad coverage of material describing the principles of immunology. There is a significant component of self-directed learning, including internet-based tutorials and assignments. The course is intended for students majoring in any area of Life Science or Medical Science interested in gaining a background in Immunology, and for those undertaking Microbiology conducted. This involves focusing on one research group within the Faculty that pursues research in an area of microbial physiology and cell biology, and that uses molecular biology to fulfil their aims. A short laboratory module is also included. The goal of this course is to combine theory introduced in previous courses with an understanding of how modern endeavours are approached. This goal will be achieved by linking lectures and laboratories to contemporary research in microbial physiology. Lectures will address molecular mechanisms involved in: determining microbial cell shape, cell division, sensing and responding to environmental signals, strategies for survival in extreme environments, and regulation of the synthesis of gene products. The lecture series also contains a module outlining the commercialisation of scientific discoveries.
or Medical Microbiology and Immunology majors. Topics addressed include the multiple components of the immune response and how they interact; an introduction to the concepts behind the regulation of the immune response; and introduction to the applied and clinical aspects of immunology, including allergy, transplantation and immunodeficiency. An element of choice in assessment tasks enables students to pursue in some depth an area of immunology which particularly interests them.

**MICR3042**
*Principles and Applications of Immunology*

**Staff Contact:** Dr Margaret Cooley  
**UOC6 HPW4 S1**  
**Prerequisite/s:** BIOC2101  
**Excluded:** MICR3041, MICR3641

This course provides a broad coverage of material describing the principles of immunology. Topics addressed include the multiple components of the immune response and how they interact; an introduction to the concepts behind the regulation of the immune response; and introduction to the applied and clinical aspects of immunology, including allergy, transplantation, and immunodeficiency. An element of choice in assessment tasks enables students to pursue in some depth an area of immunology which particularly interests them. The course differs from Immunology 1 (MICR3041), by replacing the laboratory-based practical program with a tutorial-based program discussing the principles and applications of immunological techniques. There is also a significant component of self-directed learning, including internet-based tutorials and assignments. The course is intended for students majoring in any area of Medical or Life Science interested in gaining a background in Immunology without undertaking the laboratory component, and for those undertaking combined degrees involving a Life Science component. Students wishing to major in Medical Microbiology and Immunology should take MICR3041 or MICR3641, and may undertake this course only in exceptional circumstances and only with the approval of the Course convenor.

**MICR3051**
*Immunology 2*

**Staff Contact:** Dr Andrew Collins  
**UOC6 HPW6 S2**  
**Prerequisite/s:** MICR3041

This course takes students to the frontiers of immunological knowledge, exploring conflicting theories of immunological function and regulation, and highlighting new therapeutic strategies that build upon a knowledge of immunology. Students are also introduced to research techniques ranging from the use of knockout and transgenic animals to mathematical modelling. In addition, major topics of study include the immunogenetics of the molecules of recognition, cytokines and their regulation, and lymphocyte biology. Issues arising from the public debate surrounding vaccination, are an additional major focus of this course.

**MICR3061**
*Viruses and Disease*

**Staff Contact:** Dr Gary Grohmann  
**UOC6 HPW6 S2**  
**Prerequisite/s:** MICR2011  
**Notes:** Highly recommended: BIOC2201.

Major topics include virus structure, pathogenesis and replication strategies, epidemiology, molecular virology and laboratory diagnosis. The pathogenesis of a number of human diseases is discussed in the context of virus-host interactions, the persistence, transfer and control of virus infections in the community. Finally, a consultancy brief is undertaken by students providing the opportunity to gain experience in working in consultancy teams, producing a report and a short seminar.

**MICR3071**
*Environmental Microbiology*

**Staff Contact:** Professor Staffan Kjelleberg, Dr Sally James  
**UOC6 HPW6 S1**

**Note/s:** Highly recommended: MICR2011, BIOC2201, BIOS2021.

The field of Environmental Microbiology offers great potential for the development of new and innovative strategies and products for the management and protection of the environment. In this course, students learn of the vital role of microbes in marine, freshwater and terrestrial ecosystems by exploring the dynamic interactions that take place between microbial communities, the surroundings and higher organisms. A series of lectures cover key themes in contemporary environmental microbiology including sensing and adaptive responses of bacteria, biogeochemical cycling and microbial communities and interactions. Laboratory sessions allow students to observe, first hand, the signalling and responses of marine biofilm isolates and to gain theoretical and practical experience in modern molecular techniques for the detection, phylogeny and tracking of microbial communities. This course emphasises how the principles and techniques of Environmental Microbiology can be applied to a range of environmental problems and lead to the development of sustainable resources and commercial applications, as expanded in Environmental Biotechnology (BIOT3081).

**MICR3081**
*Bacteria and Disease*

**Staff Contact:** Dr Hazel Mitchell  
**UOC6 HPW6 S1**  
**Prerequisite/s:** MICR2011

**Note/s:** Half of the compulsory practical component of this course consists of seven practical classes run over three and one half days during the mid-session break. In-session time practical classes will be run only in weeks 1 and 2, and weeks 10 through 14.

Bacteria and Disease aims to develop a high level understanding of bacterial pathogenesis, disease control and prevention. We examine in depth a select number of pathogens that portray the diverse characteristics seen in different pathogenic bacterial species. In conjunction with the lecture program, contemporary medical laboratory training is given through a simulated diagnostic unit. Development of communication skills constitutes part of this subject.

**MICR3621**
*Microbial Genetics (Advanced)*

**Staff Contact:** Dr Cavicchioli  
**UOC6 S1**

**Note/s:** Replaces BIOT3031

Course available to Advanced Science students, or as an advanced option of non-Advanced Science students. This advanced course differs from MICR3021 Microbial Genetics by providing additional laboratory practicals, laboratory tutorials and laboratory assessment, a number of advanced level lectures (presently two), and different questions (both in content and number) in lecture based assessment. The course aims to extend fundamental concepts and principles of microbial genetics to an advanced level. The course in intended to be particularly useful for students interested in molecular biology/ genetics and those considering Molecular Biology and Microbiology majors. Main topics include genetics of bacteriophage, bacteria and yeasts, mutation and repair, plasmids, gene transfer, transposable genetic elements, gene cloning (genetic engineering) and two component regulatory systems. The practical component includes a range of contemporary microbial genetics experiments that complement the lecture material. They may include experiments involving bacteria, archaea or yeast, involving transposon mutagenesis, gene library construction, gene complementation using recombinant plasmids, gene expression and regulation studies, UV mutagenesis and DNA repair, restriction/modification systems, promoter rescue experiments, and a variety of gene exchange techniques. The socioeconomic impact of microbial genetics is also discussed.
MICR3641
Immunology 1 (Advanced)
Staff Contact: Dr Margaret Cooley
UOC6 HPW6
Prerequisite/s: BIOC2101 or BIOC2181
Excluded: MICR3041, MICR3042

This advanced course differs from MICR3041 Immunology 1 by providing advanced level laboratory practicals incorporating design and performance of experiments, advanced level problem-solving tutorials, and different questions (both in content and number) in examinations. There is also a significant component of self-directed learning, including internet-based tutorials and assignments. The course aims to extend fundamental concepts and principles of immunology to an advanced level, and to promote both theoretical and practical problem solving skills. The course will be particularly useful for students considering Immunology and Microbiology majors. Topics addressed include the multiple components of the immune response and how they interact; an introduction to the concepts behind the regulation of the immune response; and an introduction to the applied and clinical aspects of immunology. There will be an emphasis on experimental design and performance as applied to solving immunological problems, and students will be expected to apply their basic knowledge to various research and “real-life” scenarios. An element of choice in assessment tasks enables students to pursue, in some depth, an area of immunology which particularly interests them. This course is available to Advanced Science and Medical Science students, and to students forming other degree programs with a particular interest in immunology and a Credit average in relevant courses.

Optometry

Optometry courses are restricted to program 3950 and are listed in the program outline. For further information on Optometry courses consult the School.

OPTM1105
Optics and the Eye 1
Staff Contact: Mr Graham Dick
UOC8 HPW8 S1


OCTM1201
Ocular and Visual Science 1
Staff Contact: Dr Gavin Boneham
UOC4 HPW4 S2
Prerequisite/s: OPTM1105, BIOS1401

Objectives: An understanding of the anatomy and physiology of the eye (particularly the anterior eye), the adnexa and visual system, and detailed information on some aspects of vision that form the foundation of Clinical Optometry. These subjects are studied in greater depth in later years. Brief Curriculum: Introduction to the gross anatomy of the eye, orbit and adnexa; the microscopic anatomy of the cornea, lens, uvea, eyelids, lacrimal apparatus and retina.

OPTM1202
Clinical Optometry 1
Staff Contact: Dr Helen Swarbrick
UOC6 HPW6 S2


OPTM1205
Optics and the Eye 2
Staff Contact: Mr Graham Dick
UOC4 HPW4 S2
Prerequisite/s: OPTM1105, PHYS1999
Corequisite/s: OPTM1201


OPTM1207
Foundations of Hygiene & Infectious Disease in Optometric Practice
Staff Contact: Dr Philip Anderton
UOC4 HPW4 S2
Prerequisite/s: BIOS1401, CHEM1819
Corequisite/s: CHEM1829


OPTM2101
Ocular and Visual Science 2A
Staff Contact: Dr Philip Anderton
UOC6 HPW6 S1
Prerequisite/s: OPTM1201, CHEM1829
Corequisite/s: PHPH2121

Objectives: Understanding of the anatomical, physiological and psychophysical fundamentals of visual perception, as they underlie

OPTM2102
Clinical Optometry 2A
Staff Contact: Dr Barbara Junghans
UOC6 HPW6 S1
Prerequisite/s: OPTM1201, OPTM1202, OPTM1205
Corequisite/s: OPTM2101, OPTM2105
Objectives: Development of good communication skills. Acquisition of technical skills to carry out an evaluation of the health of the ocular and visual system and of refractive status with a view to prescribing spectacles for the uncomplicated patient. Brief Curriculum: Ocular health: history and symptoms, introduction to diagnostic drugs, slit lamp biomicroscopy, tonometry, direct ophthalmoscopy, external eye examination. Ametropia: aetiology and management of refractive errors, objective and subjective refraction, cycloplegic refraction and prescribing lenses.

OPTM2105
Optics and the Eye 3
Staff Contact: Mr Graham Dick
UOC3 HPW3 S1
Prerequisite/s: OPTM1205
Corequisite/s: OPTM2101, OPTM2102

OPTM2201
Ocular and Visual Science 2B
Staff Contact: Dr Catherine Suttle
UOC6 HPW6 S2
Prerequisite/s: OPTM2101, OPTM2102
Corequisite/s: PHPH2221, OPTM2202
Objectives: Build on the material in OPTM2101. Brief Curriculum: Vegetative functions of the retina, the roles of retinal glia, and mechanisms of normal and abnormal development of retinal vasculature. Origins of extracellular potentials including the ERG, EOG, and VECP, and use in clinical diagnosis. The nature of normal and abnormal eye movements, the neural pathways governing eye movements. Psychophysical functions of binocular vision, visual acuity and space perception.

OPTM2202
Clinical Optometry 2B
Staff Contact: Dr Barbara Junghans
UOC6 HPW6 S2
Prerequisite/s: OPTM2101, OPTM2102, OPTM2105
Corequisite/s: OPTM2201, OPTM2202
Objectives: Building on OPTM2102 in equipping the student to be professional in manner with good communication and technical skills and able to carry out a logically sequenced primary care evaluation of the health of the ocular and visual system, refractive status and binocular coordination with a view to prescribing spectacles for the uncomplicated patient. Brief Curriculum: Interviewing skills. Ocular health: biomicroscopy, tonometry, ophthalmoscopy. Ametropia: objective and subjective refraction. Binocular vision: sensory and motor aspects of binocular vision, introduction to binocular vision anomalies. Accommodation/convergence imbalances.

OPTM2206
Pathology for Optometry
Staff Contact: Dr Peter Herse
UOC3 HPW3 S2
Prerequisite/s: OPTM1207, OPTM2102

OPTM3102
Clinical Optometry 3A
Staff Contact: Dr Lisa Asper
UOC12 HPW12 S1
Prerequisite/s: OPTM2201, OPTM2202, OPTM2206
Corequisite/s: OPTM3108, PSYC3516
Objectives: To produce a student with professional attitude and good communication skills who has the ability to integrate scientific and clinical aspects of optometry and make well-reasoned decisions while undertaking patient care at the UNSW Optometry Clinic under supervision of a registered optometrist. To advance student knowledge in dispensing, refraction, colour vision, ocular health assessment, paediatric vision and contact lenses. To advance student abilities in case analysis by integrating all aspects of optometry. To stimulate student's interest in optometric subspecialties such as colour vision, paediatric vision care and contact lenses. Brief Curriculum: Lectures, tutorials and practical classes will deal with: refraction - practical aspects; contact lenses - soft and rigid contact lens design and manufacture, fitting techniques and evaluation, care and maintenance of contact lenses, complications and modifications; paediatric optometry - child development, behavioural optometry, perceptual dysfunction, paediatric ocular disease, contact lenses and special needs children; dispensing - practical aspects; advanced ocular assessment - colour vision, visual fields and other techniques of assessing ocular and visual function.

OPTM3108
Ocular Disease
Staff Contact: Dr Peter Herse
UOC6 HPW6 S1
Prerequisite/s: OPTM2206
Corequisite/s: OPTM3102
Objectives: To introduce the diagnosis and optometric management of diseases of the anterior and the posterior eye and visual system. Brief curriculum: diseases of the lids, conjunctiva, lacrimal system, sclera, cornea, vitreous body, crystalline lens, uvea, retina, optic nerve, pupils, cranial nerves and visual pathway. Glaucoma, diplopia, effects of systemic disease and ocular trauma.

OPTM3203
Clinical Optometry 3B
Staff Contact: Dr Lisa Asper
UOC3 HPW3 S2
Prerequisite/s: OPTM3102, OPTM3108, PSYC3516
Corequisite/s: OPTM3204, OPTM3209, PHPH3302
Objectives: To produce a student with professional attitude and good communication skills who has the ability to integrate scientific and clinical aspects of optometry and make well-reasoned decisions while undertaking patient care at the UNSW Optometry Clinic under supervision of a registered optometrist. To advance student abilities in case analysis by integrating all aspects of optometry. Brief Curriculum: Students will examine patients in the Clinic under supervision of a registered optometrist. To advance student's interest in optometric subspecialties such as colour vision, paediatric vision and contact lenses. To advance student abilities in case analysis by integrating all aspects of optometry. To stimulate student's interest in optometric subspecialties such as colour vision, paediatric vision care and contact lenses. Brief Curriculum: Lectures, tutorials and practical classes will deal with: refraction - practical aspects; contact lenses - soft and rigid contact lens design and manufacture, fitting techniques and evaluation, care and maintenance of contact lenses, complications and modifications; paediatric optometry - child development, behavioural optometry, perceptual dysfunction, paediatric ocular disease, contact lenses and special needs children; dispensing - practical aspects; advanced ocular assessment - colour vision, visual fields and other techniques of assessing ocular and visual function.

OPTM3204
Clinical Optometry 3C
Staff Contact: Dr Lisa Asper
UOC8 HPW8 S2
Prerequisite/s: OPTM3102, OPTM3108, PSYC3516
Corequisite/s: OPTM3203, OPTM3209, PHPH3302
Objectives: To produce a student with professional attitude and good communication skills who has the ability to integrate scientific and clinical aspects of optometry and make well-reasoned...
decisions while undertaking patient care at the UNSW Optometry Clinic under supervision of a registered optometrist. To advance student knowledge in and to stimulate students' interest in optometric subspecialties such as low vision, binocular vision and contact lenses. Brief Curriculum: Lectures, tutorials, and practical classes will deal with: contact lenses - knowledge will be extended to special applications and advanced topics; binocular vision - case analysis, diagnosis and management of strabismus and amblyopia, aniseikonia and related topics.

OPTM3209
Environmental Optometry
Staff Contact: Associate Professor Stephen Dain
UOC6 HPW6 S2
Prerequisite/s: OPTM3102
Corequisite/s: OPTM3203

OPTM4114
Optometry and the Professional Environment A
Staff Contact: Mr David Pye
UOC3 HPW3 S1
Corequisite/s: OPTM4311, OPTM4312, OPTM4313

OPTM4210
Research Project
Staff Contact: Dr Peter Herse
UOC3 HPW3 S2
Prerequisite/s: OPTM3208, OPTM3301, OPTM3302, OPTM3309
Objectives: This subject seeks to develop students skills in searching the literature, critical analysis of publications, developing hypotheses, designing and running experiments, statistical data analysis and oral and written presentation of reports. Students in groups of 2 to 4 carry out a small research project under the guidance of an academic staff member. In November each group makes a presentation to a symposium.

OPTM4214
Optometry and the Professional Environment B
Staff Contact: Mr David Pye
UOC3 HPW3 S2
Prerequisite/s: OPTM4114
Corequisite/s: OPTM4311, OPTM4312, OPTM4313

OPTM4311
Clinical Optometry 4A
Staff Contact: Mr David Pye
UOC6 HPW6 S1 S2
Prerequisite/s: OPTM3208, OPTM3301, OPTM3302, OPTM3309, PSYC3516
Corequisite/s: MDCN8001, OPTM4312, OPTM4313
Objectives: further development of the clinical skill to examine competently patients in optometric practice and recommend appropriate treatment and strategies for patients presenting for primary eye care. Brief Curriculum: Clinical experience in primary eye care. Diagnosis, management and treatment of these patients will be emphasised.

OPTM4312
Clinical Optometry 4B
Staff Contact: Mr David Pye
UOC6 HPW6 S1 S2
Prerequisite/s: OPTM3208, OPTM3301, OPTM3302, OPTM3309, PSYC3516
Corequisite/s: MDCN8001, OPTM4311, OPTM4313
Objectives: Further development of the clinical skill to examine competently patients in optometric practice and recommend appropriate treatment and strategies for patients presenting for primary eye care. Brief Curriculum: Clinical experience in the following areas; colour vision, low vision. Ocular disease, participation in patient review clinics. Diagnosis, management and treatment of these patients will be emphasised.

OPTM4313
Clinical Optometry 4C
Staff Contact: Mr David Pye
UOC6 HPW6 S1 S2
Prerequisite/s: OPTM3208, OPTM3301, OPTM3302, OPTM3309, PSYC3516
Corequisite/s: MDCN8001, OPTM4311, OPTM4312
Objectives: further development of the clinical skill to examine competently patients in optometric practice and recommend appropriate treatment and strategies for patients presenting for primary eye care. Brief Curriculum: clinical experience in the following areas; contact lenses, dispensing, vision training, sports vision and paediatric clinics. Diagnosis, management and treatment of these patients will be emphasised.

Pathology

Pathology Level II

PATH201
Processes in Disease
Staff Contact: Dr Mark Dziegielewski
UOC6 HPW4 S2
Prerequisite/s: BIOS1101, BIOS1201; any 2 of ANAT2200, ANAT2111, PHPH2101 or BIOC2101/BIOC2181
Lectures, tutorials and museum study sessions aimed at increasing understanding of important disease processes. Comparisons between normal and abnormal cell, tissue and organ function will be made. Includes processes of cell and tissue degeneration, acute and chronic inflammation, regeneration and repair, infection, atherosclerosis, thrombosis, embolism and infarction. Particular examples include diseases of practical importance such as pneumonia, tuberculosis, pulmonary embolism and myocardial infarction. Aberrations of cell growth introduces neoplasia with examples of common tumours.
Pathology Level III

PATH3205
Molecular Basis of Disease A
Staff Contact: Dr M Davenport
U0C6 HPW4 S1
Prerequisite/s: PATH2201
Note/s: Students are advised that previous and concurrent study of Anatomy, Physiology, Biochemistry and Immunology would be an advantage.
Recent advances in understanding molecular mechanisms of acute and chronic inflammation, allergy, autoimmune diseases, atherosclerosis and thrombosis. Detailed discussion of mediators of these processes, including cytokines and growth factors. Systemic pathology of the cardiovascular and respiratory systems, with an emphasis on ischaemic heart disease and asthma. Laboratory classes introduce modern research and diagnostic techniques.

PATH3206
Molecular Basis of Disease B
Staff Contact: Dr M Dziegielewski
U0C6 HPW4 S2
Prerequisite/s: PATH3205
Note/s: Study in ANAT3231 is an advantage.
Recent advances in understanding pathogenic mechanisms underlying congenital disorders and neoplasia. Detailed discussion of molecular carcinogenesis, the metastatic process and techniques for diagnosing congenital diseases. Common tumours, with an emphasis on colorectal, breast, prostate and cervical carcinoma. Systemic pathology of the gastrointestinal, genitourinary and central nervous systems, including peptic ulcer disease, liver disorders, glomerulonephritis, and Alzheimer disease.

Pathology Level IV

PATH0005
Pathology Honours Full-time
Staff Contact: Professor C Geczy
Enrolment requires School approval
U0C48 S1 S2
Research component of thesis: basic mechanisms of human disease processes, including inflammation, rheumatoid arthritis, asthma, uveitis, infection, bone and biomaterials, tumour biology, vascular biology, atherosclerosis and genetics. Projects can include techniques such as tissue culture and cell biology, microbiology and genetics, protein chemistry, histology and microscopy, immunology and enzymology. Projects may be undertaken within the School of Pathology or at a laboratory of an affiliated institute or hospital department associated with the school.

PATH0006
Pathology Honours Part-time
Staff Contact: Professor C Geczy
Enrolment requires School approval
U0C24 S1 S2
Research component of thesis: basic mechanisms of human disease processes, including inflammation, rheumatoid arthritis, asthma, uveitis, infection, bone and biomaterials, tumour biology, vascular biology, atherosclerosis and genetics. Projects can include techniques such as tissue culture and cell biology, microbiology and genetics, protein chemistry, histology and microscopy, immunology and enzymology. Projects may be undertaken within the School of Pathology or at a laboratory of an affiliated institute or hospital department associated with the school.

Philosophy

Philosophy is a wide-ranging discipline, catering for a great diversity of interests, for instance, in science, reasoning, persons, and social issues, and encouraging critical and imaginative thought about the foundations of other courses and disciplines. Apart from providing considerable choices for students majoring in Philosophy, the diversity of Upper Level courses makes it possible for students majoring in other disciplines to select courses complementing their main interest.

Philosophy Level I

First Enrolment in Philosophy
There are five Level I courses:
Each of these has a 6 Units of Credit value. They can be taken separately, and students can gain Upper Level status in Philosophy (qualify to enrol in Upper Level subjects) by passing in only one. However, students wishing to major in Philosophy must complete any two of the four.

PHIL1001
Encountering Western Philosophy I
Staff Contact: Dr Michaelis Michael
U0C6 HPW3
Introduces students to some of the most important thinkers in the development of Western thought. Starting in Ancient Greece and culminating in medieval Europe, this course examines the origin and development of many of the ideas and arguments that shape contemporary culture such as freedom, equality, democracy, truth, good and beauty. Students will encounter some of the most influential texts of Western Philosophy and will read works by thinkers such as Parmenides, Heraclitus, Zeno, Plato, Aristotle, Plotinus, Augustine, Aquinas, Anselm and Machiavelli. Provides a firm foundation in the key themes of our intellectual inheritance.

PHIL1002
Encountering Western Philosophy II
Staff Contact: Dr Andrew Haas
U0C6 HPW3
Introduces students to some of the most important thinkers in the development of Western thought. Starting in the modern world and culminating in contemporary Europe, the course examines the origin and development of many of the ideas and arguments that shape our actions to this day such as freedom, equality, democracy, truth, good and beauty. Students will encounter some of the most influential texts of Western Philosophy, including works by thinkers such as Descartes, Hobbes, Locke, Leibniz, Rousseau, Hume, Kant, Darwin, Marx, Nietzsche, Freud, Wittgenstein and de Beauvoir. Provides a firm foundation in the key themes of our intellectual inheritance.

PHIL1007
Knowledge and Reality
Staff Contact: Associate Professor Stephen Hetherington
U0C6 HPW3 S2
An introduction to some classical and contemporary philosophical questions, puzzles, arguments, and ideas about knowledge and reality. This is a course in two central areas of philosophy - epistemology and metaphysics. Philosophers could include Plato, Descartes, Berkeley, and Hume. Topics to be discussed could include: truth, rational belief, evidence, fallibility, certainty, reason and the senses, the nature of knowledge, knowledge of the world, knowledge of other minds, knowledge of the future, moral knowledge, God's existence, universals and particulars, matter and mind, personal identity, causation, free will and determinism, essence and accident, death, meaning of life.

PHIL1008
Ethics and Society
Staff Contact: Associate Professor Stephen Cohen
U0C6 HPW3 S1
This is political philosophy and moral philosophy at the intersection of the political with the personal. When we make decisions in important areas like euthanasia, reproductive freedom and reproductive
technology, the allocations of health resources, the suppression of smoking and other drugs, censorship, the environment, penal reform and capital punishment, we must balance the rights and duties of the individual with the demands and obligations of society. In this team-taught course, we consider current debate about the above questions.

Value of Upper Level Subjects in Philosophy

All Upper Level courses are 6 units of credit

Specialisation in Philosophy

Students specialising in Philosophy must complete any two of the School's Level I courses (12 units of credit): PHIL1001 Encountering Western Philosophy I, PHIL1002 Encountering Western Philosophy II, PHIL1007 (Knowledge and the Knower), PHIL1008 (Ethics and Society), PHIL1010 (Thinking and Reasoning), PHIL1011 (Minds and Persons). In addition, students must complete 6 Upper Level (II/III) courses (36 units of credit). Of these, courses totalling at least 24 units of credit must be chosen from List A, which includes courses in Logic, Philosophy of Mind, Philosophy of Science, and areas of History of Philosophy relevant to those subject areas. Students will normally do two Level II/III courses in Year 2, and four Level II/III subjects in Year 3. Subject to the approval of the School, which considers the individual courses nominated by a student and the student's overall program in Philosophy, a student may be permitted to count courses totalling up to 6 units of credit offered outside the School toward specialisation in Philosophy.

List A

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PHIL1206</td>
<td>Logic</td>
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<tr>
<td>PHIL1207</td>
<td>Advanced Philosophy of Science</td>
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<tr>
<td>PHIL1208</td>
<td>Ways of Reasoning</td>
</tr>
<tr>
<td>PHIL1216</td>
<td>Scientific Method</td>
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<tr>
<td>PHIL2117</td>
<td>Philosophical Logic</td>
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<tr>
<td>PHIL2118</td>
<td>Philosophy and Biology</td>
</tr>
<tr>
<td>PHIL2206</td>
<td>Philosophy of Religion</td>
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<tr>
<td>PHIL2207</td>
<td>Philosophy of Psychology</td>
</tr>
<tr>
<td>PHIL2217</td>
<td>Personal Identity</td>
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<tr>
<td>PHIL2218</td>
<td>Philosophical Foundations of Artificial Intelligence</td>
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<tr>
<td>PHIL2225</td>
<td>Twentieth Century Analytic Philosophy</td>
</tr>
<tr>
<td>PHIL2518</td>
<td>Greek Philosophy</td>
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<tr>
<td>PHIL3900</td>
<td>Themes in Seventeenth Century Philosophy</td>
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<tr>
<td>PHIL3901</td>
<td>Themes in Eighteenth Century Philosophy</td>
</tr>
<tr>
<td>PHIL3910</td>
<td>Pre Honours Seminar</td>
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The remaining 12 units of credit are to be chosen from other Upper Level Philosophy courses.

Level II/III

Some Upper Level courses deal with particular philosophical topics; others can be taken in sequence to give more sustained treatments of larger areas. Students may select freely among these, subject to stipulations regarding prerequisites. They are welcome to seek advice and further information from the School.

In certain circumstances the prerequisites specified for courses may be waived; for example, in the case of students who have already studied similar material, or who wish to take isolated courses relevant to another discipline. Students who feel they have a case for a concession of this kind should consult the School.

Honours Entry Requirements

For entry into Philosophy Honours (research), students must normally have completed 54 units of credit in Philosophy, consisting of 6 or 12 units of credit at level I and the remainder at upper level. Students must normally also have a grade average of at least 70% in their Philosophy courses, including at least one Distinction result. For students commencing their university study prior to 1996 their upper level courses must include PHIL3106 Pre-Honours Seminar (now PHIL3910), and at least 18 units of credit chosen from courses which are primarily oriented towards the history of philosophy, of which 6 units of credit must be in the same area of the history of modern European philosophy. For students commencing university study in 1996 or later, the history of philosophy requirements have been changed: in addition to PHIL3910 Pre-Honours Seminar (was PHIL3106), intending honours students are required to complete the following two courses (totalling 12 units) of credit PHIL3900 Themes in Seventeenth Century Philosophy (was PHIL2228) and PHIL3901 Themes in eighteenth century Philosophy (was PHIL2229). There are no other specific course requirements.

Philosophy Level II/III

Notes: Level II Status in Philosophy consists in being in second or later year of university study, and also having passed at least one Level I Philosophy course. The prerequisite may be waived in certain cases by the School.

Level III Status in Philosophy consists of having an overall standard of credit or higher in Philosophy courses totalling 48 units of credit.

PHIL2106

Logic

Staff Contact: Associate Professor Stephen Hetherington

UOC6 HPW3 S1

Prerequisite/s: 36 units of credit

Excluded: MATH3400

This course is about deductive logic (in particular, propositional logic and predicate logic). Aims to construct - and to understand - a precise, unambiguous, formal language. Many important parts of English are translatable into it, hence many arguments of English are translated into it too. It is a language with which we can better understand the concept of deductive proof.

PHIL2108

Ways of Reasoning

Staff Contact: Dr Sandra Lynch

UOC6 HPW3 S1

Prerequisite/s: 36 units of credit

Examines what reasoning and argument really are and how best to engage in them. Material for this course is drawn from everyday sources, such as newspapers, books and advertisements, including television, as well as some of the brilliant pieces of reasoning in the philosophical tradition. From studying the structure of arguments, the purpose of reasoning, and a number of strong and weak argumentative moves, and from a guided re-evaluation of their own writing, students will be able to improve their critical skills and the presentation of their own arguments.

PHIL2109

Contemporary Metaphysics

Staff Contact: Associate Professor Stephen Hetherington

UOC6 HPW3 S1

Prerequisite/s: 6 units of credit in level 1 Philosophy and 36 units of credit overall

Examines several classic metaphysical questions some of which are as follows: Is there a real world? What is social reality? What is the nature of possibility? Is this the only possible world? Is there a God? Are there people? Is there free will?

PHIL2206

Philosophy of Mind

Staff Contact: Dr Philip Cam

UOC6 HPW3 S1

Prerequisite/s: 6 units of credit in level 1 Philosophy and 36 units of credit overall

An introduction to some central concerns and major debates about the nature of mind. Addresses questions such as can our conscious mental life be an object of scientific study? What is the relation between mind and brain? Can we explain how consciousness evolved? What is the basis and nature of our personal identity?

PHIL2208

Contemporary Epistemology

Staff Contact: Associate Professor Stephen Hetherington

UOC6 HPW3 S1

Prerequisite/s: 6 units of credit in level 1 Philosophy and 36 units of credit overall

Excluded: PHIL2209

What is knowledge? What knowledge are people capable of having? Might people have no knowledge at all? Might people at least have much less knowledge than they take themselves to have? We will discuss sceptical, as well as non-sceptical, philosophical theories
of knowledge, covering such topics as these: truth, fallibility, evidence, certainty, knowledge of the world, knowledge of the unobserved, knowledge of one's mind, knowledge of meaning.

PHIL2218
Philosophical Foundations of Artificial Intelligence
Staff Contact: Mr Philip Staines
UC6  HPW3 S2
Prerequisite/s: 6 units of credit in level 1 Philosophy and 36 units of credit overall
Artificial intelligence: an examination of its assumptions, history, goals, achievements and prospects.

PHIL2310
Heidegger and the Tradition
Staff Contact: Dr Andrew Haas
UC6  HPW3 S1
Heideggers attempt to recall us to the question of Being in itself continues to have an important impact. This course begins with some of Heideggers critical works such as: Being and Time, what is Metaphysics? Early Greek Thinking, What is Called Thinking?, The Concept of Time, On the Way to Language, Identity and Difference, The Question Concerning Technology. It then proceeds to look back to such thinkers as the Pre-Socratits, Plato, Aristotle, Kant, Hegel and Nietzsche with whom Heidegger engaged in his project of the 'destruction of metaphysics', and to look forward to the influence he continues to exercise on thinkers as diverse as Sartre, Horkheimer and Adorno, Arendt, Merleau-Ponty, Levinas, Derrida, Gadamer, Ricoeur, Nishiha, Nishitani, and Irigaray.

PHIL2407
Contemporary European Philosophy
Staff Contact: Dr Andrew Haas
UC6  HPW3 S1
Prerequisite/s: 6 units of credit in level 1 Philosophy and 36 units of credit overall
The earliest philosophy attached myth and poetry; the most recent philosophy wonders if it is possible to live without them. The writers studied criticise the moral and the aesthetic values of their culture; they demand new ways of feeling and thinking, new modes of behaviour and language. Their visions are troubling and sometimes violent, but we cannot simply dismiss them. The purpose is to reach a better understanding of the work of Nietzsche, the Surrealists, Bataille and Deleuze, in order to evaluate their critique of modernity; these writers have been chosen because of their impact on current theoretical debates in the social sciences, literature and art.

PHIL2419
Ethics, Difference and Embodiment
Staff Contact: Dr Rosalyn Diprose
UC6  HPW3 S1
Prerequisite/s: 6 units of credit in level 1 Philosophy and 36 units of credit overall
Explores an approach to ethics originating in ancient Greek thought and developed by 20th century existential phenomenologists (such as Sartre, de Beauvoir, Merleau-Ponty and Levinas). Topics covered include how an embodied ethos (ie. An habitual way of life) is socially constituted, what is the basis of our social relations with others; and possible applications of these ideas to analyses of the ethics of sexual difference, cultural difference and some issues in medical ethics.

PHIL2506
Classical Political Philosophy
Staff Contact: Associate Professor Stephen Cohen
UC6  HPW3 S2
Prerequisite/s: 6 units of credit in level 1 Philosophy and 36 units of credit overall
Examination of the work of some central figures in the history of political philosophy, with regard to the basis of political society, its various functions and its relation to the individuals in it. Through an investigation of works by Hobbes, Locke, Rousseau, and J.S. Mill, topics include the idea of a state of nature, theory of a social contract, the establishment of political rights and obligations, and the relation of moral and political concerns within a political society.

PHIL2518
Greek Philosophy
Staff Contact: Dr Andrew Haas
UC6  HPW3 S2
Prerequisite/s: 6 units of credit in level 1 Philosophy and 36 units of credit overall
Excluded: PHIL2507
Covers themes in Plato and Aristotle which have had a continuing influence in Western philosophy. Discussion centres on concepts of virtue and knowledge in relation to ideals of wisdom and contemplation.

PHIL2519
Introduction to Chinese Philosophy
Staff Contact: Dr Karyn Lai
UC6  HPW3 S2
Prerequisite/s: 6 units of credit in level 1 Philosophy and 36 units of credit overall
Excluded: PHIL2520
Confucianism and Taoism are the two most influential philosophies origination from China. Examines the two traditions, set against a backdrop of other schools of thought such as Mohism, Legalism and Chinese Buddhism. This course involves close readings of the relevant primary texts. Students will be taught to read these texts. No previous knowledge of Chinese culture or language is assumed.

PHIL2520
Aspects of Chinese Thought
Staff Contact: Dr Karyn Lai
UC6  HPW3 S2
Prerequisite/s: 36 units of credit in Arts and Social Science courses
Excluded: PHIL2519
There are many significant concepts underlying contemporary Chinese thought which have their origin in the classical Chinese schools of thought from pre-Confucian times. This course critically examines some of these concepts, such as the Confucian jen (humanity) and li (rules of propriety); and the Taoist tao and wu-wei (non-action).

PHIL2608
Aesthetics: Experiencing the Spectacle
Staff Contact: Dr Rosalyn Diprose
UC6  HPW3 S2
Prerequisite/s: 6 level 1 units of credit in Philosophy or MDCM1001 and 36 units of credit overall
Excluded: PHIL2606
Explores philosophical accounts of what is involved in a person's experience of a spectacle (eg. a painting, a piece of theatre, television or virtual reality). Some philosophers (eg. Plato) devalue the experience as irrational and different to rational contemplation of an object of knowledge. Others (eg. Kant) claim the experience can be objective and universal, where what I experience is (potentially) the same as everyone else, against the common view that the person views the spectacle from a distance and remains unaltered by the experience. Nietzsche, Heidegger and Merleau-Ponty in different ways argue that the spectacle is necessary for creatively opening the person and their world to other possibilities. Emphasis will be on how these thinkers understand the relation between the person and the spectacle with consideration of the implications of their views for understanding the impact of visually based media in our lives.

PHIL2708
Reading Option
Staff Contact: School Office
UC6  HPW3 S1 S2
Prerequisite/s: 6 units of credit in level 1 Philosophy and 36 units of credit overall
Students wishing to do work in an area not covered by an existing course or seminar may apply to the School to take a reading option. Not more than one such course may be counted towards a degree. Approval of a program for a reading option depends on its suitability and on the availability of a member of staff to undertake supervision.
PHIL3900
Themes in Seventeenth Century Philosophy (Advanced)
Staff Contact: Dr Michaelis Michael
UOC6  HPW3  S1
Prerequisite/s: 56 units of credit in at least 6 units of credit in Philosophy at 65% or higher
Excluded: PHIL2228

Includes a range of topics drawn from the writing of the seventeenth century philosophers John Locke, Rene Descartes, Benedict de Spinoza and Gottfried Leibniz. Topics will be selected from the following: substance, minds and bodies, freedom, contingency, possibility and necessity, time and space. Includes a one hour advanced level seminar with the lecturer each week.

PHIL3901
Themes In Eighteenth Century Philosophy (Advanced)
Staff Contact: Dr Sandra Lynch
UOC6  HPW3  S2
Prerequisite/s: 36 units of credit with at least 6 units of credit in Philosophy at 65% or higher
Excluded: PHIL2229

Focuses on themes taken from the writings of the philosophers George Berkeley, David Hume and Immanuel Kant. We discuss the major topics of the eighteenth century Enlightenment such as: the status of knowledge and reason, the question of the meaning of being, the conception of the ideal and the real, the relation of theory and practice. The course includes a one hour advanced level seminar with the lecturer each week.

PHIL3106
Pre-Honours Seminar
Staff Contact: Dr Rosalyn Diprose
UOC6  HPW3  S2
Prerequisite/s: 36 units of credit with at least 6 units of credit in Philosophy at 65% or higher
Excluded: PHIL3106

A team-taught course for students intending to take Honours in Philosophy, designed to form skills in philosophical research and writing through seminar discussion of readings illustrating a range of philosophical approaches, styles and techniques.

Philosophy Level IV (Honours)

PHIL4000
Philosophy Honours (Research) Full-Time
Staff Contact: Dr Sandra Lynch
Enrolment requires School approval
UOC48  S1  S2
Prerequisite/s: 54 units of credit in PHIL with an average of 70% and PHIL3910, PHIL3900 and PHIL3901 and permission from Head of School.

The Honours year consists of a one year-length seminar, one session-length seminar, and writing a research thesis under supervision.

PHIL4050
Philosophy Honours (Research) Part-Time
Staff Contact: Dr Sandra Lynch
Enrolment requires School approval
UOC24  S1  S2
Prerequisite/s: 54 units of credit in PHIL with an average of 70% and PHIL3910, PHIL3900 and PHIL3901 and permission from Head of School.

The Honours year consists of a one year-length seminar, one session length seminar, and writing a research thesis under supervision.

PHIL4500
Combined Philosophy Honours (Research) F/T
Staff Contact: Dr Sandra Lynch
Enrolment requires School approval
UOC24  S1  S2
Prerequisite/s: 48 units of credit in PHIL with an average of 70% and PHIL3910, PHIL3900 and PHIL3901 and permission from Head of School.

For Combined Honours candidates are required to present a thesis as approved by the Heads of the two participating Schools.

PHIL4550
Combined Philosophy Honours (Research) P/T
Staff Contact: Dr Sandra Lynch
Enrolment requires School approval
UOC12  S1  S2
Prerequisite/s: 48 units of credit in PHIL with an average of 70% and PHIL3910, PHIL3900 and PHIL3901 and permission from Head of School.

Notes: Students contemplating Honours are urged to seek advice from the School on their program early in their course.

For Combined Honours, candidates are required to present a thesis as approved by the Heads of the two participating Schools.

Physics

Physics Level I Courses

Notes: Where mathematics courses are specified as prerequisites or as corequisites, the higher levels of such subjects are acceptable and preferable.

PHYS1000
Physics Thinking
Staff Contact: First Year Director
UOC3  HPW3  S2

Techniques in scientific thinking and experimentation: seeing similarities, using diverse knowledge and techniques, having good ideas. Estimation in theory and experiment. The subject will mainly be taught in small groups organised to solve experimental and theoretical problems, some of them quite difficult. The problems may have fundamental as well as applied character, but the emphasis of the course is on universal principles, including conservation, symmetries, scaling and dimensional analysis, behaviour near equilibrium.

PHYS1111
Fundamentals of Physics
Staff Contact: First Year Director
UOC6  HPW6  S1  S2

Notes: Introductory level course for students of all disciplines. The methods of physics, describing motion, the dynamics of a particle, conservation of energy, kinetic theory of gases, properties of liquids, vibrations and waves, electricity and conduction in solids, magnetism and electromagnetic induction, alternating current, atomic nature of matter, X-rays, the nucleus and radioactivity, geometrical optics, optical instruments, wave optics.

PHYS1121
Physica 1A
Staff Contact: First Year Director
UOC6  HPW6  S1  S2
Corequisite/s: MATH1131 or MATH1141


PHYS1131
Higher Physics 1A
Staff Contact: First Year Director
UOC6  HPW6  S1  S2
Corequisite/s: MATH1131 or MATH1141

Vectors, kinematics, particle dynamics, work and energy, the conservation of energy, conservation of linear momentum, rotational kinematics and dynamics, simple harmonic motion, gravitation. Electrostatics, magnetostatics in vacuum, ferromagnetism, electromagnetic induction.
PHYS1149  
Physics 1A (Aviation)  
Staff Contact: First Year Director  
UOC6  HPW6  S1  
Corequisite/s: MATH1011 or MATH1079 or MATH1131 or MATH1031 or MATH1141  
The methods of Physics, describing motion, the dynamics of particle, conservation of energy, kinetic theory of gases, properties of liquids, vibrations and waves, electricity and conduction in solids, ions and ionic conduction, magnetism and electro magnetic induction, alternating current.  

PHYS1199  
Physics 1 (Optometry)  
Staff Contact: First Year Director  
UOC6  HPW6  S1  
Notes: Restricted to program 3950.  
Vectors, linear mechanics, Newton's Law of Motion, Rotational mechanics, electric forces, fields and potential. Magnetic forces and fields. Ampere's Law, Faraday's Law, Electric circuit theory, AC, DC and transient circuits. Fluid mechanics; Bernoulli's equation; viscosity; Stoke's Law. Nuclear Physics; radioactivity, half-life, nuclear forces, binding energies, fission and fusion.  

PHYS1201  
Life Sciences Physics  
Staff Contact: First Year Director  
UOC6  HPW6  S1  
Corequisite/s: MATH1011 or MATH1031  
This course examines selected topics in Physical Science, with emphasis on underlying broad classical and quantum principles which have direct relevance to rapidly developing fields of Molecular Biology, Biotechnology and other life science fields which are becoming increasingly reliant upon understanding and techniques of Physical Science. This course extends the elementary physics presented in the Fundamentals of Physics course providing a more mathematical treatment but tailored to emphasize material with direct relevance to Life Sciences fields.  

PHYS1221  
Physics 1B  
Staff Contact: First Year Director  
UOC6  HPW6  S2 X1  
Corequisite/s: MATH1231 or MATH1241  
Waves in elastic media: application of wave theories to optical and acoustical phenomena such as interference, diffraction and polarisation. Properties of matter: solids, liquids, gases. Fluids and thermal physics. Inductance and electric circuit transients. Alternating current circuit theory.  

PHYS1229  
Concepts in Engineering Physics  
Staff Contact: First Year Director  
UOC6  HPW6  S2  
Prerequisite/s: PHYS1022 or PHYS1111  
Corequisite/s: MATH1021 or MATH1031 or MATH1131 or MATH1141  
This course will examine selected topics from classical and quantum physics which are of relevance to the various Engineering disciplines. The course extends the level beyond PHYS1111 Fundamentals of Physics presenting a more mathematical treatment and including physics applications in various Engineering areas to emphasise the essential way in which Physics underpins many of the advances which have been made in modern Engineering and technology.  

PHYS1231  
Higher Physics 1B  
Staff Contact: First Year Director  
UOC6  HPW6  S2 X1  
Corequisite/s: MATH1231 or MATH1241  

PHYS1249  
Physics 1B (Aviation)  
Staff Contact: First Year Director  
UOC6  HPW6  S2  
Syllabus as per PHYS1229, but more limited scope, for weeks 1 - 7 only.  

PHYS1601  
Computer Applications in Experimental Science 1  
Staff Contact: First Year Director  
UOC6  HPW6  S1  
Corequisite/s: PHYS1111 or PHYS1121 or PHYS1131, MATH1131 or MATH1141 or MATH1031  
An introduction to the internal structure, operating and interfacing of computers. Binary and digital electronic logic; logic control devices; bus communication structures; instruction execution in a processor; machine language code and instruction sets; interfaces and interaction schemes between processor and the outside world.  

Physics Level II Subjects  
Notes: Where mathematics subjects are specified as prerequisites or as corequisites, the higher levels of such subjects are acceptable and preferable. Students are also advised that other subjects may be acceptable equivalent prerequisites or corequisites to those listed, eg PHYS2939 of course 3640 may be acceptable in place of PHYS2050. Enquiry should be made to the Physics Friend.  

PHYS2010  
Mechanics  
Staff Contact: Physics Friend  
UOC6  HPW2  S1  
Prerequisite/s: PHYS1002 or PHYS1221 or PHYS1231 and MATH1231 or MATH1241  
Corequisite/s: MATH2011 or MATH2110 or MATH2100; Excluded: PHYS2001  
Simple, damped and forced harmonic oscillations, central force problems, systems of particles, Lagrange's equations, coupled oscillations, waves.  

PHYS2020  
Computational Physics  
Staff Contact: Physics Friend  
UOC6  HPW2  S1  
Prerequisite/s: PHYS1002 or PHYS1022 or PHYS1221 or PHYS1231 and MATH1021 or MATH1231 or MATH1241 or MATH1031  
Excluded: PHYS2001  
Use of computers to solve problems in Physics. Application to mechanics, chaos, quantum and thermal physics, data analysis.
PHYS2030
Laboratory A
Staff Contact: Physics Friend
UOC3 HPW3 S1
Prerequisite/s: PHYS1002 or PHYS1022 or PHYS1111 or PHYS1221 or PHYS1231 and MATH1021 or MATH1131 or MATH1141 or MATH1031
Excluded: PHYS2031

Experimental investigations in a range of areas: x-ray diffraction, work function, semiconductor bandgap, Hall effect, carrier lifetimes, nuclear magnetic resonance, magnetic properties.

PHYS2040
Quantum Physics
Staff Contact: Physics Friend
UOC3 HPW2 S1
Prerequisite/s: PHYS1002 and PHYS1221 or PHYS1231 and MATH1231 or MATH1241
Excluded: PHYS2021


PHYS2050
Electromagnetism
Staff Contact: Physics Friend
UOC3 HPW2 S2
Prerequisite/s: PHYS1002 or PHYS1221 or PHYS1231 and MATH1231 or MATH1241
Corequisite/s: MATH2011 or MATH2110 or MATH2100;
Excluded: PHYS2011

Static and time-dependent electric and magnetic fields. Electric and magnetic potentials. Electromagnetic waves. Materials in electric and magnetic fields.

PHYS2060
Thermal Physics
Staff Contact: Physics Friend
UOC3 HPW2 S2
Prerequisite/s: PHYS1002 or PHYS1022 or PHYS1111 or PHYS1221 or PHYS1231 and MATH1021 or MATH1131 or MATH1141 or MATH1031
Excluded: PHYS2011

Laws of thermodynamics, kinetic theory, microscopic processes, entropy, solid-state defects, Helmholtz and Gibbs’ functions, Maxwell’s relations, phase diagrams, chemical and electrochemical potentials.

PHYS2160
Astronomy
Staff Contact: Physics Friend
UOC3 HPW2 S2
Prerequisite/s: PHYS1002 or PHYS1221 or PHYS1231 or PHYS1022

Galaxies, the distance scale, large scale structure of the universe, galaxy evolution, the very early universe.

PHYS2170
The Search for Life Elsewhere in the Universe
Staff Contact: Physics Friend
UOC3 HPW2 S2
Excluded: GEN5014

A scientific examination of the question “Are we alone”. The material will include discussions on the origin and survival of life, current high-tech searches for radio signals from extra-terrestrials, discoveries of new planetary systems, possible types of life-forms, Einstein’s relativity, space-travel, and much more. A team of researchers will present the lectures, which will be supported by special tutorials which will look in detail at quantitative aspects of the subject.

PHYS2310
Nuclear Science and Technology
Staff Contact: Physics Friend
UOC3 HPW2 S2
Prerequisite/s: PHYS1002 or PHYS1022 or PHYS1111 or PHYS1221 or PHYS1231 and MATH1021 or MATH1131 or MATH1141 or MATH1031
Excluded: PHYS2021, GEN5009

Structure of atom and nucleus, historical review, binding energy, mass defect, liquid drop model, semi-empirical mass formula. Radioactive decay, fission, nuclear reactors, natural (background) radiation, nuclear accidents, fusion and cosmology. Impact of radiation on living organisms, nuclear medicine.

PHYS2410
Biophysics 1
Staff Contact: Physics Friend
UOC3 HPW2 S2
Prerequisite/s: PHYS1002 or PHYS1022 or PHYS1111 or PHYS1221 or PHYS1231


PHYS2520
Einstein’s Relativity and Spacetime
Staff Contact: Physics Friend
UOC3 HPW2 S2
Excluded: PHYS3550


PHYS2601
Computer Applications in Experimental Science 2
Staff Contact: Physics Friend
UOC6 HPW5 S2
Prerequisite/s: PHYS1601

Technical aspects of computer hardware, peripherals and systems. Bus logic devices; simple interface design; use of a general purpose interface for communication, data collection and control. Speed and capacity limitations of conventional peripherals; techniques to improve performance.

PHYS2630
Electronics
Staff Contact: Physics Friend
UOC3 HPW3 S2
Prerequisite/s: PHYS1002 or PHYS1221 or PHYS1231 or PHYS1022
Excluded: PHYS2920, PHYS2031

Electronic bench experiments and tutorials on diodes, transistors, operational amplifiers, power supplies and digital electronics.

PHYS2801
Atmospheric Science
Staff Contact: Physics Friend
UOC6 HPW4 S1
Excluded: PHYS2810
Assumed knowledge: MATH1031 or equivalent; PHYS1111 or equivalent or GEOG1701

Atmospheric composition, thermodynamics of dry and moist air, stability, atmospheric motion and weather systems, energy transport, cloud processes, radiation laws, solar and terrestrial radiation, ozone formation and loss, 1D and 3D climate models and climate analysis, global warming. Laboratory exercises including chart analysis and computer simulations.
PHYS2810
Atmospheric Physics
Staff Contact: Physics Friend
UOC3 HPW2 S1
Prerequisite/s: PHYS1002 or PHYS1022 or PHYS1149 or PHYS1111 or PHYS1221 or PHYS1889 and MATH1021 or MATH1231 or MATH1079 or MATH1031
Excluded: PHYS2819
Assumed knowledge: MATH1031 or equivalent; PHYS1111 or equivalent or GEOG1701
Note/s: recommended PHYS1111 or higher or GEOG1701.
Atmospheric composition, thermodynamics of dry and moist air, stability, cloud physics, atmospheric electricity, radiation laws, solar and terrestrial radiation, applications, ozone hole, atmospheric energy transport, 1D and 3D climate models, applications, global warming.

Physics Level III Subjects
Note: See notes for Physics Level II subjects.

PHYS3010
Quantum Mechanics (Advanced)
Staff Contact: Physics Friend
UOC3 HPW2 S1
Prerequisite/s: PHYS2021 or PHYS2040
Corequisite/s: MATH2120
Excluded: PHYS3020
Note/s: Not available without a mark of 65 or greater in PHYS2021 or PHYS2040.
Fundamental principles; the Hydrogen atom; angular momentum; stationary and time-dependent perturbations; semi-classical radiation theory; variational methods; systems of particles; the Helium atom; matrix formulation.

PHYS3020
Statistical Physics
Staff Contact: Physics Friend
UOC3 HPW2 S1
Prerequisite/s: PHYS2060 or PHYS2011;
Excluded: PHYS3021.

PHYS3030
Electromagnetism (Advanced)
Staff Contact: Physics Friend
UOC3 HPW2 S1
Prerequisite/s: PHYS2011 or PHYS2050 and MATH2011 and MATH2120 and MATH2520
Excluded: PHYS3230
Note/s: Not available without a mark of 65 or greater in PHYS2011 or PHYS2050.

PHYS3040
Experimental Physics A1
Staff Contact: Physics Friend
UOC3 HPW4 S1
Note/s: Some experiments assume knowledge of PHYS2030, PHYS2040 or PHYS2050.
A selection of experimental investigations in areas including: chaotic motion, high temperature superconductivity, semiconductors, electron and tunneling microscopy, X-ray and electron diffraction, laser physics and holography, optical fibre technology, Fourier optics and transform spectroscopy, magnetic measurement techniques and resonance imaging, electromagnetic waves and waveguides, nuclear counting techniques and neutron activation, vacuum techniques. Formal scientific report writing.

PHYS3050
Nuclear Physics
Staff Contact: Physics Friend
UOC3 HPW2 S2
Prerequisite/s: PHYS3010 or PHYS3210 at a credit average or above.
Nuclear shell model; theory of beta decay; the deuteron, nucleon-nucleon scattering; theories of nuclear reactions, resonances; mesons and strange particles, elementary particle properties and interactions; symmetries and quark models; strong and weak interactions.

PHYS3060
Advanced Optics
Staff Contact: Physics Friend
UOC3 HPW2 S2
Prerequisite/s: PHYS2011 or PHYS1221 or PHYS1231
Corequisite/s: MATH2120
Review of geometrical optics, including ray tracing, aberrations and optical instruments: physical optics, including Fresnel and Fraunhofer diffraction, transfer functions, coherence, auto and cross correlation: applications of optics, including fibre optics, lasers and holography.

PHYS3070
Experimental Physics A2
Staff Contact: Physics Friend
UOC3 HPW4 S2
Note/s: Some experiments assume knowledge of PHYS2030, PHYS2040 or PHYS2050.
As for PHYS3040 Experimental Physics A1.

PHYS3080
Solid State Physics
Staff Contact: Physics Friend
UOC3 HPW2 S1
Prerequisite/s: PHYS3021 or PHYS2040
Corequisite/s: PHYS3010 or PHYS3210, PHYS3020
Excluded: PHYS3021
Free electron model of metals, Bloch states and energy bands, reciprocal space and the Fermi surface, electron dynamics, Landau levels. Crystal structure, Brillouin zones, elementary diffraction theory, bonding, cohesive processes, impurity states, impurity conductivity. Lattice vibration, monatomic and diatomic chain, acoustic and optic phonons, Einstein and Debye models, dielectric effects.

PHYS3110
Experimental Physics B1
Staff Contact: Physics Friend
UOC3 HPW4 S1
A selection of experimental investigations in areas including: chaotic motion, high temperature superconductivity, semiconductors, electron and tunneling microscopy, X-ray and electron diffraction, laser physics and holography, optical fibre technology, Fourier optics and transform spectrometry, magnetic measurement techniques and resonance imaging, electromagnetic waves and waveguides, nuclear counting techniques and neutron activation, vacuum techniques.

PHYS3120
Experimental Physics B2
Staff Contact: Physics Friend
UOC3 HPW4 S2
As for PHYS3110 Experimental Physics B1.
Astrophysics
Staff Contact: Physics Friend
UOC3 HPW2 S2
Prerequisite/s: PHYS2021 or PHYS2040

Quantum Mechanics
Staff Contact: Physics Friend
UOC3 HPW2 S1
Prerequisite/s: PHYS2021 or PHYS2040
Corequisite/s: MATH2120
Excluded: PHYS3010
As for PHYS3010 Quantum Mechanics (Advanced), but treated in less depth and excluding matrix formulation.

Electromagnetism
Staff Contact: Physics Friend
UOC3 HPW2 S1
Prerequisite/s: PHYS2011 or PHYS2050 and MATH2011 and MATH2120
Excluded: PHYS3030
Electromagnetic fields; Maxwell’s equations, Poynting theorem, potential formulation. Plane waves, reflection and transmission. Emission of radiation from accelerating charges, scattering and propagation of radiation in material media.

Physics of Solid State Devices
Staff Contact: Physics Friend
UOC3 HPW2 S2
Corequisite/s: PHYS3080 or PHYS3021
Review of electronic structure in semiconductors; p-n junctions; bipolar and field effect transistors including formation, characteristics and electrical breakdown. Optical devices including light emitting diodes and junction lasers. Integrated circuit structures.

Biophysics 2
Staff Contact: Physics Friend
UOC3 HPW2 S2
Prerequisite/s: PHYS2011 or PHYS2060 and PHYS2410

Advanced Mechanics, Fields and Chaos
Staff Contact: Physics Friend
UOC3 HPW2 S1
Prerequisite/s: PHYS2001 or PHYS2010 and MATH2011
Lagrange’s equations and applications, variational principles, dissipative systems, Hamiltonian formulation, canonical transformations, Poisson brackets, Hamilton-Jacobi equation, continuous systems and fields, stability and chaos.

General Relativity
Staff Contact: Physics Friend
UOC3 HPW2 S2
Prerequisite/s: PHYS1002 or PHYS1231 or PHYS1221, MATH2011
Relativistic kinematics and dynamics, tensors and tensor operations, Christoffel symbols, formulation of general relativity, curvature of space, geodesics, gravitational field equations, Schwarzschild solution, tests of the theory, astrophysical and cosmological implications.

Computational Physics
Staff Contact: Physics Friend
UOC3 HPW2 S1
Prerequisite/s: PHYS2001 or PHYS2020; MATH2120
Use of computers in solving physical problems, including matrix eigenvalue problems and quantum energy levels, boundary value problems (heat conduction, fluid flow and electrostatics) and Monte Carlo techniques.

Electronics
Staff Contact: Physics Friend
UOC3 HPW3 S1
Prerequisite/s: PHYS2031 or PHYS2630

Lasers and Applications
Staff Contact: Physics Friend
UOC3 HPW2 S1
Interaction between light and matter, fundamental properties of laser amplifiers and oscillators, giant pulse generation, mode locking and Q switching, specific laser systems including gas lasers and semiconductor lasers, applications of lasers.

Optoelectronics
Staff Contact: Physics Friend
UOC3 HPW2 S1
Introduction to non-linear optics, fibre optics, second harmonic generation, parametric amplification, phase matching, modulation of light, types of optical detectors including thermal detectors, photomultipliers and semiconductor detectors.

Laser and Optoelectronics Laboratory
Staff Contact: Physics Friend
UOC3 HPW4 S1 S2
A selection of experiments using techniques and components employed in optics, optoelectronics and laser technology: laser safety, properties of lasers and their light, holography, polarisation, light sources and detectors, optical fibre measurements and communication, acousto-optic modulation, spatial filtering and optical image processing, grating and Fourier transform spectrometry.

Physics 4 Honours Full Time
Staff Contact: Associate Professor M Ashley
Enrolment requires School approval
UOC48 S1 S2
Note/s: For the combined Physics/Geology honours see entry under Board of Studies in Science and Mathematics. Admission to the honours program is at the invitation of the Head of School and normally requires at least a credit average in Year 3. Honours programs consist of advanced lecture subjects and project work. Students normally undertake two separate projects during the year, in different research areas. All students take subjects in quantum mechanics, statistical mechanics, solid state physics and electromagnetism and the standard model. Additional subjects are chosen from topics such as astronomy, molecular physics, condensed matter physics and quantum field theory.
PHYS4411
**Medical Physics**
*Staff Contact: Associate Professor J Wolfe*
UOC6 HPW2 S1 S2
**Prerequisite/s:** PHYS2021 or PHYS2040


**PHYS4413**
**Medical Physics Projects**
*Staff Contact: School Office*
UOC18 HPW9 S1 S2
**Note/s:** Restricted to Course 3973 Medical Physics.

These projects for final year Medical Physics students will be in areas such as Radiotherapy, Nuclear Medicine, Medical Imaging or Biophysics. Generally carried out in a hospital environment under the supervision of a practising medical physicist but may be carried out in the university or elsewhere, if suitable facilities available. Students required to submit a written thesis and present a seminar describing their project work.

**Servicing Courses**

These are mainly courses taught within programs offered by other faculties.

For further information regarding the following courses see the relevant Faculty Handbooks.

**PHYS1250**
**Physics 1 (Building)**
*Staff Contact: First Year Director*
UOC3 HPW3 S2

Energy transfer: concepts of temperature and heat; calorimetry; gas laws; phase changes and humidity; heat transmission; refrigeration. Electrostatics and electromagnetism; electric and magnetic fields; DC circuits. Properties of matter: atomic bond types and their relation to elasticity, plasticity and fracture; pressure in stationary and moving fluids.

**PHYS1259**
**Physics 1 (Industrial Design)**
*Staff Contact: First Year Director*
UOC4 HPW4 S2

Energy transfer: concepts of temperature and heat; calorimetry; gas laws; phase changes and humidity; heat transmission; refrigeration. Electrostatics and electromagnetism; electric and magnetic fields; DC circuits; electromagnetic induction. Sound: wave properties; absorption of sound. Properties of matter: atomic bond types and their relation to elasticity, plasticity and fracture; pressure in stationary and moving fluids.

**PHYS2920**
**Measurement Electronics (Mining Engineering and Industrial Chemistry)**
*Staff Contact: Physics Friend*
UOC3 HPW3 S2
**Prerequisite/s:** PHYS1022 or PHYS1002 or PHYS1169 or PHYS1221 or PHYS1231; **Excluded:** PHYS2031, PHYS2630.

The application of electronics to measurement. Includes principles of circuit theory; amplifiers, their specification and application, transducers; electronic instrumentation; industrial data acquisition.

**PHYS2939**
**Physics 2 (Electrical Engineering)**
*Staff Contact: Physics Friend*
UOC3 HPW3 S1
**Prerequisite/s:** PHYS1231 or PHYS1969 or PHYS1002

**PHYS2969**
**Physics of Measurement (Geomatic Engineering)**
*Staff Contact: Physics Friend*
UOC3 HPW3 S1
**Prerequisite/s:** PHYS1998 or PHYS1189


**Physiology and Pharmacology**

**Physiology and Pharmacology Level II**

Students are advised that a knowledge of Biology, Chemistry and Mathematics equivalent to that outlined in Stage 1 of Table A is desirable for the study of Physiology and Pharmacology.

**PHPH2101**
**Physiology 1A**
*Staff Contact: Dr Simonetta*
UOC6 HPW6 S1
**Note/s:** Students intending to major in Physiology and/or Pharmacology should note Level III Physiology prerequisites, which can only be waived at the discretion of the Head of School.

Introduces fundamental physiological principles, from basic cellular function in terms of chemical and physical principles to the operation and interaction of body systems. The areas of physiology covered in this unit are excitable tissues, the cardiovascular system, blood and neuroscience. The unit includes a substantial series of practical class experiments on these different areas of physiology. This subject is taken by students enrolled in any of the Physiology programs.

**PHPH2121**
**Principles of Physiology A**
*Staff Contact: Dr Simonetta*
UOC6 HPW6 S1
**Note/s:** Restricted to students enrolled in BOptom degree course.

Provides an introduction to fundamental physiological principles for students in BOptom. degree course. The areas of physiology covered in this unit are excitable tissues, the cardiovascular system, blood and neuroscience, and includes a series of practical class experiments on these different areas of physiology.

**PHPH2201**
**Physiology 1B**
*Staff Contact: Dr Simonetta*
UOC6 HPW6 S2
**Prerequisite/s:** PHPH2101
**Note/s:** Students intending to major in Physiology and/or Pharmacology should note Level III prerequisites, which can only be waived at the discretion of the Head of School.

The Areas of Physiology covered in this unit build on the fundamental physiological principles introduced in PHPH2101 Physiology 1A. The topics covered include reproduction, the respiratory system, the gastrointestinal system, kidney and body fluids and the endocrine system. This unit includes a substantial series of practical class experiments on these different areas of physiology. This subject is taken by students enrolled in any of the Physiology programs.
PHPH221
Principles of Physiology B
Staff Contact: Dr Lee Simonetta
UOC6 HPW6 S2
Note/s: Restricted to students enrolled in BOptom degree course.
The area of physiology covered in this unit build on the fundamental physiological principles introduced in PHPH2121 Principles of Physiology A. This unit includes a series of practical class experiments on these different areas of physiology.

Physiology and Pharmacology Level III

PHPH3121
Membrane and Cellular Physiology
Staff Contact: Professor Peter Barry
UOC6 HPW6 S1
Prerequisite/s: PHPH2101
The properties of cell membranes and the role of channels and transporters in permeation and transport of ions, solutes and water across membranes, in the generation of electrical signals in nerve and muscle cells, in synaptic transmission and in second messenger pathways and their part in cellular function. Includes understanding techniques, such as patch clamping, used to study the properties of individual ionic channels and site-directed mutagenesis and other molecular biological techniques, used to investigate the relationship between the molecular structure of appropriate proteins and physiological function. Includes the properties of water channels and epithelial transport, the mechanisms underlying muscle contraction and disease states resulting from such things as genetic defects in ion channels. It should provide a foundation for understanding higher physiological systems.

PHPH3521
Membrane and Cellular Physiology (Adv)
Staff Contact: Professor Peter Barry
UOC6 HPW6 S1
Prerequisite/s: PHPH2101
The properties of cell membranes and the role of channels and transporters in permeation and transport of ions, solutes and water across membranes, in the generation of electrical signals in nerve and muscle cells, in synaptic transmission and in second messenger pathways and their part in cellular function. Includes understanding modern techniques, such as patch clamping, used to study the properties of individual ionic channels and site-directed mutagenesis and other molecular biological techniques, used to investigate the relationship between the molecular structure of appropriate proteins and physiological function. Included the properties of water channels and epithelial transport, the mechanisms underlying muscle contraction and disease states resulting from such things as genetic defects in ion channels. It should provide a foundation for understanding higher physiological systems. The advanced level course will include an assessable research affiliation program.

PHPH3131
Neurophysiology
Staff Contact: Professor Mark Rowe
UOC6 HPW6 S1
Prerequisite/s: PHPH2101
Brain mechanisms in sensation and perception are analysed in detail for vision, hearing and touch, and for the position sense arising from muscles, joints and the vestibular apparatus. The sensorimotor mechanisms responsible for the control of fine movement and postural regulation are also studied at different levels of the nervous system, from the sensory and motor nerves within muscles through to the highest levels of cerebral cortical function. Segments are also included on the neural control of cardiorespiratory function; transmitters and neuromodulators; neural mechanisms in certain higher functions, eg language and memory; nervous system plasticity; computer applications in neuroscience. Experimental work introduces the student to electrophysiological and other neuroscience research techniques, and in seminar-discussion groups to a critical evaluation of neuroscience research literature. The Neurophysiology (Advanced) course will involve an assessable research affiliation program based upon discussion and evaluation of a research project, and submission of a research report.

PHPH3151
Introductory Pharmacology and Toxicology
Staff Contact: Associate Professor Michael Murray
UOC6 HPW0 S1
Prerequisite/s: PHPH2101, PHPH2201, BIOC2101 and BIOC2201 or BIOC2181 and BIOC2291
Includes a study of the fundamentals of drug action, such as dose-response methods, receptor binding, drug absorption, distribution and metabolism. Further material on drug analysis and adverse effects of drugs will be presented. Segments dealing with aspects of chemical toxicology and the requirements of government agencies for the registration and evaluation of toxic chemicals will be covered. The practicals will cover basic pharmacological methods.

PHPH3551
Introductory Pharmacology and Toxicology (Advance)
Staff Contact: Associate Professor Michael Murray
UOC6 HPW6 S1
Prerequisite/s: PHPH2101, PHPH2201, BIOC2101 and BIOC2201, or BIOC2181 and BIOC2291
Includes a study of the fundamentals of drug action, such as dose-response methods, receptor binding, drug absorption, distribution and metabolism. Further material on drug analysis and adverse effects of drugs will be presented. Segments dealing with aspects of chemical toxicology and the requirements of government agencies for the registration and evaluation of toxic chemicals will be covered. The practicals will cover basic pharmacological methods. Advanced Science students will be affiliated with a research group within the School involving attendance at group meetings, seminars and the presentation of a report based on literature within the subject area.

PHPH3251
Clinical and Experimental Pharmacology
Staff Contact: Associate Professor Michael Murray
UOC6 HPW6 S2
Prerequisite/s: PHPH2101, PHPH2201, BIOC2101 and BIOC2201 or BIOC2181 and BIOC2291, PHPH3151
The subject deals with the pharmacology of drug classes, with emphasis on mode of drug action. Effects of drugs on the major organs, including the cardiovascular system, kidney, endocrine systems, and the central nervous system, will be covered. Students will be introduced to recent innovations in drug development and emerging therapeutic strategies based on advances in understanding cellular physiology and drug action. The practicals will cover basic pharmacological methods from both clinical and experimental standpoints.
The subject deals with the pharmacology of drug classes, with emphasis on mode of drug action. Effects of drugs on the major organs, including the cardiovascular system, kidney, endocrine systems, and the central nervous system, will be covered. Students will be introduced to recent innovations in drug development and emerging therapeutic strategies based on advances in understanding cellular physiology and drug action. The practicals will cover basic pharmacological methods from both clinical and experimental standpoints. Advanced Science students will be affiliated with a research group within the School involving attendance at group meetings, seminars and the presentation of a report based on literature within the subject area.

**PHPH3211**  
**Cardiorespiratory and Exercise Physiology**  
*Staff Contact: Associate Professor Michael Perry*  
*UOC6 HPW6 S2*  
*Prerequisite/s: PHPH2101, PHPH2201*  
An advanced course which emphasises function and control of the cardiovascular system; gas exchange in the lung and blood gas carriage in the respiratory system and work capacity, preventive medicine and laboratory testing in exercise physiology. Extensive practical components involve mammalian preparations and human subjects.

**PHPH3511**  
**Cardiorespiratory and Exercise Physiology (Advanced)**  
*Staff Contact: Associate Professor Michael Perry*  
*UOC6 HPW6 S2*  
*Prerequisite/s: PHPH2101, PHPH2201*  
An advanced course which emphasises function and control of the cardiovascular system; gas exchange in the lung and blood gas carriage in the respiratory system and work capacity, preventive medicine and laboratory testing in exercise physiology. Extensive practical components involve mammalian preparations and human subjects. Advanced Science students will do a project which has planning (wks. 1,2,4), execution (wks. 6,7,8,9) and presentation (wks. 14).

**PHPH3221**  
**Endocrine, Reproductive and Developmental Physiology**  
*Staff Contact: Professor Eugenie Lumbers*  
*UOC6 HPW6 S2*  
*Prerequisite/s: PHPH2101, PHPH2201*  
There are three major components to this subject, which consists of lectures, practical classes, tutorial and case studies. The first component of the course is a study of neuroendocrinology, molecular and systematic endocrinology, and of the endocrinology of exercise and disease. The second component of the subject deals with female and male reproductive physiology. The third component of the subject details the physiology of pregnancy, and that of the fetus and the newborn.

**PHPH3621**  
**Endocrine, Reproductive and Developmental Physiology (Advanced)**  
*Staff Contact: Professor Eugenie Lumbers*  
*UOC6 HPW6 S2*  
*Prerequisite/s: PHPH2101, PHPH2201*  
There are three major components to this subject, which consists of lectures, practical classes, tutorial and case studies. The first component of the course is a study of neuroendocrinology, molecular and systematic endocrinology, and of the endocrinology of exercise and disease. The second component of the subject deals with female and male reproductive physiology. The third component of the subject details the physiology of pregnancy, and that of the fetus and the newborn. In the Advanced Science course students will be required to develop and investigate a research topic related to endocrinology, reproduction and/or development.

The results of their research will be submitted in the form of a grant proposal, for evaluation by their peers and assessors.

**PHPH3302**  
**Pharmacology for Optometrists**  
*Staff Contact: Dr R Knihinicki*  
*UOC3 HPW3 S1*  
*Prerequisite/s: OPTM2301, OPTM2302, OPTM2105, OPTM2206, PHPH2121, PHPH2221*  
Objectives: To introduce optometry students to the mechanisms of drug action and interaction, with an emphasis on the pharmacology of the eye. Pharmacodynamics, pharmacokinetics and toxicology of drugs used in the diagnosis and treatment of eye conditions; side effects of drugs used to treat systemic disease. Legal aspects of drugs.

**Physiology and Pharmacology Level IV**

**PHPH4218**  
**Physiology 4 Honours Full-Time**  
*Staff Contact: Associate Professor John Morley*  
*UOC48 S1 S2*  
The Honours Year provides an introduction to research. Students undertake a research project with supervision which is written up as a thesis and presented as a seminar. Students are also required to participate in departmental seminars, and to submit an essay.

**PHPH4258**  
**Pharmacology Honours Full-Time**  
*Staff Contact: Associate Professor John Morley*  
*UOC48 S1 S2*  
The Honours Year provides an introduction to research. Students undertake a research project with supervision which is written up as a thesis and presented as a seminar. Students are also required to participate in departmental seminars, and to submit an essay.

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**Psychology**

**Psychology Level I**

**PSYC1001**  
**Psychology 1A**  
*Staff Contact: Dr Branka Spehar*  
*UOC6 HPW5 S1*  
*Excluded: GENB4001*  
This course introduces the content and methods of psychology as a basic science, with emphasis on the social bases of behaviour. After an initial review of the historical foundations for the scientific study of human behaviour, several specific topics related to the social aspects of human behaviour are discussed. Specific topics covered in this course include: development, measurement of personality, theories of consciousness, and social influences on behaviour. In addition, training in the methods of psychological inquiry and basic procedures of data analysis is also provided.

**PSYC1011**  
**Psychology 1B**  
*Staff Contact: Dr Branka Spehar*  
*UOC6 HPW5 S2*  
*Excluded: GENB4002*  
This course introduces the content and methods of psychology as a basic science, with emphasis on the biological bases of behaviour. Specific topics covered in this course include: perception, learning, memory, motivation, emotion, and abnormal behaviour. After describing the basic phenomena within an area, the goal will be to explore the neural bases of these behaviours. In addition, training in the methods of psychological inquiry and basic procedures of data analysis is also provided.
PSYC1021
Introduction to Psychological Applications
Staff Contact: Dr Jacqueyn Cranney
UOC6 HPW4 S2
Note/s: Restricted to Program 3432, Bachelor of Psychology.

The approach of psychology to issues arising in the management of human affairs and to the remediation of human problems. Topics include psychology as a scientific discipline, an overview of areas such as clinical psychology, neuropsychology and developmental disabilities in which psychological knowledge is applied to help individuals to change or to function optimally, and specific areas of public concern where psychology has a major contribution to make such as education, selection, training in industry, traffic and aircraft safety, and the law. The practical component will focus on the professional and social responsibilities of psychologists.

Psychology Level II

PSYC2001
Research Methods 2
Staff Contact: Associate Professor Peter Lovibond
UOC6 HPW4 S1
Prerequisite/s: PSYC1001, PSYC1011
Note/s: PSYC1001 may be taken as a corequisite.

General introduction to the analysis of data by means of inferential statistics (z, t and chi square). Issues in the use of statistics (power, robustness). General features of research methodology. Laboratory and statistical traditions affecting design and control procedures. The implications of the use of inferential statistics for research methodology generally. Ethics of research and interpretation of data.

PSYC2061
Social and Developmental Psychology
Staff Contact: Professor Joseph Forgas
UOC6 HPW4 S1
Prerequisite/s: PSYC1001, PSYC1011

Two strands: 1. Social - The basic principles of research and theory in social psychology, with a special emphasis on understanding how people relate to each other. Issues such as the nature of human sociability, the perception and interpretation of social behaviour, ambiguities of interpretation of interpersonal behaviour, verbal and nonverbal communication processes, impression formation and impression management and related topics will be covered. 2. Developmental - The age at which certain abilities or dispositions develop or are learned, and the processes by which developmental changes occur. Issues such as nature and nurture, continuity vs discontinuity, nomothetic vs ideographic approaches and the methods and ethics of developmental research will be covered from various perspectives - psychodynamic, biological/ethological, environmental/learning, and cognitive-developmental.

PSYC2071
Perception and Cognition
Staff Contact: Associate Professor Marcus Taft
UOC6 HPW4 S2
Prerequisite/s: PSYC1001, PSYC1011
Note/s: PSYC1001 may be taken as a corequisite.

Introduces the fundamental principles underlying human perception and cognition such as sensory coding, perceptual organisation, perception of spatial layout, perceptual learning, object recognition, attention, memory storage and retrieval, problem solving and decision making. The practical program will provide an introduction to the use of psychophysical methods, experimental approaches to the study of cognitive processes, and the application of findings in society.

PSYC2081
Learning and Physiological Psychology
Staff Contact: Dr Jacquelyn Cranney
UOC6 HPW4 S1
Prerequisite/s: PSYC1001, PSYC1011
Note/s: PSYC1001 may be taken as a corequisite.

An examination of brain and behaviour relationships with emphasis on learning, memory and motivation. Topics may include habituation, sensitisation, classical/operant conditioning, basic motivations, hunger, sex aggression, neuropsychology of amnesia and normal memory.

PSYC2101
Assessment and Personality
Staff Contact: Dr Megan Rohan
UOC6 HPW4 S2
Prerequisite/s: PSYC1001, PSYC1011

Systematic measurement of various aspects of people occurs in many different settings such as clinical, counselling, legal, educational and vocational guidance, and personnel settings. An introduction to the principles and techniques of psychological measurement, including consideration of what makes tests useful, how to evaluate tests and factors that are important to consider in their interpretation. Underlying many tests is a theoretical position about personality. Discussion of how aspects of personality are operationalised and measured will enable students to understand how tests relate to these theories. The practical program will provide the opportunity to explore the application of tests in a number of different settings.

Psychology Level III

PSYC3001
Research Methods 3A
Staff Contact: Dr Melanie Gleitzman
UOC6 HPW4 S1
Prerequisite/s: PSYC2001

Analysis of variance for single factor and multifactor designs. MANOVA model analyses of repeated measures data. Simultaneous inference procedures for contrasts defined on parameters of ANOVA and MANOVA models. General principles of experimental design. Analysing experimental data with the PSY program.

PSYC3011
Research Methods 3B
Staff Contact: Dr Melanie Gleitzman
UOC6 HPW4 S2
Prerequisite/s: PSYC3001

Multiple regression and its application to prediction, analysis of designed experiments and construction of structural models. Principal components analysis and factor analysis. Data analysis using SPSS.

PSYC3051
Physiological Psychology
Staff Contact: Professor George Paxinos
UOC6 HPW4 S2
Prerequisite/s: PSYC2001, PSYC2081

The neural control of behaviour with special emphasis on cerebral localisation of function in humans. Clinical conditions will be considered to the extent they illuminate mechanisms and theory of brain function, and the professional issues raised by different theories will be canvassed.

PSYC3121
Social Psychology
Staff Contact: Professor Joseph Forgas
UOC6 HPW4
Prerequisite/s: PSYC2001, PSYC2081

A review of the history, principles and methods, and ethics of social psychology at an advanced level. Substantive research areas such as the nature of affiliation and attraction, interpersonal relationships, the study of beliefs, values and attitudes, persuasion and processes of attitude change, social influence processes, and group behaviour, among others, will be covered.

PSYC3141
Behaviour in Organisations
Staff Contact: Dr James Bright
UOC6 HPW4 S1
Prerequisite/s: PSYC2001, PSYC2081

The application of general psychological theories and principles to contemporary management problems. It will acquaint students with...
research in employee motivation, satisfaction, selection, training, evaluation, and teamwork as well as other topics in industrial and organisational psychology, including the role of the professional in organisations and in dealing with other professionals.

PSYC3201
Psychopathology
Staff Contact: Associate Professor Peter Lovibond
UOC6 HPW4 S2
Prerequisites: PSYC2001, PSYC2081
An introduction to the scientific analysis of behavioural and mental disorders. The major syndromes, focusing upon current models and theories of causation and the empirically-based evaluation of these aetiological models and theories will be described. Treatment of the disorders will be outlined, especially where modern treatment developments throw light on fundamental causal mechanisms. Professional and ethical aspects of various treatments will be considered.

PSYC3221
Vision and Brain
Staff Contact: Professor Barbara Gillam
UOC6 HPW4 S1
Prerequisites: PSYC2001, PSYC2071
Seeing is an amazing achievement, taking up 40% of the visual cortex. This course will consider how we see and how this reveals and is related to principles of brain functioning. Topics will include stereo (3-D vision), the coding of brightness and colour, perceiving motion and self-motion, brain damage and the question of specialised visual systems, visual imagery, visual attention, and vision and art.

PSYC3241
Psychobiology of Memory and Motivation
Staff Contact: Associate Professor Rick Richardson
UOC6 HPW4 S2
Prerequisites: PSYC2001, PSYC2081
Research and theory in memory and motivation as they underpin adaptive behaviour. Primary consideration will be given to general-purpose and specialised forms of learning. Implications for the origin and treatment of clinical disorders will be described.

PSYC3271
Personality and Individual Differences
Staff Contact: Associate Professor Gail Huon
UOC6 HPW4 S1
Prerequisites: PSYC2061, PSYC2101
The study of persons from two separate, but related perspectives. The psychology of personality involves the study of the structure and the processes involved in the organised functioning of individuals, their traits, cognitions and motives. The expression and measurement of the differences in those psychological characteristics between individuals and groups, and the theories or explanations that account for them, is what is involved in a psychology of individual differences.

PSYC3301
Psychology and Law
Staff Contact: Associate Professor Kipling Williams
UOC6 HPW4 S1
Prerequisites: PSYC2001, PSYC2061
An examination of various aspects of the judicial process from a psychological perspective in terms of their impact upon the trial participants and society. The focus will be upon contributions of social psychology, although other areas of experimental psychology will be drawn from as well. Topics will include eyewitness memory, judges instructions, lie-detection, trial tactics, reactions to insanity defenses and jury decision making.

PSYC3311
The Psychology of Language
Staff Contact: Associate Professor Marcus Taft
UOC6 HPW4 S1
Prerequisites: PSYC2001, PSYC2071
One of the features that distinguishes humans from other animals is the use of a sophisticated symbolic system for communication - namely, language. This course will examine how humans cognitively represent their language system in order to successfully produce and comprehend spoken and written words. All levels of language will be considered ranging from the smallest sounds up to full discourse within context. Evidence obtained from language dysfunctions and from investigations of language development will also be considered.

PSYC3321
Cognitive Development
Staff Contact: Dr Brett Hayes
UOC6 HPW4 S2
Prerequisites: PSYC2001, PSYC2061 or PSYC2071
The study of cognitive development is concerned with changes in the way that information is encoded, transformed, and responded to as a function of age. The scope of this course ranges from the perceptual and motor abilities of young infants, to the memory functioning of elderly people. Several different perspectives leading to an understanding of cognitive development through the life span will be examined, including the Piagetian approach, age-related changes in information processing, and the acquisition of concepts and beliefs within specific knowledge domains. The applied relevance of developmental findings will also be considered.

PSYC3516
Psychology for Optometry
Staff Contact: Dr Meg Rohan
UOC3 HPW2 S1
Notes: Restricted to Program 3950 Bachelor of Optometry.
An introduction to various aspects of psychology of relevance to optometrical practice. Includes development of psychological theories, human development, social psychology, psychopathology, perceptual learning and human neuropsychology.

PSYC3526
Workplace Psychology
Staff Contact: Dr James Bright
UOC3 HPW2 S2
Excluded: GENB4005
Notes: Restricted to students enrolled in Safety Science major.
An examination of the aims, methods and ethics of industrial and organisational psychology. Topics will include personnel selection, training, job analysis and design, and the relation between job satisfaction and job performance.

Psychology Level IV

PSYC4053
Psychology 4A
Staff Contact: Dr Skye McDonald
Enrolment requires School approval
UOC24 S1 S2
A supervised research thesis and course work to be determined in consultation with the Head of School.

PSYC4063
Psychology 4B
Staff Contact: Dr Skye McDonald
UOC24 S1 S2
Prerequisites: PSYC4053
A supervised research thesis and course work to be determined in consultation with the Head of School.
This course focuses on intrapsychic and interpersonal processes relevant to the training and practice of sport. Theories in areas such as self-perception, self-evaluation, attentional control, attribution, social comparison, group cohesiveness, leadership, and conflict management will be described and applied to the sporting context. Physiological consequences of psychological processes, and their implications for preparation and performance will be discussed. Practical classes will include consideration of issues and methods involved in assessment of relevant personality and individual differences.

Safety Science

SESC1001
Safety, Health and Environment
Staff Contact: Professor Jean Cross
UOC6 HPW4 WKS14 S2
The course introduces students to the main issues of Safety, Health and Environmental Science including safety and injury prevention in the community, workplace safety, environmental health, (people, flora and fauna) pollution and waste, common themes in safety health and environmental management, managing safety health and environmental risks.

SESC1560
Risk Management 1
Staff Contact: Professor Jean Cross
UOC3 HPW4 WK57 S2
This course gives an overview of risk and the risk management process. The course briefly considers what is risk, why people take risks and the cost of risk. It then considers the steps of the risk management process as defined by Australian standards on risk management. The steps are defining the system, risk identification, risk analysis and assessment risk control implementation and auditing. The class will apply each step of the process to case studies relating primarily to aviation issues.

SESC2091
Safety, Health and Environmental Hazards
Staff Contact: Associate Professor Chris Winder
UOC6 HPW4 WKS14 S2
This course provides an introduction to safety, health and environmental hazards, including chemical hazards, atmospheric contaminants, biohazards and psychological risks. The course also introduces the epidemiology as a means of studying these hazards by examining safety, health and environmental case studies.

SESC2100
Workplace Hazards
Staff Contact: Dr Tony Green
UOC3 HPW2 WKS14 S1
This course aims to make students aware of major workplace safety issues by discussing physical, chemical, biological, psychological and biomechanical hazards. Issues covered include noise, whole body vibration, ionising and non ionising radiation, electrical hazards, hazardous substances, dangerous goods, dust, fumes and ventilation.

SESC2451
Biomechanics for Sports Scientists
Staff Contact: Dr Andrew McIntosh
UOC6 HPW6 WKS14 S1
Students will study the basic principles of biomechanics and apply these to the analysis of sports. Basic mechanics (statics, kinematics and dynamics) will be studied in two and three dimensions. Human movement measurement methods will be introduced. The mechanics of the musculoskeletal system will be studied in detail in human gait walking, running and jumping. This will integrate the student's understanding of mechanics with functional anatomy through the study of normal gait dynamics, muscle function, work and power. Aerodynamics and hydrodynamics will be introduced and explained through the analysis of throwing and swimming.

SESC2560
Risk Management 2
Staff Contact: Dr Tony Green
UOC3 HPW2 WK57 S2
This course looks into safety issues in aviation, identifies problems which could lead to emergency situations then considers the planning required for different types of emergency. The course covers writing safety and emergency procedures, emergency plans, setting up an emergency control centre, running emergency exercises and the links with state emergency planning system. General safety issues such as human factors in aviation safety and emergency planning, OHS and major hazard legislation.

SESC3020
Occupational Health and Safety Law 1
Staff Contact: School Office
UOC3 HPW2 WKS14 S2
This course covers concepts of law; the judicial and court systems; common law and equity; the common law of employment, occupational health and safety.

SESC3091
Safety, Health and Environmental Practice
Staff Contact: Dr Boban Markovic
UOC6 HPW3 WKS14 S2
Assumed Knowledge: SESC2100
A workplace assessment based course, where students are required to report on the safety, health or environmental issues of management following visits to a number of diverse industrial sites.

SESC3200
Hazard and Risk Assessment
Staff Contact: Professor Jean Cross
UOC3 HPW2 WKS14 S2
This course takes a risk management approach to safety and demonstrates how safety risk management integrates into other areas of business risk. The concept of safety risk management and requirements for safety risk management in regulations are introduced over the first 4 units. These principles are then illustrated by considering how the risks of particular industrial hazards are assessed and controlled. The topics, which use different methods of risk assessment, include manual handling, machine guarding, fire and explosion, pressure vessels, confined spaces and construction safety issues. In each module the hierarchy of controls is applied in the discussion of risk control strategies. The course concludes with a discussion of accident investigation, prevention and recording and emergency planning.

SESC3310
Social Issues in Science and Technology
Staff Contact: Dr Boban Markovic
UOC3 HPW2 WKS14 S1 S2
This course is an objective 5 course which covers social issues arising from future scientific and technological developments and the role that the professional engineer or scientist can play in influencing future directions. The course is taught by a combination of group activities, case studies, projects and seminars. This course will cover four major topic areas, which are: professional ethics, environmental related issues, safety and liability and controls of future technology.
SESC3451 Human Movement Measurement Methods
Staff Contact: Dr Andrew McIntosh
UOC6 HPW6 WKS14 S1
Prerequisite/s: SESC2451

Students will study the theory and practice of human movement measurement. The subject will be taught through lectures and laboratory sessions. Students will learn 2D and 3D optical measurement techniques and how to apply these to the study of human movement. Electromyography and general instrumentation will be studied with data processing and analysis methods. Methods for the study of human gait, electromyography and sporting skills will be covered in laboratory sessions.

SESC3541 Assessment of the Workplace Environment
Staff Contact: Dr Kamal Kothiyal
UOC6 HPW4 WKS14 S2

This course is designed to give students an opportunity to learn and apply methods and techniques used to assess the workplace and the environment. The course is based on measurements in the working and external environment. Topics are selected from measurement and evaluation of noise, lighting, vibration, ventilation, air quality, thermal environment, radiation, chemical hazards, slip resistance etc. Assessments will be carried out on sites in and around UNSW.

SESC3601 Occupational Health and Safety
Staff Contact: Associate Professor Chris Winder
UOC6 HPW4 WKS14 S1

The legal system and OHS Law; workers compensation law, legal responsibilities for safety, safety committees and safety management systems. Introduction to OHS risk management and the hierarchy of controls, case studies, user centred design and human factors in OHS.

SESC3620 Occupational Disease and Injuries
Staff Contact: Associate Professor Chris Winder
UOC3 HPW3 WKS7 S1

This course deals with the ways in which work can affect the health of workers. Covers occupational diseases and injuries of skin, respiratory system, nervous system, reproductive system, the musculoskeletal system, kidney, liver and occupational cancer.

SESC3901 Special Report
Staff Contact: Program Coordinator
UOC6 HPW4 WKS14 X1 S1 S2

A 6 UOC report on a topic relevant to the program of study and approved by the Head of School.

SESC4010 Project Research Methods
Staff Contact: Ms Dianne Gardner
UOC3 HPW2 WKS7 S1

This course is the preparation for the fourth year project in safety science. It covers issues in research methodology, including literature searching, problem formulation, null and alternative hypotheses, qualitative and quantitative research designs, statistical inference and the analysis of quantitative data, and a research report. Students will be expected to be able to recognise and avoid common methodological problems in research.

SESC4030 Occupational Health and Safety Law 2
Staff Contact: School Office
UOC3 HPW2 WKS7 S2

This course extends concepts of law introduced in SESC3020, and covers other workplace legislation and procedures, such as workers compensation and rehabilitation legislation; cases and actions under common law.

SESC4140 Radiation Protection
Staff Contact: Dr Ronald Rosen
UOC3 HPW2 WKS7 S1

Principles and practices of radiation protection for both ionising and non-ionising radiation. Radiation physics, detection and measurement; background radiation; biological effects of radiation; dose limits; technical controls for radioactive sources and radiating apparatus. Codes of safe practice; radiological monitoring and personal dosimetry; storage, transport and disposal of sources; environmental impact; administrative controls; emergency procedures; control of non-ionising radiation.

SESC4211 Risk Management
Staff Contact: Professor Jean Cross
UOC6 HPW3 WKS14 S1 S2

This course gives an overview of Risk Management following the format of the Australian Standard in Risk Management (AS4360). Tools and techniques applicable to each step of the risk management process are discussed using examples applicable to the class. The same risk management process is applied to manage a wide range of business issues including health and safety, the environment, finance and project management. This course is therefore relevant as part of a wide variety of programs and students from any program are accepted. The student selects examples for exercises to suit the industry and role in which they work (or intend to work). At the end of the course, students should be able to use risk management tools applicable to their specific interest and have an awareness of tools used in other industries and applications.

SESC4310 Safety, Health and Environmental Management
Staff Contact: Ms Dianne Gardner
UOC3 HPW2 WKS14 S1
Prerequisite/s: PSYC3526 and PSYC3141

This course covers basic issues for managing health, safety and the environment in organisations. Topics include management and management theory, the behaviour of workers, the behaviour of managers, safety culture, management standards and systems for managing health, safety and the environment.

SESC4410 Ergonomics 2
Staff Contact: Dr Andrew McIntosh
UOC3 HPW3 WKS14 S1
Assumed Knowledge: SESC2091, SESC2100, SESC3601

Covers displays & controls, design of human-machine-environment systems, job design and work organisation, design of workplaces, the physical environment and an introduction to product design.

SESC4820 Chemical Safety and Toxicology
Staff Contact: Associate Professor Chris Winder
UOC3 HPW3 WKS7 S1
Assumed Knowledge: SESC2100

This course provides an outline of the toxicological, occupational hygiene and environmental aspects of chemical hazards and exposures. Metals, solvents, atmospheric contaminants, pesticides, carcinogens, hazardous wastes and dioxins are used as case studies.

SESC4850 Management of Dangerous Materials
Staff Contact: Associate Professor Chris Winder
UOC3 HPW3 WKS7 S1 S2

Chemicals legislation, regulatory assessment of chemicals, the dangerous goods system, the hazardous substances regulation and systems for hazardous wastes.
SESC4924
Research Project
Staff Contact: Program Co-ordinator
UOC24 S1 S2
Stage 4 undergraduate project comprising 24 units of credit (50% of Year 4 load, with the other 50% made up from Stage 4 courses).
This course provides an introduction to the research process. Students will undertake a research project with supervision which is written up as a research project report.

SESC6610
Work and Safety
Staff Contact: Dr Boban Markovic
UOC3 HPW2 WK814 X1 S1 X2 S2
Notes: May not be taken as part of 48 UOC Masters program. Also offered off campus via web mode. May be taken in Stages 2, 3 or 4.
This is an introductory course that covers the fundamental safety science principles. It is aimed at giving future managers the skills needed to identify and deal with safety issues in the workplace. The course concentrates on identifying workplace hazards, their associated risks to health and how they can be controlled.

Science Communications

SCOM1011
Science, Technology and Society
Staff Contact: Dr David Miller
UOC6 HPW3 S1
Excluded: SCTS1001, SCTS1106
Examines the relations of science and technology with societies in the modern world. The status and authority of science. Can science tell us what we ought to do? Critiques of science. Is technology applied science? What is the relation between technology and social change? The political uses of expertise. Experts and the rest of us. Issues of participation. These topics will be explored theoretically and by reference to case studies including: modern genetics and its use in agriculture and medicine; information technology, computers and cyberspace; energy technologies, nuclear and solar; technologies of everyday life.

SCOM1021
Introduction to Science Communication
Staff Contact: Dr William Rifkin
UOC6 HPW3 S2
This course introduces students to methods of reporting, discussing, debating and learning in relation to concerns involving science. The course surveys employment in science communication and introduces the range of skills required of practitioners in the area. It provides practical skills in research, organising, writing and presenting scientific and quantitative information to a non-scientific audience with clarity and accuracy. Techniques for the display of quantitative information are introduced. Students will gain experience in talking and writing about science and help in achieving the skills required through presentation of science reports for group criticism. There will be consideration of the need to present information to non-scientific audiences and to consider the likely impact of what is communicated. Case studies will illustrate the differing requirements of communicating controversial and non-controversial issues.

SCOM2011
Structure and Politics of Australian Science
Staff Contact: Dr D Miller
UOC6 HPW3 S1
A study of some of the more salient episodes in the recent history of science in Australia with emphasis on economic, political and social aspects of the nature and the character of the developments, their origins, and their resource bases. Consideration of such issues as: sources of funding, lobby groups, science institutions and industry interests. The studies will be undertaken with comparative data from other countries.

SCOM2021
Professional Science Communication
Staff Contact: Dr William Rifkin
UOC6 HPW3 S2
Prerequisite/s: SCOM1021
Key issues in science communication are addressed and skills in science communication are practised and developed. Tensions faced by the professional science communicator that are addressed include: the need to identify and communicate the 'truth'; the need to simplify in order to be understood by the public and non-scientific professionals; the need to deal with a range of stakeholders with incommensurable viewpoints; and whether to allow the hopes and fears about potential impact of what is communicated to influence the act of communication. The course will be taught as a seminar and workshop combining examination of current issues with simulations for practising professional communication skills. Guest lecturers will include accomplished communicators from business, government and the media.

SCOM3011
Communicating Science: Theory and Practice
Staff Contact: Dr D Miller
UOC6 HPW3 S2
Prerequisite/s: 36 units of credit in Arts or 24 units of credit in Level I Science
Excluded: SCTS3127
Communicating science is crucial in modern societies. Scientists need to communicate not only among themselves but with representatives of business, unions, government, the media and environmental and community interest groups. This course examines how different ideas about the nature of science affect our understanding of how science is communicated. Topics include: the history of science communication; new communication technologies and science; popularisation; distortion; the communication of uncertainty and risk. Also considered is the role of communicators and policy advisors and guides students toward the latest on-line tools required to access, evaluate and use current information about science, technology and their social and environmental impacts. The class will simulate issues of communication and the roles of science communicators and produce appropriate outputs, such as journalistic articles, press releases and presentations to be published through an on-line journal.

SCOM3021
Science Communication Internship
Staff Contact: Dr William Rifkin
UOC6 HPW3 S2
Students undertake an internship in a scientific or science communication workplace relevant to the student's career plans and science focus. The internship placement may be outside the University, or the student may pair up with a scientific researcher at UNSW. The intern will benefit from working with a mentor who permits them access to observe and discuss research in progress, policy issues under debate, or products being developed for commercialisation. The course coordinator will assist students to write and/or produce a series of pieces that explain the character of the research, its primary aims, and its potential contribution to the development of a scientific field and the community at large. With the help of the course coordinator, the student will produce a series of reports on the scientific activities there, reports that are suitable for popular and technical audiences. Students will engage in regular meetings of their internship cohort to share insights and broaden their professional networks.
Science and Technology Studies

The School of Science and Technology Studies (STS) offers courses in two streams: History and Philosophy of Science and Technology; and Science, Technology, and Society. The courses in the two streams are designated by different course codes (HPST and SCTS). However, any combination of HPST or SCTS courses is permissible, subject to the relevant prerequisites. Entrance to most Level II/III courses is possible without having studied Level I HPST or SCTS courses.

Science and Technology Studies Level I

Students undertaking courses in Science and Technology Studies supplement class contact hours by study in the library. Only two Level I subjects may be counted towards course 3970.

HPST1107 Cosmology and Culture: Revolutions of Science
Staff Contact: Mr Anthony Corones
UOC6 HPW3 S1
Excluded: HPST1002, HPST1106

Introduction to the history and philosophy of science and technology. Examines the origins of science in antiquity, and the scientific revolutions of the seventeenth and eighteenth centuries. Covers the history of both physical and life sciences, including technology and medicine, and places special emphasis on change in worldviews and cosmologies, and in conceptions and practices of science. Topics: archaeoastronomy; Greek natural philosophy; Aristotle's cosmology; mathematical, physical, and life sciences in Late Antiquity; Ptolemaic astronomy; Vesalius and Renaissance anatomy; the Copernican Revolution; Harvey's new 'biology'; telescope and microscope; the infinite universe; natural history and classification; the chemical revolution.

HPST1108 Science Good, Bad and Bogus
Staff Contact: Dr Peter Slezak
UOC6 HPW3 S2
Excluded: HPST1003

What is science? What are its distinctive characteristics as a form of inquiry? Why are astrology, 'creationism' or parapsychology widely considered to be pseudosciences? A critical consideration of such inquiries raises central questions concerning the nature of science, involving issues such as the nature of observation and evidence, theories and laws, explanation and prediction, etc. Issues to be considered include the 'Galileo Affair', 'science vs. religion' and relativism. These are placed in an historical context from the Ancient Greeks to twentieth century philosophers. Also considered are the nature of scientific revolutions and 'postmodern' approaches to science.

SCTS1106 Science, Technology and Society
Staff Contact: Dr David Miller
UOC6 HPW3 S1
Excluded: SCTS1001, SCOM1011

Examines the relations of science and technology with societies in the modern world. The status and authority of science. Can science tell us what we ought to do? Critiques of science. Is technology applied science? What is the relation between technology and social change? The political uses of expertise. Experts and the rest of us. Issues of participation. These topics will be explored theoretically and by reference to case studies including: modern genetics and its use in agriculture and medicine; information technology, computers and cyberspace; energy technologies, nuclear and solar; technologies of everyday life.

SCTS1107 Understanding Environmental Controversy
Staff Contact: Mr Stephen Healy
UOC6 HPW3 S2
Excluded: SCTS1002

Examines the nature of global and local environmental problems with particular emphasis on understanding controversies about environmental risk. Patterns of population and consumption, production and waste; what constitutes an environmental problem?; risk and risk perception; environmentalism; the uses of knowledge, science and environmental controversy; international attacks on global problems; stakeholders and stances; environmental problems in your backyard; local and global action. In the last seven weeks students will participate in group projects examining particular environmental risk controversies.

Science and Technology Studies Level II/III

HPST2106 The Scientific Theory in Practice
Staff Contact: Mr Anthony Corones
UOC6 HPW3 S1
Prerequisite/s: 36 units of credit
Excluded: HPST2001

Focuses on theories in the practice of science, and examines not only the structure of theories, but also their life cycle from conception to crematorium: How are theories generated? How do they guide, and translate into, scientific practice? What are the dynamics of theoretical change? Under what conditions are theories discarded? Along the way, many of the classical problems of the philosophy of science get an airing: What are scientific laws? Can theories be proved true or falsified? Is there a logic of theory generation? Do theories describe the world?

HPST2107 The "Darwinian Revolution" and the Order of Nature 1790-1890
Staff Contact: Dr Nicolas Rasmussen
UOC6 HPW3 S1
Prerequisite/s: 36 units of credit

Examines the various theories of evolution from the early Romantic period to the later 19th century in cultural and political context. Retraces the West's quest for an explanation of living creation In terms of life forces and their interaction with a changing Earth, a quest which ultimately arrived at Darwin's theory of evolution. At the same time looks at the major historical developments that set the stage for these scientific developments in an age of dramatic political and economic revolution.

HPST2108 Cheating Death: A History of Medicine
Staff Contact: Dr Patricia Hardy
UOC6 HPW3 S1
Prerequisite/s: 36 units of credit
Excluded: GENSS522, GENST0902, HPST2003, HPST2128

What was the Medieval attitude to the bubonic plague? How has the doctor/patient relationship changed through time? In what ways has society reacted to new diseases such as AIDS? The answers to these questions, and many more, will be discussed in this course, which looks at the changes in Western medical theory and practice – from the earliest recorded times to present day. No previous biological experience required for this examination of issues of health and disease in their historical and social contexts.

HPST2109 Computers, Brains and Minds
Staff Contact: Dr Peter Slezak
UOC6 HPW3 S2
Prerequisite/s: 36 units of credit
Excluded: GENSS525, HPST2004

Introduction to contemporary discussions of the mind, thought, intelligence and consciousness. Focuses on the issues which arise in connection with the so-called 'cognitive sciences' - the
computers think? Is the brain a machine?

**HPST2111**
The Scientific Revolution  
**Staff Contact:** Dr John Schuster  
**UOC6 HPW3 S1**  
**Prerequisite/s:** 36 units of credit  
Examines fundamental issues and techniques in the history and philosophy of science. Deals with the origins of modern European science, as exemplified in the work of Copernicus, Galileo, Newton and others. The social, religious, political and economic factors shaping the emergence and content of the new science are analysed. Emphasis is placed on critical historical thinking and use of tools from the sociology of scientific knowledge.

**HPST2116**
Defining Science: A History  
**Staff Contact:** Mr Anthony Corones  
**UOC6 HPW3 S2**  
**Excluded:** HPST2011  
**Note/s:** Not recommended for students without some background in philosophy or HPST.  
Examines the history of attempts to define and direct the scientific enterprise, from Plato and Aristotle in antiquity to the twentieth century. Questions about what scientific knowledge is, or should be, and how we should go about acquiring it, provide a focal point of discussion. The diversity of answers to these questions provides insight into not only the importance of methodological issues in the history of science, but also of the normative nature of foundational theories of science. Provides an overview of the history of the philosophy and methodology of science.

**HPST2118**
Body, Mind, Soul: History and Philosophy of Psychology  
**Staff Contact:** Dr Peter Slezak  
**UOC6 HPW3 S1**  
**Excluded:** HPST2013  
**Prerequisite/s:** 36 units of credit  
Development of ideas concerning the nature of mind and its relation to the body. Topics: Plato's doctrine of the immortality of the soul; Descartes' division of mind and body; the classical dispute between rationalism and empiricism over innate ideas; the behaviourism of Watson and Skinner; the Freudian Revolution; the rise of experimental psychology from Wundt and Fechner to Chomsky and the 'Cognitive Revolution'; minds as machines and the question of whether computers can think.

**HPST2126**
God, Life, the Universe and Everything: Science and Meaning  
**Staff Contact:** Dr Peter Slezak  
**UOC6 HPW3 S1**  
**Prerequisite/s:** 36 units of credit  
'Ultimate' questions about God, the meaning of life and the point of it all, have traditionally been the business of religion. Can science provide an answer to these questions, or is there always a realm of understanding which is beyond scientific knowledge? This course examines philosophical issues in epistemology, metaphysics and philosophy of science. Topics will include arguments for the existence of God and the underlying questions of evidence and explanation in science.

**HPST2127**
Discrediting Science? - Postmodernism and Legitimation  
**Staff Contact:** Mr Anthony Corones  
**UOC6 HPW3 S2**  
**Prerequisite/s:** 36 units of credit  
Examines the perception that postmodernism discredits science. Discussion is focussed on postmodernist 'credibility towards metanarratives', and the way in which this provokes the crisis of legitimation. Topics and debates covered include constructivism, relativism, realism and anti-realism, the naturalistic turn in epistemology, rationality, hermeneutics and the politics of knowledge.

**HPST2136**
Agriculture and Civilisation in Historical Perspective  
**Staff Contact:** Dr Nicolas Rasmussen  
**UOC6 HPW3 S1**  
**Prerequisite/s:** 36 units of credit  
This course looks at some of the wide variety of ways civilisations have developed an agriculture to sustain them, and at how a people's way of embedding itself in the ecosystem can inform its culture. Also considers in some detail the ways in which the agriculture of Western civilization has been transformed in the tiny span of time (evolutionarily and ecologically speaking) since the scientific revolution and the industrial revolution that followed it. An understanding of how our relations with nature came to their current state provides essential background for approaching ecological crises of the present and future.

**HPST2137**
Life Science in the 20th Century: The Molecular Revolution  
**Staff Contact:** Dr Nicolas Rasmussen  
**UOC6 HPW3**  
**Prerequisite/s:** 36 units of credit  
Explores the rise of the experimental biology disciplines, from the embryology, genetics, bacteriology and physiology of the early 20th century through the 'molecular revolution' of the period around the Second World War and the new sciences it spawned. These include sciences such as cell biology, immunology and above all molecular genetics - the science of the genetic code and the linchpin of current biotechnology.

**HPST2138**
Worrying Ourselves to Death? Health, Risk & Modern Medicine  
**Staff Contact:** Dr Susan Hardy  
**UOC6 HPW3**  
**Prerequisite/s:** 36 units of credit  
Statistics suggest that populations of First World countries are healthier and longer-living than at any previous time. Ironically, the perception exists that we are 'doing better but feeling worse'. How did we become the 'worried well'? Departing from traditional positivist and progressivist approaches in medical history, this course provides a framework for examining some of the practices and paradoxes of modern medicine. We ask why the forces that created modern medical 'miracles' have also created the current climate of anxiety and ambivalence. Why has the maintenance of health become a perpetual exercise in risk assessment?

**HPST3113**
Changing Images of Nature  
**Staff Contact:** Dr John Schuster  
**UOC6 HPW3**  
**Prerequisite/s:** 36 units of credit  
Surveys how images of nature, the environment and humankind's place in nature have been constructed and debated in the West. Begins by examining shifting images of nature between the Renaissance and the rise of Darwinism, emphasising how theories of nature have reflected, shaped and legitimate the material and cultural practices of the societies in which they appeared. Building on these historical insights, the latter portion of the course analyses and maps a range of contemporary environmental perspectives and philosophies. Particular attention is paid to students' ability to analyse contemporary environmental debates in political, philosophical and historical terms.

**HPST3118**
Reading Option in History and Philosophy of Science  
**Staff Contact:** Dr David Miller  
**UOC6 HPW3 X1 S1 S2**  
**Prerequisite/s:** 36 units of credit  
**Note/s:** Permission for enrolment in the reading option must be obtained from the Head of School.  
Students wishing to work in an area not covered by an existing course may apply to the School to take a reading option. Not more than one such course may be counted towards a degree. Approval of a program for a reading option will depend on its suitability, and the availability of a staff member to undertake supervision.
blamed on ‘Western Industrialised Society’. This needs careful
definition as do other terms such as ‘liberal democratic’, ‘Northern’,
‘modern’ and ‘capitalist’. Major ideas and important historical
developments of Western Society are investigated, by considering
key themes in relation to present day environmental politics. Topics
include: pre-industrial social and political developments in Europe;
the ideas of the Enlightenment; the Industrial Revolution; images of
nature in the development of modernity; positivism, natural science
and the emergence of social science; progress and ecological
impacts of industrialisation; technocracy and totalitarianism in the
Twentieth Century; critical theory and the critique of science and
technology since World War Two: globalisation and postmodernity;
the lifeworld, risk, trust and participatory decision making.

SCTS2120
Science and Technology in the Movies
Staff Contact: Dr George Bindon
UOC6 HPW3 S1
Prerequisite/s: 36 units of credit

Since the inception of the communication medium of moving
pictures, the impacts of science and technology on society and
the environment have been prevalent sources of themes and
images for movie-makers. Involves viewing a variety of films and
critically examining how they have represented the interactions of
science, technology, society and the environment including such
aspects as: the portrayal of scientists and engineers; the nexus of
knowledge and power; the conflicts between the scientific/modern
project and alternate world views; utopias and dystopias; ‘popularisation’ of science; ‘scientistic’ vs. ‘scientific’ content; pro-
science and anti-science views, and the role of science fiction in
the formulation of scientific futures. These portrayals will be
considered in light of the parallel development of the scholarly
study of science, technology and society, and the extent to which
the popular media reflect academic analyses.

SCTS2121
Knowledge and Power
Staff Contact: Mr George Bindon
UOC6 HPW3 S1
Prerequisite/s: 36 units of credit

How does knowledge, particularly scientific and technical
knowledge, interact with the exercise of power? Examines the
history of the idea of a special relationship between the possession
of both knowledge and power. Through case studies of
contemporary scientific, technological and environmental policy
issues, and the use of workshops, students will simulate the
processes by which power is exercised and knowledge is used.
They will acquire some of the skills associated with the practical
deployment of knowledge within organisations, particularly those
associated with the role of policy advisers. Students will gain a
basic understanding of Australian and international science and
technology policies. Some examples of recent case study
workshops include the new Lucas Heights Reactor, a consensus
conference on genetic engineering, and the Microsoft monopoly
debate.

SCTS2122
Evolution, Innovation, Communications and the Future
Staff Contact: Mr George Bindon
UOC6 HPW3 S2
Prerequisite/s: 36 units of credit

One thing that dramatically distinguishes humans is that we are
able to change the conditions of our own existence. We achieve
this by changing what we do and whom we do it with, and by
making things that previously didn’t exist. Focuses on a developing
convergence of thinking about evolution, communications,
economics, and technological innovation/change. Considers ways
of explaining how we create physical and cultural extensions of
our bodies and our brains, and how these have evolved, and
continue to evolve. We live in an era of unprecedented
transformation. As we move rapidly into a ‘post-industrial’/‘post-
modern’ world, this course provides an opportunity to consider the
nature, origins, and consequences of the changes we shall be
experiencing.
This course is about sustainable development along with the technological and social changes that are involved in achieving it, both at a national and global level. It is divided into three parts: (1) the historical causes of the present global environmental and economic crisis; (2) possible solutions to problems of food production, environmental degradation, industrialisation, energy use, and population growth; (3) ideas for a New World Economic Order and the economic and technological changes required to bridge the ever increasing gap between rich and poor nations.

SCTS3119
Reading Option In Science and Technology Studies
Staff Contact: Dr David Miller
UOC6 HPW3 S2
Prerequisite/s: 36 units of credit
Excluded: COMD2050, SCTS3001

Permission for enrolment in the Reading Option must be obtained from the Head of School. Students wishing to enrol in an area not covered by an existing course may apply to the School to take a reading option. Not more than one such course may be counted towards a degree. Approval of a program for a reading option will depend on its suitability and the availability of a staff member to undertake supervision.

SCTS3120
Cultural Heritage Management
Staff Contact: Associate Professor Wendy Brady
UOC6 HPW3 S2
Prerequisite/s: 36 units of credit

Over 40,000 years of human habitation has helped to shape Australia’s environment. This course examines the policies and processes of managing both Aboriginal and non-Aboriginal (historical/European) “cultural heritage”. It will define the notion of “cultural heritage” and examine to what extent the Australian environment may be defined as “natural”. Identifies and examines the values attributed to cultural heritage items, sites and places by a variety of interest groups, and critically examines the legal, ethical and policy requirements which dictate management processes.

SCTS3126
Society and Environmental Process: Botany Bay
Staff Contact: Dr Paul Brown
UOC6 HPW3 S2
Prerequisite/s: SCTS2118 and 84 units of credit overall;
Excluded: SCTS3013, SCTS3020.
Note/s: In addition to SCTS2118, students must also have completed at least 2 other upper level courses listed in the Environmental Studies program

Interprets the concept of the social construction of the environment in the specific context of Botany Bay and its region. Environmental issues are identified and examined in the light of historical, sociological, economic and political developments at the regional, national and global levels. Prospects and processes for intervention.

In addition to other work, each student completes a substantial research report.

SCTS3127
Communicating Science: Theory & Practice
Staff Contact: Dr David Miller
UOC6 HPW3 S2
Prerequisite/s: 36 units of credit

Communicating science is crucial in modern societies. Scientists need to communicate not only among themselves but with representatives of business, unions, government, the media and environmental and community interest groups. Examines how different ideas about the nature of science affect our understanding of how science is communicated. Topics include: the history of science communication; new communications technologies and science; popularisation; distortion; the communication of uncertainty and risk. Also considers the role of communicators and policy advisers and guides students towards the latest on-line tools required to access, evaluate and use current information about science, technology and their social and environmental impacts. The class will simulate issues of communication and the roles of science communicators and produce appropriate outputs, such as journalistic articles, press releases, and presentations to be published through an on-line journal.
History and Philosophy of Science and Technology
Honours (Research) Part-Time

Staff Contact: Dr David Miller
Enrolment requires School approval
UOC24 S1 S2
Prerequisite/s: 54 units of credit in HPST/SCTS at 65% and permission of head of school.
Note/s: With the approval of the Head of School, courses outside the School carrying up to 12 units of credit may be substituted.

Candidates are required to present a thesis and complete coursework as approved by the Head of School.

History and Philosophy of Science and Technology
Combined Honours (Research) Full-Time

Staff Contact: Dr David Miller
Enrolment requires School approval
UOC24 S1 S2
Prerequisite/s: 48 units of credit in HPST/SCTS at 65% and permission of head of school.
Note/s: With the approval of the Head of School, courses outside the School carrying up to 12 units of credit may be substituted.

For Combined Honours, candidates are required to present a thesis and complete coursework as approved by the Heads of the two participating Schools.

Science and Technology Studies Honours (Research) Full-Time

Staff Contact: Dr David Miller
Enrolment requires School approval
UOC48 S1 S2
Prerequisite/s: 54 units of credit in HPST/SCTS at 65% including at least one of HPST3900 or SCTS3900
Note/s: With the approval of the Head of School, courses outside the School carrying up to 12 units of credit may be substituted.

For Honours, candidates are required to present a thesis and complete coursework as approved by the Head of School.

Science and Technology Studies Honours (Research) Part-Time

Staff Contact: Dr David Miller
Enrolment requires School approval
UOC24 S1 S2
Prerequisite/s: 54 units of credit in HPST/SCTS at 65% and permission of head of school.
Note/s: With the approval of the Head of School, courses outside the School carrying up to 12 units of credit maybe substituted.

For Honours, candidates are required to present a thesis and complete coursework as approved by the Head of School.

Combined Honours (Research) in Environmental Studies

F/T

Staff Contact: Dr Paul Brown
Enrolment requires School approval
UOC24 S1 S2
Note/s: Students must meet the following requirements:
1. Combined honours prerequisites in a discipline. 2. At least 48 units of credit from the list of nominated courses for the interdisciplinary major in Environmental Studies, including SCTS2118 and SCTS3126, with an average of credit or better.
3. Permission of the Honours Committee of the Environmental Studies Committee.

The course has three components: thesis (50%); seminar (25%); and either a second seminar or a project (25%). The project is intended to provide the opportunity for learning experience based on field research involving industry, government, or community activity, in a topic area different from that of the thesis. It could take the form of a radio program, a short film, an environmental action plan or design, a community event, a developed policy proposal, a detailed funding program etc., or elements of several of the foregoing.

Combined Honours (Research) in Environmental Studies

P/T

Staff Contact: Dr Paul Brown
Enrolment requires School approval
UOC12 S1 S2
Note/s: Students must meet the following requirements:
1. Combined honours prerequisites in a discipline. 2. At least 48 units of credit from the list of nominated courses for the interdisciplinary major in Environmental Studies, including SCTS2118 and SCTS3126, with an average of credit or better.
3. Permission of the Honours Committee of the Environmental Studies Committee.

The project is intended to provide the opportunity for learning experience based on field research involving industry, government, or community activity, in a topic area different from that of the thesis. It could take the form of a radio program, a short film, an environmental action plan or design, a community event, a developed policy proposal, a detailed funding program etc., or elements of several of the foregoing.

Science and Technology Studies Combined Honours (Research) Full-Time

Staff Contact: Dr David Miller
Enrolment requires School approval
UOC24 S1 S2
Prerequisite/s: 48 units of credit in HPST/SCTS at 65% including at least one of HPST3900 or SCTS3900
Note/s: With the approval of the Head of School, courses outside the School carrying up to 12 units of credit may be substituted.

For Combined Honours, candidates are required to present a thesis as approved by the Heads of the two participating Schools.

Science and Technology Studies Combined Honours (Research) Part-Time

Staff Contact: Dr David Miller
Enrolment requires School approval
UOC12 S1 S2
Prerequisite/s: 48 units of credit in HPST/SCTS at 65% including at least one of HPST3900 or SCTS3900
Note/s: With the approval of the Head of School, courses outside the School carrying up to 12 units of credit may be substituted.

For Combined Honours, candidates are required to present a thesis as approved by the Heads of the two participating Schools.
Faculty of Life Sciences

Dean: Professor MJ Sleigh
The Schools of the Faculty of Life Sciences offer facilities for students to proceed to the award of a Graduate Diploma in Biochemistry and Molecular Genetics (5345), Biotechnology (5015), Food Technology (5020), Biological Science (5350), Microbiology and Immunology (5355) and Psychology (5330).

The award of a Masters degree by course work is offered in Psychology (8256 - Clinical; 8257 - Forensic; 8258 - Organisational). Coursework Masters programs are also available in Food Science and Technology (8033), Biotechnology (8048), Biopharmaceuticals (8049) and Marine Science (8265).

Programs leading to degrees of Masters by research and PhD are available in all Schools of the Faculty. A combined PhD Masters course work program is offered in Psychology (1404 - Clinical; 1405 - Forensic; 1406 - Organisational). Graduates are advised to contact the relevant Head of School to obtain advice on entry requirements.

Faculty of Science and Technology

Dean: Professor CE Sutherland
The Schools of the Faculty of Science and Technology offer research programs leading to the award of the degrees of Doctor of Philosophy, Master of Science and (through the Schools of Materials Science and Engineering, and Safety Science) Master of Engineering.

The following formal coursework programs leading to graduate awards are also offered:

- Graduate Diploma by Research (in Physical Oceanography, Physics)
- Master (of Optometry, Statistics, Safety Science)

Graduates are advised to consult the Head of School or Department before making formal application for registration in any of the above courses.

Students completing undergraduate science degrees which include an appropriate mix of subjects may qualify for admission to higher degree programs in Faculties other than Life Sciences and Science and Technology.

Enrolment Procedures

All students re-enrolling in 2001 or enrolling in graduate courses should contact the Postgraduate Section for enrolment details.
Facilities are available in each of the Schools for research leading to the award of the degrees of Master of Science, Doctor of Philosophy and Graduate Diploma. The Department of Biotechnology (within the School of Applied Bioscience) offers a Graduate Diploma in Biotechnology and a Masters degree course in Biotechnology by formal study. The Department of Food Science and Technology (within the School of Applied Bioscience) offers a Graduate Diploma in Food Technology and Master of Science degrees in Food Technology, Food Microbiology, Food Engineering and Food Science and Nutrition by formal study. The School of Psychology offers Master of Psychology (Clinical), Master of Psychology (Forensic), Master of Psychology (Organisational), combined PhD/Master of Psychology (Clinical), combined PhD/Master of Psychology (Forensic), and combined PhD/Master of Psychology (Organisational) degree programs. A Master of Marine Science program is also available.

Higher Degree Qualifying Program

Students without a BSc Honours degree wishing to register as higher degree candidates must usually complete a qualifying program, admission to which is subject to the approval of the Faculty Higher Degree Committee.

Applicants must normally have a degree or diploma in an appropriate field of study from an approved university or institution, and in the case of a diploma, appropriate professional experience.

Undergraduates of this University may be admitted to the full-time or part-time Honours undergraduate course. Other applicants may be admitted to a full-time, part-time or external qualifying program. The duration of the qualifying program is a minimum of one year for full-time and two years for part-time or external students.

Content of Qualifying Program

The qualifying program consists of the whole of the usual program for the final Honours year of the undergraduate course, the following being the prescribed Level IV courses:

- BIOC4318 Biochemistry Honours (Full-time)
- BIOC4618 Biochemistry Honours (Part-time)
- BIOC4428 Molecular Biology Honours (Full-time)
- BIOC4629 Molecular Biology Honours (Part-time)
- BIOS5417 Biological Science Honours (Full-time)
- BIOS5427 Biological Science Honours (Part-time)
- BIOT4073 Biotechnology Honours (Full-time)
- BIOT4083 Biotechnology Honours (Part-time)
- BSSM4103 Genetics Honours (Full-time)
- BSSM4109 Genetics Honours (Part-time)
- MICR4013 Microbiology and Immunology Honours (Full-time)
- MICR4203 Microbiology and Immunology Honours (Part-time)
- PSYC4053 Psychology 4A and PSYC4063 Psychology 4B

The qualifying program is graded in the usual way, and in appropriate cases the results are expressed as a grading equivalent to Honours.

Students undertaking a qualifying program in the Department of Food Science and Technology will enrol in Course 6138 Postgraduate Qualifying in Food Science and Technology and undertake such courses as approved by the Head of Department.

Alternative Qualifying Program

Applicants who cannot attend the University regularly for the above programs may be admitted as external qualifying students to a program similar to a standard Honours year. The following are the alternative qualifying courses:

- BIOC6308 Biochemistry
- BIOS9917 Biological Science
- MICR6043 Microbiology
- PSYC6000 Psychology

The results in alternative qualifying courses are graded Pass or Fail only.

Fees

Candidates enrolled in the Alternative Qualifying Program are exempt from student service fees.
Graduate Certificate

The Graduate Certificate program is designed as a one session full-time or two sessions part-time period of study for graduates who wish to obtain specialised training in a particular area of life sciences.

School of Applied Bioscience
Department of Food Science and Technology
Full-time or Part-time

7310
Graduate Certificate in Food Science and Technology

This program provides the opportunity to obtain a Graduate Certificate qualification after successful completion of postgraduate courses totalling 18 units of credit. Generally, this will require three courses, each of 6 units of credit.

Graduate Diplomas

The Graduate Diploma is designed as a one year full-time period of study and research in all Schools except Applied Bioscience. It is intended primarily as an advanced training program for graduates from overseas universities who wish to obtain specialised training in particular areas of life sciences. The expectation is that for suitably qualified students, the program would allow entrance to a higher degree program (MSc or PhD) provided suitable supervision and facilities were available. The program is also available to graduates of Australian universities who have not done an Honours program and who wish to pursue graduate study in a discipline other than that in which they obtained their first degree.

At the successful conclusion of the program the students would be provided with a Diploma Certificate showing their Higher Degree Qualifying status by the University and a statement of their proficiency from the relevant School.

Entrance for students for whom English is the second language would be dependent on achieving an adequate standard of written and spoken English.

The academic year for the University of New South Wales consists of two sessions, commencing in late February – early March and mid-July, respectively. It is preferred that new students arrive 2-3 weeks prior to the beginning of the Session, so that they can be oriented prior to the commencement of formal teaching.

The Graduate Diplomas in Biotechnology and Food Technology are coursework programs that offer retraining for graduates of other disciplines.

Brief descriptions of the courses currently offered within the Schools of the Faculty of Life Sciences follow.

School of Applied Bioscience
Comprises the Departments of Biotechnology and Food Science and Technology.

Department of Biotechnology

5015
Biotechnology Graduate Diploma Program
Full-time or Part-time

Graduate Diploma
GradDip

Staff Contact: Prof P Rogers

The graduate diploma program provides the opportunity for graduates with no previous tuition in biotechnology to undertake training in this discipline.

A degree in a science-based course is required for admission. If the degree course has not included a biology component, the candidate is required to undertake some basic biology training as a prerequisite or corequisite.

Under normal circumstances, students whose previous training has included a substantial component of biotechnology are not admitted to the course.

The program comprises study of undergraduate and graduate formal courses, plus extensive laboratory training in biotechnology.

The diploma is awarded after one year's full-time study, or two years part time study. The program includes the listed obligatory courses plus sufficient of the listed elective courses to meet the units of credit required. The electives include courses necessary for students without previous tuition in biochemistry and microbiology, as well as alternatives for those with previous tuition in these disciplines. The choice of electives in each individual case is subject to approval by the Head of School.
Graduate Diploma in Biotechnology

Compulsory courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOT5013</td>
<td>Practical Biotechnology</td>
<td>12</td>
</tr>
</tbody>
</table>

Elective courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOT7051</td>
<td>Applied Genetics</td>
<td>6</td>
</tr>
<tr>
<td>BIOT7061</td>
<td>Peptide and Protein Technology</td>
<td>6</td>
</tr>
<tr>
<td>BIOT7071</td>
<td>Biochemical Engineering</td>
<td>6</td>
</tr>
<tr>
<td>BIOT7081</td>
<td>Environmental Biotechnology</td>
<td>6</td>
</tr>
<tr>
<td>BIOT7091</td>
<td>Applied Cell Culture</td>
<td>6</td>
</tr>
<tr>
<td>BIOT7110</td>
<td>Bioengineering Principles</td>
<td>6</td>
</tr>
</tbody>
</table>

Combinations of Compulsory and Elective courses to be 36 units of credit.

Graduate Certificate in Biotechnology

The Department of Biotechnology offers a Graduate Certificate qualification which will be awarded on the successful completion of postgraduate subjects totaling 18 units of credit. The Graduate Certificate enables students with a related science qualification to gain specific knowledge in areas of biotechnology.

Department of Food Science and Technology

5020
Food Technology Graduate Diploma Program
Full time or Part-time

Graduate Diploma
GradDip

The Graduate Diploma program is designed to provide professional training at an advanced level for graduates in Science, Science and Technology or Engineering who have not had previous training in Food Technology. Requirements are a first degree and, in some cases, the successful completion of assignments or examinations as directed by the Head of Department. The program is a blend of formal lectures and laboratory work. The Graduate Diploma is awarded on the successful completion of one year of full time study (at least 36 units of credit) or two years of part time study (at least 18 units of credit per year). It involves the following program:

Compulsory courses

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>UOC</th>
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<tbody>
<tr>
<td>FOOD1577</td>
<td>Food Processing Principles</td>
<td>6</td>
</tr>
<tr>
<td>FOOD1587</td>
<td>Food Processing Laboratory</td>
<td>6</td>
</tr>
<tr>
<td>FOOD1597</td>
<td>Food Processing and Packaging</td>
<td>6</td>
</tr>
<tr>
<td>FOOD2627</td>
<td>Food Microbiology</td>
<td>6</td>
</tr>
<tr>
<td>FOOD2837</td>
<td>Quality Assurance and Control</td>
<td>6</td>
</tr>
</tbody>
</table>

Students who have previously studied compulsory courses or their equivalent at an acceptable level may be granted an exemption by the Head of Department but the equivalent number of units of credit must be completed by taking other approved courses.

Elective courses

The elective courses making up the remainder of the units of credit, may be selected from those offered by the School of Applied Bioscience, or from those offered by other Schools in the University subject to approval by the Head of Department. Only graduate courses will count towards units of credit.

School of Biochemistry and Molecular Genetics

5345
Biochemistry Graduate Diploma Program
Full-time or Part-time

Graduate Diploma
GradDip
UOC 48

Staff Contact: Dr D Lee

The program is tailored according to the background and requirements of the individual student. In most cases it would include advanced formal undergraduate training, including lectures in general and medical biochemistry, training in the use of modern biochemical techniques, eg scintillation counting, gas liquid chromatography (GLC), high performance liquid chromatography (HPLC), molecular biology, spectrophotometry, nuclear magnetic resonance (NMR) spectroscopy, and animal and plant cell culture. The student would also carry out a research project (or projects) in the laboratory of an academic member of staff and write a report on the project.

The School of Biochemistry and Molecular Genetics has a wide range of interests and can offer research projects in most areas of biochemistry. Specialised areas of research are molecular biology, marine biochemistry, parasite biochemistry and plant biochemistry.

School of Biological Science

5350
Biological Science Graduate Diploma Program
Full-time or Part-time

Graduate Diploma
GradDip
UOC 48

Staff Contact: School Office

The program is designed to meet the needs and objectives of individual students building on their background and experience. It includes a formal coursework component and a research project which is carried out under the supervision of a member of the academic staff. Students receive advanced formal training to provide them with research and presentation skills relevant to their research project. The School has a wide range of interests, and training and research are offered in both plant and animal sciences. Areas of biology in which facilities and appropriate supervision are available include: ecology, taxonomy, environmental physiology, marine and fisheries biology, genetics and evolution, mycology, ultrastructure, comparative physiology, mammalian studies. Supervision of a member of the academic staff.
School of Microbiology and Immunology

5355
Microbiology and Immunology Graduate Diploma
Program
Full-time or Part-time

Graduate Diploma
GradDip
UOC 48

Staff Contact: School Office

The School of Microbiology and Immunology has many research teams working on a range of well-funded projects in microbiology, molecular biology, and immunology. The diverse research interests of the School can be grouped into the areas of Helicobacter pylori and gastroduodenal disease, immunology of allergic responses, environmental microbiology and remediation, microbiology of extremophiles, water-borne viral pathogens, probiotics, molecular microbiology and genomics, bacterial communication systems, marine microbiology and biotechnology.

School of Psychology

5330
Psychology Graduate Diploma Program
Full-time

Graduate Diploma
GradDip
UOC 48

Staff Contact: Dr S McDonald

This one year program is adapted to suit the needs and objectives of each student, taking into account the areas of psychology in which they have already demonstrated competence. The expectation is that students who achieve an appropriate standard in the program are then admitted to a higher degree program, provided suitable supervision and facilities are available.

The program comprises formal teaching in an approved set of courses drawn from the following areas: research methods and statistics, perception, learning, cognitive psychology, psycholinguistics, social psychology, clinical psychology, developmental psychology, personality, physiological psychology, abnormal psychology, and applied psychology. Both lectures and practical work will be given.

Students normally also carry out a research project under the supervision of a member of the academic staff of the School. Active research programs exist in most areas including abnormal and clinical psychology, behavioural neuroscience, cognitive science, cognition and perception, data analysis and psychometrics, industrial and organisational psychology, and social, personality and developmental psychology. Particular attention is paid to the interrelationship between scientific theory and the practical application of psychological knowledge.

Masters Degrees

Department of Biotechnology

Master of Science Coursework Degree Programs

The Department of Biotechnology offers three formal coursework masters programs, the Master of Science in Biotechnology 8048, the Master of Science in Biopharmaceuticals 8049.1000, and the Master of Science in Biopharmaceuticals by distance education 8049.2000.

CRC for Food Industry Innovation

Director: Professor NW Dunn

The Centre was established in 1993 and involves the Schools of Applied Bioscience, Biochemistry and Molecular Genetics and Microbiology and Immunology in the Faculty of Life Sciences, and three industry partners to provide a coordinated research and educational base to generate development of improved and novel natural food ingredients, principally through the use of microorganisms.

The five partners in the CRC have the combined expertise in research and commercialisation to market the first ingredients within four years. The ingredients that the Centre aims to develop include starter cultures, anti-microbial agents, antioxidants, fat substitutes, texture modifiers, colours, flavours, probiotics and biocontrol agents.

Currently there are eight research programs which focus on different areas which may generate commercial products. Research areas include molecular genetics, cellular physiology, biochemistry and kinetics of food approved and other potentially useful microorganisms. Microbial processes will be developed and optimised through to 100 litre pilot-scale capacity and these studies will include ingredient recovery and formulation. Expertise exists for evaluation of ingredients in food formulation and nutritional evaluation.

Undergraduate and postgraduate (formal MSc and PhD) programs provide training relevant to the total area. Research programs contribute to the generic resource of the CRC and provide students with a direct opportunity to interact with national and international food/biotechnology companies.
8048
Master of Science in Biotechnology by Coursework

MSc

The course includes advanced treatments of all areas of biotechnology. It is open to graduates with a four-year degree in biotechnology or a related discipline, or who have, in the opinion of the Higher Degree Committee, acquired equivalent qualifications or experience. Intending students are referred to Conditions for the Award of Graduate Degrees set out later in this handbook. The program consists of lectures, tutorials, practical sessions, case history studies and a supervised project. The minimum period of registration before the award of the degree is two sessions for full-time students and four sessions for part-time students.

8048
Master of Science in Biotechnology

<table>
<thead>
<tr>
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<tbody>
<tr>
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<td>BIOT7110</td>
<td>Bioengineering Principles</td>
<td>6</td>
</tr>
<tr>
<td>BIOT7123</td>
<td>Biotechnology Project Minor</td>
<td>12</td>
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<tr>
<td>TOTAL</td>
<td></td>
<td>48</td>
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</tbody>
</table>

Students may be able to replace one of the above courses (6 units of credit) with an equivalent size course in another Department or School.

Elective components

Elective courses may be selected from those offered by the School of Applied Bioscience, or from those offered by other Schools in the University subject to approval. Each individual program would comprise:

1. A major strand of related material comprising approximately 75% of the total program, including a project comprising not more than 25% of the program.
2. A minor strand of broader based material comprising up to 25% of the total program.
3. At least 60% of the non-project component must be taken in the Department of Biotechnology unless otherwise approved by the Head of School. The remainder, subject to approval and availability, may be undertaken elsewhere in the University.

8049.1000
Master of Science by Coursework in Biopharmaceuticals

MSc

This is an interdisciplinary program designed for graduates with backgrounds in either pharmacology or biotechnology who wish to obtain advanced training in both areas in order to gain expertise necessary for the development and use of the new generation of biopharmaceuticals which have been developed by, or result from, the application of molecular biology. It is open to graduates with a four-year degree in a related discipline or who have, in the opinion of the Higher Degree Committee, acquired equivalent qualifications or experience. Prior study of biochemistry is required for the program. The program consists of lectures, tutorials, practical sessions, case history studies and a supervised project. The minimum period of registration before the award of the degree is two sessions for full-time students and four sessions for part-time students. The program is also offered through distance education. Choice of courses is dependent on the background of the student.

Principles of Pharmacology (PHPH5461) must be taken by students who have not completed an approved Pharmacology course, while Principles of Biotechnology (BIOT7040) must be taken by students who have not completed an approved Biotechnology course.

All students must pass Advanced Pharmacology (PHPH5471) and Advanced Biotechnology (BIOT7030) and Biotechnology Principles (BIOT7040) and/or Pharmacology Principles (PHPH5461) whichever is applicable. Program details are as follows:

8049.1000 Master of Science by Coursework in Biopharmaceuticals

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PHPH5461</td>
<td>Pharmacology Principles</td>
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<tr>
<td>OR</td>
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<tr>
<td>BIOT7040</td>
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<tr>
<td>PHPH5471</td>
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<tr>
<td>OR</td>
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<tr>
<td>BIOT7030</td>
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<td>OR</td>
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<tr>
<td>BIOT7060</td>
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<td>PHPH5491</td>
<td>Pharmacology Project</td>
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<td>TOTAL</td>
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</tr>
</tbody>
</table>

Pharmacology Principles (PHPH5461) must be taken by students who have not completed an approved Pharmacology course, while Biotechnology Principles (BIOT7040) must be taken by students who have not completed an approved Biotechnology course program.

All students must pass Advanced Pharmacology (PHPH5471) and Advanced Biotechnology (BIOT7030).

Elective Components

Each individual program would comprise: (i) a major strand of related material comprising approximately 75% of the total program including a project comprising not less than 15% of the program (ii) a minor strand of broader based material comprising up to 25% of the total program.

8049.2000
Master of Science by Coursework in Biopharmaceuticals

Distance Education

The CRC for Biopharmaceutical Research has developed this strongly interdisciplinary Master of Science in Biopharmaceuticals program. The program teaches the scientific basis underscoring the development of recombinant biopharmaceuticals, combined with aspects of clinical trials, regulatory considerations, patent issues, and licensing. The program content is incorporated in 8 distance education modules comprised of written text and video/audio tapes containing program material, demonstrations and self-testing exercises. Access to the Course Co-ordinators will be by phone, fax, electronic mail and teleconferencing facilities.

The Master's Program can be completed in a minimum of 2 years. The minimum time option would entail the completion of two modules per session. These are offered concurrently. A maximum time for completion has been set at 8 years.

Modules consist of printed notes containing course material, readings, assessment questions and exercises. Some modules also include audio and video taped material so access to audio equipment is essential.
The Master's Program calls for the completion of 8 modules, which is equivalent to 48 units of credit (exemptions may be allowed in exceptional circumstances).

There will be two tutorials per session per module. These will be conducted via a multiple telephone link and will be structured and interactive.

Each module will be assessed separately at module completion and a certificate awarded. The assessment of modules will be flexible and will be based on two pieces of submitted work. This may be in the form of written assignments or as a timed, marked examination.

Students' module choices are from the following:

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Title</th>
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<tr>
<td>PHPH5501</td>
<td>Basic Principles of Drug Action</td>
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<tr>
<td>PHPH5511</td>
<td>Selected Topics in Pharmacology</td>
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</tr>
<tr>
<td>PHPH5521</td>
<td>Techniques for Drug Development</td>
<td>6</td>
</tr>
<tr>
<td>PHPH5531</td>
<td>Discovery and Development of New Medicines</td>
<td>6</td>
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<tr>
<td>BIOT7070</td>
<td>Production of Recombinant Products</td>
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<tr>
<td>BIOT7080</td>
<td>Principles of Fermentation and Downstream Processing</td>
<td>6</td>
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<tr>
<td>BIOT7090</td>
<td>Monoclonal Antibody Technology</td>
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<tr>
<td>BIOT7120</td>
<td>Regulatory Considerations, Patent Issues and Licensing</td>
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</tr>
</tbody>
</table>

Module 1  UOC 6
PHPH5501 Basic Principles of Drug Actions
This module covers general principles of pharmacodynamics and pharmacokinetics. Pharmacodynamics (what the drug does to the body) considers drug-receptor interactions, the basis of dose-response curves, reversible and irreversible antagonists, partial agonists and related topics. Events following the drug-receptor interaction, which include stimulation of second messenger systems and the pharmacology of ion channels, are described. The principles governing pharmacokinetics (what the body does to the drug) and their clinical importance are discussed in some detail. There are several simple graphical and problem solving exercises to be completed to aid in your understanding of this material.

Module 2  UOC 6
PHPH5511 Selected Topics in Pharmacology
For this module the topics were chosen to enable students to gain knowledge of the receptors in the human body with which drugs commonly interact to produce their main clinical effects, or their side-effects/toxicological actions. The module begins with an introduction to the autonomic nervous system, then works through autonomic receptors, receptors for histamine and serotonin, then to the newer areas of peptide receptors and cytokines, the latter areas being those for which drugs are now being developed. With this background, plus some reading material on receptors for drugs affecting the central nervous system, it is felt that students will be able to read and understand the pharmacology of most drugs in clinical use. A video which covers many autonomic drug effects on the cardiovascular system, plus questions based around this film, are included.

Module 3  UOC 6
PHPH5521 Techniques for Drug Development
This module extends the concepts raised and discussed in the Basic Pharmacokinetics section of Module 1. More advanced pharmacokinetic problems, such as compartmentation, kinetics of effects and problem solving are included. The technique of measuring receptor binding is shown in some detail on video, with explanation of how the technique is set up, and how and why it is much used in new drug development. Also included in this module is a section on techniques used in the assay of drugs. The determination of molecular structure, and quantitation of drugs in the body are vital areas of drug development, and indeed pharmacokinetics depends upon such quantitation.

Module 4  UOC 6
PHPH5531 Discovery and Development of New Medicines
This module gives an overview of most aspects of the development of new drugs. There is a very short historical introduction and examples of the discovery and development of drugs from natural products (plants) plus some examples of drugs developed using synthetic programs (chemical modifications). There is an example of a Natural Products program with examples of broad based screens and follow up testing in animals (Phase 0) followed by a section on the necessary toxicological testing in animals (also Phase 0) before a drug can be tested in humans. Phase 1-4 of clinical trials are then discussed, followed by the Pharmaceutical Company's and the Clinical Investigator's viewpoints of drug development. Regulatory issues and some ethical problems are briefly considered.

Module 5  UOC 6
BIOT7070 Production of Recombinant Products
In this module, the topics deal with some basic recombinant DNA techniques and then heterologous protein expression in prokaryotes and eukaryotes are discussed in greater detail. For prokaryotes, Escherichia coli is the model species chosen and for eukaryotes, the cell systems of yeast and mammalian cells are described. The advantages and disadvantages of the various expression cell systems are outlined. The vectors used for cloning of the protein genes are also described and illustrated. Cloning of genes into the vectors, production and subsequent characterisation of the recombinant protein are also described. These examples are actual biopharmaceutical products currently produced by the biotechnology industry and students are referred to published journal papers throughout the modules.

Module 6  UOC 6
BIOT7080 Principles of Fermentation and Downstream Processing
The units in this module were selected to give the students a good understanding of the fundamental principles associated with biopharmaceuticals manufacture. The module begins by discussing basic fermentation principles for the large-scale culture of bacterial and mammalian cells to produce recombinant protein biopharmaceuticals. This is followed by a thorough study of the main unit operations associated with product recovery, commonly referred to as downstream processes. The principles of Good Manufacturing Practice are discussed in the third unit, which is relevant to all aspects of drug manufacturing, including fermentation and product recovery operations. This unit is thus designed to put regulatory principles into the wider context of biopharmaceutical manufacture. The last unit covers modern methods of product characterisation, which forms a critical component of the regulatory procedure.

Module 7  UOC 6
BIOT7090 Monoclonal Antibody Technology
This module is made up of 4 units covering techniques for the production of monoclonal antibodies and discussing their therapeutic applications. Unit 1 is designed as an introduction to immunology, emphasising the areas of immunology relevant to antibody production. In addition the structure of antibody molecules is studied in detail. Unit 2 describes the processes in the production of hybridomas, the specialised cells which produce monoclonal antibodies. This unit includes information on immunisation protocols, methods of cell fusion and selection, and the production of human monoclonal antibodies by EBV-transformed B cells. Unit 3 is associated with the more recent developments in antibody engineering techniques. The phage display system, and genetic manipulations for the production of humanised antibodies and antibody fragments are described in detail. Unit 4 covers the applications of monoclonal antibodies both for in vivo diagnostics and for therapy. Also, some of the more recent innovations such as the production of recombinant immunotoxins are described.
Module 8  UOC 6
BIOT7120 Regulatory Considerations, Patent Issues and Licensing

The first unit of this module looks at the code of Good Manufacturing Practice (GMP) for the production of recombinant biopharmaceuticals and the establishment of Standard Operating Procedures (SOPs) for a production process. This is especially relevant as many of the M.App.Sc. (Biopharmaceuticals) graduates will take up positions in industry. The international biopharmaceutical industry is a vigorous, rapidly growing industry. Compared to the pharmaceutical industry it is still at a fairly early stage of development and undergoing some interesting changes. The second unit provides an understanding of the nature of the biopharmaceutical industry at this stage of its evolution. It includes the concept of licensing as an important factor in its development as well as an appreciation of the basics of licensing activity. The final unit introduces the student to the concept of intellectual property as it relates to biopharmaceuticals and provides some guidelines on its management. Intellectual property is the collection of statute and common law principles giving ownership of inventions, trade secrets, trade marks, designs and copyright in literary and artistic works to their creators. The creation and protection of intellectual property is the basis on which development and commercialisation of biopharmaceuticals is built and as such is of vital concern to the industry. This unit will provide a detailed consideration of patents and trade secrets and touch briefly on the course of trade mark registrations, industrial design registrations and copyright. Special issues relating to patents and trade secrets in biopharmaceuticals will also be examined.

Department of Food Science and Technology

8033
Master of Science by Coursework

The MSc coursework degree programs provide a comprehensive study of theoretical and applied aspects of the science, technology and engineering of foods. The programs are elective in nature providing an opportunity for graduates to apply their basic skills in areas relevant to those fields of Science and Technology in which the Department has developed special expertise. Intending candidates are invited to contact the Head of Department for advice and recommendation.

Graduate programs are available for Master of Science by Coursework degrees in the following areas:

Food Technology Program 8033.1000
Food Microbiology Program 8033.2000
Food Engineering Program 8033.3000
Food Science and Nutrition Program 8033.4000

Entry qualifications

A four-year Bachelor degree, honours degree or equivalent (e.g. three-year degree plus relevant employment experience) is the minimum requirement for admission to the programs.

Study programs

Students are required to complete a program of study totalling 48 units of credit made up of compulsory courses, a compulsory project and elective courses. Students who have previously studied compulsory courses or their equivalent may be granted an exemption by the Head of Department but the equivalent number of units of credit must be completed by taking other approved courses. The degree will comprise one year of full-time study (normally two sessions of 24 units of credit each), or two years of part-time study (normally four sessions of 12 units of credit each), and would comprise:

1. A major strand of related material comprising approximately 75% of the total program, including a project comprising not less than 12.5% nor more than 25% of the program.

2. A minor strand of broader based material comprising up to 25% of the total program.

3. Undergraduate material may be included in one or both strands but will not be included in units of credit.

4. At least 60% of the non-project component must be taken in the School of Applied Bioscience unless otherwise approved by the Head of Department. The remainder, subject to approval and availability, may be undertaken elsewhere in the University. Full details of all courses are listed under Disciplines of the University in the Calendar.

8033.1000
Food Technology

Master of Science by Coursework in Food Technology
MSc

The MSc by Coursework program in Food Technology is designed for graduates in Science, Applied Science, Biochemistry, Microbiology or Biotechnology or related disciplines, who seek specialised knowledge of the science and technology of foods. The program provides advanced training in various aspects of food science and technology that can be tailored to the background of the candidate.

Compulsory courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>FOOD1577</td>
<td>Food Processing Principles</td>
<td>6</td>
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<tr>
<td>FOOD1587</td>
<td>Food Processing Laboratory</td>
<td>6</td>
</tr>
<tr>
<td>FOOD1597</td>
<td>Food Processing and Packaging</td>
<td>6</td>
</tr>
<tr>
<td>FOOD1677</td>
<td>Product Design and Development</td>
<td>6</td>
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<td>FOOD5117</td>
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Elective courses

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<tr>
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<td>Food Microbiology</td>
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<tr>
<td>FOOD2637</td>
<td>Quality Assurance and Control</td>
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<tr>
<td>FOOD2647</td>
<td>Food Safety</td>
<td>6</td>
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<tr>
<td>or other courses as approved by the Head of Department to a total of 48 units of credit.</td>
<td></td>
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</tr>
</tbody>
</table>
*Units of credit may be concentrated in one session

8033.2000
Food Microbiology

Master of Science by Coursework in Food Microbiology
MSc

The MSc by Coursework program in Food Microbiology is designed for graduates in Food Science, Food Technology, Microbiology, Biochemistry, Biotechnology or related disciplines, who seek specialised knowledge of microorganisms associated with foods. The program provides advanced training in all aspects of food microbiology as well as some fundamental aspects of food science and technology.

A four year Bachelor degree, honours degree or equivalent (e.g. three-year degree plus sufficient relevant industry experience) involving some basic training in microbiology and biochemistry is the minimum requirement for admission to the course.
**Compulsory courses**  

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<th>UOC*</th>
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<td>FOOD2637</td>
<td>Quality Assurance and Control</td>
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<td>Analytical Microbiology</td>
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<td>FOOD2667</td>
<td>Advanced Food Microbiology</td>
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**Elective courses**

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<tr>
<td>FOOD1567</td>
<td>Food Preservation</td>
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</tbody>
</table>

or other courses as approved by the Head of Department to a total of 48 units of credit.

*Units of credit may be concentrated in one session

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**8033.3000 Food Engineering**

**Master of Science by Coursework in Food Engineering MSc**

The MSc by Coursework in Food Engineering is designed for graduates in Engineering or related disciplines, who have an interest in the processing of biological resources for human consumption. The formal components of the course provide professional training at an advanced level in food engineering and food science. The studies in food engineering are designed to strengthen and broaden the engineering background of candidates and emphasise the use of fundamental principles in solving problems associated with food processing. Problem solving skills in engineering are developed further in a research project devoted to an area of food engineering.

**Compulsory courses**  

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<td>Food Processing Laboratory</td>
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<td>FOOD1597</td>
<td>Food Processing and Packaging</td>
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<td>FOOD4617</td>
<td>Advanced Food Engineering</td>
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<td>FOOD5117</td>
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<tr>
<td>FOOD5127</td>
<td>Research Project</td>
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**Elective courses**

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<td>FOOD2647</td>
<td>Food Safety</td>
</tr>
<tr>
<td>FOOD1567</td>
<td>Food Preservation</td>
</tr>
</tbody>
</table>

or other courses as approved by the Head of Department to a total of 48 units of credit.

*Units of credit may be concentrated in one session

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**8033.4000 Food Science and Nutrition**

**Master of Science by Coursework in Food Science and Nutrition MSc**

The MSc by Coursework in Food Science and Nutrition is designed for graduates in Science, Food Science and Food Technology with principal interests in chemistry, biochemistry, physiology and human nutrition. The program is comprised of a core component (including a project) and an elective component that allows for reasonable flexibility and a choice of courses in human nutrition and food science and technology based on the candidate's background.

**Compulsory courses**  

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<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>FOOD1697</td>
<td>Advanced Food Chemistry</td>
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<td>FOOD2647</td>
<td>Food Safety</td>
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<td>FOOD3567</td>
<td>Nutrition</td>
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**Elective courses**

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<td>CMED9500</td>
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<tr>
<td>CMED9516</td>
<td>Introduction to Public Health</td>
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<td>CMED9605</td>
<td>Health in Developing Countries</td>
</tr>
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<td>CMED9610</td>
<td>Food and Nutrition Policy Studies</td>
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</tr>
<tr>
<td>HEAL9371</td>
<td>Research and Evaluation Methods</td>
</tr>
</tbody>
</table>

or other courses as approved by the Head of Department to a total of 48 units of credit.

*Units of credit may be concentrated in one session

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**Centre for Marine and Coastal Studies**

**Presiding Member of Management Committee:**

Professor JH Middleton

**Director:** Professor J Benzie

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**8265 Master of Marine Science Degree Course (MMarSc) UOC 48**

The Master of Marine Science is a course work degree to be completed in one year of full time study. It is intended primarily as an advanced training program for graduates from overseas universities who require specialised training in marine science but do not wish to undertake a research degree.

Graduates, especially from overseas universities, who do not meet the requirements for entry to the MSc (Research) degree, or Australian Science graduates who wish to update their qualifications or obtain a qualification in an area which is different from that of their initial award.

The program is multi disciplinary in approach and includes advanced treatments of all areas of marine science with provision for specialisation. It consists of lectures, tutorials, practical sessions, case history and a supervised project.

The Master of Marine Science degree program is available to graduates in science who have completed a four year degree. Others may be admitted if they have submitted evidence of such academic and/or professional attainment as may be approved by the appropriate faculty on the recommendation of its Higher Degree Committee. Applicants with other qualifications may be admitted after completion of a qualifying program approved by the appropriate Faculty. The program shall be of one year duration (full-time) or two years part-time.
The program is as follows:

MSC15001 Marine Environmental Monitoring and Assessment
MSC15002 Management of Marine Resources
MSC15003 Experimental Design and Analysis
MSC15004 Oceanographic Processes
MSC15005 Topics in Marine Science
MSC15006 Graduate Seminars in Marine Science
MSC15007 Marine Science Project
MSC15008 Special topic*

* If a student has previous relevant experience in one of the courses designated, a special topic may be substituted in consultation with the course director.

School of Psychology

Head of School: Associate Professor SM Andrews
Senior Administrative Officer: Mr T Clulow

The School offers programs leading to the award of the combined degrees of PhD/Master of Psychology (Clinical), PhD/Master of Psychology (Forensic), and PhD/Master of Psychology (Organisational), and the degrees of Master of Psychology (Clinical), Master of Psychology (Forensic) and Master of Psychology (Organisational).

1404
Combined Doctor of Philosophy/Master of Psychology (Clinical) Degree Program
Full-time
Doctor of Philosophy Master of Psychology (Clinical) PhD MPsychol(Clin)

The combined Doctor of Philosophy/Master of Psychology (Clinical) degree program has an emphasis on research training in clinical fields. The combined degree program requires a minimum of four full-time years to complete, and offers advanced training in research skills that are particularly relevant to clinical areas. It is accredited as fifth and sixth years of study leading to full membership of the Australian Psychological Society and to its College of Clinical Psychologists, and registration as a psychologist in New South Wales.

The normal entrance requirements are (1) completion of an honours Class 1 degree in Psychology from the University of New South Wales or a qualification deemed equivalent, and (2) the availability of adequate supervision and research infrastructure. As the number of places is limited, entry into the combined program is competitive. Referees reports will be sought for applicants who are shortlisted and an interview may be required. Students may apply for advanced standing, credit transfer or exemption of coursework components. The minimum period of registration before the award of the degrees is eight sessions.

The combined program consists of two components which are compulsory: (1) a research project (PhD), and (2) a coursework component (MPsychol(Clin)). The research project should be original, and lead to a significant contribution to our knowledge of the nature of psychological processes, particularly in the field of clinical psychology. The program structure requires students to work on their research project during the entire candidature until submission, and the same research-related requirements as for the regular PhD degree (Program code 1400) will apply for the first two years of this program. University regulations and guidelines for good practice in postgraduate research supervision will apply to this program.

Students will concurrently undertake a compulsory coursework component, which is set out below. There are twelve courses and students will normally complete these by taking three courses in each of the four years. In the first year only one course may be taken in Session 1. The coursework program focuses on training in the diagnosis, assessment and treatment of people with a range of psychological problems or disabilities, and the training stems from a strong theoretical and empirical background in experimental clinical psychology.

PSYC7000 Research and Evaluation Methods
PSYC7001 Psychological Assessment 1
PSYC7204 Child Clinical Psychology
PSYC7210 Human Neuropsychology
PSYC7212 Experimental Clinical Psychology 1
PSYC7220 Psychology of Health and Illness
PSYC7221 Experimental Clinical Psychology 2
PSYC7222 Experimental Clinical Psychology 3
PSYC7223 Professional and Ethical Practice (Clinical) 1
PSYC7224 Professional and Ethical Practice (Clinical) 2
PSYC7225 Professional and Ethical Practice (Clinical) 3
PSYC7226 Professional and Ethical Practice (Clinical) 4

POSTGRADUATE STUDY 175
PSYC7403  Experimental Psychology and Law
PSYC7409  Professional and Ethical Practice (Forensic) 1
PSYC7410  Professional and Ethical Practice (Forensic) 2
PSYC7411  Professional and Ethical Practice (Forensic) 3
PSYC7412  Professional and Ethical Practice (Forensic) 4

1406
Combined Doctor of Philosophy/Master of Psychology (Organisational) Degree Program
Full-time
Doctor of Philosophy Master of Psychology (Organisational)
PhD MPsychol(Org)

The combined Doctor of Philosophy/Master of Psychology (Organisational) degree program has an emphasis on research training in organisational fields. The combined degree program requires a minimum of four full-time years to complete, and offers advanced training in research skills that are particularly relevant to organisational areas. It is accredited as fifth and sixth years of study leading to full membership of the Australian Psychological Society and to its College of Organisational Psychologists, and registration as a psychologist in New South Wales.

The normal entrance requirements are (1) completion of an honours Class 1 degree in Psychology from the University of New South Wales or a qualification deemed equivalent, and (2) the availability of adequate supervision and research infrastructure. As the number of places is limited, entry into the combined program is competitive. Referees reports will be sought for applicants who are shortlisted and an interview may be required. Students may apply for advanced standing, credit transfer or exemption of coursework components. The minimum period of registration before the award of the degrees is eight sessions.

The combined program consists of two components which are compulsory: (1) a research project (PhD), and (2) a coursework component (MPS psychol(Org)). The research project should be original, and lead to a significant contribution to our knowledge of the nature of psychological processes, particularly in the field of organisational psychology. The program structure requires students to work on their research project during the entire candidature until submission, and the same research-related requirements as for the regular PhD degree (Program code 1400) will apply for the first two years of this program. University regulations and guidelines for good practice in postgraduate research supervision will apply to this program.

Students will concurrently undertake a compulsory coursework component, which is set out below. There are twelve courses and students will normally complete these by taking three courses in each of the four years. In the first year only one course may be taken in Session 1. The coursework program focuses on theories, practice and research in industrial and organisational psychology and in human factors.

PSYC7000  Research and Evaluation Methods
PSYC7001  Psychological Assessment 1
PSYC7002  Psychological Assessment 2
PSYC7100  Psychology of Organisations 1
PSYC7101  Psychology of Organisations 2
PSYC7102  Psychological Principles of Training
PSYC7115  Vocational Interviewing and Counselling
PSYC7117  Advanced Topics in Organisational Psychology
PSYC7122  Professional and Ethical Practice (Organisational) 1
PSYC7123  Professional and Ethical Practice (Organisational) 2
PSYC7124  Professional and Ethical Practice (Organisational) 3
PSYC7125  Professional and Ethical Practice (Organisational) 4

8256
Master of Psychology (Clinical) Degree Program
Full-time or Part-time
Master of Psychology (Clinical)
MPS psychol(Clin)

This program provides graduate training for psychologists who intend to work as clinicians in hospitals, community health and other settings where they might be engaged in health promotion and the diagnosis, assessment and treatment of people with a range of psychological problems or disabilities. It is accredited as fifth and sixth years of study leading to full membership of the Australian Psychological Society and to its College of Clinical Psychologists, and registration as a psychologist in New South Wales.

The normal entrance requirement is completion of an honours Class 1 or Class 2 degree in Psychology from the University of New South Wales or a qualification considered equivalent.

Selection is based on academic qualifications for the program. As the number of places is limited, entry into the program is competitive. Referees reports will be sought for applicants who are shortlisted and an interview may be required.

Applicants who do not satisfy these entrance requirements may in exceptional circumstances be admitted, depending upon their knowledge, experience, occupation and the nature of their undergraduate training. Students applying under these provisions will usually be required to complete a qualifying program before they are admitted.

The minimum period of registration before the award of the degree is four sessions for full-time students and six sessions for part-time students. Students with advanced standing may have the minimum period reduced by up to one half of the program if a student has completed a PhD in an approved area of Psychology and one session if a student has completed part of the coursework program.

The program consists of three components, all of which are compulsory: 1. coursework (weekly lectures and seminars with associated written forms of assessment), 2. professional practice (completion of a minimum of 1,000 hours of supervised clinical practice within the School Clinic and in field clinical settings, weekly Clinical meetings and Skills Training Workshops), and 3. a a research thesis. The three components total 96 units of credit (48 in each stage).

It should be noted that the program extends over two calendar years and not just four academic sessions with vacation breaks.

**Stage 1**
PSYC7000  Research and Evaluation Methods
PSYC7001  Psychological Assessment 1
PSYC7204  Child Clinical Psychology
PSYC7210  Human Neuropsychology
PSYC7212  Experimental Clinical Psychology 1
PSYC7221  Experimental Clinical Psychology 2
PSYC7222  Professional and Ethical Practice (Clinical) 1
PSYC7223  Professional and Ethical Practice (Clinical) 2

**Stage 2**
PSYC7220  Psychology of Health and Illness
PSYC7222  Experimental Clinical Psychology 3
PSYC7225  Professional and Ethical Practice (Clinical) 3
PSYC7226  Professional and Ethical Practice (Clinical) 4
PSYC7227  Research Thesis (Clinical) 1*
PSYC7228  Research Thesis (Clinical) 2*

*PSYC7227 and PSYC7228 together contribute 25 per cent to the overall grading for the degree.

**Notes:** Part-time students normally are expected to take half the full-time program in any one session.
Master of Psychology (Forensic) Degree Program
Full-time or Part-time
Master of Psychology (Forensic) MPsy chol(For)

This program provides graduate training for psychologists who
intend to pursue employment within a setting associated with the
legal system – police, courts, prisons, probation and parole,
guardianship, child protection, statutory review tribunals (e.g.,
mental health), worker compensation, licensing of special programs
and community services, public policy and legislative review.
Graduates will be trained in the assessment of people with a range
of psychological disorders, disabilities and/or special needs, be
equipped with advanced interviewing and counselling skills for
dealing with such clients, and familiar with statutory and common
law provisions and procedures and government policies and
programs relevant to different forensic settings. It is accredited as
fifth and sixth years of study leading to full membership of the
Australian Psychological Society and to its College of Forensic
Psychologists, and registration as a psychologist in New South
Wales.

The normal entrance requirement is completion of an honours
Class 1 or Class 2 degree in Psychology from the University of
New South Wales or a qualification considered equivalent.

Selection is based on academic qualifications for the program. As
the number of places is limited, entry into the program is competitive.
Referees reports will be sought for applicants who are shortlisted
and an interview may be required.

Applicants who do not satisfy these entrance requirements may in
exceptional circumstances be admitted, depending upon their
knowledge, experience, occupation and the nature of their
undergraduate training. Students applying under these provisions
will usually be required to complete a qualifying program before
they are admitted.

The minimum period of registration before the award of the degree
is four sessions for full-time students and six sessions for part-
time students. Students with advanced standing may have the
minimum period reduced by up to one half of the program, i.e.
reduction of one session if a student has completed a PhD in an
approved area of Psychology and one session if a student has
completed part of the coursework program.

The program consists of three components, all of which are
compulsory: 1. coursework (weekly lectures and seminars with
associated written forms of assessment), 2. professional practice
(completion of a minimum of 1000 hours of supervised
practice in forensic settings, weekly Forensic Psychology meetings, and Skills
Training Workshops) and 3. a research thesis. The three
components total 96 units of credit (48 in each stage).

Stage 1
LAW9800 Law for Psychologists 1
LAW9810 Law for Psychologists 2
PSYC7000 Research and Evaluation Methods
PSYC7001 Psychological Assessment 1
PSYC7400 Interventions in Forensic Psychology 1
PSYC7401 Interventions in Forensic Psychology 2
PSYC7409 Professional and Ethical Practice (Forensic) 1
PSYC7410 Professional and Ethical Practice (Forensic) 2

Stage 2
PSYC7402 Applications of Forensic Psychology
PSYC7403 Experimental Psychology and Law
PSYC7411 Professional and Ethical Practice (Forensic) 3
PSYC7412 Professional and Ethical Practice (Forensic) 4
PSYC7413 Research Thesis (Forensic) 1*
PSYC7414 Research Thesis (Forensic) 2*

*PSYC7413 and PSYC7414 together contribute 25 per cent to the overall
grading for the degree.

Notes: Part-time students normally are expected to take half the
full-time program in any one session.

Master of Psychology Degree Program
Full-time or Part-time
Master of Psychology (Organisational) MPsy chol(Org)

This program provides graduate training for psychologists who
intend to work in Industry, commerce, consulting practice, service
organisations, trade unions, or the public service. The program
focuses on the theories, practice, and research in industrial and
organisational psychology and in human factors. It is accredited as
fifth and sixth years of study leading to full membership of the
Australian Psychological Society and to its College of Organisational
Psychologists, and registration as a psychologist in New South
Wales.

The normal entrance requirement is completion of an honours
Class 1 or Class 2 degree in Psychology from the University of
New South Wales or a qualification considered equivalent.

Selection is based on academic qualifications for the program. As
the number of places is limited, entry into the program is competitive.
Referees reports will be sought for applicants who are shortlisted
and an interview may be required.

Applicants who do not satisfy these entrance requirements may in
exceptional circumstances be admitted, depending upon their
knowledge, experience, occupation and the nature of their
undergraduate training. Students applying under these provisions
will usually be required to complete a qualifying program before
they are admitted.

The minimum period of registration before the award of the degree
is four sessions for full-time students and six sessions for part-
time students. Students with advanced standing may have the
minimum period reduced by up to one half of the program, i.e.
reduction of one session if a student has completed a PhD in an
approved area of Psychology and one session if a student has
completed part of the coursework program.

The program consists of three components, all of which are
compulsory: 1. coursework (weekly lectures and seminars with
associated written forms of assessment), 2. professional practice
(completion of a minimum of 1,000 hours of supervised
organisational practice in organisational field settings, weekly
Organisational meetings and Career Development Workshops), and
3. a research thesis. The three components total 96 units of credit (48 in each stage).

Stage 1
PSYC7000 Research and Evaluation Methods
PSYC7001 Psychological Assessment 1
PSYC7100 Psychology of Organisations 1
PSYC7101 Psychology of Organisations 2
PSYC7102 Psychological Principles of Training
PSYC7115 Vocational Interviewing and Counselling
PSYC7122 Professional and Ethical Practice
( Organisational) 1
PSYC7122 Professional and Ethical Practice
( Organisational) 2

Stage 2
PSYC7002 Psychological Assessment 2
PSYC7117 Advanced Topics in Organisational Psychology
PSYC7124 Professional and Ethical Practice
( Organisational) 3
PSYC7125 Professional and Ethical Practice
( Organisational) 4
PSYC7126 Research Thesis (Organisational) 1*
PSYC7127 Research Thesis (Organisational) 2*

*PSYC7126 and PSYC7127 together contribute 25 per cent to the overall
grading for the degree.

Notes: Part-time students normally are expected to take half the
full-time program in any one session.
Institute of Environmental Studies

For Graduate Certificate, Graduate Diploma and Masters degree programs in Environmental Management, see p195.
The Schools of the Faculty of Science and Technology offer research programs leading to the award of the degrees of Doctor of Philosophy, Master of Science and (through the Schools of Materials Science and Engineering, and Safety Science) Master of Engineering.

Formal coursework programs leading to graduate awards of Graduate Certificate (GradCert) and Graduate Diploma (GradDip) and the degree of Master of Science and Technology (MScTech), as well as several specialist Masters degree programs, are also offered as follows:

- School of Chemistry: GradCert in Chemical Analysis and Laboratory Management, GradDip in Chemical Analysis and Laboratory Management, MScTech in Chemical Analysis and Laboratory Management
- School of Geography: GradDip in Remote Sensing, MScTech in Remote Sensing, MScTech in Geographic Information Systems
- School of Geology: MScTech in Geological Data Processing, MScTech in Groundwater Studies
- School of Materials Science and Engineering: MScTech in Corrosion Engineering, MScTech in Engineering Materials
- School of Mathematics: GradDip in Computation, GradDip by Research in Physical Oceanography, GradDip in Statistics, MScTech in Mathematics, MScTech in Computation, Master of Statistics
- School of Optometry: GradCert in Optometry, GradDip in Optometry, Master of Optometry
- School of Physics: GradDip by Research in Physics, GradDip in Physics Research Techniques
- Department of Aviation: GradCert in Aviation Management; GradDip in Aviation Management, GradDip in Flying, MScTech in Aviation
- In addition the Faculty of Science and Technology has two faculty-wide programs that are administered by the School of Safety Science. These are: GradDip in Environmental Science, and MScTech in Environmental Science.

Graduates are advised to consult the Head of School or Department before making formal application for registration in any of the above programs.

For admission to all degree programs of Master or MScTech (except Master of Statistics), candidates must have completed one of the following:

1. An approved degree of Bachelor with Honours.
2. An approved three-year program leading to the award of the degree of Bachelor plus an approved qualifying program. Suitable professional and/or research experience may be accepted in lieu of the qualifying program.
3. An approved four-year program leading to the award of the degree of Bachelor.

Applicants for registration for the degree of Master of Statistics shall have been admitted to the degree of Bachelor with major studies in the field of statistics in the University of New South Wales or other approved university.

For admission to Graduate Diploma and Graduate Certificate programs, candidates must have completed one of the following:

1. An approved degree of Bachelor.
2. Evidence of other academic and professional attainments as approved by the Research Committee of the Faculty.

The conditions governing these higher degrees are set out later in this handbook.

In many cases the Faculty offers articulated programs whereby a student who performs satisfactorily in a Graduate Certificate or Graduate Diploma may be permitted to upgrade to a MScTech or Masters program in the same discipline. For further details students should consult their Director of Graduate Studies or Postgraduate Studies Coordinator.

Many of the graduate programs offered by the Faculty of Science and Technology include core and/or elective courses from other Faculties at UNSW. There are also multi-faculty programs in which the Faculty of Science and Technology is a major participant. These include the Master of Environmental Management (described below), Master of Technology Management and Master of Business and Technology (see Faculty of Engineering Handbook).
Graduate Certificates

School of Chemistry

Head of School: Professor R Lamb
Director of Graduate Studies: Prof DB Hibbert (contactable via Chemistry Academic Office)

7345.3002
Graduate Certificate in Chemical Analysis and Laboratory Management

This program offers training in advanced chemical analysis techniques and associated management issues. It allows students to select from a series of courses covering all aspects of modern chemical analysis, safety and occupational health issues, and people management. The program will normally be completed within one year on a part time basis. It is particularly suited to new graduates or laboratory chemists and managers who wish to upgrade their qualifications in and knowledge of chemical analysis and related topics. This is the first stage in a fully articulated program of Graduate Certificate, Graduate Diploma and Master of Science and Technology in Chemical Analysis and Laboratory Management.

Entry Qualifications

BSc degree with a major in Chemistry or equivalent qualification

Course Requirements

Candidates are required to complete a total of 18 UOC selected from the following offerings with at least 6 UOC being selected from the analysis courses and at least 6 UOC from the management courses:

### Analysis Courses

<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Name</th>
<th>UOC</th>
<th>HPW Sess.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM7112</td>
<td>Analysis of Biological and Organic Materials</td>
<td>6</td>
<td>3 2</td>
</tr>
<tr>
<td>CHEM7113</td>
<td>Elemental Analysis</td>
<td>6</td>
<td>3 1</td>
</tr>
<tr>
<td>CHEM7114</td>
<td>Chromatography</td>
<td>6</td>
<td>3 2</td>
</tr>
<tr>
<td>CHEM7115</td>
<td>Treatment of Analytical Data</td>
<td>6</td>
<td>3 1</td>
</tr>
<tr>
<td>CHEM7116</td>
<td>Chromatography/Mass Spectrometry</td>
<td>6</td>
<td>3 1</td>
</tr>
<tr>
<td>CHEM7117</td>
<td>Molecular Analysis</td>
<td>6</td>
<td>3 2</td>
</tr>
<tr>
<td>CHEM7118</td>
<td>Surface Analysis of Materials</td>
<td>6</td>
<td>3 1</td>
</tr>
</tbody>
</table>

### Management Courses

<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Name</th>
<th>UOC</th>
<th>HPW Sess.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM7111</td>
<td>Quality Assurance and Laboratory Practice</td>
<td>6</td>
<td>3 2</td>
</tr>
<tr>
<td>SESC9020</td>
<td>Occupational Health and Safety Law 1</td>
<td>3</td>
<td>2 2</td>
</tr>
<tr>
<td>SESC9030</td>
<td>Occupational Health and Safety Law 2</td>
<td>3</td>
<td>2 2</td>
</tr>
<tr>
<td>SESC9820</td>
<td>Chemical Safety and Toxicology Materials</td>
<td>3</td>
<td>3 1</td>
</tr>
<tr>
<td>SESC9850</td>
<td>Management of Dangerous Materials</td>
<td>3</td>
<td>3 1 or 2</td>
</tr>
<tr>
<td>IROB5700</td>
<td>Management, Work and Organisation</td>
<td>6</td>
<td>3 1 or 2</td>
</tr>
</tbody>
</table>

School of Optometry

Head of School: Associate Professor S Dain
Postgraduate Studies Coordinator: Dr C Suttle

7345.7500
Graduate Certificate in Optometry

The Graduate Certificate in Optometry program consists of a selection of courses from the electives listed below. Up to 6 UOC may be taken from elsewhere in the University, subject to the approval of the Head of School. From 2001, a new system is introduced in which courses are available in smaller units than those offered in previous years, with the intention of creating a flexible program which is more accessible to practising optometrists. Courses comprise 3, 6 or 12 UOC, which count towards the total of 18 UOC required for this graduate award. A number of the courses have pre-requisites, co-requisites or exclusions, as indicated in the course descriptions. The program may be completed in one session of full-time study, or in two or more sessions of part-time study. The program provides advanced training in clinical and theoretical aspects of optometry, with opportunities for specialisation in fields such as contact lenses, occupational optometry and behavioural optometry.

On successful completion of the GradCert, the student may decide to continue with postgraduate study at a higher level. Some or all of the UOC achieved in the GradCert program may be counted towards a GradDip or MOptom degree. The student may use all 18 UOC in this way if the GradCert is not awarded, or 12 UOC if the degree is awarded. The introduction of the GradCert and GradDip programs in optometry is intended to allow the postgraduate student to take progressive steps towards a higher degree at a level of their choice and to appeal to practising optometrists with time constraints.

Not all courses will be offered in 2001 and those offered will only run if there is sufficient demand. For information on which courses are being offered refer to www.optom.unsw.edu.au.

### Course ID | Course Name                  | UOC |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OPTM7102</td>
<td>Visual Function</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7103</td>
<td>Behavioural Optometry 1</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7203</td>
<td>Behavioural Optometry 2</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7704</td>
<td>Advanced Contact Lens Studies 1</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7204</td>
<td>Advanced Contact Lens Studies 2</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7105</td>
<td>Advanced Contact Lens Practice*</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7106</td>
<td>Occupational Optometry 1</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7206</td>
<td>Occupational Optometry 2*</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7108</td>
<td>Small Research Project</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7110</td>
<td>Public Health Optometry*</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7111</td>
<td>Pathophysiology of Ocular Disease 1</td>
<td>3</td>
</tr>
<tr>
<td>OPTM7112</td>
<td>Pathophysiology of Ocular Disease 2</td>
<td>3</td>
</tr>
<tr>
<td>OPTM7211</td>
<td>Pathophysiology of Ocular Disease 3</td>
<td>3</td>
</tr>
<tr>
<td>OPTM7212</td>
<td>Pathophysiology of Ocular Disease 4</td>
<td>3</td>
</tr>
<tr>
<td>OPTM7113</td>
<td>Human Visual Development</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7115</td>
<td>Visual Neuroscience*</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7301</td>
<td>Advanced Clinical Optometry</td>
<td>12</td>
</tr>
<tr>
<td>OPTM7307</td>
<td>Clinical Imaging</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7309</td>
<td>Ocular Therapy</td>
<td>12</td>
</tr>
<tr>
<td>OPTM7320</td>
<td>Rehabilitation of the Partially Sighted</td>
<td>6</td>
</tr>
</tbody>
</table>

* Not offered in 2001
School of Safety Science

Head of School: Associate Professor C Winder
Postgraduate Studies Coordinator: Dr K Kothiyal

7345.8510 Graduate Certificate in Industrial Safety

Students enrolled in the Graduate Certificate in Industrial Safety must complete a program totalling 18 UOC. The program is normally completed by six months of full-time study or one year of part-time study. This program may be taken in on campus or off campus learning mode, however the range of electives available in off campus mode is more restricted than available in on campus mode. It is the first stage in an articulated sequence of Graduate Certificate and Master of Science and Technology programs in industrial safety.

Students undertake 9 UOC of compulsory core courses, and 9 UOC of electives.

<table>
<thead>
<tr>
<th>Core courses</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SESC9100 Physical Hazards</td>
<td>3</td>
</tr>
<tr>
<td>SESC9200 Hazard and Risk Assessment</td>
<td>3</td>
</tr>
<tr>
<td>SESC9300 Effective Behaviour in Organisations</td>
<td>3</td>
</tr>
</tbody>
</table>

Exemption but not Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses. Where necessary, other approved postgraduate courses may be substituted.

**Elective courses**

Students are required to complete elective courses to make up 18 UOC. Elective courses may be taken from any school at UNSW or from other Universities subject to the approval of the program co-ordinator and the Head of School of Safety Science (but at least 50% of the program must be completed at UNSW). The range of electives available at UNSW in off-campus mode is more restricted than for Internal students.

<table>
<thead>
<tr>
<th>Elective Courses - 12 UOC</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SESC9010 Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>SESC9100 Physical Hazards</td>
<td>3</td>
</tr>
<tr>
<td>SESC9200 Hazard and Risk Assessment</td>
<td>3</td>
</tr>
<tr>
<td>SESC9300 Effective Behaviour in Organisations</td>
<td>3</td>
</tr>
<tr>
<td>SESC9411 Principles of Ergonomics</td>
<td>6</td>
</tr>
</tbody>
</table>

Exemption but not necessarily Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses.

7345.8520 Graduate Certificate in Risk Management

The Graduate Certificate in Risk Management provides students with the opportunity to study risk management related courses to meet specific vocational needs or individual interests. The program requires 24 UOC and is normally completed in one year of part-time study. It is the first stage in an articulated sequence of Graduate Certificate, Graduate Diploma and Master of Science and Technology programs in risk management.

**Fundamental Knowledge Courses - 6 UOC**

<table>
<thead>
<tr>
<th>Fundamental Knowledge Courses - 6 UOC</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SESC6010 Descriptive Statistics</td>
<td>3</td>
</tr>
<tr>
<td>and SESC9010 Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>or ECON5203 Statistics for Business</td>
<td>6</td>
</tr>
</tbody>
</table>

**Core course - 6 UOC**

<table>
<thead>
<tr>
<th>Core course - 6 UOC</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SESC9211 Risk Management</td>
<td>6</td>
</tr>
</tbody>
</table>

**Elective Courses - 12 UOC**

12 UOC of other courses from the core or electives listed for the MScTech in Risk Management. Students may be proscribed from taking courses that would duplicate prior studies.

7345.8530 Graduate Certificate in Occupational Health and Safety Management

The Graduate Certificate in Occupational Health and Safety Management is a graduate program for students with an appropriate level of knowledge of occupational health and safety. The program requires 24 UOC and is normally completed in six months of full-time (or equivalent part-time) study. It is the first stage in an articulated sequence which can lead into Graduate Diploma and Masters programs in the School of Safety Science.

<table>
<thead>
<tr>
<th>Core courses - 12 UOC</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SESC9200 Hazard and Risk Assessment</td>
<td>3</td>
</tr>
<tr>
<td>SESC9300 Effective Behaviour in Organisations</td>
<td>3</td>
</tr>
<tr>
<td>SESC9341 OHS Management Systems Auditing</td>
<td>6</td>
</tr>
</tbody>
</table>

Exemption but not necessarily Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses.

**Elective courses - 12 UOC**

Elective courses may be chosen from other programs offered by the School of Safety with the approval of the program authority.

7345.8540 Graduate Certificate in Ergonomics

The Graduate Certificate in Ergonomics is intended to provide professionals from other disciplines with an awareness of the principles of ergonomics sufficient for them to be able to identify ergonomics problems in human-technology-environment systems and to be able to recommend a user-centred, systems approach to their assessment and control. It is the first stage in a fully articulated sequence of Graduate Certificate, Graduate Diploma and Master of Science & Technology programs in ergonomics.

The program requires 24 UOC and is normally completed in six months of full-time (or equivalent part-time) study, and is available in on campus or off campus learning mode.

**Fundamental Knowledge courses - 6 UOC**

<table>
<thead>
<tr>
<th>Fundamental Knowledge courses - 6 UOC</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANAT6151 Introductory Functional Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>SESC6110 Physical Principles of Safety</td>
<td>3</td>
</tr>
</tbody>
</table>

Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses.

**Core courses - 18 UOC**

<table>
<thead>
<tr>
<th>Core courses - 18 UOC</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SESC9010 Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>SESC9100 Physical Hazards</td>
<td>3</td>
</tr>
<tr>
<td>SESC9200 Hazard and Risk Assessment</td>
<td>3</td>
</tr>
<tr>
<td>SESC9300 Effective Behaviour in Organisations</td>
<td>3</td>
</tr>
<tr>
<td>SESC9411 Principles of Ergonomics</td>
<td>6</td>
</tr>
</tbody>
</table>

Exemption but not necessarily Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses. Where necessary other approved postgraduate courses may be substituted.

1 Students with no statistics in their background will have to do SESC6010 - Descriptive Statistics (3 UOC) in addition to the above load.
7345.8360
Graduate Certificate in Safety Science

The Graduate Certificate in Safety Science is a graduate program for students working in health and safety intending to become safety practitioners. It is the first stage in a fully articulated sequence of Graduate Certificate, Graduate Diploma and Master of Science and Technology programs in occupational health and safety or Master of Safety Science. The program requires 24 UOC and is normally completed in six months of full-time (or equivalent part-time) study and is available in on campus or off campus learning modes.

Fundamental knowledge courses
Up to a maximum of 6 UOC, depending on student background.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANAT6151</td>
<td>Functional Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>SESC6010</td>
<td>Descriptive Statistics</td>
<td>3</td>
</tr>
<tr>
<td>SESC6110</td>
<td>Physical Principles of Safety 1</td>
<td>3</td>
</tr>
<tr>
<td>SESC6800</td>
<td>Fundamentals of Toxicology</td>
<td>3</td>
</tr>
</tbody>
</table>

Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses.

Core courses
A minimum of 12 UOC, depending on student background and the need for fundamental knowledge courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SESC6120</td>
<td>Physical Principles of Safety 2</td>
<td>3</td>
</tr>
<tr>
<td>SESC9100</td>
<td>Physical Hazards</td>
<td>3</td>
</tr>
<tr>
<td>SESC9200</td>
<td>Hazard and Risk Assessment</td>
<td>3</td>
</tr>
<tr>
<td>SESC9300</td>
<td>Effective Behaviour in Organisations</td>
<td>3</td>
</tr>
<tr>
<td>SESC9400</td>
<td>Ergonomics 1</td>
<td>3</td>
</tr>
<tr>
<td>SESC9500</td>
<td>Occupational Health and Safety Law 1</td>
<td>3</td>
</tr>
<tr>
<td>SESC9600</td>
<td>Introduction to Occupational Health</td>
<td>3</td>
</tr>
<tr>
<td>SESC9810</td>
<td>Introduction to Toxicology</td>
<td>3</td>
</tr>
</tbody>
</table>

Exemption but not necessarily Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses. Where necessary, other approved postgraduate courses may be substituted.

Elective Courses
Students can also select up to 6 UOC of other courses offered by the School of Safety Science with the approval of the program authority.

1 Requires Fundamental Knowledge course or equivalent knowledge as assumed knowledge.

7345.9001
Graduate Certificate in Aviation Management

The Graduate Certificate in Aviation Management is designed for students who do not have tertiary qualifications but do have at least four years of relevant professional experience or two years experience and two years of advanced training (e.g. holder of an ATPL). Three courses will be completed to a total of 18 UOC. A credit average must be achieved to continue on to the Graduate Diploma level. The Graduate Certificate is offered through distance education and designed with industry input for professionals and managers working in aviation related environments. The program can be part-time or full-time and can be completed over 2 to 3 sessions. The program is further described at http://www.aviation.unsw.edu.au.

Available Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIA5001</td>
<td>Law and Regulations in Aviation</td>
<td>6</td>
</tr>
<tr>
<td>AVIA5007</td>
<td>Airport Operations Management</td>
<td>6</td>
</tr>
<tr>
<td>AVIA5009</td>
<td>Airline Corporate Management</td>
<td>6</td>
</tr>
<tr>
<td>AVIA5311</td>
<td>Inflight Services Management</td>
<td>3</td>
</tr>
<tr>
<td>AVIA5003</td>
<td>Aviation and Security</td>
<td>6</td>
</tr>
<tr>
<td>AVIA5004</td>
<td>Aviation Safety and Accident Prevention</td>
<td>6</td>
</tr>
<tr>
<td>AVIA5005</td>
<td>Airline Operational Management</td>
<td>6</td>
</tr>
<tr>
<td>AVIA5006</td>
<td>Airport Planning</td>
<td>6</td>
</tr>
<tr>
<td>AVIA5018</td>
<td>Aviation Human Factors</td>
<td>6</td>
</tr>
</tbody>
</table>

Session X1 Summer Session

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIA5003</td>
<td>Aviation and Security</td>
<td>6</td>
</tr>
<tr>
<td>AVIA5018</td>
<td>Aviation Human Factors</td>
<td>6</td>
</tr>
<tr>
<td>AVIA5311</td>
<td>Inflight Services Management</td>
<td>3</td>
</tr>
</tbody>
</table>
Graduate Diplomas

Faculty of Science and Technology
Administered by the School of Safety Science
Program Coordinator: Dr B Markovic

5522.8770
Graduate Diploma in Environmental Science

The Graduate Diploma in Environmental Science program is a specialist graduate program of one year full time (or equivalent) study chosen from faculty-wide environmental courses. Specialisation is achieved by undertaking study in one or two environmental streams of the program, although some flexibility in courses may be permitted at the discretion of the program authority. The programs are designed to study the nature of environmental problems and the methodology of their evaluation and management. Emphasis is placed on the development of relevant skills in environmental analysis and planning. The programs are primarily intended for students with a background in science or engineering, however, students with other degrees who have undertaken undergraduate level environmental courses and/or have professional experience in an environmental area may apply for entry.

Program requirements
Candidates are required to complete a program of study totalling 36 UOC where 6 UOC are a core course and the remaining 30 UOC include courses from the Master of Science and Technology in Environmental Science elective streams.

Compulsory Course
SESC9751 Introduction to Environmental Science (6 UOC)

Elective Courses
Students are required to select up to 30 UOC of electives from specialist streams of courses presented for the MScTech in Environmental Science program.

School of Chemistry
Head of School: Professor R Lamb
Director of Graduate Studies: Prof DB Hibbert (contactable via Chemistry Academic Office)

5522.3002
Graduate Diploma in Chemical Analysis and Laboratory Management

This program offers training in advanced chemical analysis techniques and associated management issues. It allows students to select from a series of modules covering all aspects of modern chemical analysis, safety and occupational health issues, and people management. The program will normally be completed within one year on a full time basis, or over two years part time. It is particularly suited to new graduates or laboratory chemists and managers who wish to upgrade their qualifications in and knowledge of chemical analysis and related topics. This is the second stage in a fully articulated program of Graduate Certificate, Graduate Diploma and Master of Science and Technology in Chemical Analysis and Laboratory Management.

Entry Qualifications
BSc degree with a major in Chemistry or equivalent qualification

Course Requirements
Candidates are required to complete a total of 36 UOC selected from the following offerings with at least 6 UOC being selected from the analysis courses and at least 6 UOC from the management courses:

Analysis Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>UOC</th>
<th>HPW</th>
<th>Sess.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM7112</td>
<td>Analysis of Biological and Organic Materials</td>
<td>6</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>CHEM7113</td>
<td>Elemental Analysis</td>
<td>6</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>CHEM7114</td>
<td>Chromatography</td>
<td>6</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>CHEM7115</td>
<td>Treatment of Analytical Data</td>
<td>6</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>CHEM7116</td>
<td>Chromatography/Mass Spectrometry</td>
<td>6</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>CHEM7117</td>
<td>Molecular Analysis</td>
<td>6</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>CHEM7118</td>
<td>Surface Analysis of Materials</td>
<td>6</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Management Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>UOC</th>
<th>HPW</th>
<th>Sess.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM7111</td>
<td>Quality Assurance and Laboratory Practice</td>
<td>6</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>SESC9020</td>
<td>Occupational Health and Safety Law 1</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SESC9030</td>
<td>Occupational Health and Safety Law 2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SESC9820</td>
<td>Chemical Safety and Toxicology</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>SESC9850</td>
<td>Management of Dangerous Materials</td>
<td>3</td>
<td>3</td>
<td>1 or 2</td>
</tr>
<tr>
<td>IROB5700</td>
<td>Management, Work and Organisation</td>
<td>6</td>
<td>3</td>
<td>1 or 2</td>
</tr>
</tbody>
</table>

School of Geography
Head of School: Professor I Burnley
Postgraduate Studies Coordinator: Dr J Sammut

5522.4003
Graduate Diploma in Remote Sensing

The graduate diploma program in Remote Sensing is offered in both the Faculty of Science and Technology and the Faculty of Engineering. Entry into either faculty depends on the background of the applicant and the orientation of the proposed program.

Entry qualifications
Three-year degree from an approved university or qualifications deemed appropriate by the Faculty Postgraduate Coursework Committee.

Program requirements
Candidates are required to complete a program totalling 36 UOC made up of 4 compulsory courses (24 UOC) and 2 elective courses (12 UOC). Compulsory courses not offered in a particular year may be substituted by an approved equivalent course.

The program will normally comprise one year of full-time study or two years part-time study.
### School of Mathematics

**Head of School:** Professor Gl Gaudry  
**Director of Graduate Studies:** Dr P Blennerhassett

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#### 5522.2001  
**Graduate Diploma in Computation**

**Staff Contact:** Dr P Blennerhassett  
The graduate diploma will provide thorough training in modern computational techniques in the areas of computational fluid mechanics and environmental modelling.

Admission to the Graduate Diploma program requires the student to have at least a pass degree in Science, Engineering or other mathematically based discipline. The program can be completed in one year of full-time study, or over two years for part-time students.

Students are required to complete two compulsory courses and four elective courses, chosen from the list below, to give a total of 36 UOC. All the courses below are worth 6 UOC each. With the approval of the Director of Graduate Studies, a student may take graduate level courses, up to 12 UOC, which are not on the list below. The student’s proposed program requires the approval of the Director of Graduate Studies.

<table>
<thead>
<tr>
<th>Compulsory Courses</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATHS305 Computational Mathematics</td>
<td>6</td>
</tr>
<tr>
<td>MATHS315 High Performance Numerical Computing</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elective Courses</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATHS295 Methods for Computational Fluid Dynamics</td>
<td>6</td>
</tr>
<tr>
<td>MATHS275 Applied Data Analysis</td>
<td>6</td>
</tr>
<tr>
<td>MATHS285 Ocean Modelling</td>
<td>6</td>
</tr>
<tr>
<td>MATHS295 Atmospheric Modelling</td>
<td>6</td>
</tr>
<tr>
<td>MATHS395 Computational Mesh Generation and Data Visualization</td>
<td>6</td>
</tr>
<tr>
<td>MATHS5225 Advanced Fluid Dynamics</td>
<td>6</td>
</tr>
<tr>
<td>MATHS52020 Computational Fluid Dynamics</td>
<td>6</td>
</tr>
<tr>
<td>MATHS5730 Multiphase Flow</td>
<td>6</td>
</tr>
<tr>
<td>MATHS5750 Industrial Applications of Heat Transfer</td>
<td>6</td>
</tr>
</tbody>
</table>

A student may upgrade to the MScTech program in Computation, following the Faculty articulation rules.

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#### 5522.6002  
**Graduate Diploma in Statistics**

**Staff Contact:** Professor W Dunsmuir  
This graduate diploma is intended for Statistics graduates wishing to further develop their knowledge and skills in Statistical science. In particular, it provides an opportunity for advanced training in topics relevant to Medical Statistics and Financial Mathematics.

Intending students are referred to the conditions for the award of graduate diplomas set out elsewhere in the handbook. Basic entry qualifications for this program are a degree in Statistics or Econometrics or a degree in Commerce with a major in Business Statistics or an approved equivalent. The program consists of eight courses from the MStats program (excluding MATH5925 and MATH5935). At most two courses may be selected from those offered by other Departments or Schools within the University.

The program may be taken over one year full-time or on a part-time basis. The total number of UOC is 48, six for each course.

<table>
<thead>
<tr>
<th>Compulsory Courses</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCEA5115 Experimental Project</td>
<td>24</td>
</tr>
<tr>
<td>OCEA5125 Geophysical Fluid Dynamics</td>
<td>6</td>
</tr>
<tr>
<td>OCEA5145 Applied Time Series Analysis</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elective Courses</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG9021 Image Analysis in Remote Sensing</td>
<td>6</td>
</tr>
<tr>
<td>GMAT9606 Microwave Remote Sensing</td>
<td>6</td>
</tr>
<tr>
<td>CVEN9935 Coastal Engineering</td>
<td>6</td>
</tr>
<tr>
<td>CVEN9936 Coastal Engineering</td>
<td>6</td>
</tr>
<tr>
<td>CVEN9963 Estuarine Hydraulics</td>
<td>6</td>
</tr>
<tr>
<td>GEOG9012 Remote Sensing Applications</td>
<td>6</td>
</tr>
<tr>
<td>OCEA5155 Theoretical Project</td>
<td>12</td>
</tr>
<tr>
<td>MATHS285 Ocean Modelling</td>
<td>6</td>
</tr>
</tbody>
</table>

or appropriate courses within mathematics, physics or engineering chosen on the basis of individual background.

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#### 5528.6003  
**Graduate Diploma by Research in Physical Oceanography**

**Staff Contact:** Dr John Middleton  
This graduate diploma is intended to train graduates in the physical sciences or engineering in the basic techniques of physical oceanography particularly in preparation for further study at postgraduate level. The program may be taken over one year full-time or two years part-time.

It is intended to develop student skills in planning and execution of oceanographic experiments, in the theory of oceanographic fluid mechanics, the applications and limitations of oceanographic equipment and of commonly used data analysis techniques.

Recent rapid developments in marine science coupled with the relative scarcity of persons able to take up support positions demonstrate the need for skilled persons who will be able to assist oceanographic research with minimum training. This program is aimed at providing such skilled graduates.

Intending students are referred to the conditions for the award of graduate diplomas set out elsewhere in this handbook. Basic entry qualifications for this program are a degree in Engineering or in Science with major studies in mathematics or physics.

The program, requiring 48 UOC for completion, consists of a major project OCEA5115 worth 24 UOC of the total accreditation for the program, the remaining 24 being comprised as indicated below.

<table>
<thead>
<tr>
<th>Compulsory Courses</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCEA5115 Experimental Project</td>
<td>24</td>
</tr>
<tr>
<td>OCEA5125 Geophysical Fluid Dynamics</td>
<td>6</td>
</tr>
<tr>
<td>OCEA5145 Applied Time Series Analysis</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elective Courses</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG9021 Image Analysis in Remote Sensing</td>
<td>6</td>
</tr>
<tr>
<td>GMAT9606 Microwave Remote Sensing</td>
<td>6</td>
</tr>
<tr>
<td>CVEN9935 Coastal Engineering</td>
<td>6</td>
</tr>
<tr>
<td>CVEN9936 Coastal Engineering</td>
<td>6</td>
</tr>
<tr>
<td>CVEN9963 Estuarine Hydraulics</td>
<td>6</td>
</tr>
<tr>
<td>GEOG9012 Remote Sensing Applications</td>
<td>6</td>
</tr>
<tr>
<td>OCEA5155 Theoretical Project</td>
<td>12</td>
</tr>
<tr>
<td>MATHS285 Ocean Modelling</td>
<td>6</td>
</tr>
</tbody>
</table>
School of Optometry

Head of School: Associate Professor S Dain
Postgraduate Studies Coordinator: Dr C Suttle

The Graduate Diploma in Optometry program consists of a selection of courses from the electives listed below. Up to 12 UOC may be taken from elsewhere in the University, subject to the approval of the Head of School. Courses comprise 3, 6 or 12 UOC, which count towards the total of 36 UOC required for this graduate award. A number of the courses have pre-requisites, co-requisites or exclusions, as indicated in the course descriptions. The program may be completed in one year of full-time study, or in two or more years of part-time study. The program provides advanced training in clinical and theoretical aspects of optometry, with opportunities for specialisation in fields such as contact lenses, occupational optometry and behavioural optometry.

On successful completion of the GradDip, the student may decide to continue with postgraduate study at the MOptom level. The student may choose not to accept the GradDip award and instead use all 36 UOC towards an MOptom degree. Alternatively, if the GradDip is awarded, 30 UOC may be used in this way. Thus the postgraduate student may progress towards a higher degree at a level of their choice. This system is intended to make postgraduate study accessible to optometrists with time constraints.

Not all courses will be offered in 2001 and those offered will only run if there is sufficient demand. For information on which courses are being offered refer to www.optom.unsw.edu.au.

<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Name</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPTM7102</td>
<td>Visual Function*</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7103</td>
<td>Behavioural Optometry 1</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7203</td>
<td>Behavioural Optometry 2</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7104</td>
<td>Advanced Contact Lens Studies 1</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7204</td>
<td>Advanced Contact Lens Studies 2</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7105</td>
<td>Advanced Contact Lens Practice*</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7106</td>
<td>Occupational Optometry 1</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7206</td>
<td>Occupational Optometry 2*</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7108</td>
<td>Small Research Project</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7110</td>
<td>Public Health Optometry*</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7111</td>
<td>Pathophysiology of Ocular Disease 1</td>
<td>3</td>
</tr>
<tr>
<td>OPTM7112</td>
<td>Pathophysiology of Ocular Disease 2</td>
<td>3</td>
</tr>
<tr>
<td>OPTM7211</td>
<td>Pathophysiology of Ocular Disease 3</td>
<td>3</td>
</tr>
<tr>
<td>OPTM7212</td>
<td>Pathophysiology of Ocular Disease 4</td>
<td>3</td>
</tr>
<tr>
<td>OPTM7113</td>
<td>Human Visual Development</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7115</td>
<td>Visual Neuroscience*</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7301</td>
<td>Advanced Clinical Optometry</td>
<td>12</td>
</tr>
<tr>
<td>OPTM7307</td>
<td>Clinical Imaging</td>
<td>6</td>
</tr>
<tr>
<td>OPTM7308</td>
<td>Research Project</td>
<td>12</td>
</tr>
<tr>
<td>OPTM7309</td>
<td>Ocular Therapy</td>
<td>12</td>
</tr>
<tr>
<td>OPTM7320</td>
<td>Rehabilitation of the Partially Sighted</td>
<td>6</td>
</tr>
</tbody>
</table>

* Not offered in 2001

School of Physics

Head of School: Professor J Storey
Postgraduate Studies Coordinator: Associate Professor RJ Stening

The Graduate Diploma in Physics offers an advanced training program for graduates from overseas universities who wish to obtain specialised training in physics. The program is also available to graduates from Australian universities who have not done an Honours program and who wish to pursue postgraduate study in physics. Students qualified to enrol in the Honours program would be expected to do so rather than to enrol in this GradDip program. For suitably qualified students the expectation is that the program would allow entrance to a higher degree research program provided suitable supervision and facilities were available.

The GradDip by Research in Physics will be offered with program work and research project requirements similar to Physics Level IV, with substitutions if required to be approved by the School Postgraduate Coordinator. The program involves two sessions full-time study or four sessions part-time study comprising a total of 24 UOC, plus a single research project over the period of study or two different research projects, one in each half of the period of study (total 24 UOC). All students normally take programs in quantum mechanics, statistical mechanics and solid state physics. Other lecture programs and the research projects are offered in general areas of physics including astrophysics, biophysics, condensed matter physics and theoretical physics. More details may be found at www.phys.unsw.edu.au

5528.7003
Graduate Diploma by Research in Physics

Staff Contact: Associate Professor RJ Stening

The Graduate Diploma in Physics Research Techniques offers an advanced training program for graduates who wish to update their knowledge of physics and/or satisfy requirements for admission to a research degree in physics. The program involves two sessions full-time study or four sessions part-time study and consists of courses at Level III/IV totalling 30 UOC and a research project (18 UOC). The choice of courses is very flexible. Most courses selected should be from the School of Physics but courses from other Schools may be included. Students wishing to proceed to a research degree should consult with their potential supervisor on their choice of courses.

Details of physics courses available may be found at www.phys.unsw.edu.au

5522.7002
Graduate Diploma in Physics Research Techniques

Staff Contact: Associate Professor RJ Stening

The Graduate Diploma in Physics Research Techniques offers an advanced training program for graduates who wish to update their knowledge of physics and/or satisfy requirements for admission to a research degree in physics. The program involves two sessions full-time study or four sessions part-time study and consists of courses at Level III/IV totalling 30 UOC and a research project (18 UOC). The choice of courses is very flexible. Most courses selected should be from the School of Physics but courses from other Schools may be included. Students wishing to proceed to a research degree should consult with their potential supervisor on their choice of courses.

Details of physics courses available may be found at www.phys.unsw.edu.au
School of Safety Science

Head of School: Associate Professor C Winder
Postgraduate Studies Coordinator: Dr K Kothiyal

5522.8765
Graduate Diploma in Occupational Medicine

The Graduate Diploma in Occupational Medicine is a graduate program for medical graduates intending to become occupational physicians. The program requires 36 UOC and is normally completed in one year of full-time (or equivalent part-time) study, and is available in on campus or off campus learning mode. It is the second stage in an articulated sequence of Graduate Certificate in Occupational Rehabilitation, and Graduate Diploma and Master of Science and Technology programs in Occupational Medicine. This program is suitable for occupational physician trainees of the Australasian Faculty of Occupational Medicine of the Royal Australasian College of Physicians.

Core courses – 15 UOC
- ESC90631 Occupational Medicine 6
- ESC90640 Occupational Epidemiology 3
- ESC90651 Occupational Rehabilitation 6

Exemption but not necessarily Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses. Where necessary, other approved postgraduate courses may be substituted.

Elective courses – 21 UOC
Elective courses may be chosen from other programs offered by the School of Safety with the approval of the program authority.

5522.8720
Graduate Diploma in Risk Management

The Graduate Diploma in Risk Management provides a general introduction to risk management as it is applied across all disciplines. Courses for the program are offered by the Faculties of Science and Technology, Engineering, and Commerce. The program requires 48 UOC and is normally completed in one year of full-time (or equivalent part-time) study. Students may be exempted from the fundamental knowledge courses where these topics have been studied during previous studies.

Fundamental knowledge courses – 12 UOC
- ECON5103 Business Economics 6
- ECON5203 Statistics for Business 6
- ESC6010 Descriptive Statistics 3
- ESC6010 Research Methods 3

Core courses – 24 UOC
- ESC9351 Risk Management 6
- ESC9352 Risk Analysis 6
- FIN55513 Security Valuation and Portfolio Selection 6
- FIN55531 Risk and Insurance 6

Elective courses – 12 UOC
Students may select courses from any Faculty providing they can demonstrate to the program authority the relevance of the course to risk management. A list of possible electives is given with the description of the Master of Science and Technology in Risk Management.

5522.8740
Graduate Diploma in Ergonomics

The Graduate Diploma in Ergonomics is intended for students wishing to become professional ergonomists. It provides students with the competencies to identify ergonomics hazards in human-technology-environment systems, to assess their associated risks and to use a user-centred, systems approach to develop controls for the hazards. It is the second stage in a fully articulated sequence of Graduate Certificate, Graduate Diploma and Master of Science and Technology programs in ergonomics. The program requires 48 UOC and is normally completed in one year of full-time (or equivalent part-time) study.

Fundamental knowledge courses – 6 UOC
- ANAT6151 Functional Anatomy 3
- SESC6110 Physical Principles of Safety 1 3

Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses.

Core courses – 42 UOC
- ESC9010 Research Methods 3
- ESC9100 Physical Hazards 3
- ESC9200 Hazard and Risk Assessment 3
- ESC9300 Effective Behaviour in Organisations 3
- ESC9411 Principles of Ergonomics 6
- ESC9421 Applied Ergonomics 6
- ESC9431 Physical Ergonomics 6
- ESC9441 Ergonomics & New Technology 6
- ESC9541 Assessment of the Workplace Environment 6

Exemption but not necessarily Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses. Where necessary other approved courses may be substituted.

1 Students with no statistics in their background will have to do SESC6010 - Descriptive Statistics (3 UOC) in addition to the above load.

5522.8760
Graduate Diploma in Safety Science

The Graduate Diploma in Safety Science is a graduate program of study for students with a health and safety background intending to become safety professionals. It is the second stage in a fully articulated sequence of Graduate Certificate, Graduate Diploma and Master of Science and Technology programs in safety science or occupational health and safety. The program requires 48 UOC, is normally completed in one year of full-time (or equivalent part-time) study and is available in on campus and off campus study modes.

Fundamental knowledge courses – 12 UOC
- ANAT6151 Functional Anatomy 3
- SESC6010 Descriptive Statistics 3
- SESC6110 Physical Principles of Safety 1 3
- SESC6800 Fundamentals of Toxicology 3

Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses.

Core courses – 27 UOC
- SESC6120 Physical Principles of Safety 2 3
- SESC6301 Research Methods 3
- SESC9100 Physical Hazards 3
- SESC9200 Hazard and Risk Assessment 3
- SESC9300 Effective Behaviour in Organisations 3
- SESC9400 Ergonomics 3
- SESC9500 Occupational Health and Safety Law 1 3
- SESC9600 Introduction to Occupational Health 3
- SESC9810 Introduction to Toxicology 3

Exemption but not necessarily Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses. Where necessary other, approved postgraduate courses may be substituted.

1 Requires fundamental knowledge course or equivalent knowledge as assumed knowledge.
Elective courses – 9 UOC
Electives may be chosen from core courses offered in the MScTech program in Occupational Health and Safety or other courses offered by the School of Safety Science with the approval of the program authority. The range of electives available in off-campus mode is more restricted than for internal students.

Department of Aviation

Head of School: Professor J Middleton
Postgraduate Coursework Coordinator: Mr R Robertson

5522.9001
Graduate Diploma in Aviation Management

The Graduate Diploma in Aviation Management is designed for students who have an approved diploma from a recognised tertiary institution as well as two years of relevant professional experience. Six courses will be completed to a total of 36 UOC. A credit average must be achieved to continue on to the Masters level. The Graduate Diploma is offered through distance education and designed with industry input for professionals and managers working in aviation related environments. The course can be part-time or full-time and can be completed over 2 to 6 sessions. The course is further described at www.aviation.unsw.edu.au.

Available Courses

<table>
<thead>
<tr>
<th>Session</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIA5001</td>
<td>Law and Regulations in Aviation 6</td>
</tr>
<tr>
<td>AVIA5007</td>
<td>Airport Operations Management 6</td>
</tr>
<tr>
<td>AVIA5009</td>
<td>Airline Corporate Management 6</td>
</tr>
<tr>
<td>AVIA5311</td>
<td>Inflight Services Management 3</td>
</tr>
</tbody>
</table>

Masters Degrees

Faculty of Science and Technology

Administered by the School of Safety Science
Program Coordinator: Dr B Markovic

8720.8970
Master of Science and Technology in Environmental Science

The MScTech in Environmental Science program is a specialist graduate program of one year full time (or equivalent part-time) study chosen from faculty-wide environmental courses. Specialisation is achieved by undertaking study in one or two environmental streams of the program, although some flexibility in courses may be permitted at the discretion of the program authority. The programs are designed to study the nature of environmental problems and the methodology of their evaluation and management. Emphasis is placed on the development of relevant skills in environmental analysis and planning. The programs are primarily intended for students with a background in science or engineering, however, students with other degrees who have undertaken undergraduate level environmental courses and/or have professional experience in an environmental area may apply for entry.

Program requirements

Candidates are required to complete a program of study totalling 48 UOC where 6 UOC are a core course and the remaining 42 UOC may optionally include a project of 6 or 12 UOC. Where students select the option of a 12 UOC project they must also complete SESC9900 Project Methods unless they can demonstrate prior knowledge.

Compulsory Course

<table>
<thead>
<tr>
<th>Science of the Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS3014 Ecological Studies in Arid Land Management 6</td>
</tr>
<tr>
<td>BIOT7081 Environmental Biotechnology 6</td>
</tr>
<tr>
<td>GEOG9022 Vegetation Management 6</td>
</tr>
<tr>
<td>GEOL9053 Hydrogeochemistry 3</td>
</tr>
</tbody>
</table>
### Course Requirements

Candidates are required to complete a total of 48 UOC selected from the following offerings with at least 6 UOC being selected from the management courses and at least 6 UOC from the analysis courses:

#### Analysis Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>UOC HPW Sess.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM7112</td>
<td>Analysis of Biological and Organic Materials</td>
<td>6 3 2</td>
</tr>
<tr>
<td>CHEM7113</td>
<td>Elemental Analysis</td>
<td>6 3 1</td>
</tr>
<tr>
<td>CHEM7114</td>
<td>Chromatography</td>
<td>6 3 2</td>
</tr>
<tr>
<td>CHEM7115</td>
<td>Treatment of Analytical Data</td>
<td>6 3 1</td>
</tr>
<tr>
<td>CHEM7116</td>
<td>Chromatography/Mass Spectrometry</td>
<td>6 3 1</td>
</tr>
<tr>
<td>CHEM7117</td>
<td>Molecular Analysis</td>
<td>6 3 2</td>
</tr>
<tr>
<td>CHEM7118</td>
<td>Surface Analysis of Materials</td>
<td>6 3 1</td>
</tr>
</tbody>
</table>

#### Management Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>UOC HPW Sess.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM7111</td>
<td>Quality Assurance and Laboratory Practice</td>
<td>6 3 2</td>
</tr>
<tr>
<td>SES6020</td>
<td>Occupational Health and Safety Law 1</td>
<td>3 2 2</td>
</tr>
<tr>
<td>SES9030</td>
<td>Occupational Health and Safety Law 2</td>
<td>3 2 2</td>
</tr>
<tr>
<td>SES6020</td>
<td>Chemical Safety and Toxicology</td>
<td>3 3 1</td>
</tr>
<tr>
<td>SES9850</td>
<td>Management of Dangerous Materials</td>
<td>3 3 1 or 2</td>
</tr>
<tr>
<td>IROB5700</td>
<td>Management, Work and Organisation</td>
<td>6 3 1 or 2</td>
</tr>
</tbody>
</table>

### School of Chemistry

**Head of School:** Professor R Lamb  
**Director of Graduate Studies:** Prof DB Hibbert (contactable via Chemistry Academic Office)

### 8720.3002

**Master of Science and Technology in Chemical Analysis and Laboratory Management**

This program offers training in advanced chemical analysis techniques and associated management issues. It allows students to select from a series of modules covering all aspects of modern chemical analysis, safety and occupational health issues, and people management. The program will normally be completed within one year on a full time basis, or over two years part time. It is particularly suited to new graduates or laboratory chemists and managers who wish to upgrade their qualifications in and knowledge of chemical analysis and related topics.

#### Entry Qualifications

A four-year BSc degree with a major in Chemistry or equivalent qualification or a three-year BSc degree with at least one year of relevant experience in a laboratory based career or a three-year BSc degree and completion of the UOC required by the Graduate Diploma in Chemical Analysis and Laboratory Management with at least a credit (65%) average mark and no failures.

#### Course Requirements

Students may undertake a project on a topic relevant to the program of 6 or 12 UOC. Students may enrol in SES6020 or SES6012 or may enrol directly in the appropriate project courses offered by any School of the Faculty of Science and Technology.
School of Geography

Head of School: Professor I Burnley
Director of Graduate Studies: Dr J Sammut

8720.4001
Master of Science and Technology in Geographic Information Systems

Entry qualifications
Four-year Honours degree of appropriate standard in Geography, Geology, Geomatic Engineering, or a relevant environmental science.

Program requirements
Candidates are required to complete a program totalling 48 UOC made up of 3 compulsory courses, 3 elective courses and a project. The degree will normally comprise one year of full-time study or two years of part-time study.

Compulsory Courses – 30 UOC

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG9016</td>
<td>Principles of Geographic Information Systems</td>
<td>6</td>
</tr>
<tr>
<td>GEOG9017</td>
<td>Advanced Geographical Information Systems</td>
<td>6</td>
</tr>
<tr>
<td>GEOG9530</td>
<td>Project</td>
<td>12</td>
</tr>
</tbody>
</table>

AND EITHER

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG9020</td>
<td>Applications and Management of GIS</td>
<td>6</td>
</tr>
<tr>
<td>GMA9604</td>
<td>Land Information Systems</td>
<td>6</td>
</tr>
</tbody>
</table>

Elective courses – 18 UOC

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP9311</td>
<td>Introduction to Data Base Systems</td>
<td>6</td>
</tr>
<tr>
<td>GEOG9012</td>
<td>Remote Sensing Applications</td>
<td>6</td>
</tr>
<tr>
<td>GEOG9014</td>
<td>Computer Mapping and Data Display</td>
<td>6</td>
</tr>
<tr>
<td>GEOG9018</td>
<td>Transportation Applications of Geographical Information Systems</td>
<td>6</td>
</tr>
<tr>
<td>GEOG9019</td>
<td>Special Topic</td>
<td>6</td>
</tr>
<tr>
<td>GEOG9021</td>
<td>Image Analysis in Remote Sensing</td>
<td>6</td>
</tr>
<tr>
<td>GMA9532</td>
<td>Data Acquisition and Terrain Modelling</td>
<td>6</td>
</tr>
<tr>
<td>GMA9600</td>
<td>Principles of Remote Sensing</td>
<td>6</td>
</tr>
<tr>
<td>GEOL0360</td>
<td>Remote Sensing Applications in Geoscience</td>
<td>6</td>
</tr>
</tbody>
</table>

Note: Other courses may be substituted for those listed with permission of the Director of Graduate Studies to suit the specific needs of individual students.

*Students wishing to include both of these courses should take one as an elective.

8720.4003
Master of Science and Technology in Remote Sensing

Masters degree programs in Remote Sensing are offered in both the Faculty of Science and Technology and the Faculty of Engineering. Entry into either Faculty depends on the background of the applicant and the orientation of the proposed program.

Entry qualifications
Four-year degree of appropriate standard in engineering, geography, geology, geomatic engineering, or in a relevant environmental science.

Program requirements
Candidates are required to complete a program totalling 48 UOC, made up of core and elective courses, and may include a project. The degree may be taken internally on a full-time (normally 4 sessions) or a part-time (normally 4 sessions) basis. The Program Director is Dr J Jankowski.

Core courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO9011</td>
<td>Groundwater Environments</td>
<td>3</td>
</tr>
<tr>
<td>GEO9053</td>
<td>Hydrogeochmistry</td>
<td>3</td>
</tr>
<tr>
<td>GEO9054</td>
<td>Analysis and Interpretation of Hydrochemical Data</td>
<td>3</td>
</tr>
<tr>
<td>GEO9055</td>
<td>Hydrogeochromatic Modelling</td>
<td>3</td>
</tr>
<tr>
<td>GEO9112</td>
<td>Investigation and Management of Salinity</td>
<td>3</td>
</tr>
<tr>
<td>GEO9252</td>
<td>Groundwater Quality and Protection</td>
<td>3</td>
</tr>
<tr>
<td>CVEN7807</td>
<td>Groundwater Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>CVEN7808</td>
<td>Investigation of Groundwater Resources</td>
<td>3</td>
</tr>
<tr>
<td>CVEN7809</td>
<td>Geophysical Techniques in Groundwater Studies</td>
<td>3</td>
</tr>
<tr>
<td>CVEN7823</td>
<td>Applied Groundwater Modelling</td>
<td>3</td>
</tr>
</tbody>
</table>
School of Materials Science and Engineering

Head of School: Professor DJ Young
Postgraduate Coordinator: Professor CC Sorrell

Programs involving formal coursework and a research component are available leading to the award of Master of Science and Technology in Engineering Materials (Program 8702.5001) or in Corrosion Engineering (Program 8702.5002), although the latter is not offered in 2001.

8720.5001 Master of Science and Technology in Engineering Materials

The MScTech program in Engineering Materials provides a comprehensive yet flexible study of the full range of materials, including ceramics, composites, metals, and polymers. It is designed for graduates wishing to acquire expertise in the design, selection, use, and performance of modern materials. The program is designed for several types of postgraduate students:

1) Graduates with Science, Engineering, Technology, or related backgrounds who seek to update their expertise
2) Graduates with Materials Science or Materials Engineering backgrounds who seek to extend specific aspects of their expertise
3) Graduates with Materials Science or Materials Engineering backgrounds who seek to update their expertise

The program consists of one year of full-time study (two sessions) or two years of part-time study (four sessions). This comprises 36 UOC of formal coursework plus 12 UOC of experimental andlor design project work (MATS6695 Materials Project). Initial enrolment in Session 1 is preferred, although entrance in Session 2 is permitted. All formal coursework is taught during work hours, although the project work may be undertaken with considerable flexibility in terms of time and location. Enrolment in formal coursework offered by Schools other than the School of Materials Science and Engineering is permitted, subject to the approval of the Head of School.

Course Selection

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATS6605</td>
<td>Professional Communication and Presentation</td>
<td>6</td>
</tr>
<tr>
<td>MATS6615</td>
<td>Materials Design</td>
<td>6</td>
</tr>
<tr>
<td>MATS6625</td>
<td>Materials Processing</td>
<td>6</td>
</tr>
<tr>
<td>MATS6635</td>
<td>Materials Properties and Behaviour</td>
<td>6</td>
</tr>
<tr>
<td>MATS6645</td>
<td>Materials Characterisation</td>
<td>6</td>
</tr>
<tr>
<td>MATS6655</td>
<td>Advanced Materials Characterisation</td>
<td>6</td>
</tr>
<tr>
<td>MATS6665</td>
<td>Materials Applications and Performance</td>
<td>6</td>
</tr>
<tr>
<td>MATS6675</td>
<td>Materials Modelling</td>
<td>6</td>
</tr>
<tr>
<td>MATS6685</td>
<td>Management</td>
<td>6</td>
</tr>
<tr>
<td>MATS6695</td>
<td>Materials Project</td>
<td>12</td>
</tr>
</tbody>
</table>

Students must enrol in MATS6605 Professional Communication and Presentation (6 UOC), MATS6695 Materials Project (12 UOC), plus a balance of 30 UOC of formal coursework, consisting of five of the above remaining eight courses (and selected offerings from the School of Materials Science and Engineering and/or other Schools if desired).
School of Mathematics

Head of School: Professor GI Gaudry
Director of Graduate Studies: Dr PJ Blennerhassett

The School offers graduate programs leading to the award of the degrees of Master of Science and Technology in Mathematics and Master of Statistics (MStats). The School also offers an articulated program in computational mathematics, consisting of the Graduate Diploma in Computation and the Master of Science and Technology in Computation.

8720.2001
Master of Science and Technology in Computation

The MScTech degree program in Computation will provide thorough training in modern computational techniques in the areas of computational fluid mechanics and environmental modelling through course work and a focussed project in your major field. Admission to the program requires the equivalent of a 4-year degree in Science, Engineering or other mathematically based discipline at a satisfactory level. Candidates must have adequate higher-level language (preferably Fortran) programming skills. The program can be completed in one year of full-time study or two years of part-time study.

Students are required to complete a small research project, worth 12 UOC, two compulsory courses and four elective courses, chosen from the list below. A total of 48 UOC are required for the completion of the degree. All the courses below are worth 6 UOC each. With the approval of the Director of Graduate Studies, a student may take graduate level courses, up to 12 UOC, which are not on the list below. The project will be supervised by academic members of the Faculty of Science and Technology or academic members of the Faculty of Engineering. The student's proposed program requires the approval of the Director of Graduate Studies.

Compulsory Courses
MATH5305 Computational Techniques
MATH5315 High Performance Numerical Computing

Elective Courses
Not all courses are necessarily offered every year
MATH5115 Analysis of the Finite Element Method
MATH5245 Methods for Computational Fluid Dynamics
MATH5275 Applied Data Analysis
MATH5285 Ocean Modelling
MATH5295 Atmospheric Modelling
MATH5325 Computational Mesh Generation and Data Visualization
MECH9610 Advanced Fluid Dynamics
MECH9620 Computational Fluid Dynamics
MECH9730 Multiphase Flow
MECH9750 Industrial Applications of Heat Transfer

8720.6001
Master of Science and Technology in Mathematics

The Master of Science and Technology in Mathematics degree program is intended for suitably qualified graduates in applied mathematics, pure mathematics or statistics, but others may be admitted after completing a qualifying program. The program may be completed in one year of full-time or two years of part-time study. The program may be taken as a preliminary step towards enrolment in the PhD program in mathematics. It also provides advanced training for persons specialising in the teaching of mathematics in tertiary institutions. In addition an appropriate program may provide training for those employed or seeking employment in the area of industrial mathematics.

8750
Master of Statistics
MStats

The Master of Statistics Program covers a wide range of statistical theory and practice and provides advanced training for practising statisticians. The program may be completed in three sessions of full-time or three years of part-time study, and it is available to graduates with a pass degree in statistics or an honours degree in a related field (commonly mathematics) with supporting studies in statistics. Honours graduates in statistics may be exempted from up to 30 UOC.

The academic requirement for the degree is 72 UOC. Unless otherwise noted, all courses listed below are 6 UOC each, while courses offered by other schools may vary in value. A project, worth 12 UOC, is a compulsory component of the program.

Each candidate's program of study must be approved by the Head of the School.

Compulsory Courses (offered every year)
MATH5835 Stochastic Processes
MATH5905 Statistical Inference
MATH5925 Project (12 UOC)
MATH5935 Statistical Consultancy

Elective Courses (offered every second year)
MATH5806 Applied Regression Analysis
MATH5815 Experimental Design 1
MATH5816 Mathematics of Security Markets 2
(Preqquisite: MATH5965)
MATH5826 Statistical Methods in Epidemiology
MATH5845 Time Series
MATH5855 Multivariate Analysis 1
MATH5865 Multivariate Analysis 2
MATH5875 Sample Survey Design
MATH5895 Nonparametric Methods
MATH5915 Medical Statistics
MATH5945 Categorical Data Analysis
MATH5955 Statistical Quality Control
MATH5965 Mathematics of Security Markets 1

Up to 24 UOC may be taken in graduate courses offered by other Departments or Schools within the University, subject to the approval of the Head of School.
School of Safety Science

Head of School: Associate Professor C Winder
Postgraduate Studies Coordinator: Dr K Kothiyal

8720.8910
Master of Science and Technology in Industrial Safety

This program is designed as a specialist program that builds on a previous four year bachelor’s degree in engineering or a related discipline. It is suitable for people who manage safety as part of their line management role and wish to extend their learning in their base discipline in addition to gaining a grounding in safety. It is also suitable for people looking for a specialist program building on a first degree in safety. In addition to the core there is a wide choice of elective courses to suit students from widely varying backgrounds. No fundamental knowledge courses are required for this program as the specialist area chosen must be based on the discipline of the student's first degree. The program requires 48 UOC and is normally completed in one year of full-time (or equivalent part-time) study, and is available in on campus or off campus learning mode.

Core courses - 12 UOC
SESC9010 Research Methods 3
SESC9100 Physical Hazards 3
SESC9200 Hazard and Risk Assessment 3
SESC9300 Effective Behaviour in Organisations 3

Exemption but not necessarily Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses. Where necessary, other approved postgraduate courses may be substituted.

Project courses – 15 UOC
SESC9900 Project Methods 3
SESC9912 Project 12

Elective courses – 21 UOC
Elective courses may be taken from any School in the Faculties of Science and Technology or Engineering, subject to the agreement of the Head of relevant School and the Head of the School of Safety Science. This enables students to extend their specialist knowledge in their own discipline, to undertake additional general management courses or to focus on courses relating to safety science.

8720.8920
Master of Science and Technology in Risk Management

The Master of Science and Technology in Risk Management provides a general introduction to risk management principles as they are applied across all disciplines, then allows students to specialise in one or more areas. Courses for the program are offered by the Faculties of Science and Technology, Engineering, Commerce and the AGSM. Students may select either a financial or a technical focus.

The program requires 72 UOC and is normally completed in one and a half years of full-time (or equivalent part-time) study. Students may receive advanced standing in the fundamental knowledge courses on the basis of prior studies providing they can demonstrate the prerequisite knowledge for the core courses. Advanced standing is not given for core and elective courses.

Fundamental Knowledge Courses – 18 UOC
ECON5103 Business Economics 6
SESC9300 Effective Behaviour in Organisations 3
SESC9020 Occupational Health and Safety Law 1 3
and/or
ECON5203 Statistics for Business 6
SESC6010 Descriptive Statistics 3
and
SESC9010 Research Methods 3

Core Courses – 30 UOC
SESC9211 Risk Management 6
SESC9231 Risk Analysis 6
FINS5513 Security Valuation and Portfolio Selection 6
FINS5531 Risk and Insurance 6
SESC9906 Special Report 6

Elective Courses – 24 UOC
Students may select courses from any faculty providing they can demonstrate to the program authority the relevance of the course to risk management. A list of possible electives is shown below.
OHS Risk Courses
SESC9030 Occupational Health and Safety Law 2 3
SESC9100 Physical Hazards 3
SESC9200 Hazard and Risk Assessment 3
SESC9221 Major Hazards Management 6
SESC9411 Principles of Ergonomics 6
SESC9810 Introduction to Toxicology 3
SESC9820 Chemical Safety and Toxicology 3
SESC9850 Management of Dangerous Materials 3

Financial Risk Courses
ACCT5901 Accounting a User Perspective 6
ACCT5909 Auditing 6
ACCT5996 Management Accounting Control Systems 6
ECON124 Public Enterprise Economics and Cost Benefit Analysis 8
FIN5511 Corporate Finance 6
FIN5512 Financial Markets and Institutions 6
FIN5513 Security Valuation and Portfolio Selection 6
FIN5517 Applied Portfolio Management and Modelling 6
FIN5535 Derivatives and Risk Management Techniques 6
FIN5551 International Insurance Management 6
FIN5552 Property Risk Management 6
FIN5553 Liability Risk Management 6

Environmental Risk Courses
CVEN9888 Environmental Management 6
CVEN9889 Environmental Economics and Law 6
GEOG9015 Population Health and the Environment 6
MATH5285 Ocean Modelling 6
MATH5295 Atmospheric Modelling 6
SESC9261 Introduction to Environmental Risk Assessment 6
SESC9271 Advanced Topics in Environmental Risk Management 3
SESC9741 Environmental Management Systems 6
SESC9751 Introduction to Environmental Science 6

Technical Risk Management Courses
BLDG5314 Project Quality Management 4
BLDG6253 Construction Planning and Control 4
BLDG6255 Contracts Management and Law 4
BLDG7406 Real Estate Investment Analysis 4
COMP9514 Advanced Decision Theory 6
CVEN9701 Engineering Economics and Financial Management 6
CVEN9702 Project Planning and Control 6
CVEN9703 Quality and Quality Systems 6
CVEN9707 Contracts Management 6
CVEN9711 Management of Professional Services 6
CVEN9714 Resource Management 6
CVEN9720 Strategic Management in Engineering 6
CVEN9881 Problem solving and decision making 6
CVEN9881 Hazardous Waste Management 6
SESC9320 Effective Management 3
SESC9331 Technology Management 6
SESC9341 Occupational Health and Safety Management Systems Auditing 6

Courses from the AGSM may also be taken by agreement.

The Master of Science and Technology in Ergonomics is a graduate program intended for students wishing to become professional ergonomists. It provides students with the competencies to identify ergonomics hazards in human-technology-environment systems, to assess their associated risks and to use a user-centred, systems approach to develop controls for the hazards. In addition it provides students with the competencies to plan and conduct an ergonomics research or design project in a scientific manner and to disseminate the results. It is the third stage in a fully articulated sequence of Graduate Certificate, Graduate Diploma and Master of Science and Technology programs in ergonomics. The program requires 72 UOC and is normally completed in one and a half years of full-time (or equivalent part-time) study.

Fundamental knowledge courses1 - 6 UOC
ANAT6151 Introductory Functional Anatomy 3
SESC6110 Physical Principles of Safety 1 3

Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses.

Core courses - 57 UOC
SESC9010 Research Methods 3
SESC9100 Physical Hazards 3
SESC9200 Hazard and Risk Assessment 3
SESC9300 Effective Behaviour in Organisations 3
SESC9411 Principles of Ergonomics 6
SESC9421 Applied Ergonomics 6
SESC9431 Physical Ergonomics 6
SESC9441 Ergonomics & New Technology 6
SESC9541 Assessment of the Workplace Environment 6
SESC9900 Project Methods 3
SESC9912 Project 12

Exemption but not necessarily Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses. Where necessary other approved postgraduate courses may be substituted.

Electives - 9 UOC
Elective courses may be selected from those offered by the School of Safety Science in its other programs, e.g. Master of Safety Science, and Master of Science and Technology in OHS or Industrial Safety. Students may take courses available from other Schools within the University subject to the approval of both the relevant program coordinator and the Ergonomics Program Coordinator.

8720.8960 Master of Science and Technology in Occupational Health and Safety

The Master of Science and Technology in Occupational Health and Safety is a graduate program of study for students with a health and safety background intending to become occupational health and safety professionals. It is the third stage in a fully articulated sequence of Graduate Certificate, Graduate Diploma and Master of Science and Technology programs in occupational health and safety or Master of Safety Science. The program requires 72 UOC and is normally completed in one and a half years of full-time (or equivalent part-time) study, and is available on campus or off campus learning modes.

Fundamental knowledge courses - 12 UOC
ANAT6151 Functional Anatomy 3
SESC6010 Descriptive Statistics 3
SESC6110 Physical Principles of Safety 1 3
SESC6800 Fundamentals of Toxicology 3

Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses.

Core courses - 27 UOC
SESC6120 Physical Principles of Safety 2 3
SESC9010 Research Methods1 3
SESC9100 Physical Hazards1 3
SESC9200 Hazard and Risk Assessment 3
SESC9300 Effective Behaviour in Organisations 3
SESC9440 Ergonomics1 3
SESC9541 Assessment of the Workplace Environment 6
SESC9900 Project Methods 3
SESC9912 Project 12

Exemption but not necessarily Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses. Where necessary other, approved postgraduate courses may be substituted.

8720.8940 Master of Science and Technology in Ergonomics

The Master of Science and Technology in Ergonomics is a graduate program intended for students wishing to become professional ergonomists. It provides students with the competencies to identify ergonomics hazards in human-technology-environment systems, to assess their associated risks and to use a user-centred, systems approach to develop controls for the hazards. In addition it provides students with the competencies to plan and conduct an ergonomics research or design project in a scientific manner and to disseminate the results. It is the third stage in a fully articulated sequence of Graduate Certificate, Graduate Diploma and Master of Science and Technology programs in ergonomics. The program requires 72 UOC and is normally completed in one and a half years of full-time (or equivalent part-time) study.

Fundamental knowledge courses1 - 6 UOC
ANAT6151 Introductory Functional Anatomy 3
SESC6110 Physical Principles of Safety 1 3

Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses.

Core courses - 27 UOC
SESC6120 Physical Principles of Safety 2 3
SESC9010 Research Methods1 3
SESC9100 Physical Hazards1 3
SESC9200 Hazard and Risk Assessment 3
SESC9300 Effective Behaviour in Organisations 3
SESC9440 Ergonomics1 3
SESC9541 Assessment of the Workplace Environment 6
SESC9900 Project Methods 3
SESC9912 Project 12

Exemption but not necessarily Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses. Where necessary other, approved postgraduate courses may be substituted.
Project courses – 15 UOC UOC
SESC9900 Project Methods1 3
SESC9912 Project# 12

Elective courses – 18 UOC
Elective courses may be taken from other courses offered by the School of Safety Science with the approval of the program authority. The range of electives available in off-campus mode is more restricted than for internal students.

1 Requires fundamental knowledge course or equivalent knowledge as assumed knowledge.

8720.8965 Master of Science and Technology in Occupational Medicine
The Master of Science and Technology in Occupational Medicine is a graduate program for medical graduates intending to become occupational physicians. It is the third stage in an articulated sequence of Graduate Certificate in Occupational Rehabilitation, and Graduate Diploma and Master of Science and Technology programs in occupational medicine. The Master of Science and Technology in Occupational Medicine is available in on campus and off campus study modes. This program is suitable for occupational physician trainees of the Australasian Faculty of Occupational Medicine of the Royal Australasian College of Physicians. The program requires 48 UOC and is normally completed in one year of full-time (or equivalent part-time) study, and is available in on campus or off campus learning mode.

Core courses –15 UOC UOC
SESC9631 Occupational Medicine 6
SESC9640 Occupational Epidemiology 3
SESC9651 Occupational Rehabilitation 6
SESC9912 Project (optional) 12
Exemption but not necessarily Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses. Where necessary, other approved postgraduate courses may be substituted.

Elective courses – to a maximum of 33 UOC
Elective courses may be chosen from other courses offered by the School of Safety Science with the approval of the program authority. The range of electives available in off-campus mode is more restricted than for internal students.

8671 Master of Safety Science MSafetySc
The Master of Safety Science is a graduate program of two years full time (or equivalent) study for students wanting a broad based understanding of safety engineering, occupational health, environmental science, risk management and ergonomics to become safety, health and environmental professionals. The program requires 96 UOC and is normally completed in two years of full-time (or equivalent part-time) study and is available in on campus or off campus learning mode.

Fundamental knowledge courses – 12 UOC
ANAT6151 Functional Anatomy 3
SESC6010 Descriptive Statistics 3
SESC6110 Physical Principles of Safety 1 3
SESC6800 Fundamentals of Toxicology 3
Advanced Standing may be awarded to students who can establish that they have equivalent knowledge in these courses.

Available Courses

Session 1 UOC
AVIA5001 Law and Regulations in Aviation 6
AVIA5003 Aviation and Security 6
AVIA5007 Airport Operations Management 6
AVIA5009 Airline Corporate Management 6

Session 2 UOC
AVIA5004 Aviation Safety and Accident Prevention 6
AVIA5005 Airline Operational Management 6
AVIA5006 Airport Planning 6
AVIA5018 Aviation Human Factors 6

Other UOC
AVIA5020 Aviation Research Project 6
Institute of Environmental Studies

The environmental expertise of 7 faculties at UNSW has been brought together to provide practical and flexible programs in environmental management, designed for people from a wide range of disciplinary backgrounds, professional experience and environmental knowledge. They provide a solid foundation in the frameworks and tools for environmental management and an understanding of the key disciplinary approaches, whilst also enabling students to tailor-make a program to suit their special needs, by drawing on more than 100 relevant elective courses at UNSW.

These new University-wide programs (starting in Session 1, 2000) are coordinated by the Institute of Environmental Studies.

Entry qualifications

An appropriate degree of Bachelor from UNSW or a qualification considered equivalent from another University or tertiary institution. Performance in the undergraduate degree and/or relevant experience will be taken into account in granting admission. An applicant may be granted admission to the GradCert on the basis of evidence of other academic or professional attainments, including relevant experience.

Program requirements

Programs may be taken part-time or full-time.

8619
Master of Environmental Management
MEM

The Master of Environmental Management program can be taken over 3 sessions full-time or 6 sessions part-time. The required total of 72 UOC is made up of core courses (18 UOC), fundamental knowledge courses (generally 24 UOC), and electives (generally 30 UOC). A project (18 UOC) may be substituted for some of the elective requirement.

Core courses

<table>
<thead>
<tr>
<th>Course</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEST5001</td>
<td>Frameworks for Environmental Management 6</td>
</tr>
<tr>
<td>IEST5002</td>
<td>Tools for Environmental Management 6</td>
</tr>
<tr>
<td>IEST5003</td>
<td>Addressing Environmental Issues 6</td>
</tr>
</tbody>
</table>

Fundamental knowledge courses

Each 6 UOC
Each titled "Fundamental Knowledge in Environmental Management: ........."

<table>
<thead>
<tr>
<th>BIOSxxxx</th>
<th>Ecology</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON5125</td>
<td>Economics</td>
</tr>
<tr>
<td>CVEN9995</td>
<td>Engineering</td>
</tr>
<tr>
<td>LAWS3439</td>
<td>Law</td>
</tr>
<tr>
<td>CHEM7300</td>
<td>Physical Science</td>
</tr>
<tr>
<td>SCTS5317</td>
<td>Social Science</td>
</tr>
</tbody>
</table>

Students will take fundamental knowledge courses (generally four) in the areas outside their own disciplinary background.

Electives

Chosen from across the University to meet specific needs. Students may enhance their specific skills or broaden their area of expertise and understanding.

5499
Graduate Diploma in Environmental Management

The Graduate Diploma in Environmental Management can be completed in two sessions full-time or four sessions part-time. The required total of 48 UOC comprises:

<table>
<thead>
<tr>
<th>Course</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEST5001</td>
<td>Frameworks for Environmental Management 6</td>
</tr>
<tr>
<td>IEST5002</td>
<td>Tools for Environmental Management 6</td>
</tr>
<tr>
<td>Four fundamental knowledge courses</td>
<td>24</td>
</tr>
<tr>
<td>Electives</td>
<td>12</td>
</tr>
</tbody>
</table>

7339
Graduate Certificate in Environmental Management

The Graduate Certificate in Environmental Management can be completed in one session full-time or two sessions part-time. The required total of 24 UOC comprises:

<table>
<thead>
<tr>
<th>Course</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEST5001</td>
<td>Frameworks for Environmental Management 6</td>
</tr>
<tr>
<td>Two fundamental knowledge courses</td>
<td>12</td>
</tr>
<tr>
<td>EITHER</td>
<td></td>
</tr>
<tr>
<td>IEST5002</td>
<td>Tools for Environmental Management 6</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>One further fundamental knowledge course</td>
<td>6</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>One Elective</td>
<td>6</td>
</tr>
</tbody>
</table>
Course Descriptions

Aviation

AVIA5001
Law and Regulation in Aviation
Staff Contact: Mr Ron Bartsch
UOC6 WKS12 S1
This course provides an overview of the regulatory structure of civil aviation in Australia. It focuses on the legal system within which this regulatory system operates and the powers, responsibilities and scope of various aviation regulatory authorities. In particular, the course will concentrate on providing a practical insight into the legal implications associated with the various aviation positions such as the pilot in command.

AVIA5003
Aviation and Security
Staff Contact: Mr Ron Armstrong
UOC6 WKS12 S1, X1
Aviation security needs to be understood by all those involved in the operational requirements of civil aviation. Past disasters have provided appalling lessons that any departure from strict, internationally accepted procedures creates an "opportunity" for those intent on acts of unlawful interference. The course Aviation and Security deals with the broad issue of security appreciation for professionals and managers, a perspective of the human and organisational dimensions of aviation security, an explicit understanding of responsibilities, the mechanism for implementation and the ability to determine and report on security events. This course is designed for a wide cross section of professionals in the aviation, transport and affiliated industries.

AVIA5004
Aviation Safety and Accident Investigation
Staff Contact: Mr Ron Bartsch
UOC6 WKS12 S2
Safety and Accident prevention is an issue in almost every walk of life, none more so than within the aviation industry. The objective of this course is to provide those working in aviation and associated industries with a broad and detailed understanding of the commercial aviation safety system and strategies developed to make that system safer. While the course specifically relates to commercial air service operations in Australia, it also recognises the vital importance of global co-operation and the role of specific international organisations. It also focuses on the investigation and prevention of accidents, and the roles of the Bureau of Air Safety Investigation and the Aviation Regulatory authorities.

AVIA5005
Airline Operational Management
Staff Contact: Mr Rodger Robertson
UOC6 WKS12 S2
Airline Operational Management includes the operational and day to day aspects of airline management such as operational control, aircraft maintenance outsourcing, crew planning and scheduling, airport management, catering, reservations management, delay and punctuality control, marketing and emergency planning. The course covers these aspects of the day to day management and the relationship between these functions and those of the corporate areas in AVIA5009. These matters drive the major airline cost areas.

AVIA5006
Airport Planning
Staff Contact: Mr Rod Sullivan
UOC6 WKS12 S2
Airport Planning includes the following: town planning aspects, access, obstacles, growth, longer term issues of noise and other environmental issues, longer term political issues and ownership issues as airports become privatised. Also included are topics covering the process of privatisation and investment evaluation, community benefits, airport master plans, forecasting aircraft movements and passenger and freight flows, terminal planning issues, runway and taxiway planning.

AVIA5007
Airport Management
Staff Contact: Mr Rod Sullivan
UOC6 WKS12 S1
This course covers day to day operational issues such as managing annual budgets, fees (landing, passenger, shops, car parking, etc.) determination methods, emergency planning in all aspects, relationships with airlines, short term political issues management, slot management-peak time issues, managing concessions and other airport business opportunities, aircraft parking control, relationship with other industry bodies and general administrative tasks at airports such as roads, signs, flight information, electricity and water.

AVIA5008
Air Traffic Management
Staff Contact: Mr John Guselli
UOC6 WKS12
Note/s: Not offered in 2001
This course includes the following aspects: definition and quantification of risk, primacy and management of Air Traffic System safety, development of efficient procedures, Air Traffic System - 'requirements, management of traffic priorities, environmental management, financial imperatives, aviation industry liaison and public liaison'.

AVIA5009
Airline Corporate Management
Staff Contact: Mr Rodger Robertson
UOC6 WKS12 S1
Airline Corporate Management includes organisational structures, business planning and budgeting, financial analysis, supply and demand analysis, economics, forecasting, commercial agreements liaisons, scheduling planning and fleet planning. This course provides an insight into the complex and interwoven nature of the airline business and gives a picture of the prime drivers, which differentiate airlines. This course is complementary to the course of Airline Operational Management.
This course requires the student, under guidance, to research an issue in aviation management and produce a written report. The Aviation Research Project

AVIA5010
Private Pilot Licence Practical and Theory (PPL)
Staff Contact: Mr Gregory Clynick
UOC12 WK1 S1 S2
Conducted in two full time blocks of 6 and 12 weeks, this practicum covers the theory and practical aspects required for the issue of a Civil Aviation Safety Authority (CASA) Private Pilots Licence (PPL) qualification. Study areas include Pre Command theory, Basic Aeronautical knowledge, PPL Theory, Introduction and PPL flight training.

AVIA5011
Flight Training – Commercial Pilot Licence (CPL)
Staff Contact: Mr Gregory Clynick
UOC12 WK20 S1
Prerequisites/s: AVIA5010 or equivalent
Conducted in a single full time block of 20 weeks, this practicum covers the theory and practical aspects required for the issue of a Civil Aviation Safety Authority (CASA) Commercial Pilots Licence (CPL), Night rating (NVFR) and multi engine type endorsement.

AVIA5012
Flight Training – Instrument Rating & Theory (CIR)
Staff Contact: Mr Gregory Clynick
UOC6 WK99 S2
Prerequisites/s: AVIA5011 or equivalent
Conducted in a single full time block of 9 weeks, this practicum covers the theory and practical aspects required for the issue of a Civil Aviation Authority (CASA) Multi Engine Command Instrument Rating (CIR).

AVIA5013
Flight Training – Grade Three Instructor Rating (QF)
Staff Contact: Mr Gregory Clynick
UOC6 WK99 S2
Prerequisites/s: AVIA5011, AVIA5012 or equivalent
Conducted in a single full time block of 9 weeks, this practicum covers the theory and practical aspects required for the issue of a Civil Aviation Authority (CASA) Grade III Instructor Rating (Fixed Wing).

AVIA5014
Flight Training – Airline Transport Pilot Licence Theory (ATPL)
Staff Contact: Mr Len Sales
UOC6 WK99 S2
Prerequisites/s: AVIA5011, AVIA5012 or equivalent
This course addresses the theory requirements for the issue of an Australian Airline Transport Pilot’s Licence (ATPL). Conducted on a full time basis over 8 weeks, the course culminates in the sitting of CASA conducted exams.

AVIA5018
Aviation Human Factors
Staff Contact: Dr Graham Braithwaite
UOC6 WK12 S2 X1
Aviation Human Factors is a fast developing subject area that influences all aspects of the aviation environment from ramp to maintenance line and from airport to flight deck and has particular relevance for all involved in management. This course provides and in-depth introduction to the subject in the context of organisational efficiency, management of error and safety. Basic principles of physical and cognitive human performance are covered along with a detailed analysis of error, situational awareness, ergonomics and the evaluation of human factors. Specific aviation coverage includes Crew Resource Management (CRM), human factors in aircraft operations air traffic control, maintenance and management.

AVIA5020
Aviation Research Project
Staff Contact: Mr Rodger Robertson
UOC6 WK12 S1 S2
This course requires the student, under guidance, to research an issue in aviation management and produce a written report. The topic of the project will be agreed between the research supervisor and the student.

AVIA5311
Inflight Services Management
Staff Contact: Mr Peter Elwin
UOC3 WK12 S1 X1
Inflight Services Management studies the management issues in the provision of passenger food and beverages and in other services provided to passengers and crew during their flight. The course covers interfaces with other industries, quality assurance, menu design and pricing, catering production and operations management, and the design of inflight services. The course also covers topics common in the operational management area including regulatory aspects, capital acquisition, production forecasting, transportation logistics, product design, and market research.

Biochemistry

BIOC6308
Postgraduate Qualifying (Biochemistry) Full-Time
Staff Contact: Dr Vincent Murray
Enrolment requires School approval
UOC48 S1 S2
Similar in content and standard to BIOC4318 Biochemistry Honours and BIOC4428 Molecular Biology Honours but designed specifically for students who cannot regularly attend the University.

Biological Science

BIOS9001
Fundamental Knowledge in Environmental Management
Ecology
Staff Contact: Dr PB Banks
UOC6 HPW3 S1
Assumed Knowledge: This is a basic training in ecological concepts and principles for non-biologists and there are no biological prerequisites.

Notes: This course is one of the Fundamental Knowledge core courses available within the Masters of Environmental Management degree program. If places are available it may also be taken as short course in stand alone mode or as part of other postgraduate programs. It is offered as a short course in December with field training at the UNSW Field Station at Smiths Lake followed by study on campus at Kensington. Enrolment is from July for December 2001.

Students will gain essential knowledge for environmental managers concerning ecosystem structure and function, ecological sustainability, maintenance of biodiversity and ecosystem integrity, restoration of disturbed ecosystems, bioeconomics, conservation of threatened populations, and impacts of particular environmental threats such as climatic change, pollution, salinisation and species invasions. The course will emphasise the effective management and monitoring of complex ecosystems where inherent uncertainty, limited ecological understanding and political, economic and legal constraints must be factored into environmental decision making. Issues in management of terrestrial and marine ecosystems will be introduced through lectures, learning exercises and field excursions.

BIOS9917
Alternative Higher Degree Qualifying Program (Full-time)
Staff Contact: School Office
Enrolment requires School approval
UOC48 HPWO S1 S2
Notes: Similar in content and standard to BIOS4018 Biological Science Honours but designed specifically for students who cannot regularly attend the University.
Biotechnology

BIOT5013
Practical Biotechnology
Staff Contact: Professor P Rodgers
Enrolment requires School approval
UOC12 HPW8 S1 S2
Illustration, demonstration and operation of laboratory- scale and pilot-scale equipment. Visits to appropriate industries. Experimental project or critical review.

BIOT7030
Advanced Biotechnology
Staff Contact: Dr F Foong
Enrolment requires School approval
UOC12 HPW3 S1 S2
Corequisite/s: PHPH5471
This course will cover the production and characterisation of biopharmaceuticals. Production involving chemical and enzymatic peptide synthesis, recombinant production in E.coli, yeast, baculovirus and mammalian cells and associated purification processes will be covered. Regulatory considerations important in the validation of fermentation and recovery processes, the purity of final product, and the design of facilities will also be covered. Patent issues relevant to such products and other aspects of licensing business considerations will be addressed, as will case studies of current production processes.

BIOT7040
Biotechnology Principles
Staff Contact: Dr SM Mahler
Enrolment requires School approval
UOC12 HPWS S1 S2
This course is designed to provide students who have not previously studied biotechnology with sufficient training in the field to complete the MSc (Biopharmaceuticals). Aspects of the application of gene cloning techniques for the production of recombinant proteins from a range of host cells, growth, product formation and recovery of microbial products, bioreactor design and operation, monoclonal antibody and gene probe technology will be covered.

BIOT7050
Biopharmaceuticals Project (Major)
Staff Contact: Dr SM Mahler
Enrolment requires School approval
UOC24 HPWS S1 S2
An experimental or technical investigation or design project in the general field of biotechnology.

BIOT7051
Applied Genetics
Staff Contact: Dr D Glenn
Enrolment requires School approval
UOC6 HPWS S2
Isolation of commercially useful microorganisms. Mutagenesis and the isolation of mutants of the following types: auxotrophs; catabolic mutants; feedback inhibition and repression resistance; constitutive; catabolite repression resistance; resistance to antimicrobial agents and to viruses; extended enzyme substrate specificity; altered enzyme properties; changes in promoter and attenuator activity. Techniques of genetic exchange: transformation, conjugation; transduction; cell fusion; sexual and parasaexual cycles. The use of these techniques in strain construction. Recombinant-DNA technology: plasmid and virus technology; cloning vectors for use in microorganisms, plant and animal cells. Strain construction using rec-DNA techniques. Properties of expression, excretion and genetic stability of constructs.

BIOT7061
Peptide and Protein Technology
Staff Contact: Dr CP Marquis
Enrolment requires School approval
UOC6 HPWS S1
Industrial scale production of enzymes, peptide hormones, antibodies including monoclonal antibodies, vaccines; regulation of synthesis by environmental control and genetic manipulation; recovery and down-stream processing techniques; immobilization by entrapment and binding. Applications of proteins in medical therapy and diagnosis and as analytical tools including ELISA and affinity chromatography: applications of enzymes in the food and beverage industries.

BIOT7071
Biochemical Engineering
Staff Contact: Dr LJR Foster
Enrolment requires School approval
UOC6 HPWS S2
Design of bioreactors; range of biocatalysts from free enzymes to immobilized cells; heat and mass transfer, scale-up, economic feasibility studies as applied to bioprocesses; design of equipment and facilities for sterile operation and to meet recDNA guidelines; downstream processing, design and operation; instrumentation and control; use of computer-linked systems; mathematical simulation. Detailed examples of bioprocesses including: amino acid production, single cell protein and liquid fuels, secondary metabolite production, growth and product formation of animal and plant tissue cultures. Patent and commercial aspects of bioprocesses.

BIOT7081
Environmental Biotechnology
Staff Contact: Dr LJR Foster
Enrolment requires School approval
UOC6 HPWS S2
Environmental Biotechnology examines the way microbes decompose chemically complex materials. Applications include the use of bacteria and fungi to detoxify wastes, converting them to usable substances. Prevention of biodeterioration of valuable materials is also an important area of study. Lectures cover biodegradation of minerals, metals, cellulosics, aromatics, hydrocarbons and waste-water treatment. Students present research reviews and conduct experimental projects.

BIOT7091
Applied Cell Culture
Staff Contact: Dr F Foong
Enrolment requires School approval
UOC6 HPWS S2
Elemental and molecular composition of cells; formulation of growth media; stoichiometry of growth processes and product formation; metabolic regulation; stringent response; mechanisms of metabolite uptake and product release; maintenance energy; thermodynamics of cellular growth and activities. Effect of mutation on cellular physiology; recombinant-DNA products. Fermentation processes: inoculum preparation, physiology of selected processes.

BIOT7110
Bioengineering Principles
Staff Contact: Associate Professor PM Doran
Enrolment requires School approval
UOC6 HPW3 S1
A course designed to provide an introduction for students in the MSc Biotech program who have not previously undertaken any bioengineering studies. Steady state and differential balances as a basis for quantification of complex real systems. Concepts in rate processes and kinetic analysis with application to biological systems. Experimental determination of rate data. Correlation of simple lumped rate processes and simultaneous distributed

BIOT7123
Biotechnology Project

Staff Contact: Professor PL Rogers
Enrolment requires School approval
UOC12 HPW4 S1 S2
A small experimental or design project, or an extensive literature review and analysis of a selected topic in biotechnology.

BIOT7210
Food Biotechnology: Principles

Staff Contact: Professor PL Rogers
Enrolment requires School approval
UOC6 S1 S2
The course covers the basic principles in food biotechnology including techniques of genetic manipulation of microorganisms, principles of cell culture, bioreactor design, operation and control for the food industry, the use of bacteria in the production of new and novel foods, the use of yeast and fungi in foods, and the principles involved in developing probiotics and functional foods. Examples are taken from the food industry where the principles of food microbiology and bioprocess engineering are both essential to an understanding of food process and product innovation.

BIOT7220
Food Biotechnology: Applications

Staff Contact: Professor PL Rogers
Enrolment requires School approval
UOC6 S1 S2
The course reviews a range of applications in the food industry where food biotechnology principles are involved. These include: the applications of the principles of biocontrol in food production and the extension of shelf life, the application of enzymes in food production, the use of molecular diagnostic and analytical procedures for food monitoring, new technologies in the treatment and utilization of food processing wastes, the applications of both plant biotechnology and animal biotechnology for enhanced food production and the new developments and implications of transgenic plants and animals.

BIOT7230
Food Biotechnology: Management

Staff Contact: Professor PL Rogers
Enrolment requires School approval
UOC6 S1 S2
The course is designed to develop management skills related to biotechnology-based innovations in the food industry. It provides an overview and analysis of the Australian and international food industry as well as covering the principles of economic feasibility analysis for new opportunities and strategies for effective R&D, marketing and commercialization to exploit these opportunities. Intellectual property and patenting, regulatory aspects (novel foods, applications of gene technology in foods) are also covered as well as a comparative study of food standards in Australia and Internationally. A series of case studies on new food biotechnology products and processes is designed to integrate the various concepts developed in the course.

BIOT8010
Graduate Seminars

Staff Contact: School Office
Enrolment requires School approval
UOC3 HPW2 S1 S2

Chemistry

CHEM7111
Quality Assurance and Laboratory Practice

Staff Contact: Professor Brynn Hibbert
UOC6 HPW3 S2
International bodies and regulations; statistical and QA tools; uncertainty and traceability; method validation; accreditation; interlaboratory trials and proficiency testing; GLP, Guide 25 and ISO 9000 etc.; Laboratory Information Management Systems.

CHEM7112
Analysis of Biological and Organic Materials

Staff Contact: Dr Justin Gooding
UOC6 HPW3 S2
Analysis of biological and organic species in complex matrices (e.g., biological, food, soil, wastewater etc.). Emphasis will be on: (i) bioassays and new methods requiring minimal sample preparation; enzyme and immunoassays, assay formats, transduction and design, biosensors including DNA and surface plasmon resonance devices; (ii) conventional instrumental techniques for analysis of biological and organic molecules with emphasis on sample preparation including sampling, extraction, derivatisation and clean-up.

CHEM7113
Elemental Analysis

Staff Contact: Dr Grainne Moran
UOC6 HPW3 S1

CHEM7114
Chromatography

Staff Contact: Associate Professor Peter Southwell Keely
UOC6 HPW3 S2
Principles of chromatographic separation; gas, liquid and thin layer chromatography. Gas chromatography: columns, instrumentation and applications. HPLC: overview of techniques; normal and reverse phase; size exclusion; ion-exchange and ion-pair techniques; instrumentation, derivatisation and method selection. Latest chromatographic software and data handling methods. Applications in the food, pharmaceutical, biological and health fields.

CHEM7115
Treatment of Analytical Data

Staff Contact: Professor Brynn Hibbert
UOC6 HPW3 S1

CHEM7116
Chromatography/Mass Spectrometry

Staff Contact: Associate Professor Michael Guilhaus
UOC6 HPW3 S1
Principles of mass spectrometry especially when combined with gas chromatography and liquid chromatography. Method source and analyser options for environmental, forensic, clinical, pharmaceutical, food, natural product, petroleum, polymer and biological analysis. Sampling and clean-up for chromatography-mass spectrometry. Interpretation of spectra; use of databases. Fast separations and MS/MS. Quantitative methods; isotope dilution; isotope ratio MS. Management and maintenance of equipment; costing analyses and planning equipment replacements.
Food Science and Technology

Not all courses are necessarily offered in any one year.

**FOOD1517 Chemistry, Biochemistry and Physics of Foods**
*Staff Contact: Professor KA Buckle*
Enrolment requires School approval

UOC3  HPW3  S1


**FOOD1567 Food Preservation**
*Staff Contact: Dr JL Paterson*
Enrolment requires School approval

UOC6  HPW6  S1
*Excluded: FOOD1577, FOOD1587, FOOD1597*

Introduction to food preservation and food processing; heating, chilling, freezing, dehydration. Use of salt, sugar, acid, chemical preservatives, modified atmospheres in food preservation. Water relations and chemical and microbial stability of foods. An integrated program of laboratory and plant exercises designed to illustrate the principles and procedures presented in the lecture course.

**FOOD1577 Food Processing Principles**
*Staff Contact: Dr JL Paterson, Dr RH Driscoll*

UOC6  HPW6  S1
*Corequisite/s: FOOD1587*

This course is presented as a series of lectures and some discussion groups that cover methods of preservation and processing used in the food industry. Preservation principles and technologies covered include heating, chilling, freezing, dehydration, salt, sugar, acids, chemical preservatives, ionising radiations and novel methods. Basic principles of processing covered are mass and energy balances, heat transfer, fluid flow. Methods of processing include refrigeration, evaporation, dehydration, fermentation, extrusion, chemical and physical separation, and particle size reduction. The course is run in conjunction with FOOD1587 Food Processing Laboratory designed to demonstrate key principles in a practical context.

**FOOD1587 Food Processing Laboratory**
*Staff Contact: Dr JE Paton, Dr JL Paterson*

UOC6  HPW6  S1
*Corequisite/s: FOOD1577*

This course is presented as an integrated lecture-laboratory program that covers production principles of a number of primary food commodities including dairy, marine and meat products, fruit and vegetables, sugars and cereal products. The laboratory component demonstrates the effect of processing on aspects of food such as functionality and quality.

**FOOD1587 Food Processing and Packaging**
*Staff Contact: Dr RH Driscoll, Dr JL Paterson*

UOC6  HPW6  S2
*Prerequisite/s: FOOD1577, FOOD1587*

This course is presented as an integrated lecture-laboratory program that covers production principles of a number of primary food commodities including dairy, marine and meat products, fruit and vegetables, sugars and cereal products. The laboratory component demonstrates the effect of processing on aspects of food such as functionality and quality. In addition, aspects of plant design such as factory layout, hygienic design and operation, cleaning in-place and application and comparison of HACCP and other hygiene management systems.
HAZOP, and an introduction to new technologies such as high pressure processing and ohmic heating, are covered. This course also provides fundamental principles of packaging including properties of packaging materials, and selection and evaluation of packaging materials and systems.

**FOOD1557**

*Postharvest Physiology and Handling of Fruit and Vegetables*

*Staff Contact: Dr JE Paton*

UOC6 HPW6 S1

*Prerequisite/s: FOOD1597 or equivalent*

Biochemistry and physiology of metabolism in fresh fruit and vegetables; respiration measurements as an index of metabolism, maturation and senescence; concept of climacteric and non-climacteric produce; physiological and metabolic changes occurring during ripening. Effect of temperature on metabolism; constraints of high and low temperatures; role of humidity control and water loss in quality maintenance; use of atmosphere control to delay senescence and ripening. Physiological disorders of stored produce; microorganisms of importance to post-harvest tissue; physical and chemical methods of control; post-harvest disinfection and quarantine measures. Examination of current commercial storage and marketing operations.

**FOOD1667**

*Postharvest Storage of Foods*

*Staff Contact: Dr JE Paton*

UOC6 HPW6 S1

*Prerequisite/s: FOOD1597 or equivalent*

Pre-harvest considerations, post-harvest physiology and biochemistry, post-harvest factors affecting quality, methods of storage and handling, marketing strategies for selected food commodities.

**FOOD1677**

*Product Design and Development*

*Staff Contact: Associate Professor M Wootton*

UOC6 HPW6 S2

Consumer, commercial and national needs for new products, types of new products, the steps in the product development process; development team, idea generation; market research: its role, specific tasks, techniques, and limitations. Roles of advertising and supermarkets in new product success. Product lifecycles, reasons for new product failure and preventative strategies. Ingredient and additive properties and contributions to foods, effects of processing on their properties and functionality. Optimisation of quality and acceptability of foods by manipulation of formulations. Packaging and processing for food acceptability; sensory properties, storage stability and nutritional properties of foods. Impact of new technology. Sensory analysis: basic sensory analysis techniques, expert vs consumer panels, interpretation and implementation of sensory testing data, sensory rankings from different target markets.

**FOOD1697**

*Advanced Food Chemistry*

*Staff Contact: Associate Professor M Wootton*

UOC6 HPW6 S2

*Prerequisite/s: CHEM3801 or equivalent*

Chemistry and analysis of volatile food components. Qualitative and quantitative analysis, fractionation of proteins, starch and its derivatives, non-starch polysaccharides, dietary fibre constituents and lipids using advanced methods. Detection and measurement of mycotoxins. Analysis of selected vitamins. Application of advanced separation techniques to food components.

**FOOD1747**

*Special Topics in Food Science and Technology*

*Staff Contact: Professor KA Buckle*

Enrolment requires School approval

UOC6 HPW6 S1 S2

An individually supervised program of investigation in specialised aspects of food science and technology not otherwise offered.

Embraces a literature review, laboratory work and/or industrial liaison as may be appropriate. Available only to appropriately qualified students.

**FOOD1757**

*Topics in Food Science and Technology*

*Staff Contact: Professor KA Buckle*

Enrolment requires School approval

UOC6 HPW3 S1 S2

An investigation similar to but shorter than that outlined in FOOD1747.

**FOOD1767**

*Reading Assignment*

*Staff Contact: Professor KA Buckle*

Enrolment requires School approval

UOC6 HPW3 S1 S2

A reading assignment in an area supporting candidates major disciplines or commodity interests. Presentation of a seminar may be required.

**FOOD1777**

*Food Choice: Psychology, preference and acceptability*

*Staff Contact: Associate Professor M Wootton, Dr JE Paton*

UOC6 HPW6 S2

This course considers factors that influence the choice of foods and eating patterns by consumers, and provides a rational basis for the design, development, and marketing of new food products and new processing technologies. It is aimed at students with interests in food and human behaviour, for example marketing, advertising, food service/hospitality and psychology, as well as students in food science and technology. Topics covered include: physiology of taste and smell; the sensory acceptability of foods in terms of flavour, appearance and texture and its measurement (sensory evaluation); psychological, physiological, cultural, religious, environmental and genetic factors that affect food preference and consumption patterns and behaviour: eating disorders (eg. anorexia, bulimia); diet and consequences for physical and mental acuity (eg. Sports diets); implications for food product development, process development, marketing, advertising and diet design.

**FOOD1787**

*Forensic Food Science*

*Staff Contact: Professor GH Fleet*

Enrolment requires School approval

UOC6 HPW3 S2

This course consists of a series of lectures, discussions and assignments that examine a range of techno-legal issues which frequently confront companies involved in the manufacture and service of foods and beverages. A portfolio of case studies are used to demonstrate the fundamental and practical aspects of the investigative process: defining the cause of the problem; acquisition of appropriate information and analytical evidence; loss assessment; reporting; communication with solicitors, barristers and insurance companies; appearance at court. Topics covered include: the legal process; prosecution for breach of food safety, quality and labelling regulations; prosecution for fraud, deception and adulteration; compensation disputes between companies when products or processes do not meet contractual specifications; compensation claims for consumers who have experienced food-borne illness; food composition and labelling authenticity, including religious certification for halal and kosher foods, genetic modification using recombinant DNA technology, species homogeneity; sabotage, deliberate adulteration, tampering; protection of intellectual property, patents. The course is aimed at students in food science and technology, but its content and structure are designed to accommodate students with a broader background in science and technology, as well as practicing professionals in the food/beverage industries, government regulatory agencies and consulting companies.
FOOD2627
Food Microbiology
Staff Contact: Professor GH Fleet
UO6 HPW6 S1
Prerequisite/s: MICR2201 or equivalent
This is a lecture-laboratory course that introduces the basic concepts of food microbiology, covering the ecology, biochemistry, isolation, enumeration and identification of bacteria, yeasts, fungi and viruses associated with foods and beverages. Food spoilage: specific food microorganism associations; taxonomy and biochemistry of major spoilage species; chemical and physical changes to food properties; spoilage of specific commodities. Foodborne microbial disease: foods as vectors of disease and food poisoning; statistics and epidemiology; ecology and taxonomy of food-borne pathogenic microorganisms; control and prevention by hygiene, microbiological standards and legislation. Food fermentation: microbial ecology and biochemistry of fermentations; fermentations of alcoholic beverages, bakery products, dairy fermentation: microbial ecology and biochemistry of fermentations; of food-borne pathogenic microorganisms; control and prevention by hygiene, microbiological standards and legislation. Foodborne microbial disease: foods as vectors of disease and food poisoning; statistics and epidemiology; ecology and taxonomy of food-borne pathogenic microorganisms; control and prevention by hygiene, microbiological standards and legislation. Food fermentation: microbial ecology and biochemistry of fermentations; fermentations of alcoholic beverages, bakery products, dairy fermentation: microbial ecology and biochemistry of fermentations; of food-borne pathogenic microorganisms; control and prevention by hygiene, microbiological standards and legislation. Foodborne microbial disease: foods as vectors of disease and food poisoning; statistics and epidemiology; ecology and taxonomy of food-borne pathogenic microorganisms; control and prevention by hygiene, microbiological standards and legislation.

FOOD2637
Quality Assurance and Control
Staff Contact: Dr JM Cox
UO6 HPW4 S2
Prerequisite/s: FOOD2627
This course aims to provide students with a knowledge base and application of concepts in quality assurance (QA) and quality control (QC) in the context of the food industry. What are quality, QA, QC? Organisation-wide quality management, quality costs, Total Quality Management and ISO9000-based Quality Management Systems. Tools in quality management, brainstorming and other qualitative tools, benchmarking. Production-level QA and QC, HACCP, risk analysis and management, statistical quality/process control, microbiological criteria, sampling and sampling plans, cleaning and sanitation. QA in the laboratory, accreditation, metrology, proficiency testing, QA of microbiological media. Regulatory aspects of QA/QC. Auditing quality. Staff training.

FOOD2647
Food Safety
Staff Contact: Professor KA Buckle
UO6 HPW6 S2
This course presents a package of information and exercises designed to demonstrate (i) the public health risk associated with the production and consumption of foods and (ii) the strategies adopted by industry, government and consumers to manage and control these risks. Topics covered include: chemical risks - natural, additives and residues; microbiological risks - bacteria, fungi, viruses, algae, parasites, prions; nutrition - diet and health; genetically modified foods - concepts and specific safety issues; management of food safety by industry - TOM, HACCP, ISO; management of food safety by government - food law, national and international regulation and issues; legal and insurance issues; consumer concerns - education, social, moral and ethical issues; safety in the workplace.

FOOD2657
Analytical Microbiology
Staff Contact: Dr JM Cox
Enrolment requires School approval
UO6 HPW6 S2
The aim of this course is to provide students with an understanding of the underlying principles of and practical exposure to modern and rapid methods for microbiological analysis, with specific reference to foods. The course begins with a history of the development of methods of analysis and criteria for the evaluation of methods. Methods considered include improved and advanced cultural methods, automated biochemical identification systems, ATP and lux bioluminescence, methods for assessing hygiene, ice nucleation, impedance technology, immunoassay, electrophoretic and chromatographic techniques for strain characterisation and identification, nucleic acid probes, PCR and genepchip technology.

FOOD2667
Advanced Food Microbiology
Staff Contact: Professor GH Fleet
UO6 HPW6 S2
Prerequisite/s: FOOD2627
This course consists of a series of lectures, discussion groups and visits to local food companies that takes food microbiology from its basic concepts to advanced consideration of current issues on food spoilage, foodborne microbial disease, food and beverage fermentations and the use of microorganisms as processing aids and sources of food ingredients and additives. With a focus on commodity groups, it considers industry structure, food production and processing operations that impact on the growth, survival and biochemical activity of microorganisms as they relate to spoilage, safety and desirable fermentations. Commodities considered include dairy products, fruit and vegetables, meat products (red, poultry, seafoods) and alcoholic beverages. Advanced concepts of microbial taxonomy, biochemistry, physiology, detection and enumeration are covered as well as the use of microorganisms as sources of colours, flavours, polysaccharides, vitamins, amino acids and as probiotic and biocontrol agents.

FOOD3567
Nutrition
Staff Contact: Dr J Arcot
UO6 HPW6 S1
Prerequisite/s: BIQC2101 or BIQC2181
This course consists of a series of lectures and practical exercises that provide students with the knowledge about the occurrence of nutrients in foods and their role in human physiology, health and disease. Structure, properties and sources of nutrients. Role of nutrients in human structure and function. Introduction to food groups, tables of food composition, food labels, dietary recommendations. Food guides. Nutrition in health and disease. Nutritional needs of vulnerable groups: infants, pregnant and lactating women, the aged. Dietary intolerance, disorders related to the affluent diet including coronary heart disease, dental caries, diabetes, hypertension and cancer. Problems of undernutrition including protein, energy, mineral and vitamin deficiencies. Physiological and nutritional aspects of dietary fibre, alcohol. Assessment of nutritional status using dietary and anthropometric techniques. Practical exercises on anthropometric techniques and measurement of nutrient intake using computer systems on individual and group bases.

FOOD3577
Advanced and Applied Nutrition
Staff Contact: Dr J Arcot
UO6 HPW6 S2
Prerequisite/s: FOOD3567
This course consists of lecture and discussion classes that build on the basic concepts of nutrition with respect to the food supply, giving advanced treatment of the following topics. Food and nutrition policy: structure of the population. Food supplies, food consumption, nutritional epidemiology. Population dietary references. Food programs such as food fortification, supplementary feeding schemes, nutritional rehabilitation, nutrition education, dietary and nutrition interventions (ORT, family planning, infection control, growth monitoring). Principles, practice and evaluation of applied nutrition programs. Advanced assessment methods in nutrition: nutrient bioavailability studies, nitrogen balance tests, vitamin load tests, sodium and potassium excretion, creatinine excretion, fitness assessment, biochemical assessment, design and evaluation of nutritional epidemiology studies, food intake studies.
FOOD4617
Advanced Food Engineering
Staff Contact: Dr RH Dricoll, Dr JL Paterson
UOC6 HPW6 S1
Prerequisite/s: FOOD1577, FOOD1587
This course consists of lectures and discussion groups covering advanced aspects of modern food processing and preservation. This includes food bulk and thermal properties, rheological properties and models of heat transfer (analytical, graphical and numerical methods, computer packages, microwave, infrared, and radio frequency irradiation), process modelling and control, dehydration, evaporation and distillation, membrane processes.

FOOD5117
Minor Project
Staff Contact: Professor KA Buckle
Enrolment requires School approval
UOC6 HPW6 S1 S2
The aim of this course is to provide students with an opportunity to undertake independent study of a particular aspect of food science and technology through critical evaluation of literature or the performance of limited laboratory work. Students will be expected to present the results of their investigation in a thesis-style report and in a research seminar. Students will select a project in consultation with the course authority within the program of study in which they are enrolled.

FOOD5127
Research Project
Staff Contact: Professor KA Buckle
Enrolment requires School approval
UOC12 HPW12 S1 S2
The aim of this course is to provide students with an opportunity to undertake independent study of a particular aspect of food science and technology through performance of laboratory-based research work. Students will be expected to present the results of their investigation in a thesis-style report and in a research seminar. Students will select a project in consultation with the course authority within the program of study in which they are enrolled.

Geography

GEOG9011
Environmental Impact Assessment
Staff Contact: Dr Jes Sammut
UOC6 HPW4 S1
Environmental planning legislation and decision making processes in Australia with special reference to NSW. The content and structure of Environmental Impact Statements and the stages in the granting of development consent. Approaches to EIA with reference to the assessment of impacts on the natural, social and economic environments. Case studies exemplifying procedures, techniques, methods, and issues. Trends in EIA in Australia and selected other countries.

GEOG9012
Remote Sensing Applications
Staff Contact: Professor Tony Milne
UOC6 HPW3 S1
Using a diverse range of case studies, this course demonstrates broad remote sensing applications in forestry, agriculture, natural resource management, wildlife conservation, environmental change, pedology, oceanography, geology, meteorology, and politics. Specific applications relate to the assessment of tropical and sub-tropical land cover change, ecosystem dynamics and biogeochemical cycles, vegetation biophysical properties, wetlands management and monitoring, fire, pollution, urban studies and cold region hydrology. Computer-based laboratories allow the students to explore a range of optical, thermal and radar data appropriate to particular applications, and provide exposure to practical image processing and interpretation techniques including classification, change detection, formulation of indices and derivation of empirical relationships. Practical experience with IDL ENVI and Eradas Imagine is provided.

GEOG9013
Directed Problems in Remote Sensing
Staff Contact: Professor Tony Milne
UOC6 HPW3 S1 S2
Notes: This course requires prior approval of the supervisor.
A detailed investigation of a particular aspect of remote sensing technology or an area of applications relevant to candidates interests and background.

GEOG9014
Computer Mapping and Data Display
Staff Contact: Professor Barry Garner, Mr Stephen Filan
UOC6 HPW4 S1
Introduction to automated cartography and thematic mapping: theoretical and practical problems in displaying and mapping data by computer; review and application of selected computer mapping packages. MapInfo is used for cartographic manipulation and output.

GEOG9015
Population Health and Environment
Staff Contact: Professor Ian Burnley
UOC6 HPW4 S2
Relationship between environmental factors and disease morbidity and mortality is examined by consideration of the epidemiological transition in different countries, and the spatial and occupational-specific variation in disease incidence in Australia. Methodology for standardising, testing for significance and data quality.

GEOG9016
Principles of Geographic Information Systems
Staff Contact: Dr Bruno Parolin
UOC6 HPW3 S1
Study of selected geographic information systems; problems of data capture and display, data storage and manipulation, system design and development; cartographic displays and computer mapping. INFO is used for database management, and ARCINFO and MAP for spatial data manipulation and display.

GEOG9017
Advanced Geographic Information Systems
Staff Contact: Dr Bruno Parolin
UOC6 HPW3 S2
Prerequisite/s: GEOG9240 or GEOG9016
Advanced topics and concepts in GIS research and development. Focus is primarily on vector-based systems. Topics include data models, structures and capture; vector editing and algorithms; errors and data accuracy. Practical exercises based on ARCGIS; INFO is used for data base management.

GEOG9018
Transportation Applications of Geographic Information Systems
Staff Contact: Dr Bruno Parolin
UOC6 HPW3 S2
Prerequisite/s: GEOG9240 or GEOG9016
This course provides an overview and hands-on experience in the design, use, and interpretation of Transport Information Systems (GIS-T's). Topics covered include transportation layers, transportation related referencing systems, data structures, network structures, urban transportation planning models, logit and other spatial models. At the end of the course, the student will have a sound working knowledge of transportation GIS and an ability to work directly with real problems in government and private sectors.
GEOG9019
Special Topic in Geography
Staff Contact: Dr Jes Sammut
UOC6  HPW3  S1 S2

Notes: This course requires prior approval of the supervisor. Selected topics may be pursued in the forum of individually supervised readings and assignments linked to studies in postgraduate programs offered through the School of Geography.

GEOG9020
Application and Management of Geographic Information Systems
Staff Contact: Dr Bruno Parolin
UOC6  HPW3  S2

The process and issues involved in an organisation acquiring, implementing and managing a GIS will be considered using real examples. Applications using GIS in the management of natural resources (forest, park, soil etc), human activities at the local, national and global scale will be critically reviewed. The course will involve field visits.

GEOG9021
Image Analysis in Remote Sensing
Staff Contact: Professor Tony Mite
UOC6  HPW3  S2

This course, which is largely laboratory based, provides an in-depth understanding of image processing, analysis and interpretation. Topics include human vision and colour, the construction, display, enhancement and filtering of images, geometric, radiometric and atmospheric correction, supervised and unsupervised classification, principal components analysis, and spatial modeling. The course also demonstrates the theory of hyperspectral and radar remote sensing through lectures and practical computer-based processing. The course provides training in both remote sensing and GIS software, including ERDAS, ENVI, ArcView and Arc/Info.

GEOG9022
Vegetation Management
Staff Contact: Dr Scott Mooney
UOC6  HPW3  S2

Notes: Field work forms a compulsory part of this course and students will incur personal costs. The course provides a background in theory and practice in vegetation management, particularly under Australian conditions. It covers the description and measurement of vegetation, vegetation dynamics, vegetation response to perturbation and human impacts, theories, and modelling of vegetation change. A third of the course is devoted to management strategies of selected vegetation types.

GEOG9024
Soil Degradation and Conservation
Staff Contact: Dr David Eldridge
UOC6  HPW3  S2

Notes: Field work forms a compulsory part of this course and students will incur personal costs. Identification, assessment and analysis of the main processes of soil degradation, including the role of climate, vegetation, geomorphology and pedology in controlling the processes. Discussions of appropriate management strategies for reducing degradation and for reclaiming degraded landscapes. Topics include: surface wash, gully erosion, wind erosion, soil acidification, soil structure decline, salinisation, accumulation of toxins and residuals.

GEOG9530
Project
Staff Contact: Dr Jes Sammut
UOC12  S1 S2

An investigation of a problem in environmental management, remote sensing or geographical information systems which may involve an identifiable research component. Such an investigation should be related to the research interests of particular Schools within the Faculty of Science and Technology.

Geology

GEOL0114
Project in Geological Remote Sensing
Staff Contact: Associate Professor Geoffrey Taylor
UOC12
Notes: Restricted to programs 8720.4003 (MScTech in Remote Sensing) and 8720.1003 (MScTech in Geological Data Processing).

GEOL0304
Project
Staff Contact: Dr David Cohen
UOC12  S1 S2

A project equivalent to 6HPW study for one session which requires the student to carry out detailed processing and analysis of a comprehensive data set for a geological project that may relate to the student's field of employment.

GEOL0310
Image Processing of Spatial Data Sets
Staff Contact: Associate Professor Geoffrey Taylor
UOC6  S1 S2

Data sources and formats, remotely sensed, geophysical, geochemical and topographic. Image display systems; data pre-processing, image rectification, spatial filtering and enhancement techniques. Statistical analysis, classification and image display as a tool for data integration.

GEOL0320
Geostratigraphic Ore Reserve Estimation
Staff Contact: Dr David Cohen
UOC6  S1 S2

When to apply geostatistics; brief review of univariate statistics; bivariate statistics and correlation; exploratory data analysis; measures of spatial correlation: the variogram, the covariance; variogram calculation and how to obtain a good variogram; random function models and stationarity; desirable properties of estimators; estimation of variance; dispersion variance and uses; optimal weighted average estimator, ordinary kriging; recoverable reserve estimation, problems and solutions; application examples, coal, copper, gold; blasthole kriging for overwaste selection; geotechnics and the environment.

GEOL0330
Conceptual Models for Exploration Geology
Staff Contact: Dr Alistair Dunlop
UOC6  S1 S2

The development and use of ore deposit models as a guide for exploration. Examples drawn from the major categories of deposit such as epithermal gold, greenstone associated gold, vein-type uranium, porphyry copper, volcano-genic massive sulphides, carbonate and shale-hosted lead-zinc and ultramafic-hosted nickel sulphides. Exploration strategies and tactics; risk analysis and prospect evaluation.

GEOL0340
Geochemical Exploration Techniques
Staff Contact: Dr David Cohen
UOC6  S1 S2


GEOL0350
Exploration Geochemical Data Processing
Staff Contact: Dr David Cohen
UOC6  S1 S2

Graphical analysis of exploration geochemical data; identification of anomalous observations. Correlation of geochemical variables;

GEOL0355
Environmental Assessment
Staff Contact: Dr David Cohen
UOC6
This course is an introduction to methods for assessing existing and potential contamination of industrial sites and mining operations. The course includes elements such as the policy and legal framework of environmental assessments; sources of information on a range of chemical contaminants and recommended exposure limits; the role of the assessor (or auditor). Selected environmental assessment case studies will be considered.

GEOL0360
Remote Sensing Applications in Geoscience
Staff Contact: Associate Professor Geoffrey Taylor
UOC6  S1  S2
The physics of various remote sensing techniques. Consideration of various sources of imagery; Landsat, TM, SPOT, aircraft scanners etc. Spectral properties of rocks, soils and vegetation. Geological applications of visible, infrared, thermal and multi-parameter microwave imagery in resource exploration, tectonic studies, geological hazard recognition and environmental monitoring. Mapping and data integration methodologies.

GEOL0370
Fundamentals of Exploration Geophysics
Staff Contact: Mr Derecke Palmer
UOC6  S1  S2
An introduction to the theory and application of geophysical methods to engineering, environmental, and groundwater studies. The methods covered include gravity, magnetic, seismic refraction, shallow seismic reflection, DC electrical resistivity, electromagnetic, transient electromagnetic, radar, and geophysical well logging. Each method is described in terms of the fundamental physical principles, data acquisition and field techniques, data processing and presentation, and quantitative interpretation.

GEOL0380
Electrical Methods in Geophysical Exploration
Staff Contact: Mr Derecke Palmer
UOC6  S1  S2
The relationships between geology and electrical geophysical properties; basic theory of resistivity, induced polarisation and electromagnetic methods. Evaluation of applications, survey design, instrumentation, data acquisition, interpretation and productivity. Computer methods of interpretation are emphasised by the extensive use of hands-on microcomputer tutorials. An introduction to recent advances in electrical geophysics: inversion, multi-electrode array resistivity, spectral induced polarisation, transient electromagnetics and ground probing radar.

GEOL0390
Data Processing for Fossil Fuel Resources
Staff Contact: Associate Professor Colin Ward
UOC6  S1  S2
Sedimentary basin analysis with special emphasis on the geology of coal deposits; coal deposit evaluation, data acquisition, computer processing, analysis and display.

GEOL1110
Geographical Information Systems in Applied Geology
Staff Contact: Associate Professor Geoffrey Taylor
UOC6
Introduction to GIS; raster versus vector systems; overview of GIS in geology and geological applications of GIS. Introduction to raster systems; spatial associations and analysis tools; digital terrain modelling; spatial modelling; site and route selection. Introduction to vector systems; vector data models and database systems. Input of spatial data into vector based GIS; building a vector geographical database. Managing attribute data; data analysis and modelling using a vector based GIS. Cartographic output and data display. Spatial data analysis methods in geology; geological case studies; integration of GIS and remote sensing. GIS hardware. GIS organisational and management issues. Desktop mapping in a GIS.

GEOL9053
Hydrogeochemistry
Staff Contact: Dr Jerzy Jankowski
UOC3  S1

GEOL9054
Analysis and Interpretation of Hydrogeochemical Data
Staff Contact: Dr Jerzy Jankowski
UOC3  S1

GEOL9055
Hydrogeochemical Modelling
Staff Contact: Dr Jerzy Jankowski
UOC3  S2

GEOL9060
Environmental Geology
Staff Contact: Dr David Cohen
UOC6  S1  S2
Geology and urban planning; geological input to Environmental Impact Statements; soil and rock construction materials; ground subsidence due to mining and ground-water pumping; geological hazards; land degradation and problem soils; engineering geomorphology.

GEOL9070
Engineering Geophysics
Staff Contact: Mr Derecke Palmer
UOC6  S1
Note/s: Short field tutorials are included as part of this course. Students will incur personal costs.

An introduction to the theory and application of geophysical methods to engineering, environmental, and groundwater studies. The methods covered include gravity, magnetic, seismic refraction, shallow seismic reflection, DC electrical resistivity, electromagnetic, transient electromagnetic, radar, and geophysical well logging. Each method is described in terms of the fundamental physical principles, data acquisition and field techniques, data processing and presentation, quantitative interpretation, and case histories.
Groundwater Environments
Staff Contact: Dr Jerzy Jankowski
UOC3 S1
Study of the detailed occurrence and the environmental problems associated with groundwater in aquifer systems of importance to Australia. Environments will include karst hydrogeology and hydrogeochemical processes in karst terrains, natural saline groundwaters, deep sedimentary basins, groundwater-surface water interaction, fractured rock, alluvial plains, and unconsolidated sediments.

Investigation and Management of Salinity
Staff Contact: Dr Jerzy Jankowski
UOC3 S1
Fresh water saline water interaction in coastal aquifers. Occurrence and salinity mechanisms of naturally occurring saline groundwaters. Saline lakes and playa brines. Dryland salinity mechanisms; occurrence and management. Irrigation induced salinity; mechanisms and management. Case studies.

Groundwater Project
Staff Contact: Dr Jerzy Jankowski
UOC12 S1 S2
A project equivalent to 10HPW study for one session which will require the student to carry out a detailed investigation relating to groundwater or hydrogeology. The study may relate to the student's field of employment.

Petroleum Geology
Staff Contact: Associate Professor Colin Ward
UOC6 S1 S2
Note/s: External mode only.
Petroleum generation, including kerogen types and maturation, entrapment and degradation processes; sedimentology of petroleum-bearing sequences; features of sedimentary rocks, with special reference to reservoir materials; primary and secondary porosity; introduction to clay minerals; structural and stratigraphic traps; including diapirs and fractured rock reservoirs; coal-bed methane, oil shale and other non-conventional petroleum sources; geological setting of Australian petroleum basins; exploration and evaluation of petroleum deposits, including an introduction to geophysical techniques.

Petroleum Geophysics
Staff Contact: Mr Derecke Palmer
UOC6 S1 S2
Note/s: External mode only.
Principles and applications of gravity, magnetic refraction and reflection methods; nature and properties of seismic waves; acquisition of seismic data in land and marine environments; fundamentals of signal processing; processing of seismic reflection data; three-dimensional and four-dimensional (time-lapse) seismic methods; inversion of seismic traces; amplitude variation with offset (AVO); vertical seismic profiling (VSP); integration of geology and geophysics in petroleum exploration and development programs.

Groundwater Quality and Protection
Staff Contact: Dr Jerzy Jankowski
UOC3 S1

Marine Science
MSCI5001
Environmental Monitoring and Assessment
Staff Contact: Centre for Marine and Coastal Studies
UOC6 HPW4 S1 S2
This course is designed to give each student an understanding of the various techniques used in monitoring a coastal environment. It includes the applications and limitations of oceanographic instrumentation and application of physical, geological, chemical and biological methods in the field. Bathymetric, sedimentological and ecological surveys are art of a number of field activities designed to train students to carry out a detailed assessment of a coastal area.

Management of Marine Resources
Staff Contact: Centre for Marine and Coastal Studies
UOC3 HPW4 S1
This course covers basic concepts relating to marine resources, environmental issues, property rights and how different property rights affect the exploitation of marine resources, questions of marine resources, how natural systems interact with economic systems, with policies and regulations that may improve economic performance in a very uncertain environment, with adjustment to economic policies on regional and community criteria, with sustainable and non-sustainable models of resource use in general and the management of fisheries in particular and with problems of resource use in developing countries.

Experimental Design and Analysis
Staff Contact: Centre for Marine and Coastal Studies
UOC3 HPW4 S1 S2
Applications of statistics to marine science data. Probability, estimation statistics and tests of hypotheses. Experimental design, ANOVA, linear and multiple regression, multivariate analysis, non parametric methods. Emphasis is placed on the applications of computer software packages.

Oceanographic Processes
Staff Contact: Centre for Marine and Coastal Studies
UOC6 HPW4 S1 S2
The physical, biological and geological processes of the marine environment; the dynamics of ocean currents including surface waves, geostrophy, tides, upwelling subduction, basin scale gyres, El Nino: biological processes including primary formation of particulate matter, secondary production, biological cycles; geological processes.

Topics in Marine Science
Staff Contact: Centre for Marine and Coastal Studies
UOC12 HPW8 S1 S2
Students choose topics from those listed below to make up the required contact hours per week. The topics chosen must be approved by the course co-ordinator: marine biology, aquaculture, zooplankton, marine botany, fisheries, coastal ecology, marine pollution, environmental microbiology, fluid dynamics, estuarine hydraulics, dispersion processes, instrumentation, coastal engineering, remote sensing, atmosphere-ocean dynamics, marine geology, coastal environmental assessment, aquatic chemistry, computers in chemistry, spectroscopic analysis, environmental chemistry, modern developments in chemical synthesis.

Graduate Seminars in Marine Science
Staff Contact: Centre for Marine and Coastal Studies
UOC6 HPW2 S1 S2
A series of seminars of particular relevance to the practice of marine science. Includes both specialist topics in the disciplines...
that contribute to the marine sciences and detailed study and evaluation of case studies and contemporary issues in marine science.

**MCSI5007**
*Marine Science Project*
*Staff Contact: Centre for Marine and Coastal Studies*
*UOC12  HPW8  S1 S2*
A study of an aspect of marine science and submission of a project report. The project may be either experimental or theoretical in approach.

**MCSI5008**
*Special Topic*
*Staff Contact: Centre for Marine and Coastal Studies*
*UOC6  HPW4  S1 S2*
A special reading program and seminar course to cover perceived areas of special need. This subject is designed to meet the particular needs of individual students.

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### Materials Science and Engineering

**MATS6605**
*Professional Communication and Presentation*
*Staff Contact: Professor Charles Sorrell*
*UOC6  HPW2  S1 S2*
Corequisites: MATS6695
Presentation skills: public speaking, presentation techniques, visual aids, and library usage. MATS6695 Materials Project: guidelines for project preparation and two oral presentations. Job search skills: curriculum vitae, cover letters, and interviews.

**MATS6615**
*Materials Design*
*Staff Contact: Associate Professor Alan Crosby*
*UOC6  HPW4  S1 S2*
Selected topics in ceramics, composites, metals, and/or polymers involving the inter-relationships between materials properties, design, production, and performance. Materials selection, specifications, and standards.

**MATS6625**
*Materials Processing*
*Staff Contact: Associate Professor Veena Sahajwalla*
*UOC6  HPW4  S1 S2*
Selected topics in ceramics, composites, metals, and/or polymers involving the processing of raw materials to their finished condition as precursors, stock shapes, or specific components. Mass and energy balances, engineering calculations, and unit operations.

**MATS6635**
*Materials Properties & Behaviour*
*Staff Contact: Dr Mark Hoffman*
*UOC6  HPW4  S1 S2*
Selected topics in ceramics, composites, metals, and/or polymers involving the principal properties of materials: physical, chemical, thermal, mechanical, thermo-mechanical, electrical, magnetic, and optical.

**MATS6645**
*Materials Characterisation*
*Staff Contact: Associate Professor Paul Munroe*
*UOC6  HPW4  S1 S2*
Selected topics in ceramics, composites, metals, and/or polymers involving the structural, microstructural, and chemical analyses of materials: X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM), energy dispersive spectroscopy (EDS), electron probe microanalysis (EPMA), atomic force microscopy (AFM), and optical microscopy.

**MATS6655**
*Advanced Materials Characterisation*
*Staff Contact: Associate Professor Alan Crosby*
*UOC6  HPW4  S1 S2*
Selected topics in ceramics, composites, metals, and/or polymers involving the structural, microstructural, and chemical analyses of materials: secondary ion mass spectroscopy (SIMS), X-ray photoelectron spectroscopy (XPS), Auger electron spectroscopy (AES), and laser Raman microscopy.

**MATS6665**
*Materials Applications & Performance*
*Staff Contact: Dr Peter Krauklis*
*UOC6  HPW4  S1 S2*
Selected topics in ceramics, composites, metals, and/or polymers involving the inter-relationships between the structure and microstructure of materials, their resultant properties, expected and actual performance, and current and potential applications.

**MATS6675**
*Materials Modelling*
*Staff Contact: Dr Mark Hoffman*
*UOC6  HPW4  S1 S2*
Selected topics in ceramics, composites, metals, and/or polymers involving numerical and analytical techniques, such as finite element modelling (FEM), applied to materials and processes in terms of design and performance, particularly thermal and mechanical stress analyses. Software packages and design of computer programs.

**MATS6685**
*Management*
*Staff Contact: Dr Peter Krauklis*
*UOC6  HPW4  S1 S2*
Selected topics in management involving basic economic principles, cost-benefit analyses, basic accounting, legal and contractual issues, products and services liability, human resources, industrial relations and conflict, leadership, decision-making, operations and project management, quality assurance and management, organisational design and development, market research and strategy, marketing and sales.

**MATS6695**
*Materials Project*
*Staff Contact: Associate Professor Veena Sahajwalla*
*UOC12  HPW8  S1 S2*
Corequisites: MATS6605
A project report on ceramics, composites, metals, and/or polymers in the form of a thesis, including literature review; experimental, theoretical, or design investigation; and discussion of the results. Serves as the basis for the oral presentations in MATS6605 Professional Communication and Presentation.
Mathematics

Mathematics graduate courses are not offered every year. Contact the School of Mathematics Office or the School of Mathematics website, http://www.maths.unsw.edu.au, to see which courses are offered in any particular year.

MATH5115
Analysis of the Finite Element Method
Staff Contact: School of Mathematics Office
UOC6

MATH5130
Advanced Mathematical Methods
Staff Contact: School of Mathematics Office
UOC6

Fundamental methods for solution of problems in applied mathematics, physics and engineering.

MATH5155
Topics in Modern Applied Mathematics A
Staff Contact: School of Mathematics Office
UOC6

A selection of topics from: bifurcation theory, Hamiltonian systems, perturbation methods, the theory of solitons and chaotic systems.

MATH5215
Nonlinear Analysis
Staff Contact: School of Mathematics Office
UOC6

The mathematical theory of nonlinear differential equations, whose behaviours may range from coherence to chaos. Major topics include soliton theory covering integrable partial differential equations and their method of solution using the inverse scattering method, asymptotic methods for nonlinear differential equations covering global techniques and singularity analysis, and functional and complex analytic methods of proving qualitative results for equations of physical interest.

MATH5255
Waves
Staff Contact: School of Mathematics Office
UOC6

Hyperbolic waves, the first-order wave equation, Burgers equation, hyperbolic systems, gas dynamics and the wave equation. Dispersive waves, linear dispersive waves, wave patterns, linear and nonlinear theories of water waves, modulated waves including the weakly nonlinear theory, stability and wave resonances.

MATH5275
Applied Data Analysis
Staff Contact: School of Mathematics Office
UOC6

Analytical and numerical modelling of ocean dynamics, and their interpretation. The course examines aspects of modelling of oceanic circulation using analytical and numerical modelling techniques. Theoretical analyses of the primitive equations will be used to identify individual physical processes such as surface Ekman layers, stratified flow over topography and wind-forced coastal currents under idealised conditions. A general numerical ocean model will be used to illustrate these results by comparison with the idealised analytical work, and by extension to more complex cases. Theoretical and practical aspects of model implementation will be considered including numerical stability, open boundary conditions, surface and convective mixed layer algorithms, as well as interpretation in the light of observations.

MATH5295
Atmospheric Modelling
Staff Contact: School of Mathematics Office
UOC6

Atmospheric dynamics and their simulation using numerical models. This course combines atmospheric dynamics and numerical modelling. It covers the following topics: derivation and interpretation of the equations governing the motion of the earth's atmosphere from the surface to just above the stratopause, the important types of wave motions supported by the governing equations, the use of scaling analysis to develop several distinct kinds of atmospheric models and the application of a range of numerical techniques to solving the equations governing these models. The last section will form the major part of the course, and will examine the various numerical algorithms in terms of accuracy, stability, consistency and efficiency. The choice of lateral boundary conditions also will be discussed in detail. During the course, computer laboratory sessions will be held and course participants will put together a working numerical model of their choice, from one of those introduced in the course. This model will be realistic in the sense that it will produce 24 hour predictions of the state of the atmosphere using real (observed) data as initial and boundary conditions.

MATH5305
Computational Techniques
Staff Contact: School of Mathematics Office
UOC6

Topics covered are chosen from the following: stability of timestepping schemes, iterative methods for elliptic equations, including multigrid techniques, special treatment of nonlinear terms and outflow/radiation conditions. The emphasis is on finite differences, and the course involves a computer project.
MATH5325
Computational Mesh Generation and Data Visualization
Staff Contact: School of Mathematics Office
UOC6
An introduction to the theories of mesh generation for structured and unstructured grids. The emphasis of the course is on the use of computational packages to create grids for specific problems. Advanced visualization techniques, using commercial packages for data manipulation and presentation.

Pure Mathematics

MATH5425
Fuzzy Logic and Neural Nets
Staff Contact: School of Mathematics Office
UOC6
Topics from: how fuzzy logic handles imprecise and vague concepts, fuzzy control theory, artificial neural nets and their learning algorithms, approximation by neural nets, supervised and unsupervised networks.

MATH5505
Topics in Algebra
Staff Contact: School of Mathematics Office
UOC6

MATH5515
Topics in Analysis
Staff Contact: School of Mathematics Office
UOC6

MATH5525
Topics in Geometry
Staff Contact: School of Mathematics Office
UOC6

MATH5535
Topics in Number Theory
Staff Contact: School of Mathematics Office
UOC6

MATH5605
Operator Theory
Staff Contact: School of Mathematics Office
UOC6
Topics from: invariant subspaces, integral equations and Fredholm theory, functional calculus, decomposition theorems, Hankel and Toeplitz operators, operators on Hp spaces, Ergodic theory, semigroups.

MATH5615
Banach and Operator Algebras
Staff Contact: School of Mathematics Office
UOC6
Topics from: commutative Banach algebras and Gelfand theory, spectral theory of operators on Hilbert space, introduction to C* and von Neumann algebras, relationship to group representations and ergodic theory.

MATH5625
Distributions and Partial Differential Equations
Staff Contact: School of Mathematics Office
UOC6

MATH5645
Number Theory
Staff Contact: School of Mathematics Office
UOC6
Topics from: elementary number theory, prime numbers, number theoretic functions, Dirichlet series, prime number theorem, continued fractions, diophantine approximation, quadratic reciprocity, algebraic number theory, class number theorem.

MATH5655
Homological Algebra
Staff Contact: School of Mathematics Office
UOC6
Topics from: concept of a category, additive and abelian categories, representable functors, exact sequences, homology, derived functors, Ext and Tor, relations with algebraic topology, derived categories, homological dimension.

MATH5665
Algebraic Topology
Staff Contact: School of Mathematics Office
UOC6
Topics from: functors and natural transformations, homotopy of maps, homotopy groups, covering spaces, simplicial and singular homology and cohomology, homological algebra.

MATH5675
Set Theory and Topology
Staff Contact: School of Mathematics Office
UOC6
Topics from: set theory, axiom of choice, ordinals and cardinals, topological spaces, compactness, quotient topologies.

MATH5685
Complex Analysis
Staff Contact: School of Mathematics Office
UOC6
Topics from: Brownian motion, Itô calculus, Malliavin calculus, Girsanov’s theorem, Clark’s theorem, the Harrison-Pliska model of option pricing.

MATH5695
Non-Commutative Harmonic Analysis
Staff Contact: School of Mathematics Office
UOC6
Topics from: locally compact groups, Haar measure, homogeneous spaces, convolution algebras, representations, irreducibility, induced representations, Mackey theory, compact groups, Peter-Weyl theory, nilpotent groups, Krillov theory.

MATH5725
Lie Groups and Algebras
Staff Contact: School of Mathematics Office
UOC6
Topics from: revision of manifolds and linear algebra, topological groups, Haar measure, Lie groups, Lie algebras, substructures, classification of semi-simple complex Lie algebras, highest weight representations.

MATH5735
Advanced Algebra
Staff Contact: School of Mathematics Office
UOC6
Topics from: rings, commutative rings, factorization theory, modules, associative and Lie algebras, Wedderburn theory, category theory.

MATH5745
Group Theory
Staff Contact: School of Mathematics Office
UOC6
Topics from: abelian, nilpotent and solvable groups, further representation theory, Euclidean reflection groups, Chevalley groups, group homology and cohomology, group extensions.
MATH5755
Mathematical Foundations of Quantum Mechanics
Staff Contact: School of Mathematics Office
UOC6
Topics from: origin and interpretation of Schrödinger's equation, unbounded operators on Hilbert space, spectral theory, functional calculus and time evolution, the role of symmetry groups, irreducible and induced.

MATH5765
Algebraic Geometry
Staff Contact: School of Mathematics Office
UOC6
Topics from: algebraic curves, cohomology, Riemann-Roch theorem, elliptic curves, Jacobians, classical projective geometry, quadrics, cubic surfaces, Grassmanians, Schubert calculus, commutative algebra, modules, homological concepts, dimension.

MATH5775
Calculus on Manifolds
Staff Contact: School of Mathematics Office
UOC6
Topics from: manifolds, vector fields, flows, introduction to Morse theory, differential forms, Stokes theorem, de Rham cohomology.

MATH5785
Geometry
Staff Contact: School of Mathematics Office
UOC6
Topics from: axiomatic geometry, affine geometry, Desargues theorem, projective geometry, spherical and hyperbolic geometry.

MATH5795
Investment Science
Staff Contact: School of Mathematics Office
UOC6
An introduction to the applications of mathematics to finance, with particular attention given to portfolio balancing and to derivatives.

Statistics

MATH5806
Applied Regression Analysis
Staff Contact: School of Mathematics Office
UOC6

MATH5815
Experimental Design 1
Staff Contact: School of Mathematics Office
UOC6
Modified designs for fixed effects models. Incomplete and balanced incomplete block designs. Confounding and fractional replication. Randomization theory.

MATH5816
Mathematics of Security Markets 2
Staff Contact: School of Mathematics Office
UOC6
Prerequisite/s: MATH5965
More advanced applications of stochastic calculus to security markets.

MATH5825
Statistical Methods in Epidemiology
Staff Contact: School of Mathematics Office
UOC6
Measures and models of disease association, relative risks and odds ratios, attributable risk, interactions, Mantel-Haenszel formulae, confounding, logistic regression, survival analysis.

MATH5835
Stochastic Processes
Staff Contact: School of Mathematics Office
UOC6

MATH5845
Time Series
Staff Contact: School of Mathematics Office
UOC6

MATH5855
Multivariate Analysis 1
Staff Contact: School of Mathematics Office
UOC6
Likelihood ratio tests for means, variances and structure. Discriminant, principal component, canonical and factor analysis. Computing will feature prominently.

MATH5865
Multivariate Analysis 2
Staff Contact: School of Mathematics Office
UOC6
The general linear hypothesis and analysis of dispersion. Tests based on roots, distribution theory.

MATH5875
Sample Survey Design
Staff Contact: School of Mathematics Office
UOC6
Simple, stratified and systematic random sampling. Estimation of proportions, ratios, and sample sizes. Multistage sampling.

MATH5895
Nonparametric Methods
Staff Contact: School of Mathematics Office
UOC6

MATH5905
Statistical Inference
Staff Contact: School of Mathematics Office
UOC6
Decision theory. General theory of estimation and hypothesis testing.

MATH5915
Medical Statistics
Staff Contact: School of Mathematics Office
UOC6
Bioassay, generalised linear models, analysis of multivariate discrete data including loglinear model analysis of contingency tables, survival analysis, competing risks, hazard models for point processes.
MATH5925
Project
Staff Contact: School of Mathematics Office
UOC12
A thorough study of a set of statistical papers or some workplace problem of the student's choice.

MATH5935
Statistical Consultancy
Staff Contact: School of Mathematics Office
UOC6
This is a practical course which introduces students to the general framework of statistical consulting and gives students experience in solving statistical problems arising in practice.

MATH5945
Categorical Data Analysis
Staff Contact: School of Mathematics Office
UOC6

MATH5955
Statistical Quality Control
Staff Contact: School of Mathematics Office
UOC6

MATH5965
Mathematics of Security Markets 1
Staff Contact: School of Mathematics Office
UOC6

Medicine

CMED9100
Independent Studies (4uc)
Staff Contact: Associate Professor Robyn Richmond
Enrolment requires School approval
UOC4 HPW0 S1 S2
Independent studies are designed to provide opportunities for candidates to pursue interests and areas not adequately addressed in existing courses. They are recommended particularly for candidates who wish to explore specific community health problems within their own communities or areas.

CMED9500
Epidemiology
Staff Contact: Professor John Kaldor
UOC6 HPW3 S1 S2
This course provides students with an understanding of the role of epidemiology as the quantitative science underpinning much of public health practice. Students will learn the basic methodological tools of epidemiology, such as statistics to measure disease frequency, skills to critically review literature and interpret epidemiological studies, and their application in a variety of research and public health contexts. Skills for measuring frequency of disease and testing for evidence of association between risk factors and disease in this course will build on statistics learnt in CMED9502 Statistics for Public Health. This course will cover topics pertaining to study design, basic statistical tests and interpretation of results.

Application of these topics in areas such as questionnaire design, conducting and managing studies, problems relating to research grants will be covered in CMED9513 Applied Epidemiology.

CMED9610
Food and Nutrition Policy Studies
Staff Contact: Ms Bloomfield
UOC4 HPW2 S2
The relationship between population, health and the food and nutrition system, i.e. the production, distribution and consumption of food. Discussion of development of intersectoral policies and strategies addressing specific segments of the food and nutrition system to improve the health of vulnerable populations in developed and developing countries. Students will work through a case study and demonstrate their understanding by preparing, presenting and defending a proposed food policy for a specified population or community group.

Microbiology and Immunology

MICR6043
Postgraduate Qualifying (Microbiology)
Staff Contact: Mr Adrian Lee
UOC48 HPW0 S1 S2
Similar in standard to MICR4013 Microbiology Honours, but designed for students who cannot regularly attend the University.

Oceanography

Administered by the School of Mathematics. Please contact Dr John Middleton.

OCEA5115
Experimental Project in Physical Oceanography
Staff Contact: School Office
UOC24 S1 S2
A report of an experimental project, including recording, preparation, analysis and interpretation of field or laboratory data.

OCEA5125
Geophysical Fluid Dynamics
Staff Contact: School Office
UOC6 HPW2 S1 S2
Aspects of the physical features of the oceans. Includes ocean waves rotational and gravitational, tides, large scale wind driven ocean circulation, coastal dynamics, thermohaline circulations and mixing processes.

OCEA5145
Applied Time Series Analysis
Staff Contact: School Office
UOC6 HPW2 S1
Classification of random processes, sampling for discrete analysis, Fourier analysis, spectra, filtering. Crossspectra, estimation and hypothesis testing, confidence limits, application to experiment planning. Emphasis on computer analysis of actual data.

OCEA5155
Theoretical Project in Physical Oceanography
Staff Contact: School Office
UOC12 S1 S2
A theoretical project aimed at developing the prediction of oceanographical phenomena, tailored to meet individual student background but taken only by those students with a strong theoretical background.
Optometry

Initial contact for these courses should be directly with the School of Optometry. All courses are full year course.

OPTM7102
Visual Function
Staff Contact: Associate Professor Stephen Dain, Dr Philip Anderton
UOC6 HPW4 S1
Note/s: Not offered in 2001
This course provides understanding of the characteristics of human vision from the basis of psychophysics and electrophysiologic methods of investigation. The relationship with clinical methods of investigation will be explored. Perceptual organisation of the retinal image; neural networks in the retina and their mathematical analogues; visual transfer functions. Electrophysiologic analysis of cortical processing and retinal function in normal and pathological cases. The electro-oculogram, electromyography. Temporal and spatial effects. Colour vision physiology and psychophysics. Defective colour vision.

OPTM7103
Behavioural Optometry 1
Staff Contact: Ms Rosemary Paynter
UOC6 HPW4 S1
Behavioural Optometry is one of the fastest developing clinical areas in optometry. It embodies a broad clinical approach to the practice of optometry by considering vision in the context of other sensory motor systems. This course covers the scientific and theoretical background to behavioural optometry, the neuroscience of visual function, developmental vision, the development of myopia, the clinical recognition and evaluation of efficient visual function, strabismus & amblyopia, and the optometric management of learning disabilities. Assignments require the clinical application of behavioural concepts to simple and complex cases, so all participants need to have access to a variety of optometric patients, including children. Overseas students can arrange this with the course controller. Together with OPTM7203 Behavioural Optometry 2, this course forms the foundation program for candidates for a Fellowship of the Australasian College of Behavioural Optometrists.

OPTM7104
Advanced Contact Lens Studies 1
Staff Contact: Dr Helen Swarbrick
UOC6 HPW4 S1
This course provides lectures, seminars and practical workshops on topics underlying an advanced knowledge of contact lens practice and research. Subjects covered in the course include: research concepts and opportunities in private clinical practice; accessing the contact lens literature and other relevant databases; clinical photography and videography; use of clinical grading scales; update on corneal physiology and biochemistry; tear film assessment; advanced clinical and research instrumentation; visual considerations with different contact lens designs and modalities; corneal topographic analysis; advanced rigid contact lens design and fitting; rigid and soft toric lens fitting; rigid lens parameter measurement and lens modification; contact lens material properties. The course is conducted over 4 weekend sessions of 14 hours each, during Session 1 only.

OPTM7105
Advanced Contact Lens Practice
Staff Contact: Dr Helen Swarbrick
UOC6 HPW4 S1 or S2
Note/s: Not offered in 2001
This course will provide an opportunity for appropriately qualified contact lens practitioners to acquire advanced clinical knowledge and skills in specialty contact lens practice. The course will be offered as a series of targetted external clinical placements at a range of teaching institutions and optometric practices which specialise in contact lens practice. Travel and accommodation costs must be met by the student. Emphasis will be placed on advanced and specialised contact lens fitting and patient management, including keratoconus, post-keratoplasty and post-refractive surgery lens fitting, haptic lens fitting, orthokeratology, contact lenses for babies and children, rigid toric lenses, bifocal contact lenses, and extended wear. The application of new techniques and advanced instrumentation will also be emphasised.

OPTM7106
Occupational Optometry 1
Staff Contact: Associate Professor Stephen Dain
UOC6 HPW4 S1

OPTM7108
Small Research Project
Staff Contact: Associate Professor Stephen Dain
UOC6 HPW3 S1 S2
A research investigation into a topic in Optometry or Visual Science. May be carried out either on campus or within the student's professional practice with supervision from the University. Involving less time commitment than OPTM7308 Research Project

OPTM7110
Public Health Optometry
Staff Contact: Associate Professor Stephen Dain
UOC6 S1 or S2
Note/s: Distance learning. Not offered in 2001
This course provides understanding of the issues of public health as it relates to optometry at an advanced level. Topics covered include; Structure of the Australian health care system. Optometry's present and future role in the health care system. Comparative study of health care systems. Optometry in the multi-disciplinary health care system. Quality assurance in health care. Demography and epidemiology of occupational eye disease and injuries. Social issues and optometric involvement. Occupational eye disease management. Law and ethics.

OPTM7111
Pathophysiology of Ocular Disease 1: Basic Sciences
Staff Contact: Dr Fiona Stapleton, Dr Gavin Boneham
UOC3 S1
Note/s: Distance learning
This course will give the student a background in basic sciences and increase their understanding of the pathology of ocular disease. This knowledge will be necessary to understand the processes involved in the pathophysiology of commonly encountered ocular diseases seen in optometric practice. Subjects covered include cell and molecular biology, biochemistry, immunology, and inflammation.

OPTM7112
Pathophysiology of Ocular Disease 2
Staff Contact: Dr Gavin Boneham, Dr Fiona Stapleton
UOC3 HPW2 S1
Corequisite/s: OPTM7111
Note/s: Distance learning
Increasingly Optometry is playing a role as the primary provider in eye care diagnosis and referring for secondary and tertiary care. Comitant with this is the duty to enhance our knowledge of the pathophysiological processes associated with ocular disease. This short course covers three types of eye disease commonly encountered in optometric practice: diabetes, glaucoma, and dry eye disease. The course discusses the underlying pathophysiology of each disease allowing the student to better understand and manage these conditions.
OPTM7113
Human Visual Development
Staff Contact: Dr Catherine Suttle
UOC6 HPW4 S1
This course aims towards an understanding of visual sensitivity to colour, motion and form in human infants and young children. Specifically, topics will include: Methods of infant visual function assessment. Limitations of currently available techniques, including visual evoked potentials, forced-choice preferential looking and optokinetic nystagmus. Anatomical and functional development of the human visual system: differential neural pathway development. Visual development under normal and abnormal conditions: the effects of oculo-visual abnormality on development of different visual functions.

OPTM7115
Visual Neuroscience
Staff Contact: Associate Professor Stephen Dain, Dr Philip Anderton
UOC6 S1 or S2
Note/s: Not offered in 2001

OPTM7203
Behavioural Optometry 2
Staff Contact: Ms Rosemary Paynter
UOC6 HPW4 S2
Prerequisite/s: OPTM7103
This course utilises the principles of behavioural optometry introduced in OPTM7103 Behavioural Optometry 1, with an emphasis on treatment options, vision training, and practice management issues. Consideration is also given to the assessment and management of special needs patients including those with genetic conditions, developmental disabilities and traumatic brain injury. Assignments require the clinical application of behavioural concepts to simple and complex cases, so all participants need to have access to a variety of optometric patients, including children. Overseas students can arrange this with the course controller. Together with OPTM7103 Behavioural Optometry 1, this course forms the foundation program for candidates for a Fellowship of the Australasian College of Behavioural Optometrists.

OPTM7204
Advanced Contact Lens Studies 2
Staff Contact: Dr Helen Swarbrick
UOC6 HPW4 S2
Prerequisite/s: OPTM7104
This course provides lectures, seminars and practical workshops on topics underlying an advanced knowledge of contact lens practice and research, and builds on topics covered in OPTM7104 Advanced Contact Lens Studies 1. Subjects covered in the course include: contact lenses for keratoconus, PMMA and RGP haptic contact lenses; fitting contact lenses after corneal refractive surgery and keratoplasty; contact lenses for children and teenagers; therapeutic contact lenses; research and clinical aspects of orthokeratology; tinted contact lenses; contact lenses for colour vision deficiency; contact lens-related ocular microbiology and immunology; future directions in the contact lens field; contact lens education; current market issues. The course is conducted over 4 weekend sessions of 14 hours each, during Session 2 only.

OPTM7206
Ocational Optometry 2
Staff Contact: Associate Professor Stephen Dain
UOC6 HPW4 S1 or S2
Pre-requisite/s: OPTM7106
Note/s: Short course format, field trips. Not offered in 2001
This course will take the principles learnt in OPTM7106 Occupational Optometry 1 and apply them to industrial situations. The course will comprise field work. Local students will participate in organised visits and assessments. Remote students may propose a programme of industry-based visits, assessments and assignments, organised by themselves, for approval by the Head of School.

OPTM7211
Pathophysiology of Ocular Disease 3
Staff Contact: Dr Fiona Stapleton, Dr Gavin Boneham
UOC3 HPW2 S2
Prerequisite/s: OPTM7111
Note/s: Distance learning
Increasingly Optometry is playing a role as the primary provider in eyecare diagnosing and referring for secondary and tertiary care/ surgery. Compliant with this is the duty to enhance our knowledge of the processes associated with ocular disease and the techniques/effects of surgery popular in modern day eyecare. The course discusses the underlying pathophysiology of anterior eye disease along with techniques/outcomes of various surgical techniques used in corneal refractive surgery and the treatment of cataract.

OPTM7212
Pathophysiology of Ocular Disease 4
Staff Contact: Dr Gavin Boneham, Dr Fiona Stapleton
UOC3 HPW2 S2
Prerequisite/s: OPTM7111
Note/s: Distance learning
Posterior eye disease, especially age related maculopathy, is becoming more prevalent with our aging population. In this course we will discuss the pathophysiology of commonly encountered posterior eye diseases of the optic nerve, vitreous, retina and the visual pathway.

OPTM7301
Advanced Clinical Optometry
Staff Contact: Mr David Pye
UOC12 S1 S2
Prerequisite/s: OPTM7309
Note/s: Short course format - overseas posting
This course comprises clinical work on selected patients with special emphasis on advanced techniques and new developments. Optometric examination procedures include: gonioscopy, slit lamp fundoscopy, binocular indirect ophthalmoscopy and scleral depression; ultrasonography; corneal topography; ocular photography; computerised visual field analysis; visual functions; low vision; optometric co-management; evaluation of binocular functions; genetric and paediatric optometry; the clinical application of electrophysiological techniques. Assessments of new instruments, methods and treatments. This course is offered as an overseas posting at either the Pennsylvania College of Optometry (PCO) in Philadelphia, USA or the LV Prasad Eye Institute in Hyderabad, India. This posting is for a 4 week period, with travel and accommodation costs to be met by the candidate. Posting to PCO attracts an additional fee.

OPTM7307
Clinical Imaging
Staff Contact: Dr Barbara Junghans
UOC6 HPW4 S2
This course will provide candidates with a working knowledge of clinical photography of the ocular adnexa, anterior eye and posterior eye using both film and digitally-based still and video photography. Topics will include: ethical and legal issues relating to photodocumentation and archiving of clinical records, the unique lighting requirements for ocular photography, interfacing ophthalmic instruments with image capture devices, image database applications, image analysis versus image processing, video editing.
using tape and digitised facilities, comparison of the relative advantages of the various photographic modalities, use of photography in patient management, patient education and communication with other practitioners.

OPTM7308
Research Project
Staff Contact: Associate Professor Stephen Dain
UOC12 HPW6 S3
A research investigation into a topic in Optometry or Visual Science. May be carried out either on campus or within the student's professional practice with supervision from the University.

OPTM7309
Ocular Therapy
Staff Contact: Dr Philip Anderton
UOC12 S1 or S2
Notes: Short course mode, 120 hours

OPTM7320
Visual Rehabilitation of the Partially Sighted
Staff Contact: Dr Peter Herse
UOC6 HPW4 S1
This course will survey issues involved in the visual rehabilitation of the partially sighted person. Topics covered include epidemiology of visual impairment, pathophysiology of the major ocular disease processes, models of adaptation to loss, assessment of visual impairment, provision of optical and non-optical visual aids, new developments in adaptive technology, professional interactions and referrals and support structures.

Physics

Not all graduate courses are necessarily offered in any one year. Initial contact should be made with A/Prof RJ Stening.

PHYS9583
Advanced Theoretical Physics
Staff Contact: Associate Professor Robert Stening
UOC3 HPW2 S1 S2
A field theory approach to condensed matter physics. Field theory and critical phenomena, exactly soluble models, low-dimensional quantum spin models. Content may vary from year to year.

PHYS9583
Advanced Astrophysics
Staff Contact: Associate Professor Robert Stening
UOC3 HPW2
Radio astronomy and interferometry; the structure of the galaxy; optical and infrared astronomy - instrumentation and data reduction; the extragalactic distance scale. Content may vary from year to year.

Physiology and Pharmacology

PHPH5451
Principles of Pharmacology
Staff Contact: School Office
UOC12 S1
This subject introduces the principles of pharmacology and also covers the systematic pharmacology of selected drug groups. It is designed for students with a background in biotechnology but with little or no knowledge of pharmacology. The subject covers topics such as dose response relationships, drug absorption, metabolism and elimination, autonomic pharmacology, autacoids, pharmacokinetics and toxicology.

PHPH5471
Advanced Pharmacology
Staff Contact: Dr Wakelin
UOC12 S2
Prerequisite/s: PHPH3152, PHPH5461
This course is an advanced coverage of pharmacological topics including receptor binding, pharmacokinetics, drug assays, drug development, toxicology, autacoids and ion channels. The lecture material is supplemented by computerised analysis of data derived from experiments on receptor binding, dose response relationships and pharmacokinetics. Considerable emphasis is placed on the many aspects of drug development.

PHPH5481
Major Project Pharmacology
Staff Contact: School Office
UOC0 S1 S2
A laboratory or industry based project taken in the area of drug development.

PHPH5481
Pharmacology Project
Staff Contact: Dr Wakelin
UOC12 S1 S2
A small laboratory or industry based project or an extensive literature review or extensive data analysis in the area of drug development.

PHPH5501
Basic Principles of Drug Actions Module 1 - Distance Education MSc by Coursework in Biopharmaceuticals
Staff Contact: Dr Wakelin
UOC6 S1 S2
This module covers general principals of pharmaco-dynamics and pharmaco-kinetos. Pharma-dynamics (what the drug does to the body) considers drug-receptor interactions, the basis of dose-response curves, reversible and irreversible antagonists, partial agonists and related topics. Events following the drug-receptor interaction, which include stimulation of second messenger systems and the pharmacology of ion channels, are described. The principles governing pharmaco-kinetos (what the body does to the drug) and their clinical importance are discussed in some detail. There are several simple graphical and problem solving exercises to be completed to aid your understanding of this material.

PHPH5511
Selected Topics in Pharmacology - Module 2 - Distance Education MSc by Coursework in Biopharmaceuticals
Staff Contact: Dr Wakelin
UOC6 S1 S2
For this module the topics were chosen to enable students to gain knowledge of the receptors in the human body with which drugs commonly interact to produce their main clinical effects, or their side-effects/toxicological actions. The module begins with an introduction to the autonomic nervous system, then works through autonomic receptors, receptors for histamine and serotonin, then to the newer areas of peptide receptors and cytokines, the latter areas being those for which drugs are now being developed. With this background, plus some reading material on receptors for drugs affecting the central nervous system, it is felt that students will be
able to read and understand the pharmacology of most drugs in
clinical use. A video which covers many autonomic drug effects
on the cardiovascular system, plus questions based around this
film, are included.

PHPS5521
Techniques for Drug Development - Module 3 - Distance
Education MSc by Coursework in Biopharmaceuticals
Staff Contact: School Office
UOC6 S1 S2
This module extends the concepts raised and discussed in the
Basic Pharmacokinetics section of Module 1. More advanced
pharmacokinetic problems, such as compartmentation, kinetics
of effect and problems solving are included. The technique fo
measuring receptor binding is shown in some detail on video,
with explanation of how the technique is set up, and how and
why it is much used in new drug development. Also included in
this module is a section on techniques used in the assay of
drugs. The determination of molecular structure, and
quantitation of drugs in the body are vital areas of drug
development, and indeed pharmacokinetics depends upon such
quantitation.

PHPS5531
Discovery and Development of New Medicines - Module 4 -
Distance Education MSc by Coursework
Staff Contact: School Office
UOC6 S1 S2
This module gives an overview of most aspects of the development
of new drugs. There is a very short historical introduction and
elements of the discovery and development of drugs from natural
products (plants) plus some examples of drugs developed using
synthetic programs (chemical modifications). There is an example
of a Natural Products program with examples of broad based
screens and follow up testing in animals (Phase 0) before a drug
can be tested in humans. Phase 1-4 of clinical trials are then
discussed, followed by the Pharmaceutical Company’s and the
Clinical Investigator’s viewpoints of drug development. Regulatory
issues and some ethical problems are briefly considered.

Psychology

PSYC6000
Alternative Higher Degree Qualifying Program
Staff Contact: Associate Professor Marcus Tuff
UOC48 S3
Refer to the School of Psychology for details.

PSYC7000
Research and Evaluation Methods
Staff Contact: Dr Melanie Gleitzman
UOC6 HPW2 S2
An examination of threats to the validity of casual inferences from
randomised experiments, quasi-experiments and passive
observational studies, with particular reference to field studies and
program evaluations. Statistical power analysis, the analysis of
data from nonequivalent control group designs, interrupted time
series analysis, and structural modelling.

PSYC7001
Psychological Assessment 1
Staff Contact: Dr Skye McDonald
UOC6 HPW3 S1
A theoretical basis, background information and development of
practical skills in methods of assessment typically used in clinical,
forensic and organizational psychology. Topics will include: the
assessment of adult abilities, vocational interests, and personality,
use of behavioural/structured interviewing, computerized test
administration and expert scoring systems, assessment centers,
special purpose testing, preparation of assessment reports, the
 provision of feedback to clients and subjects, and ethical, legal
and professional issues. Emphasis will be on the development of
practical skills in the administration, scoring and interpretation of
standardized psychological instruments.

PSYC7002
Psychological Assessment 2
Staff Contact: Professor E James Kehoe
UOC6 HPW2 S1
The psychometric foundations of psychological assessment.
Classical and modern test theory. Item analysis and item response
toery. Differential change measurement. Single case profile
analysis, with applications to the WAIS-R and WISC-3. Applications
of exploratory and confirmatory factor analysis to test construction
and evaluation. Clinical and statistical prediction. Decision theoretic
approaches to testing and assessment. The use of intraclass
correlations to evaluate the reliability of ratings and other
assessment methods.

PSYC7100
Psychology of Organisations 1
Staff Contact: Dr James Bright
UOC6 HPW2 S1
General framework for understanding organisational settings and
how social structures and procedures affect work motivation, job
satisfaction, performance and health. Emphasis placed on the
particular contribution which psychologists can make to such areas
as job analysis and design, selection, and performance appraisal,
interpersonal and intergroup relations, the socio-technical analysis
of production systems, social influence, leadership style, job
enrichment, and communication patterns.

PSYC7101
Psychology of Organisations 2
Staff Contact: Dr James Bright
UOC6 HPW2 S2
An advanced examination of some topics covered in PSYC7100
Psychology of Human Resources 1 with a particular emphasis on
the application of sound measurement and research principles to
selection, job evaluation and work motivation. Special attention
given to the application of social psychological principles to the
work setting.

PSYC7102
Psychological Principles of Training
Staff Contact: Professor E James Kehoe
UOC6 HPW2 S2
Relevant principles from learning theory and cognitive psychology
applied to training in industry and retraining for new technology.
Training for adaptability and transfer; the important role of
automaticity and attitudes in training. Development of work related
cognitive, motor and social skills, and the use of computerised
packages. Research on the effectiveness of different methods of
training.

PSYC7115
Vocational Interviewing and Counselling
Staff Contact: Associate Professor Gail Huon
UOC6 HPW2 S1
The theory and practice of vocational interviewing and counselling,
and approaches to career decision making and work adjustment
throughout life. The role of occupational information and
psychological tests, and the impact of work, leisure, retirement
and unemployment on these areas will be considered. The specific
problems of minority groups in these areas will be highlighted.

PSYC7117
Advanced Topics in Organisational Psychology
Staff Contact: Professor E James Kehoe
UOC6 HPW2 S2
Advanced treatment of established and emerging areas in
organisational psychology.
PSYC7122
Professional and Ethical Practice (Organisational) 1
Staff Contact: Dr James Bright
UOC6 S1
Attendance at professional practice meetings (including reviews of professional ethical issues) and career development workshops (including a thorough understanding of ethical principles and practices within professional settings) and the completion of placements to a total of 250 hours.

PSYC7123
Professional and Ethical Practice (Organisational) 2
Staff Contact: Dr James Bright
UOC6 S2
Attendance at professional practice meetings (including reviews of professional ethical issues) and career development workshops (including a thorough understanding of ethical principles and practices within professional settings) and the completion of placements to a total of 250 hours.

PSYC7124
Professional and Ethical Practice (Organisational) 3
Staff Contact: Dr James Bright
UOC6 S1
Prerequisite/s: PSYC7122, PSYC7123
Attendance at professional practice meetings (including reviews of professional ethical issues) and career development workshops (including a thorough understanding of ethical principles and practices within professional settings) and the completion of placements to a total of 250 hours.

PSYC7125
Professional and Ethical Practice (Organisational) 4
Staff Contact: Dr James Bright
UOC6 S2
Prerequisite/s: PSYC7122, PSYC7123
Attendance at professional practice meetings (including reviews of professional ethical issues) and career development workshops (including a thorough understanding of ethical principles and practices within professional settings) and the completion of placements to a total of 250 hours.

PSYC7126
Research Thesis (Organisational) 1
Staff Contact: Professor E James Kehoe
UOC12 S1 S2
Research thesis involving an investigation into some aspect of organisational psychology.

PSYC7127
Research Thesis (Organisational) 2
Staff Contact: Professor E James Kehoe
UOC12 S1 S2
Prerequisite/s: PSYC7126
A continuation of the research thesis begun in PSYC7126.

PSYC7204
Child Clinical Psychology
Staff Contact: Dr Karen Salmon
UOC6 HPW2 S2
Description, assessment and treatment of child and adolescent psychopathology. Role of constitutional and environmental factors in behavioural and emotional dysfunction. Theoretical bases of behavioural, cognitive, and family treatment approaches. Integrated cognitive behavioural management programs.

PSYC7210
Human Neuropsychology
Staff Contact: Dr Skye McDonald
UOC6 HPW3 S1
Neural bases of human behaviour, with particular emphasis on clinical applications. Issues in assessment and rehabilitation, functional analysis of each cerebral lobe, and particular disorders such as the dementias and aphasias.

PSYC7212
Experimental Clinical Psychology 1
Staff Contact: Associate Professor Richard Bryant, Dr Jane Henry
UOC6 HPW4 S1
An introduction to clinical practice and covers the major anxiety and mood disorders. This course reviews the major models and research strategies for understanding psychopathology and clinical interventions. Specific psychological disorders are analysed in detail to illustrate the interplay of biological, cognitive, and behavioural models of psychological dysfunction. Each disorder is also described in terms of practical assessment and treatment procedures.

PSYC7220
Psychology of Health and Illness
Staff Contact: Dr Jane Henry
UOC6 HPW2 S2
Applications of psychological principles, derived from human and animal research, to human health, including health promotion, risk factor reduction, and the psychological assessment and management of medical illnesses, with a special focus on chronic illnesses.

PSYC7221
Experimental Clinical Psychology 2
Staff Contact: Associate Professor Richard Bryant, Dr Jane Henry
UOC6 HPW4 S2
A continuation of the problem-oriented approach begun in PSYC7212 and deals with a range of psychological problems, including schizophrenia, personality disorders, eating disorders, psychopharmacology, and other clinical dysfunctions. This course continues the integration of theoretical models of each disorder with applied descriptions of assessment and treatment procedures.

PSYC7222
Experimental Clinical Psychology 3
Staff Contact: Associate Professor Richard Bryant, Dr Jane Henry
UOC6 HPW2 S1
The assessment and management of a range of disorders including schizophrenia, post-traumatic stress disorders, and dissociative disorders.

PSYC7223
Professional and Ethical Practice (Clinical) 1
Staff Contact: Associate Professor Richard Bryant, Dr Jane Henry
UOC6 S1
This course focuses on practical training of clinical skills and thorough understanding of ethical principles and practices within professional settings. Attendance at 4 one-day workshops and once-weekly meetings is required. Skills training includes interviewing, cognitive therapy, providing expert testimony, and interviewing children. There will be a strong focus on the code of professional conduct and ethical issues that arise in the context of working with individuals, cultural groups, organisations, other professionals and the public at large.

PSYC7224
Professional and Ethical Practice (Clinical) 2
Staff Contact: Associate Professor Richard Bryant, Dr Jane Henry
UOC6 S2
Prerequisite/s: PSYC7223
This course continues with the training of psychological skills and ethical practices required in the professional context. Attendance at 4 one-day workshops and once-weekly meetings is required. Skills training includes interviewing families, group processes, professional supervision, and report writing. Weekly meetings will also deal with the conduct of professional psychologists, with a strong focus on the maintenance of ethical practices.
PSYC7225
Professional and Ethical Practice (Clinical) 3
Staff Contact: Associate Professor Richard Bryant,
Dr Jane Henry
UOC6 S1
Prerequisite/s: PSYC7224

Across PSYC7225 and PSYC7226 students must complete three
field placements, totalling 800 hours. These will normally comprise
one adult mental health setting, one child setting, and one
specialised setting. In addition, students will complete supervised
clinical work in the Psychology Clinic. Students will also attend
once-weekly meetings that will continue reviews of professional
and ethical issues.

PSYC7226
Professional and Ethical Practice (Clinical) 4
Staff Contact: Associate Professor Richard Bryant,
Dr Jane Henry
UOC6 S1 S2
Prerequisite/s: PSYC7224
Note/s: See under PSYC7225.

In addition to field placements, students will also attend once-
weekly meetings that will continue reviews of professional and
ethical issues.

PSYC7227
Research Thesis (Clinical) 1
Staff Contact: Associate Professor Richard Bryant
UOC12 S1 S2

Research thesis involving an investigation into some aspect of
clinical psychology.

PSYC7228
Research Thesis (Clinical) 2
Staff contact: Associate Professor Richard Bryant
UOC12 S1 S2
Prerequisite/s: PSYC7227

A continuation of the research thesis begun in PSYC7227.

PSYC7400
Interventions in Forensic Psychology 1
Staff Contact: Associate Professor Richard Bryant
UOC6 HPW2 S1

Working as a forensic psychologist involves assessing and
managing a range of psychological problems. This course seeks
to provide an introduction to a range of assessment and intervention
methods applicable to forensic psychology. The emphasis is on
the scientist-practitioner model, nd how evidence-based
interventions can manage presentations within forensic settings.
Topics that will be covered include assessment and management
of anxiety and depression, assessment and prevention of suicide
risk, and management of posttraumatic stress disorder, substance
abuse and gambling.

PSYC7401
Interventions in Forensic Psychology 2
Staff Contact: Dr Karen Salmon
UOC6 HPW2 S2

An examination of the approaches to intervention employed by
psychologists in various forensic settings. It will focus specifically
on the theory and practice of interviewing and counselling forensic
clients. Areas to be covered will include: the assessment, treatment
and prevention of child maltreatment; interviewing child witnesses;
specific issues in interventions with crime victims; dealing with
spousal violence; counselling and mediation in the Family Court;
the prevention of juvenile offending; and the interventions involving
violent offenders.

PSYC7402
Applications of Forensic Psychology
Staff Contact: Dr Richard Kemp
UOC6 HPW2 S1

The relationship between work and the legal system. It includes
issues relating to work and work organisation, such as equal
employment opportunity, unfair dismissal, stress in the workplace,
and issues relating to workers compensation such as the
assessment of the effects of harmful workplace exposures on
performance, the effects of work injury on work performance and
the effects of the compensation system itself. It also includes issues
relating to testimony for cases in coronial, compensation and other
criminal courts.

PSYC7403
Experimental Psychology and Law
Staff Contact: Associate Professor Kipling Williams
UOC6 HPW2 S2

Examination of contributions to the application of forensic
psychology in different settings that come from theory and research
in social and experimental psychology and allied fields. Topics
may include eyewitness identification, jury selection, lie detection,
use of hypnosis, trial advocacy tactics, individual and jury decision
making, laypersons, perceptions of insanity, judges instructions,
the effects of the media, to name a few.

PSYC7409
Professional and Ethical Practice (Forensic) 1
Staff Contact: Associate Professor Richard Bryant
UOC6 S1

This course provides an introduction to skills training in a variety of
tasks undertaken by forensic psychologists. It focuses on practical
training of forensic skills and a thorough understanding of ethical
principles and practices within professional settings. Attendance
at 4 one-day workshops and once-monthly meetings is required.
Skills training includes interviewing, cognitive techniques, providing
expert testimony, and interviewing children. There will be a strong
focus on the code of professional conduct, and ethical issues that
arise in the context of working with individuals, cultural groups,
organisations, other professionals and the public at large.

PSYC7410
Professional and Ethical Practice (Forensic) 2
Staff Contact: Associate Professor Richard Bryant
UOC6 S2
Prerequisite/s: PSYC7409

This course continues with the training of psychological skills and
ethical practices required in the professional context. Attendance
at 4 one-day workshops and once-monthly meetings is required.
Skills training includes interviewing families, group and jury
processes, professional supervision, and mediation counselling.
Weekly meetings will also deal with the conduct of professional
psychologists, with a strong focus on the maintenance of ethical
practices.

PSYC7411
Professional and Ethical Practice (Forensic) 3
Staff Contact: Associate Professor Richard Bryant
UOC6 S1
Prerequisite/s: PSYC7410

Across PSYC7411 and PSYC7412 students must complete three
field placements, totalling 800 hours. These will normally comprise
placements of approximately 35 days in settings that may include
the courts, police, prisons, or other related forensic settings.
Students will also attend once-monthly meetings that will continue
reviews of professional ethical issues. Assessment will be
conducted by audio and videotaped practice, case presentations,
and formal reports.

PSYC7412
Professional and Ethical Practice (Forensic) 4
Staff Contact: Associate Professor Richard Bryant
UOC6 S2
Prerequisite/s: PSYC7410
Note/s: See under PSYC7411.

In addition to field placements, students will also attend once-
monthly meetings that will continue reviews of professional and
ethical issues. Assessment will be conducted by audio and
videotaped practice, case presentation, and formal reports.
PSYC7413
Research Thesis (Forensic) 1
Staff Contact: Associate Professor Richard Bryant
UOC12 S1 S2
Research thesis involving an investigation into some aspect of forensic psychology.

PSYC7414
Research Thesis (Forensic) 2
Staff Contact: Associate Professor Richard Bryant
UOC12 S1 S2
Prerequisite/s: PSYC7413
A continuation of the research thesis begun in PSYC7413.

LAWS9800
Law for Psychologists 1
Staff Contact: School office
UOC6 HPW2 S1
This course will provide an introduction to certain aspects of law relevant to forensic psychologists. Topics to be covered will include an overview of the Australian legal system, a range of issues arising in the fields of criminal law and procedure, and the laws of evidence. Safety Science Fundamental Knowledge Courses Available in Safety Science, OHS and Ergonomics programs only

LAW9810
Law for Psychologists 2
Staff Contact: School Office
UOC6 HPW2 S2
Prerequisite/s: LAWS9800
This course will consider legal issues for forensic psychologists. Topics to be covered will include relevant areas of children and the law, and a range of issues arising in the fields of criminal law and procedure and the laws of evidence.

Safety Science

Fundamental Knowledge Courses

SESC6010
Descriptive Statistics
Staff Contact: School Office
UOC3 HPW3 WKS7 S1
Note/s: Also available in off campus mode in S1
Introduction to theory of statistics and to statistical techniques for describing data. Topics include measures of central tendency and dispersion, probability and probability distribution and statistical inference.

SESC6110
Physical Principles of Safety 1
Staff Contact: Professor Jean Cross
UOC3 HPW3 WKS7 S1 S2
Note/s: Also available in off campus mode in S1 and S2
This course introduces the principles of statics and dynamics as it applies to safety and ergonomic issues. Topics include materials handling, equilibrium and balance, biomechanics and linear motion.

SESC6610
Work and Safety
Staff Contact: Dr Boban Markovic
UOC3 HPW2 WKS14 S1 S2 X1 X2
Note/s: Also available in off campus web mode. May not be taken as part of a 48UOC Masters program.
This is an introductory course that covers the fundamental safety science principles. It is aimed at giving future managers the skills needed to identify and deal with safety issues in the workplace. The course concentrates on identification of workplace hazards, their associated risks to health and how they can be controlled.

SESC6800
Fundamentals of Toxicology
Staff Contact: Associate Professor Chris Winder
UOC3 HPW3 WKS7 S1
Note/s: Also available in off campus mode in S1 and S2
Introduction to chemical, biochemical, toxicological and cellular principles.

Core and Elective Courses

SESC6120
Physical Principles of Safety 2
Staff Contact: Professor Jean Cross
UOC3 HPW3 WKS7 S1 S2
Assumed Knowledge: SESC6110
Note/s: May not be taken as part of a 48UOC Masters program.
This course builds on SESC6110 and aims to give students the confidence and vocabulary to understand an engineer's report in safety issues and to understand technical standards and codes of practice. Topics include collisions and impacts, fluids ventilation, rotation, vibration and friction.

SESC9010
Research Methods
Staff Contact: Ms Dianne Gardner
UOC3 HPW3 WKS7 S1
Assumed Knowledge: Basic statistics
Note/s: Also offered in off campus mode in S1 and S2.
This course covers issues in research methodology including research problem formulation, null and alternative hypotheses, qualitative and quantitative research designs, statistical inference and the analysis of quantitative data. Students will be expected to be able to recognise and avoid common methodological problems in research. The course will not provide a detailed coverage of statistical theory but a basic understanding of statistics is required.

SESC9020
Occupational Health and Safety Law 1
Staff Contact: School Office
UOC3 HPW2 WKS7 S2
Note/s: Also offered in off campus mode in S2.
This course covers concepts of law: the judicial and court systems; common law and equity; the common law of employment, occupational health and safety legislation.

SESC9030
Occupational Health and Safety Law 2
Staff Contact: Professor Adrian Brooks
UOC3 HPW2 WKS7 S2
Assumed Knowledge: SESC9020
This course extends concepts of law introduced in SESC9020, and covers other workplace legislation and procedures, such as workers compensation and rehabilitation legislation; cases and actions under common law.

SESC9091
Safety, Health and Environmental Practice
Staff Contact: Dr Boban Markovic
UOC6 HPW6 WKS14 S2
Assumed Knowledge: SESC9060
A workplace assessment based course, where students are required to report on the safety, health or environmental issues required to be assessed for a number of diverse industrial sites.

SESC9100
Physical Hazards
Staff Contact: Dr Tony Green
UOC3 HPW3 WKS7 S2
Assumed Knowledge: Core courses
Note/s: Also offered in off campus mode in S1 and S2.
SESC9121 Fire and Explosion
Staff Contact: Dr Tony Green
UOC6 X2
Note/s: Short course mode.
This course introduces the students to the principles of combustion in fire and explosion processes. The first section deals with the control of industrial fires (liquids and gases). The second section deals with the control of building fires and the third section deals with explosion prevention and control.

SESC9130 Noise Management
Staff Contact: School Office
UOC3 X2
Assumed Knowledge: SESC9100 and SESC9600
Note/s: Short course mode.

SESC9140 Radiation Protection
Staff Contact: Dr Ronald Rosen
UOC3 HPW2 WK57 S1
Principles and practices of radiation protection for both ionising and non-ionising radiation. Radiation physics, detection and measurement; background radiation; biological effects of radiation; dose limits; technical controls for radioactive sources and radiating apparatus. Codes of safe practice; radiological monitoring and personal dosimetry; storage, transport and disposal of sources; environmental impact; administrative controls; emergency procedures; control of non-ionising radiation.

SESC9150 Electrical Safety
Staff Contact: Professor Jean Cross
UOC3 S1
Note/s: Off campus mode only.
Regulations and codes of safe practice relating to electricity. Identification assessment and control of electrical hazards including electrocution, electrical fires, static electricity, electrical wiring in hazardous areas, the effect of electric and magnetic fields, safety related systems.

SESC9160 Construction Safety
Staff Contact: School Office
UOC3 HPW2.5 WK57 S1
This course examines current issues and problems in ensuring the occupational safety and health of workers in building, construction and manufacturing industry. Topics include OHS act, legal responsibilities, implications of changes in legislation to building and construction safety, contractual relationship with subcontractors, risk assessment and control strategies, positive performance indicators, safeguarding of plant, systems safety management, audit reviews, hazards in building and construction work, human behaviour and occupational safety and incident investigation. Best practice initiatives in the construction sector.

SESC9200 Hazard and Risk Assessment
Staff Contact: Professor Jean Cross
UOC3 HPW3 WK57 X1 S2
Note/s: Also offered in off campus mode in S1 and S2.
Principles of OHS risk management and systems safety, the legal content of OHS risk management, hazard identification, risk assessment, accident models, accident reporting, auditing. Each topic will be illustrated by practical examples and case studies.

SESC9211 Risk Management
Staff Contact: Professor Jean Cross
UOC6 HPW3 WKS14 S1 S2
Note/s: Also available in off campus mode in S1 and S2.
This course gives an overview of Risk Management following the format of the Australian Standard in Risk Management (AS4360). Tools and techniques applicable to each step of the risk management process are discussed using examples application to the class. The same risk management process is applied to manage a wide range of business issues including health and safety, the environment, finance and project management. This subject is therefore relevant as part of a wide variety of postgraduate courses and students from any postgraduate course are accepted if numbers permit. The student selects examples for exercises to suit the industry and role in which they work (or intend to work). At the end of the subject, students should be able to use risk management tools applicable to their specific interest and have an awareness of tools used in other industries.

SESC9221 Major Hazards Management
Staff Contact: Dr Tony Green
UOC6 HPW3 WKS14 S1 X2
This course discusses the management of major hazardous facilities. Australian and overseas legislation is discussed, together with the preparation of safety cases, environmental impact statements and emergency planning. Analysis techniques that are required for these assessments will be discussed including how to quantify likelihood and the consequences through the use of modelling. Finally, the requirements for emergency plans are discussed.

SESC9231 Risk Analysis
Staff Contact: Professor Jean Cross
UOC6 HPW3 WKS14 S2
This course introduces methods used to assess risk in different disciplines. Techniques covered include Fault Tree analysis and quantification, Trend analysis, Monte Carlo and other computer modelling techniques, use of risk analysis software. The methods are applied to examples which include decision making in financial, environmental and safety management. In addition students undertake a case study selecting areas of risk of their choice.

SESC9261 Introduction to Environmental Risk Assessment
Staff Contact: Professor Jean Cross
UOC6 HPW3 WKS14 S1 S2
Note/s: Also available in off campus mode in S1 and S2.
This subject introduces the methods used to quantify human health and ecological risks associated with the presence of hazardous chemicals and pathogens in the environment. Environmental risks can be quantified when the following elements are known: The source of the Chemical/pathogen posing risk(s) to human and/or ecological receptors; The fate and transport mechanisms by which a chemical/pathogen moves from the source of the receptors; Exposure scenarios; The dose to the receptors; These elements will be evaluated during the course. Theoretical concepts used in environmental risk assessment will be illustrated with simple, real life examples. Relevant guideline documents will be used to highlight the practice of environmental risk assessment in Australia and compare it with that of countries in Europe and the United States.

SESC9271 Advanced Topics in Environmental Risk Assessment
Staff Contact: Professor Jean Cross
UOC3 HPW3 WKS14 S2
Note/s: Also available in off campus mode in S2.
This subject builds on the principles of environmental risk assessment introduced in Course SESC9261, by focussing on the detailed evaluation of risks to human health through exposure to chemicals and pathogens in the environment. The course presents the latest scientific and practical advancements in evaluating risks to humans exposed to harmful agents through more than one exposure pathway, while accounting for the
uncertainty and variability of risk estimates in the decision-making process. Important course components include guidelines for the correct selection of risk assessment models and the use of Bayesian principles to account for human judgement in the presence of uncertainty. The course will involve the use of various software packages to quantify risks, evaluate uncertainties and make decisions. Lectures will combine the presentation of theoretical concepts, case study illustrations and hands-on applications. The relationship of risk assessment with risk management will be illustrated through the Risk-Based Corrective Action (RBCA) process - a consistent, streamlined decision process for selecting corrective actions at chemical release sites.

SESC9300
Effective Behaviour in Organisations
Staff Contact: Ms Dianne Gardner
UOC3 HPW3 WK57 S1
Notes: Also offered in off campus mode in S1 and S2.
This course examines issues of human behaviour as a major system factor in occupational health and safety. Topics include attitudes and motivation, decision making, leadership and group dynamics, selection, training and communication.

SESC9320
Effective Management
Staff Contact: Ms Dianne Gardner
UOC3 HPW3 WK57 S1
Notes: Also available in off campus mode in S1 and S2.
This course examines processes required for effective management. Topics include management systems and standards, planning, change management, measuring organisational performance, best practice and benchmarking and the management of conflict.

SESC9331
Technology Management
Staff Contact: Ms Dianne Gardner
UOC6 HPW3 WK14 S2
This course covers a range of issues in the management of technology. Topics include legal responsibilities of managers, industrial relations, project management, management of contracts and the management of technological change.

SESC9341
Occupational Health and Safety Management Systems Auditing
Staff Contact: Ms Dianne Gardner
UOC6 X1 X2
Notes: Short course mode.
This course outlines the requirements of an effective OHS management system, and how such systems may be audited.

SESC9350
Safety, Health and Environmental Management
Staff Contact: Ms Dianne Gardner
UOC3 HPW3 WK57 S2
This course covers basic issues for managing health, safety and the environment in organisations. Topics include management and management theory, the behaviour of workers, the behaviour of managers, safety culture, organisational management systems for health, safety and the environment.

SESC9400
Ergonomics 1
Staff Contact: Dr Andrew McIntosh
UOC3 HPW3 WK57 S1
Notes: Also offered in off campus mode in S1 and S2.
This course provides an introduction to ergonomics, emphasising the principles of user centered design and human-machine-environment systems. Specific topics include definition of and justification for ergonomics, design and human error, human capabilities and limitations, introduction to anthropometry, and the reduction of musculoskeletal loading of workers.

SESC9410
Ergonomics 2
Staff Contact: Dr Andrew McIntosh
UOC3 HPW3 WK57 S1
Assumed Knowledge: SESC9400
Notes: Also offered in off campus mode in S1 and S2.
This course follows on from SESC9400 Ergonomics 1, and covers displays & controls, design of human-machine-environment systems, job design and work organisation, design of workplaces, the physical environment and an introduction to product design.

SESC9411
Principles of Ergonomics
Staff Contact: Dr Andrew McIntosh, Dr Kamal Kothiyal
UOC6 HPW3 WK14 S1
Notes: Also offered in off campus mode in S1 and S2.
This course will give an introduction to ergonomics, emphasising the principles of designing user-centred, human-machine-environment systems. Specific topics include definition of and justification for ergonomics, design and human error, human capabilities and limitations, introduction to anthropometry and the reduction of musculoskeletal loading of workers, displays & controls, design of human-machine-environment systems, job design and work organisation, design of workplaces, the physical environment and an introduction to product design.

SESC9421
Applied Ergonomics
Staff Contact: Mr Roger Hall
UOC6 HPW3 X2
Assumed Knowledge: SESC9410 or SESC9411 or equivalent
Notes: Short course mode.
This course will focus on the application of ergonomics principles to real world problems and the difficulties involved. It requires a knowledge of the principles of ergonomics and will provide in-depth knowledge and skills in ergonomics research methodology - analysing the exact nature and extent of the problem, and evaluating the outcome of solutions to the problem. Topics include ergonomics methodologies, analysis techniques, benefit-cost & practical case studies, mock trial, professional ethics, and participatory ergonomics.

SESC9431
Physical Ergonomics
Staff Contact: Dr Kamal Kothiyal
UOC6 S2
Assumed Knowledge: SESC9410 or SESC9411 or equivalent
Notes: Off campus mode plus a 2-3 day workshop during S2.
This course discusses various analytical tools and techniques used by ergonomists to assess or solve practical, physical ergonomics problems. It requires a knowledge of the principles of ergonomics and will provide in-depth knowledge and skills in assessing the physical ergonomics aspects of work systems. Topics include applied anthropometry, biomechanical models, electromyography, manual handling jobs with multiple tasks and work physiology. Students will gain hands-on experience with relevant equipment and software such as Mannequin, 2D and 3D SSP Programs, Energy Expenditure Program, and the revised NIOSH 1991 equation.

SESC9441
Ergonomics and New Technology
Staff Contact: Mr Roger Hall
UOC6 HPW3 WK14 S1
Assumed Knowledge: SESC9410 or SESC9411 or equivalent
The course will focus on the ergonomics issues related to the design and implementation of new technology. It assumes a knowledge of the principles of ergonomics and in particular it will look at cognitive aspects of human-computer interaction, human error and software design, usability and its assessment, user interface design, evaluation techniques, guidelines and standards, and the introduction of new systems into organisations.
This course commences with lectures on experimental methods, instrument analysis methods. The student then undertakes a series of experiments by motion analysis, EMG, exercise tests and impact testing.

Biomechanics of Impact Injury
Staff Contact: Dr Andrew McIntosh
UOC6 HPW3 WKS14 S2
Assumed Knowledge: SESC6110, SESC6120
Note/s: Short course mode

Impact injury occurs in traffic accidents, on the sports field, during recreation, and in the workplace. The course covers mechanisms of trauma, research methods, human tolerance to impact, injury assessment functions and their bases, ATD biofidellty and methods for reducing injury. The course brings together biomechanics, engineering and traumatology.

Industrial Ergonomics
Staff Contact: Dr Kamal Kothiyal
UOC6 HPW3 WKS14 S2
Assumed Knowledge: For students with an engineering background

This course discusses the principles of ergonomics and their application to engineering systems. Topics include introduction to ergonomics, works systems design and evaluation, neuromuscular function, perceptual motor skills, biomechanics of human body movement, work physiology, anthropometry and workplace design, human information processing, human error and design, job design and work organisation, psychophysical measurements, manual materials handling, visual tasks measurements and design, environmental ergonomics, work schedules and sustained human performance (shift work), participatory ergonomics, ergonomics in manufacturing, ergonomics cost/benefits analysis.

Occupational Hygiene
Staff Contact: School Office
UOC6 HPW3 WKS14 S1
Assumed Knowledge: SESC9100, SESC9600
Note/s: Also available in off campus mode in S1 and S2.

This course deals with practical considerations of recognising, evaluating and controlling workplace hazards. Topics include the role of the occupational hygienist; types of workplace hazards such as particulates, gases and vapours, chemicals, noise, radiation, temperature, biohazards; workplace assessment and monitoring; and methods for the control of hazards (such as ventilation and personal protection).

Personal Protective Equipment
Staff Contact: Associate Professor Chris Winder
UOC3 X1
Note/s: Short course mode.

This course provides an introduction to personal protective equipment. Protection for head, eyes, hearing, skin, respiration, feet and protection against falling. Relevant standards for personal protection. Personal protection programs.

Assessment of the Workplace Environment
Staff Contact: Dr Kamal Kothiyal
UOC6 HPW3 WKS14 S2
Assumed Knowledge: Core courses

This is an experimental and workplace based course where students will be required to assess ergonomics, physical and chemical hazards encountered in the occupational environment. Students will design and carry out a number of practical measurement programs to assess and report on workplace environmental parameters. Topics include measurement and analysis of noise, lighting, vibration, ventilation, air quality, thermal environment, radiation and magnetic fields, assessment of chemical hazards, and floor slip resistance characteristics.

Industrial Pollution Control
Staff Contact: Professor Jean Cross
UOC6 S1 S2 X1 X2

This course introduces environmental and pollution issues of relevance to people with responsibility for ensuring pollution control in industry. The course starts with an introduction to environmental assessment processes and environmental management systems, then considers contaminated sites, pollution from liquid, solid and gaseous wastes and their control. Note/s: Off campus mode only

Introduction to the Workplace Environment
Staff Contact: Associate Professor Chris Winder
UOC6 HPW3 WKS7 S1
Note/s: Also offered in off campus mode in S1 and S2.

This course introduces the workplace hazards and risks, approaches to workplace safety, occupational health and safety legislation, management of workplace safety, the hierarchy of controls, occupational epidemiology and occupational rehabilitation.

Occupational Diseases and Injuries
Staff Contact: Associate Professor Chris Winder
UOC3 HPW3 WKS7 S1
Assumed Knowledge: ANAT6151, SESC9600
Note/s: Also offered in off campus mode in S1 and S2.

This course deals with the ways in which work can affect the health of workers. Covers occupational diseases and injuries of skin, respiratory system, nervous system, reproductive system, the musculoskeletal system and occupational cancer.

Occupational Medicine
Staff Contact: Head of School
UOC6 HPW3 WKS14 S1
Assumed Knowledge: SESC9600
Note/s: Only available to medical practitioners; available in off campus mode in S1.

This course deals with the role of the occupational physician in practice and research. This includes health promotion, health screening, medical surveillance and biological monitoring.

Occupational Epidemiology
Staff Contact: Associate Professor Chris Winder
UOC3 HPW3 WKS7 S2
Assumed Knowledge: SESC9600

This course provides an introduction to epidemiology of the workplace. The course covers concepts of epidemiology, including relative risk, odds ratio, confidence limits, confounding, bias, types of epidemiological studies and their design. Interpretation of the results of epidemiology subjects. A significant feature of the course is the study of case studies in various occupational health and safety areas.

Occupational Rehabilitation
Staff Contact: Dr Andrew McIntosh
UOC6 WKS14 S2
Note/s: Medical or allied health background desirable. Available in off campus mode only.

This course provides a scientific basis upon which to base rehabilitation. The main focus will be on examining methods in physical rehabilitation. Other issues, for example relating to case management, will be covered briefly. Concepts and practice from areas such as exercise physiology, training/conditioning, biomechanics, medicine, physiotherapy and occupational therapy will be covered in the context of the rehabilitation.
SESC9711
Environment Planning and Assessment
Staff Contact: Dr Boban Markovic
UOC6 HPW2.5 WKS14 S1
Notes: Also offered in off campus mode in S1.
This course provides the conceptual framework for understanding interactions between humans, nature, philosophy, law, politics, ethics and decision making and how this is related to environmental planning and assessment.

SESC9721
Environment and Medicine
Staff Contact: Dr John Frith
UOC6 HPW2.5 WKS14 S1
Notes: Also offered in off campus mode in S1.
Aspects of medicine bearing upon physiological consequences of pollutants. Metabolic mechanisms; chemical interactions, synergism and antagonism; photosynthesis and phytotoxicity. Ozone depletion and greenhouse effects. Morbidity and mortality surveys. Studies of particular pollutants and environmental contaminants.

SESC9741
Environmental Management Systems
Staff Contact: Dr Boban Markovic
UOC6 X2 S2
Notes: Short course mode.
This course is designed to define the central role of management strategies for environmental issues. It describes the development of different approaches to fulfill the demands of the environment while considering not only the current legislative requirements but also customer requirements, competitive pressure and safety aspects of the firms respectively. A short course. Lecture materials are delivered as a short course.

SESC9751
Introduction to Environmental Science
Staff Contact: Dr Boban Markovic
UOC6 HPW3 WKS14 S1
Notes: Also available in off campus mode in S1 and S2.
This course describes the current and fundamental knowledge in the area of environmental sciences and is a core in the Environmental Science degree programs through the Faculty of Science and Technology. Covered are the current global legal frameworks that affect environmental science practice, latest modeling and research in global system and climate change, current practices and directions of environmental planning and impact assessment.

SESC9810
Introduction to Toxicology
Staff Contact: Associate Professor Chris Winder
UOC3 HPW3 WKS7 S2
Notes: Also offered in off campus mode in S1 and S2.
This course provides an introduction to toxic hazards, including chemicals and biohazards. Effects of exposure to toxic hazards. Legislation and standards for the identification and control of toxic hazards.

SESC9820
Chemical Safety and Toxicology
Staff Contact: Associate Professor Chris Winder
UOC3 HPW3 WKS7 S1
Notes: Also offered in off campus mode in S1 and S2.
This course provides an outline of the toxicological, occupational hygiene and environmental aspects of chemical hazards and exposures. Metals, solvents, toxic and irritant gases, pesticides, carcinogens, hazardous wastes and dioxins are used as case studies.

SESC9850
Management of Dangerous Materials
Staff Contact: Associate Professor Chris Winder
UOC3 HPW3 WKS7 S1 S2
Notes: Also offered in off campus mode in S1 and S2.
Chemicals legislation, regulatory assessment of chemicals, the dangerous goods system, the hazardous substances regulation and systems for hazardous wastes.

SESC9860
Applied Laboratory Safety
Staff Contact: Associate Professor Chris Winder
UOC3 WKS14 S2
Notes: Available in off campus mode only.
Identification of hazards found in laboratories (chemicals, radiation, biohazards, physical hazards), the ways in which they can be controlled, and development of management systems for laboratory safety.

SESC9871
Environmental and Toxicological Laboratory Science
Staff Contact: Dr Boban Markovic
UOC6 HPW3 WKS14 S1 S2
Assumed Knowledge: SESC9820
A laboratory based course which provides basic requirements of laboratory based research, especially in chemical safety and applied toxicology. The course covers literature review, methodology, experimental design, data collection and analysis, discussion and presentation skills, through undertaking a research project.

SESC9900
Project Methods
Staff Contact: Ms Dianne Gardner
UOC3 HPW3 WKS7 S1 S2
Assumed Knowledge: SESC9910
Notes: Also offered in off campus mode in S1 and S2.
This course covers the development of a research project including the research proposal, research design and data analysis and the writing of the research report. Students will be expected to be able to recognise and avoid common methodological problems in research.

SESC9903
Report
Staff Contact: Course coordinator
UOC3 S1 or S2
A 3 units of credit report on a topic relevant to the program of study.

SESC9906
Special Report
Staff Contact: Course coordinator
UOC6 S1 or S2
A 6 units of credit report on a topic relevant to the program of study.

SESC9912
Project
Staff Contact: Dr Tony Green
UOC12 S1 or S2
Assumed Knowledge: SESC9900
A 12 units of credit project relevant to the program of study. Students will be required to undertake an investigative project with supervision and to present a satisfactory report.

SESC9918
Project
Staff Contact: Dr Tony Green
UOC18 S1 or S2
Assumed Knowledge: SESC9900
An 18 units of credit project relevant to the program of study. Students will be required to undertake an investigative project with supervision and to present a satisfactory report (only for students in 1.5 or 2 year Masters programs).

SESC9924
Project
Staff Contact: Dr Tony Green
UOC24 S1 or S2
Assumed Knowledge: SESC9900
A 24 units of credit project relevant to the program of study. Students will be required to undertake an investigative project with supervision and to present a satisfactory report (only for students in 1.5 or 2 year Masters programs in exceptional circumstances).
Courses offered by Other Faculties

The courses listed below are specifically mentioned as core or elective courses in postgraduate coursework programs offered by the Faculty of Science and Technology. Students are referred to the appropriate Faculty Handbook for further information on these courses, including staff contact, UOC, session offered, and pre-requisites and co-requisites. A key for identifying the alphabetical prefixes used can be found in the "Handbook Guide" earlier in this publication.

ACCT5901 Accounting - a User Perspective
ACCT5908 Auditing
ACCT5917 Strategic Management Systems and Processes
ACCT5996 Management Accounting Control Systems
ANAT6151 Introductory Functional Anatomy
ANCE8208 Physics and Modelling of the Atmospheric Boundary Layer
BLDG7406 Real Estate Investment Analysis
CEIC5630 Industrial Water and Wastewater Engineering
CIVL7823 Applied Groundwater Modelling
CIVL9403 Theory of Land Use Transportation Interaction
CIVL9405 Urban Transport Planning Practice
CIVL9408 Transport Systems Design (Urban)
CIVL9701 Engineering Economics and Financial Management
CIVL9702 Project Planning and Control
CIVL9703 Quality and Quality Systems
CIVL9707 Contracts Management
CIVL9711 Management of Professional Services
CIVL9714 Resource Management
CIVL9718 Strategic Management in Engineering
CIVL9720 Problem Solving and Decision Making
CIVL9858 Water Quality Management
CIVL9872 Solid Waste Management
CIVL9881 Hazardous Waste Management
CIVL9888 Environmental Management
CIVL9889 Environmental Economics and Law
CMED9612 Environmental Health
COMP9311 Introduction to Data Base Systems
COMP9514 Advanced Decision Theory
CONS0003 Project Quality Management
CONS0009 Construction Planning and Control
CONS0010 Contracts Management and Law
CVEN7800 Urban Hydrology and Storm Water
CVEN7805 Coastal Zone Management
CVEN7806 Catchment and Water Quality Management
CVEN7807 Groundwater Hydrology
CVEN7808 Investigation of Groundwater Resources
CVEN7809 Geophysical Techniques in Groundwater Studies
CVEN7810 Electrical Methods in Groundwater Investigation
CVEN7817 Water in Mining Engineering
CVEN7819 Hydrological Processes
CVEN7823 Applied Groundwater Modelling
CVEN7824 Risk Management in Water Engineering
CVEN7825 Aquatic Chemistry for Engineering
CVEN7830 Physical Aspects of Contaminated Ground Water
CVEN7831 Chemical and Biological Aspects of Contaminated Ground Water
CVEN9835 Coastal Engineering 1
CVEN9836 Coastal Engineering 2
CVEN9861 Environmental and Engineering Geophysics
CVEN9863 Estuarine Hydraulics
CVEN9875 Hydrological Processes
ECON5103 Business Economics
ECON5203 Statistics for Business
FINS5511 Corporate Finance
FINS5512 Financial Markets and Institutions
FINS5513 Security Valuation and Portfolio Selection
FINS5517 Applied Portfolio Management and Modelling
FINS5531 Risk and Insurance
FINS5535 Derivatives and Risk Management Techniques
FINS5541 Advanced Investment and Funds Management
FINS5542 Applied Funds Management
FINS5551 International Insurance
GMAT9211 Introduction to Geodesy
GMAT9532 Data Acquisition and Terrain Modelling
GMAT9600 Principles of Remote Sensing
GMAT9604 Land Information Systems
GMAT9606 Microwave Remote Sensing
IROB5700 Management, Work and Organisation
MECH9610 Advanced Fluid Dynamics
MECH9620 Computational Fluid Dynamics
MECH9730 Multiphase Flow
MECH9750 Industrial Applications of Heat Transfer
REST0001 Real Estate Investment Analysis
Conditions for the Award of Degrees

First Degrees

Rules, regulations and conditions for the award of first degrees are set out in the appropriate Faculty Handbooks. For the list of undergraduate programs and degrees offered see Table of Programs by Faculty (Undergraduate Study) in the Calendar.

Higher Degrees

For the list of postgraduate degrees by research and course work, arranged in faculty order, see UNSW Programs (by faculty) in the Calendar. The conditions for the award of postgraduate degrees, diplomas and certificates appear in the relevant Faculty Handbook.

Doctor of Philosophy (PhD)

1. The degree of Doctor of Philosophy may be awarded by the Council on the recommendation of the Research Committee of the appropriate faculty or board (hereinafter referred to as the Committee) to a candidate who has made an original and significant contribution to knowledge.

Qualifications

2. (1) A candidate for the degree shall have been awarded an appropriate degree of Bachelor with Honours from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Committee.

(2) In exceptional cases an applicant who submits evidence of such other academic and professional qualifications as may be approved by the Committee may be permitted to enrol for the degree.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment as a candidate for the degree.

Enrolment

3. (1) An application to enrol as a candidate for the degree shall be lodged with the Registrar at least one month prior to the date at which enrolment is to begin.

(2) In every case before making the offer of a place the Committee shall be satisfied that initial agreement has been reached between the School and the applicant on the topic area, supervision arrangements, provision of adequate facilities and any coursework to be prescribed and that these are in accordance with the provisions of the guidelines for promoting postgraduate study within the University.

(3) The candidate shall be enrolled either as a full-time or a part-time student.

(4) A full-time candidate will present the thesis for examination no earlier than three years and no later than five years from the date of enrolment and a part-time candidate will present the thesis for examination no earlier than four years and no later than six years from the date of enrolment, except with the approval of the Committee.

(5) The candidate may undertake the research as an internal student i.e. at a campus, teaching hospital, or other research facility with which the University is associated, or as an external student not in attendance at the University except for periods as may be prescribed by the Committee.

(6) An internal candidate will normally carry out the research on a campus or at a teaching or research facility of the University except that the Committee may permit a candidate to spend a period in the field, within another institution or elsewhere away from the University provided that the work can be supervised in a manner satisfactory to the Committee. In such instances the Committee shall be satisfied that the location and period of time away from the University are necessary to the research program.
(7) The research shall be supervised by a supervisor and where possible a co-supervisor who are members of the academic staff of the School or under other appropriate supervision arrangements approved by the Committee. Normally an external candidate within another organisation or institution will have a co-supervisor at that institution.

Progression

4. The progress of the candidate shall be considered by the Committee following report from the School in accordance with the procedures established within the School and previously noted by the Committee.

(i) The research proposal will be reviewed as soon as feasible after enrolment. For a full-time student this will normally be during the first year of study, or immediately following a period of prescribed coursework. This review will focus on the viability of the research proposal.

(ii) Progress in the course will be reviewed within twelve months of the first review. As a result of either review the Committee may cancel enrolment or take such other action as it considers appropriate. Thereafter, the progress of the candidate will be reviewed annually.

Thesis

5. (1) On completing the program of study a candidate shall submit a thesis embodying the results of the investigation.

(2) The candidate shall give in writing to the Registrar two months notice of intention to submit the thesis.

(3) The thesis shall comply with the following requirements:

(a) it must be an original and significant contribution to knowledge of the subject;

(b) the greater proportion of the work described must have been completed subsequent to enrolment for the degree;

(c) it must be written in English except that a candidate in the Faculty of Arts and Social Sciences may be required by the Committee to write a thesis in an appropriate foreign language;

(d) it must reach a satisfactory standard of expression and presentation;

(e) it must consist of an account of the candidate’s own research but in special cases work done conjointly with other persons may be accepted provided the Committee is satisfied about the extent of the candidate’s part in the joint research.

(4) The candidate may not submit as the main content of the thesis any work or material which has previously been submitted for a university degree or other similar award but may submit any work previously published whether or not such work is related to the thesis.

(5) Four copies of the thesis shall be presented in a form which complies with the requirements of the University for the preparation and submission of theses for higher degrees.

(6) It shall be understood that the University retains the four copies of the thesis submitted for examination and is free to allow the thesis to be consulted or borrowed. Subject to the provisions of the Copyright Act, 1968, the University may issue the thesis in whole or in part, in photostat or microfilm or other copying medium.

Examination

6. (1) There shall be not fewer than three examiners of the thesis, appointed by the Committee, at least two of whom shall be external to the University.

(2) At the conclusion of the examination each examiner shall submit to the Committee a concise report on the thesis and shall recommend to the Committee that one of the following:

(a) The thesis merits the award of the degree.

(b) The thesis merits the award of the degree subject to minor corrections as listed being made to the satisfaction of the head of school.

(c) The thesis requires further work on matters detailed in my report. Should performance in this further work be to the satisfaction of the Committee, the thesis would merit the award of the degree.

(d) The thesis does not merit the award of the degree in its present form and further work as described in my report is required. The revised thesis should be subject to re-examination.

(e) The thesis does not merit the award of the degree and does not demonstrate that resubmission would be likely to achieve that merit.

(3) If the performance in the further work recommended under (2)(c) above is not to the satisfaction of the Committee, the Committee may permit the candidate to submit the thesis for re-examination as determined by the Committee within a period determined by it but not exceeding eighteen months.

(4) After consideration of the examiners’ reports and the results of any further examination of the thesis, the Committee may require the candidate to submit to written or oral examination before recommending whether or not the candidate be awarded the degree. If it is decided that the candidate be not awarded the degree, the Committee shall determine whether or not the candidate be permitted to resubmit the thesis after a further period of study and/or research.

Fees

7. A candidate shall pay such fees as may be determined from time to time by the Council.
CONDITIONS FOR THE AWARD OF HIGHER DEGREES

1. The combined degrees of Doctor of Philosophy/Master of Psychology (Clinical), Doctor of Philosophy/Master of Psychology (Forensic) and Doctor of Philosophy/Master of Psychology (Organisational) by thesis and formal coursework may be awarded by the Council on the recommendation of the Research Committee of the Faculty of Life Sciences (hereinafter referred to as the Committee) to a candidate who has made an original and significant contribution to knowledge, and who has satisfactorily completed a program of advanced study.

Qualifications

2. (1) A candidate for the combined degrees shall have been awarded an appropriate degree of Bachelor with Honours Class 1 in Psychology from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Committee.

(2) In exceptional cases an applicant who submits evidence of such other academic and professional qualifications as may be approved by the Committee may be permitted to enrol for the combined degrees.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment as a candidate for the combined degrees.

Enrolment

3. (1) An application to enrol as a candidate for the combined degrees shall be made on the prescribed form which shall be lodged with the Registrar at least one month before the commencement of session in which enrolment is to begin.

(2) In every case before making the offer of a place the Committee shall be satisfied that initial agreement has been reached between the School and the applicant on the PhD topic area, supervision arrangements, provision of adequate facilities and coursework and that these are in accordance with the provisions of the guidelines for promoting postgraduate study within the University.

(3) The candidate shall be enrolled as a full-time student only.

(4) The candidate will present the PhD thesis for examination no earlier than three years and no later than five years from the date of enrolment, except with the approval of the Committee.

(5) A candidate for the award of the degree of Doctor of Philosophy as part of a combined program shall not be eligible to be awarded that degree until they have completed the additional requirements applicable to the other degree in such combined program.

(6) The candidate shall undertake the PhD research only as an internal student i.e. at a campus, teaching hospital, or other research facility with which the University is associated.

(7) The candidate will normally carry out the PhD research on a campus or at a teaching or research facility of the University except that the Committee may permit a candidate to spend a period in the field, within another institution or elsewhere away from the University provided that the work can be supervised in a manner satisfactory to the Committee. In such instances the Committee shall be satisfied that the location and period of time away from the University are necessary to the research program.

(8) The PhD research shall be supervised by a supervisor and where possible a co-supervisor who are members of the academic staff of the School or under other appropriate supervision arrangements approved by the Committee.

(9) A candidate for the combined degrees shall be required to undertake such formal courses and pass such assessment as prescribed. The order in which the formal courses are taken must be approved by the School of Psychology.

Progression

4. The progress of the candidate shall be considered by the Committee following report from the School in accordance with the procedures established within the School and previously noted by the Committee.

(i) The research proposal will be reviewed as soon as feasible after enrolment. This will be during the first year of study. This review will focus on the viability of the research proposal.

(ii) Progress in the combined program will be reviewed within twelve months of the first review. As a result of either review the Committee may cancel enrolment or take such other action as it considers appropriate. Thereafter, the progress of the candidate will be reviewed annually.

PhD Thesis

5. (1) On completing the program of study a candidate shall submit a thesis embodying the results of the investigation.

(2) The candidate shall give in writing to the Registrar two months notice of intention to submit the thesis.

(3) The thesis shall comply with the following requirements:
   (a) it must be an original and significant contribution to knowledge of the subject;
   (b) the greater proportion of the work described must have been completed subsequent to enrolment for the degree;
(c) it must be written in English;
(d) it must reach a satisfactory standard of expression and presentation;
(e) it must consist of an account of the candidate's own research but in special cases work done conjointly with other persons may be accepted provided the Committee is satisfied about the extent of the candidate's part in the joint research.

(4) The candidate may not submit as the main content of the thesis any work or material which has previously been submitted for a university degree or other similar award but may submit any work previously published whether or not such work is related to the thesis.

(5) Four copies of the thesis shall be presented in a form which complies with the requirements of the University for the preparation and submission of theses for higher degrees.

(6) It shall be understood that the University retains the four copies of the thesis submitted for examination and is free to allow the thesis to be consulted or borrowed. Course to the provisions of the Copyright Act, 1968, the University may issue the thesis in whole or in part, in photostat or microfilm or other copying medium.

PhD Examination

6. (1) There shall be not fewer than three examiners of the thesis, appointed by the Committee, at least two of whom shall be external to the University.

(2) At the conclusion of the examination each examiner shall submit to the Committee a concise report on the thesis and shall recommend to the Committee that one of the following:

(a) The thesis merits the award of the degree.
(b) The thesis merits the award of the degree course to minor corrections as listed being made to the satisfaction of the head of school.
(c) The thesis requires further work on matters detailed in my report. Should performance in this further work be to the satisfaction of the Committee, the thesis would merit the award of the degree.
(d) The thesis does not merit the award of the degree in its present form and further work as described in my report is required. The revised thesis should be course to re-examination.
(e) The thesis does not merit the award of the degree and does not demonstrate that resubmission would be likely to achieve that merit.

(3) If the performance in the further work recommended under (2)(c) above is not to be satisfaction of the Committee, the Committee may permit the candidate to submit the thesis for re-examination as determined by the Committee within a period determined by it but not exceeding eighteen months.

(4) After consideration of the examiners' reports and the results of any further examination of the thesis, the Committee may require the candidate to submit to written or oral examination before recommending whether or not the candidate be awarded the degree. If it is decided that the candidate be not awarded the degree, the Committee shall determine whether or not the candidate be permitted to resubmit the thesis after a further period of study and/or research.

Fees

7. A candidate shall pay such fees as may be determined from time to time by the Council.

Master of Science by coursework (MSc) – Biotechnology/Biopharmaceuticals/Food Science and Technology

1. The degree of Master of Science by coursework may be awarded by the Council to a candidate who has satisfactorily completed a program of advanced study.

Qualifications

2. (1) A candidate of the degree shall have been awarded an appropriate degree of Bachelor of four full-time years duration (or the part-time equivalent) from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Research Committee of the Faculty of Life Sciences (hereinafter referred to as the Committee), or
(2) An applicant who submits evidence of such other academic or professional attainments as may be approved by the Committee may be permitted to enrol for the degree.
(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment.

Enrolment and Progression

3. (1) An application to enrol as a candidate for the degree shall be made on the prescribed form which shall be lodged with the Registrar at least two calendar months before the commencement of the session in which enrolment is to begin.
(2) A candidate for the degree shall be required to undertake such formal courses and pass such assessment as prescribed.
(3) The progress of a candidate shall be reviewed at least once annually by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.

(4) No candidate shall be awarded the degree until the lapse of two academic sessions from the date of enrolment in the case of a full-time candidate or four sessions in the case of a part-time candidate. The maximum period of a candidate shall be four academic sessions from the date of enrolment for a full-time candidate and six sessions for a part-time candidate. In special cases an extension of this time may be granted by the Committee.

Fees

4. A candidate shall pay such fees as may be determined from time to time by the Council.

Master of Engineering (ME) and Master of Science (MSc)

1. The degree of Master of Engineering or Master of Science by research may be awarded by the Council on the recommendation of the Higher Degree or Research Committee of the appropriate faculty (hereinafter referred to as the Committee) to a candidate who has demonstrated ability to undertake research by the submission of a thesis embodying the results of an original investigation.

Qualifications

2. (1) A candidate for the degree shall have been awarded an appropriate degree of Bachelor from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Committee.

(2) An applicant who submits evidence of such other academic or professional attainments as may be approved by the Committee may be permitted to enrol for the degree.

(3) When the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant, before being permitted to enrol, to undergo such examination or carry out such work as the Committee may prescribe.

Enrolment and Progression

3. (1) An application to enrol as a candidate for the degree shall be made on the prescribed form which shall be lodged with the Registrar at least one calendar month before the commencement of the session in which enrolment is to begin.

(2) In every case, before permitting a candidate to enrol, the head of the school in which the candidate intends to enrol shall be satisfied that adequate supervision and facilities are available.

(3) An approved candidate shall be enrolled in one of the following categories.

(a) full-time attendance at the University;
(b) part-time attendance at the University;
(c) external not in regular attendance at the University and using research facilities external to the University.

(4) A candidate shall be required to undertake an original investigation on an approved topic. The candidate may also be required to undergo such examination and perform such other work as may be prescribed by the Committee.

(5) The work shall be carried out under the direction of a supervisor appointed from the full-time members of the University staff.

(6) The progress of a candidate shall be reviewed annually by the Committee following a report by the candidate, the supervisor and the head of the school in which the candidate is enrolled and as a result of such review the Committee may cancel enrolment or take such other action as it considers appropriate.

(7) No candidate shall be granted the degree until the lapse of three academic sessions in the case of a full-time candidate or four academic sessions in the case of a part-time or external candidate from the date of enrolment. In the case of a candidate who has been awarded the degree of Bachelor with Honours or who has had previous research experience the Committee may approve remission of up to one session for a full-time candidate and two sessions for a part-time or external candidate.

(8) A full-time candidate for the degree shall present for examination not later than six academic sessions from the date of enrolment. A part-time or external candidate for the degree shall present for examination not later than ten academic sessions from the date of enrolment. In special cases an extension of these times may be granted by the Committee.

Thesis

4. (1) On completing the program of study a candidate shall submit a thesis embodying the results of the original investigation.

(2) The candidate shall give in writing two months notice of intention to submit the thesis.

(3) The thesis shall present an account of the candidate's own research. In special cases work done conjointly with other persons may be accepted, provided the Committee is satisfied about the extent of the candidate's part in the joint research.
(4) The candidate may also submit any work previously published whether or not such work is related to the thesis.

(5) Three copies of the thesis shall be presented in a form which complies with the requirements of the University for the preparation and submission of higher degree theses.

(6) It shall be understood that the University retains the three copies of the thesis submitted for examination and is free to allow the thesis to be consulted or borrowed. Subject to the provisions of the Copyright Act, 1968, the University may issue the thesis in whole or in part, in photostat or microfilm or other copying medium.

Examination

5. (1) There shall be not fewer than two examiners of the thesis, appointed by the Committee, at least one of whom shall be external to the University unless the Committee is satisfied that this is not practicable.

(2) At the conclusion of the examination each examiner shall submit to the Committee a concise report on the merits of the thesis and shall recommend to the Committee that:

(a) the candidate be awarded the degree without further examination; or

(b) the candidate be awarded the degree without further examination subject to minor corrections as listed being made to the satisfaction of the head of the school; or

(c) the candidate be awarded the degree subject to a further examination on questions posed in the report, performance in this further examination being to the satisfaction of the Committee; or

(d) the candidate be not awarded the degree but be permitted to resubmit the thesis in a revised form after a further period of study and/or research; or

(e) the candidate be not awarded the degree and be not permitted to resubmit the thesis.

(3) If the performance at the further examination recommended under (2)(c) above is not to the satisfaction of the Committee, the Committee may permit the candidate to represent the same thesis and submit to a further oral, practical or written examination within a period specified by it but not exceeding eighteen months.

(4) The Committee shall, after consideration of the examiners' reports and the reports of any oral or written or practical examination, recommend whether or not the candidate may be awarded the degree. If it is decided that the candidate be not awarded the degree the Committee shall determine whether or not the candidate may resubmit the thesis after a further period of study and/or research.

Fees

6. A candidate shall pay such fees as may be determined from time to time by the Council.

Master of Engineering (ME), Master of Science (MSc) and Master of Surveying (MSurv) without supervision

1. The degree of Master of Engineering or Master of Science or Master of Surveying without supervision may be awarded by the Council on the recommendation of the Higher Degree or Research Committee of the appropriate faculty (hereinafter referred to as the Committee) to a candidate who has demonstrated ability to undertake research by the submission of a thesis embodying the results of an original investigation.

Qualifications

2. A candidate for the degree shall have been awarded an appropriate degree of Bachelor from the University of New South Wales with at least three years relevant standing in the case of Honours graduates and four years relevant standing in the case of Pass graduates, and at a level acceptable to the Committee.

Enrolment

3. An application to enrol as a candidate for the degree without supervision shall be made on the prescribed form which shall be lodged with the Registrar not less than six months before the intended date of submission of the thesis. A graduate who intends to apply in this way should, in his or her own interest, seek at an early year the advice of the appropriate head of school with regard to the adequacy of the subject matter and its presentation for the degree. A synopsis of the work should be available.

Thesis

4. (1) A candidate shall submit a thesis embodying the results of the investigation.

(2) The candidate shall give in writing to the Registrar two months notice of intention to submit the thesis.

(3) The thesis shall present an account on the candidate's own research. In special cases work done conjointly with other persons may be accepted, provided the Committee is satisfied about the extent of the candidate's part in the joint research.

(4) The candidate may also submit any work previously published whether or not such work is related to the thesis.

(5) Three copies of the thesis shall be presented in a form which complies with the requirements of the University for the preparation and submission of theses for higher degrees.
(6) It shall be understood that the University retains the three copies of the thesis submitted for examination and is free to allow the thesis to be consulted or borrowed. Subject to the provisions of the Copyright Act, 1968, the University may issue the thesis in whole or in part, in photostat or microfilm or other copying medium.

Examination

5. (1) There shall be not fewer than two examiners of the thesis, appointed by the Committee, at least one of whom shall be external to the University unless the Committee is satisfied that this is not practicable.

(2) Before the thesis is submitted to the examiners the head of the school in which the candidate is enrolled shall certify that it is prima facie worthy of examination.

(3) At the conclusion of the examination each examiner shall submit to the Committee a concise report on the thesis and shall recommend to the Committee that:

(a) the candidate be awarded the degree without further examination; or

(b) the candidate be awarded the degree without further examination subject to minor corrections as listed being made to the satisfaction of the head of the school; or

(c) the candidate be awarded the degree subject to a further examination on questions posed in the report, performance in this further examination being to the satisfaction of the Committee; or

(d) the candidate be not awarded the degree but be permitted to resubmit the thesis in a revised form after a further period of study and/or research; or

(e) the candidate be not awarded the degree and be not permitted to resubmit the thesis.

(4) If the performance at the further examination recommended under (3)(c) above is not to the satisfaction of the Committee, the Committee may permit the candidate to represent the same thesis and submit to further examination as determined by the Committee within a period specified by it but not exceeding eighteen months.

(5) The Committee shall, after consideration of the examiners' reports and the results of any further examination, recommend whether or not the candidate may be awarded the degree. If it is decided that the candidate be not awarded the degree the Committee shall determine whether or not the candidate may resubmit the thesis after a further period of study and/or research.

Fees

6. A candidate shall pay such fees as may be determined from time to time by the Council.

Master of Science and Technology (MScTech)

1. The degree of Master of Science and Technology by formal coursework may be awarded by the Council to a candidate who has satisfactorily complete a program of advanced study.

Qualifications

2. (1) A candidate for the degree shall:

(a) have been awarded an appropriate degree of Bachelor of four full-time years duration (or the part-time equivalent) from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Postgraduate Coursework Education Committee of the Faculty (hereinafter referred to as the Committee), or

(b)(i) have been awarded an appropriate degree of Bachelor of three full-time years duration (or the part-time equivalent) from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Committee and

(ii) have undertaken appropriate postgraduate studies of the full-time year's duration (or the part-time equivalent) at the University of New South Wales or studies considered equivalent from another university or tertiary institution at a level acceptable to the Committee.

(2) An applicant who submits evidence of such other academic or professional attainments as may be approved by the Committee may be permitted to enrol for the degree.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment.

Enrolment and Progression

3. (1) An application to enrol as a candidate for the degree shall be made on the prescribed form which shall be lodged with the Registrar at least two calendar months before the commencement of the session in which enrolment is to begin.

(2) A candidate for the degree shall be required to undertake such formal courses including the submission of a report on a project, and pass such assessment as prescribed. The project shall be under the supervision of an academic staff member and shall be assessed by two examiners (for a major project).

(3) The progress of a candidate shall be reviewed at least once a year by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.
(4) No candidate shall be awarded the degree until the lapse of two academic sessions from the date of enrolment in the case of a full-time candidate and four sessions in the case of a part-time candidate. The maximum period of candidature shall be four academic sessions from the date of enrolment for a full-time candidate, eight sessions for a part-time candidate, and ten sessions for an external candidate. In special cases an extension of these times may be granted by the Committee.

Fees

4. A candidate shall pay such fees as may be determined from time to time by the Council.

Master of Optometry (MOptom)

1. The degree of Master of Optometry by formal coursework may be awarded by the Council to a candidate who has satisfactorily completed a program of advanced study.

Qualifications

2. (1) A candidate for the degree shall have been awarded an appropriate degree of Bachelor of four full-time year's duration (or the part-time equivalent) from The University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Postgraduate Coursework Education Committee of the Faculty of Science and Technology (hereinafter referred to as the Committee).

(2) In exceptional cases an applicant who submits evidence of such other academic and professional qualifications as may be approved by the Committee may be permitted to enrol for the degree.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undertake such assessment or carry out such work as the Committee may prescribe, before permitting enrolment.

Enrolment and Progression

3. (1) An application to enrol as a candidate for the degree shall be made on the prescribed form which shall be lodged with the Registrar two calendar months before the commencement of the session in which enrolment is to begin.

(2) A candidate for the degree shall be required to undertake such formal courses and pass such assessment as prescribed.

(3) The progress of a candidate shall be reviewed at least once annually by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.

(4) No candidate shall be awarded the degree until the lapse of two academic sessions from the date of enrolment in the case of a full-time candidate or four sessions in the case of a part-time candidate. The maximum period of candidature shall be four academic sessions in the case of a full-time candidate and eight sessions for a part-time candidate. In special cases an extension of this time may be granted by the Committee.

Fees

4. A candidate shall pay such fees as may be determined from time to time by the Council.

Master of Psychology (Clinical) (MPsychol(Clin)), Master of Psychology (Forensic) (MPsychol(For)) and Master of Psychology (Organisational) (MPsychol(Org))

1. The degree of Master of Psychology (Clinical), Master of Psychology (Forensic) or Master of Psychology (Organisational) by formal coursework and thesis may be awarded by the Council to a candidate who has satisfactorily completed a program of advanced study. The degree shall be awarded at the Pass level or with the grade of Honours Class 1 or with the grade of Honours Class 2 (two divisions).

Qualifications

2. (1) A candidate for the degree shall have been awarded an appropriate degree of Bachelor with Honours in Psychology from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution, at a level acceptable to the Higher Degree Committee of the Faculty of Life Sciences (hereinafter referred to as the Committee).

(2) In exceptional cases an applicant who submits evidence of such other academic and professional qualifications as may be approved by the Committee may be permitted to enrol for the degree.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment.
Enrolment and Progression

3. (1) An application to enrol as a candidate for the degree shall be made on the prescribed form which shall be lodged with the Registrar at least four calendar months before the commencement of the session in which enrolment is to begin.

(2) A candidate for the degree shall be required to undertake such formal courses and pass such assessment as prescribed.

(3) The progress of a candidate shall be reviewed at least once annually by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.

(4) No candidate shall be awarded the degree until the lapse of four academic sessions from the date of enrolment in the case of a full-time candidate or six sessions in the case of a part-time candidate. The maximum period of candidature shall be six academic sessions from the date of enrolment for a full-time candidate and ten sessions for a part-time candidate. In special cases a variation of these times may be granted by the Committee.

Fees

4. A candidate shall pay such fees as may be determined from time to time by the Council.

Master of Safety Science (MSafetySc)

1. The degree of Master of Safety Science may be awarded by the Council to a candidate who has satisfactorily completed a program of advanced study.

Qualifications

2. (1) A candidate for the degree shall have been awarded an appropriate degree of Bachelor from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Postgraduate Coursework Education Committee of the Faculty of Science and Technology (hereinafter referred to as the Committee).

(2) In exceptional cases an applicant who submits evidence of such other academic and professional qualifications as may be approved by the Committee may be permitted to enrol for the degree.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment.

Enrolment and Progression

3. (1) An application to enrol as a candidate for the degree shall be made on the prescribed form which shall be lodged with the Registrar at least two calendar months before the commencement of the session in which enrolment is to begin.

(2) A candidate for the degree shall be required to undertake such formal courses and pass such assessment as prescribed. The program of advanced study shall total a minimum of 45 units of credit. The number of credits allocated for each course shall be determined by the Committee on the recommendation of the Course Director (hereinafter referred to as the head of the school).

(3) The progress of a candidate shall be reviewed at least once annually by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.

(4) No candidate shall be awarded the degree until the lapse of two academic sessions from the date of enrolment in the case of a full-time candidate or four sessions in the case of a part-time candidate. The maximum period of candidature shall be six academic sessions from the date of enrolment for a full-time candidate and ten sessions for a part-time candidate. In special cases an extension of these times may be granted by the Committee.

Project Report

4. (1) The program of advanced study may include a 48 units of credit project on an approved topic.

(2) The work shall be carried out under the direction of a supervisor appointed from the full-time academic members of the University staff.

(3) The candidate shall give in writing to the Registrar two months notice of intention to submit a report on the project.

(4) Three copies of the project report shall be presented in a form which complies with the requirements of the University for the preparation and submission of project reports for higher degrees.

(5) It shall be understood that the University retains the three copies of the project report submitted for examination and is free to allow the project report to be consulted or borrowed. Subject to the provisions of the Copyright Act, 1968, the University may issue the project report in whole or in part, in microfilm or other copying medium.
Examination of Project Report

5. (1) There shall be not fewer than two examiners of the project report, appointed by the Committee.

(2) At the conclusion of the examination each examiner shall submit to the Committee a concise report on the project and shall recommend to the Committee that:

(a) the project report be noted as satisfactory; or

(b) the project report be noted as satisfactory subject to minor corrections being made to the satisfaction of the head of the school; or

(c) the project report be noted as unsatisfactory but that the candidate be permitted to resubmit it in a revised form after a further period of study and/or research; or

(d) the project report be noted as unsatisfactory and that the candidate be not permitted to resubmit it.

(3) The Committee shall, after considering the examiners' reports and the candidate's results of assessment in the prescribed formal coursework, recommend whether or not the candidate may be awarded the degree.

Fees

6. A candidate shall pay such fees as may be determined from time to time by the Council.

Master of Science (MSc), Master of Science (MSc) without supervision

See Master of Engineering above for these degrees.

Master of Statistics (MStats)

1. The degree of Master of Statistics by formal coursework may be awarded by the Council to a candidate who has satisfactorily completed a program of advanced study.

Qualifications

2. (1) A candidate for the degree shall have been awarded a degree of Bachelor with major studies in statistics from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Postgraduate Coursework Education Committee of the Faculty of Science and Technology (hereinafter referred to as the Committee).

(2) In exceptional cases an applicant who submits evidence of such other academic and professional qualifications as may be approved by the Committee may be permitted to enrol for the degree.

(3) If the Committee is not satisfied with qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment.

Enrolment and Progression

3. (1) An application to enrol as a candidate for the degree shall be made on the prescribed form which shall be lodged with the Registrar at least two calendar months before the commencement of the session in which enrolment is to begin.

(2) A candidate for the degree shall be required to undertake such formal courses and pass such assessment as prescribed.

(3) The progress of a candidate shall be reviewed at least once annually by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.

(4) No candidate shall be awarded the degree until the lapse of three academic sessions from the date of enrolment in the case of a full-time candidate or six sessions in the case of a part-time candidate. In the case of a candidate who has been awarded a degree of Bachelor with Honours in statistics the Committee may approve remissions of up to one session for a full-time candidate and two sessions for a part-time candidate. The maximum period of candidature shall be four academic sessions from the date of enrolment for a full-time candidate and eight sessions for a part-time candidate. In special cases an extension of these times may be granted by the Committee.

Fees

4. A candidate shall pay such fees as may be determined from time to time by the Council.
Graduate Diploma (GradDip)

1. A Graduate Diploma may be awarded by the Council to a candidate who has satisfactorily completed a program of advanced study.

Qualifications

2. (1) A candidate for the diploma shall have been awarded an appropriate degree of Bachelor from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Education or Postgraduate Coursework Education Committee of the appropriate faculty (hereinafter referred to as the Committee).

(2) An applicant who submits evidence of such other academic or professional attainments as may be approved by the Committee may be permitted to enrol for the diploma.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment.

Enrolment and Progression

3. (1) An application to enrol as a candidate for diploma shall be made on the prescribed form which shall be lodged with the Registrar at least two calendar months before the commencement of the session in which enrolment is to begin.

(2) A candidate for the diploma shall be required to undertake such formal courses and pass such assessment as prescribed.

(3) The progress of a candidate shall be reviewed at least once annually by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.

(4) No candidate shall be awarded the diploma until the lapse of two academic sessions from the date of enrolment in the case of a full-time candidate or four sessions in the case of a part-time candidate. The maximum period of candidature shall be four academic sessions from the date of enrolment in the case of a full-time candidate and six sessions for a part-time candidate. In special cases an extension of these times may be granted by the Committee.

Fees

4. A candidate shall pay such fees as may be determined from time to time by the Council.

Graduate Certificate (GradCert)

1. A Graduate Certificate may be awarded by the Council to a candidate who has satisfactorily completed an approved program of study.

Qualifications

2. (1) A candidate for the Graduate Certificate shall have been awarded an appropriate degree of Bachelor from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Education or Postgraduate Coursework Education Committee of the Faculty (hereinafter referred to as the Committee).

(2) An applicant who submits evidence of such other academic and professional qualifications as may be approved by the Committee may be permitted to enrol for the Graduate Certificate.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment.

Enrolment and Progression

3. (1) An application to enrol as a candidate for the Graduate Certificate shall be made on the prescribed form which shall be lodged with the Registrar by the advertised closing date, which shall be set at least two calendar months before the commencement of the session in which enrolment is to begin.

(2) A candidate for the certificate shall be required to undertake courses and pass any assessment prescribed.

(3) The progress of a candidate shall be reviewed by the end of two sessions by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.

(4) The normal duration of the course is one academic session from the date of enrolment in the case of a full-time student or two sessions in the case of a part-time. For an open learning or external candidate the normal duration is two sessions from the date of enrolment. In special cases a variation of these times may be approved by the head of school.

Fees

4. Candidates shall pay such fees as may be determined from time to time by Council.
Graduate Diploma by Research (GradDip)

1. A Graduate Diploma by Research may be awarded by the Council to a candidate who has satisfactorily completed an approved program of study that includes the submission of a research report embodying the results of an original investigation and the completion of coursework.

Qualifications

2. (1) A candidate for the diploma shall have been awarded an appropriate degree of Bachelor from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Postgraduate Coursework Education Committee of the appropriate faculty (hereinafter referred to as the Committee).

(2) An applicant who submits evidence of such other academic or professional attainments as may be approved by the Committee may be permitted to enrol for the diploma.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment.

Enrolment and Progression

3. (1) An application to enrol as a candidate for the graduate award shall be made on the prescribed form which shall be lodged with the Registrar at least two calendar months before the commencement of the session in which enrolment is to begin.

(2) In every case before making the offer of a place the Committee shall be satisfied that initial agreement has been reached between the School and the applicant on the topic area, supervision arrangements, provision of adequate facilities and any coursework to be prescribed and that these are in accordance with the provisions of the guidelines for promoting postgraduate study within the University.

(3) The normal duration of the program is two academic sessions from the date of enrolment in the case of a full-time candidate or four sessions in the case of a part-time candidate. In special circumstances a variation of these times may be approved by the Head of School.

(4) The progress of a candidate shall be reviewed by the end of two sessions by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.

(5) The candidate may undertake the research as an internal student, i.e. at a campus, teaching hospital, or other research facility with which the University is associated, or as an external student not in attendance at the University except for periods as may be prescribed by the Committee.

(6) An internal candidate will normally carry out the research on a campus or at a teaching or research facility of the University except that the Committee may permit a candidate to spend a period in the field, within another institution or elsewhere away from the University provided that the work can be supervised in a manner satisfactory to the Committee. In such circumstances the Committee shall be satisfied that the location and period of time away from the University are necessary to the research program.

(7) The research shall be supervised by a supervisor or supervisors who are members of the academic staff of the School or under other appropriate supervision arrangements approved by the Committee. Normally an external candidate within another organisation or institution will have a co-supervisor at that institution.

Research Report

4. (1) On completing the program of study a candidate shall submit to the School a research report embodying the results of the original investigation.

(2) The research report shall present an account of the candidate’s own research. In special cases work done conjointly with other persons may be accepted, provided the Committee is satisfied as to the candidate’s contribution to the joint research.

Coursework

5. The School shall specify, at the time of the candidate’s acceptance into the program, any courses to be undertaken and the level of achievement required in each of the courses.

Fees

6. A candidate shall pay such fees as may be determined from time to time by the Council.
The scholarships listed below are available to students whose courses are listed in this book. Each Faculty Handbook contains in its scholarships section the scholarships available for study in that Faculty. Travel scholarships are shown separately. Applicants should note that the scholarships and their conditions are subject to review and the closing dates for awards may vary from year to year.

Scholarship information is regularly included in the University publication ‘Focus’ and updated on the UNSW Web site: http://www.infonet.unsw.edu.au/academic/schopriz/httoc.htm.

Students investigating study opportunities overseas should also consult ‘Study Abroad’ which is published by UNESCO. The British Council (02 9326 2365) may be of assistance for information about study in Britain. The Australian-American Education Foundation (02 6247 9331) or the U.S. Consulate General Educational Advising Centre (02 9373 9230) can provide information about study in America. Information may also be obtained from the embassy or consulate of the country in which the study is proposed and from the proposed overseas institution. Details of overseas awards and exchanges administered by the Department of Education, Training and Youth Affairs (DETYA) can be obtained from the Awards and Exchanges Section, DETYA, PO Box 826, Woden, ACT 2606.

KEY

L Students with Australian Citizenship or Permanent Resident status can apply.

I International students can apply.

Postgraduate scholarships for research or coursework are identified with the following codes:

R Available for study by research (normally Masters by Research or PhD).

C Available for study by coursework (normally Masters by Coursework or Graduate Diploma).

The scholarship information is normally provided in the following format:

- Amount
- Duration
- Conditions

Unless otherwise stated, application forms are available from the Scholarships and Student Loans Unit, ci-New South Q” (Lower Ground Floor, Chancellery). Applications normally become available four to six weeks before the closing date.
**Undergraduate Scholarships**

Following are details of scholarships available to undergraduate students at UNSW. The scholarships are listed according to the year of study for which the scholarship is available (i.e., scholarships for first year students; scholarships for second or later year students; scholarships for Honours year students) or whether they are available to undertake travel, and then also by Faculty and course (e.g., scholarships in Science and Technology or Engineering). If students from more than one Faculty are able to apply the scholarship is listed in the General Scholarships section.

For further information contact:
The Scholarships and Student Loans Unit
The University of New South Wales
Sydney 2052 Australia
Tel: (02) 9385 3100/3101/1462
Fax: (02) 9385 3732
Email: scholarships@unsw.edu.au

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**Scholarships for students entering the first year of an undergraduate course**

**General**

**The Alumni Association Scholarships (I,L)**
- Up to $1,500 pa
- 1 year renewable subject to satisfactory progress
The scholarships are available to students enrolled in any year of a full-time undergraduate course. Candidates must be the children or grandchildren of alumni of UNSW. Applications close early January.

**The AUSIMM Education Endowment Fund (L)**
- $2,500-$5,000 pa
- 1 year may be renewable subject to satisfactory progress
The scholarships are open to full-time undergraduate students enrolled in a course leading to the award of a Geoscience, Mining Engineering or Minerals Engineering (Minerals Processing or Extractive Metallurgy) degree related to the interests of the mineral industry. Further information is available from The Australian Institute of Mining and Metallurgy (AUSIMM), PO Box 660, Carlton South VIC 3053, Tel (03) 9662 3166.

**The Australian Development Scholarships (ADS) (I)**
- Tuition fees, medical cover, airfare and a stipend
- Duration of the course
This award is for international students from selected countries only. Information and applications can only be obtained from Australian Diplomatic Posts or Australian Education Centres in the home country. Applications normally close at least 12 months before the year of study.

**The Australian Vietnam Veterans Trust Education Assistance Scheme (L)**
- $3,500 pa
- Duration of the course subject to satisfactory progress
The scholarship is available to the children of Vietnam veterans who are aged under 25 at the time of application. The award is subject to the same income test as AUSTUDY. Applicants can be undertaking any year of a Bachelors course. Applications and further information are available from the Australian Vietnam War Veterans Trust National Office, PO Box K978, Haymarket NSW 1240, Tel (02) 9281 7077, Email: vvt@accsoft.com.au. Applications close 31 October.

**The Ben Lexcen Sports Scholarships (I,L)**
- $2,000 pa
- 1 year with possibility of renewal
The scholarships are available to students who are accepted into a course of at least two years duration. Prospective applicants should have an outstanding ability in a particular sport and are expected to be active members of a UNSW Sports Club. Applications close late January.

**The Captain Reg Saunders Scholarship (L)**
- $3,000
- Up to 4 years
Applicants must be Aboriginals or Torres Strait Islanders eligible to commence a university degree in the area of psychology, nursing, applied science, social work or education. Further Information and applications are available from the Aboriginal Education Program, UNSW, Tel (02) 9385 3805.

**The UNSW Co-Op Program (L)**
- $11,150 pa, and between 9 and 20 months industry training
- Duration of the course subject to satisfactory progress
The scholarships are offered by industry sponsors through the University for some of the disciplines in the Faculties of Science and Technology, Commerce and Economics, and Engineering. Scholars are selected by interview with emphasis placed on achievements in community and extra-curricular activities as well as communication and leadership skills. A minimum UAI of 93.8 is expected. The UNSW Co-Op Program application form is available from school Careers Advisers or the Co-op Program Office on (02) 9385 5116. Applications close September 30 with interviews held at the end of November and beginning of December. Further information is available at the Co-Op program web page http://co-op.web.unsw.edu.au.

**The Girls Realm Guild Scholarships (L)**
- Up to $1,500 pa
- 1 year with the prospect of renewal subject to satisfactory progress and continued demonstration of need
The scholarships are available to female students under 35 years of age who are enrolling in any year of a full-time undergraduate course. Selection is based on academic merit and financial need. Applications close 25 March.
The Ian Somervaille Scholarships (L,L)
• Up to $3,000
• 1 year
The scholarships are available to immediate family members (ie. children, parents, brothers, sisters, spouses, de facto partners) of UNSW staff members. Applicants must be full-time students enrolling in any year of an undergraduate course leading to the degree of Bachelor at UNSW. Selection will be based on academic merit, aptitude and commitment to the proposed course. Consideration may be given in cases of hardship or disadvantage. Applications close 31 January.

The John Niland Scholarships (L)
• $5,000
• 1 year
The scholarships are available to students commencing the first year of undergraduate study at UNSW in any discipline. Applicants must be undertaking an undergraduate or postgraduate degree which includes, or leads to, research relevant to Aboriginal health. Applications will be assessed in terms of previous qualifications and experience. Consideration will be given to prior knowledge and experience of Aboriginal culture and health. Applications close early August.

The New College Access Scholarship
The scholarship provides up to half of the accommodation fee for a limited number of first year ACCESS scheme students experiencing long term financial hardship. Nominations are forwarded by the College. No application form is required.

The National Health and Medical Research Council (NHMRC) Training Scholarship for Aboriginal Health Research (L,R)
• $16,135 - $23,997 pa (depending on qualifications)
• Up to 3 years
Applicants must be undertaking an undergraduate or postgraduate degree which includes, or leads to, research relevant to Aboriginal health. Applications will be assessed in terms of previous qualifications and experience. Consideration will be given to prior knowledge and experience of Aboriginal culture and health. Applications close late July.

The Smith Family Tertiary Scholarship Scheme (L,L)
• Up to $2,000 for University fees, books, laboratory/field or practical fees
• 1 year
The scheme offers scholarships to first year undergraduate students from disadvantaged families who demonstrate high academic ability and the personal commitment to succeed in tertiary studies. Applications are available from The Education Support Co-ordinator, The Smith Family, Locked Bag 1000, Camperdown NSW 2050, Tel (02) 9550 4422, fax (02) 9516 4063. Applications close late July.
The St George Students' Association Lexcen Scholarship (L)
- $2,000
- 1 year only

Two Scholarships will be awarded annually to high achieving sports persons undertaking, or proposing to undertake, study at UNSW. To be eligible, applicants must be enrolled in, or proposing to enrol in, a course of at least two years duration at UNSW. Applicants should possess an outstanding ability in a particular sport. It is desirable, but not essential, that an applicant's family home is located in the St George/Sutherland Shire region. Each applicant will be assessed on the basis of outstanding ability in a particular sport. Consideration may also be given to an applicant's leadership qualities, potential to contribute to the wider life of the University, any social and economic circumstances which may affect the applicant and academic merit. Application must be made using the Ben Lexcen Scholarship application form. An interview may be required. Applications will normally close on 31 January.

The Vice-Chancellor's Equity Scholarships (L)
- $1,500 pa
- 1 year

In 1999, a small number of scholarships were awarded for financially disadvantaged students commencing full-time undergraduate study. Consideration is normally given to academic merit and financial need. The conditions may change each year.

The W.S. and L.B. Robinson Scholarship (L)
- Up to $8,500 pa
- 1 year renewable for the duration of the course subject to satisfactory progress

Applicants must have completed their schooling in Broken Hill or have parents who reside in Broken Hill. Applicants should be undertaking a course related to the mining industry, for example courses in mining engineering, geology, electrical and mechanical engineering, metallurgical process engineering, chemical engineering or science. A letter of application should be sent to Pasminco Mining, PO Box 460, Broken Hill, NSW 2880. Applications close 30 September.

The UNSW Golden Jubilee Scholarships (I)
- Course fees for the minimum course duration less any advanced standing, subject to satisfactory progress

The Scholarships have been established to encourage outstanding Diplomates from Singapore and Malaysia to complete an undergraduate degree at UNSW. To be eligible, applicant's must be proposing to undertake an undergraduate qualification at UNSW in one of the Faculties of Arts and Social Sciences, the Built Environment, Commerce and Economics, Engineering, Life Sciences or Science and Technology or the College of Fine Arts. Successful applicants will be granted advanced standing on the basis of their studies in Singapore and Malaysia. The Scholarship is only available to graduands of specific institutions. Applicants must be Citizens or Permanent Residents of Singapore or Malaysia. Selection will be based on academic merit. Applications will normally close on 30 November for study commencing in Session One of the following year and 30 April for study commencing in Session Two of the same year.

Faculty Scholarships

Faculty of Science and Technology

The School Scholarships (Chemistry, Mathematics and Physics)- including the John Ragnar Anderson Chemistry Scholarships (L)
- Up to $2,000 pa
- 1 year renewable for the duration of the course subject to satisfactory progress

Up to six scholarships are available to full-time students enrolled in the Schools of Chemistry, Mathematics or Physics. Application forms are available from the Faculty Office or the Scholarships and Student Loans Unit. Applications normally close mid-February.

The Science and Technology Faculty Scholarships (L)
- Up to $3,000 pa
- 1 year renewable for the duration of the course subject to satisfactory progress

Six scholarships are available and carry the title of Faculty Scholar. The scholarships are available to full-time students enrolled in one of the disciplines of the Faculty of Science and Technology. Students undertaking the combined Bachelor of Science/Bachelor of Arts course may also apply. Application forms are available from the Faculty Office or the Scholarships and Student Loans Unit. Applications normally close mid-February.

Ceramic Engineering

The Clay Brick Association Scholarship (L)
- Up to $2,500 pa
- 1 year renewable for the duration of the course subject to satisfactory progress

Applicants must be eligible for admission to Year 1 of the full-time degree course in Ceramic Engineering. A new scholarship is only offered when the current scholarship recipient completes his/her course. It is expected that a new award will be available in 1999. Applications normally close at the end of January.

The Thomson Family Scholarship (L)
- Up to $1,000 pa
- 1 year renewable for the duration of the course subject to satisfactory progress

Applicants must be eligible for admission to Year 1 of the full-time degree course in Ceramic Engineering. Applications normally close at the end of January.

The Monier PGH Scholarship (L)
- Up to $1,000 pa
- 1 year renewable for the duration of the course subject to satisfactory progress

Applicants must be eligible for admission to Year 1 of the full-time degree course in Ceramic Engineering. Applications normally close at the end of January.
Metallurgy

The CSIRO Division of Minerals Scholarship in Metallurgical Engineering (L)
- $2,500 pa
- 4 years subject to satisfactory progress
The scholarship is available to a full-time student enrolled in Year 1 of the course leading to a Bachelor of Metallurgical Engineering (Process Metallurgy) degree. Selection is based on academic merit and personal qualities. Applications close in early December.

The Sir Rupert Myers Scholarship (L,L)
- Up to $2,500 pa
- 1 year renewable for the duration of the course subject to satisfactory progress
The scholarship is available to students who are Permanent Residents of Australia or whose parents are Permanent Residents of Australia. Applicants must be eligible for admission to Year 1 of the full-time degree course in Metallurgy or Metallurgical Engineering. Applications normally close at the end of January.

The AITD-MMI Insurance-Mark Pompei Scholarship (L)
- $1,000
The Australian Institute of Training and Development and MMI Insurance offer an annual scholarship to a part-time student currently working in the field of Training and Development. Applicants should be completing their first accredited qualification to assist their development in this field. Applications are available from AITD NSW Division Administrator, PO Box 5452, West Chatswood NSW 2057, Tel (02) 9419 4966, Fax (02) 9419 4142, Email nswdivn@aitd.com.au. Applications close in May.

The Alumni Association Scholarships (L,L)
- Up to $1,500 pa
- 1 year renewable subject to satisfactory progress
The scholarships are available to students enrolled in any year of a full-time undergraduate course. Candidates must be the children or grandchildren of alumni of UNSW. Applications close early January.

The Australian Vietnam Veterans Trust Education Assistance Scheme (L)
- $3,500 pa
- Duration of the course subject to satisfactory progress
The scholarship is available to the children of Vietnam veterans who are aged under 25 at the time of application. The award is subject to the same income test as AUSTUDY. Applications and further information are available from the Australian Vietnam War Veterans Trust National Office, PO Box K978, Haymarket NSW 1240, Tel (02) 9281 7077, Email: vvt@accsoft.com.au. Applications close 25 March.

The Ben Lexcen Sports Scholarships (L,L)
- $2,000 pa
- 1 year with possibility of renewal
The scholarships are available to students who are accepted into a course of at least two years duration. Prospective applicants should have an outstanding ability in a particular sport and are expected to be active members of a UNSW Sports Club. Applications close late January.

The Bill Pardy University Challenge Scholarship (L,L)
- $1,000
- 1 year only
The Scholarship is established to recognise Bill Pardy's achievement in winning the 1998 University Challenge on the television program Sale of the Century, and to encourage students to participate in and contribute to the cultural life of the University. To be eligible, applicants must be enrolled in the second or later year of an undergraduate degree at UNSW. Each applicant will be assessed on the basis of a personal statement detailing their previous and proposed contribution to the cultural life of the University. Consideration may also be given to academic merit. Applications will normally close on 31 March.

The Girls Realm Guild Scholarship (L)
- Up to $1,500 pa
- 1 year with the prospect of renewal subject to satisfactory progress and continued demonstration of need
The scholarships are available only to female students under 35 years of age who are enrolling in any year of a full-time undergraduate course. Selection is based on academic merit and financial need. Applications close 31 March.

The Dried Fruits Research and Development Council (DFRDC) Studentships and Student Awards (L,L)
- Up to $3,000 for Studentships, up to $1,000 for Student Awards
The Studentships assist students to undertake research projects in the final year of a Bachelors degree (applications close April 15), or to undertake a research project during the summer vacation (applications close October 15). The Student Awards are provided for excellence in student research projects related to the dried fruit industry. Further information and applications are available from the Executive Officer, Dried Fruits Research and Development Council, Box 1142, Mildura VIC 3502, Tel (050) 221515, Fax (050) 233321.
The Esso Australia Ltd Geosciences Scholarship (L,L)

- Up to $3,000
- 1 year

The scholarship is for a full-time student seeking to undertake study in the final year (Year 4) of a Bachelor of Science (AppGeo) or an equivalent Honours year, majoring in geology or geophysics. The successful applicant is expected to have an interest in petroleum related studies ie sedimentology, biostratigraphy, seismic/magnetic/ gravity geophysical studies, basin studies, palynology or palaeontology. Selection is based on academic merit, the benefit the student will gain by being awarded the scholarship and can include consideration of financial need. Applications close 30 November.

The Ian Somerville Scholarships (L,L)

- Up to $3,000
- 1 year

The scholarships are available to immediate family members (ie. children, parents, brothers, sisters, spouses, de facto partners) of UNSW staff members. Applicants must be full-time students enrolling in any year of an undergraduate course leading to the degree of Bachelor at UNSW. Selection will be based on academic merit, aptitude and commitment to the proposed course. Consideration may be given in cases of hardship or disadvantage. Applications close 31 January.

The Julian Small Foundation Annual Research Grant (L,L)

- Up to $5,000

Applications are open to postgraduate and undergraduate students undertaking research and involved in the study of law, or industrial relations. Selection will be based on a research proposal which outlines how the research will advance thinking and practice in the area of employment law and industrial relations in Australia. Applications close mid-August.

The Kensington Colleges Scholarships

Further information concerning the awards below may be available from The Kensington Colleges, Tel (02) 9315 0000, Fax (02) 9315 0011, Email kenso-colleges@unsw.edu.au, Web: http://www.kenscoll.unsw.edu.au.

The Fell Scholarship

The scholarship provides $650 credit for accommodation costs and is awarded to a returning resident in each College. Applicants will be assessed on their academic performance in the second or later year of their course.

Resident Assistant Scheme

The program provides subsidised accommodation, valued at up to $1,000, for 22 academically promising residents, and an apprenticeship in the collegiate Residential Academic Staff role. All residents who have successfully completed at least one year of university study are eligible to apply.

The National and Medical Research Council (NHMRC) Training Scholarship for Aboriginal Health Research (L,R)

- $16,135 - $23,997 pa (depending on qualifications)
- Up to 3 years

Applicants must be undertaking an undergraduate or postgraduate degree which includes, or leads to, research relevant to Aboriginal health. Applications will be assessed in terms of previous qualifications and experience. Consideration will be given to prior knowledge and experience of Aboriginal culture and health. Applications close late July.

The Nicholas Catchlove Scholarship in Flying (L)

- $10,000
- 1 year

The scholarship will be awarded to provide a final year student with the opportunity to undertake further flying training to prepare for a career in the aviation industry. Applicants must be proposing to undertake the final year of an appropriate course and hold a Commercial Pilot's Licence. Selection will be based on academic merit, reasons for undertaking the course, financial need, commitment to flying and to the course, demonstrated ability, leadership qualities and interview performance. Applications close in October.

The NSW Ministry for the Arts Scholarships (L,R,C)

- $5,000 - $25,000 (depending on the award)

The NSW Government offers a number of scholarships and awards to writers, artists and scholars living in NSW. Further information is available from the New South Wales Ministry for the Arts, GPO Box 5341, Sydney NSW 2000, Tel (02) 9228 3533, Fax (02) 9228 4722.

The RGC Scholarship in Economic Geology (L)

- $5,000
- 1 year

The scholarship is available to a student entering Year 4 of the Applied Geology course or an Honours year in geology in the Science course and who is proposing to undertake a field project relevant to economic geology. Letters of application and requests for information should be directed to RGC, Gold Fields House, 1 Alfred St, Sydney NSW 2000. Applications close 31 January.

The Rural Allied Health Placement Grants (L)

- Up to $500

Grants are available to students undertaking rural placements, who are in the final two years of an undergraduate course in dietetics, diagnostic radiography, occupational therapy, pharmacy, physiotherapy, podiatry, social work, speech pathology, psychology (honours) or any year of a postgraduate course in dietetics or psychology (Masters). Applications are available from the NSW Health Rural Health Support Unit. Tel (02) 6640 2302, Fax (02) 6640 2499, Email rhsu@nor.com.au, web: www.nor.com.au/community/rhsu. Session One applications close 15 May. Session Two applications close in August.

The Rural Allied Health Scholarships (L)

- $5,750

Scholarships are available to students who are in the final two years of a four year undergraduate course in Aboriginal health, dietetics, diagnostic radiography, occupational therapy, pharmacy, physiotherapy, podiatry, social work, speech pathology, or the final year of psychology (honours) degree or any year of a Masters qualification in dietetics or psychology. Applications are available from the NSW Health Rural Health Support Unit. Tel (02) 6640 2302, Fax (02) 6640 2499, Email rhsu@nor.com.au, web: www.nor.com.au/community/rhsu. Applications close late September.

The Sam Cracknell Memorial Scholarships (L,L)

- Up to $1,500
- 1 year

Applicants should have already completed at least 2 years of a degree or diploma course and be enrolled in a full-time course during the year of application. Selection is based on academic merit, participation in sport both directly and administratively and financial need. Applications close 31 March.
The St George Students' Association Lexcen Scholarship (L)

- $2,000
- 1 year only

Two Scholarships will be awarded annually to high achieving sports persons undertaking, or proposing to undertake, study at UNSW. To be eligible, applicants must be enrolled in, or proposing to enrol in, a course of at least two years duration at UNSW. Applicants should possess an outstanding ability in a particular sport. It is desirable, but not essential, that an applicant's family home is located in the St George/Sutherland Shire region. Each applicant will be assessed on the basis of outstanding ability in a particular sport. Consideration may also be given to an applicant's leadership qualities, potential to contribute to the wider life of the University, any social and economic circumstances which may affect the applicant and academic merit. Application must be made using the Ben Lexcen Scholarship application form. An interview may be required. Applications will normally close on 31 January.

The Spruson and Ferguson (Patent Attorneys) Scholarship for Innovation (L)

- At least $1,000
- 1 year

The scholarship is available to a student who is undertaking the final year of an undergraduate course in any school of the Faculty of Science and Technology or the Faculty of Engineering. Selection will be based on academic merit and the innovative nature of the proposed final year project. Applicants are required to submit an application and a 200 word outline of their proposed research topic. Applications close 7 March.

The Telstra Education Fellowships (L)

- $7,500
- 1 year

Applicants must be entering the final year of study in the disciplines of computer, electrical or electronic engineering, computer science or human factors. Students may also have the opportunity to undertake up to 12 weeks non-compulsary vacation employment. Further information is available from the Fellowship Applications Officer, Telstra Research Laboratories, PO Box 249, Rosebank MDC, Clayton Victoria 3169. Email c.zaman@tl.telstra.com.au. Applications normally close at the end of July.

Telstra Network Technology Group and Multimedia (NTG&M) EEO Scholarships (L)

- $10,000, plus summer vacation work and guaranteed employment
- 1 year

The scholarships are open to undergraduate students enrolled in the second last year in electrical/electronic engineering, computers systems engineering, communications or other degree related to telecommunications. Applicants must belong to one of the following EEO groups: women, people from a non-English-speaking background, Aborigines or Islanders, people with a disability. The successful candidates are expected to work for Telstra NTG&M in the summer break and for at least two years after the completion of study. Enquiries to Karen Stewart on (03) 9634 3448, Email kstewart@vcomfin.telstra.com.au. Applications close late June.

The W.S. and L.B. Scholarship (L)

- Up to $6,500 pa
- 1 year renewable for the duration of the course subject to satisfactory progress

Applicants must have completed their schooling in Broken Hill or have parents who reside in Broken Hill. Applicants should be undertaking a course related to the mining industry, for example courses in mining engineering, geology, electrical and mechanical engineering, metallurgical process engineering, chemical engineering or science. A letter of application should be sent to Pasminco Mining, PO Box 460, Broken Hill, NSW 2880. Applications close 30 September.

Faculty second year or later

Faculty of Life Sciences

The Roy and Lois Tirrell Scholarship

- $2000
- 1 year

The scholarship was established to encourage students to undertake study in Biochemistry. The scholarship is provided for students undertaking the second year of the Bachelor of Science program with a major in Biochemistry. The scholarship shall normally have a minimum value of $2000 per annum. The scholarship will normally be tenable for one year only.

Faculty of Science and Technology

Metallurgy

The Pasminco Scholarship (L)

- Up to $1,000
- 1 year

One scholarship is available for a student entering Year 4 of the Bachelor of Metallurgical Engineering. A letter of application should be sent direct to the School of Materials Science and Engineering. Applications close early March.
Honours Year Scholarships

General

The Alumni Association Scholarships (I,L)
- Up to $1,500 pa
- 1 year renewable subject to satisfactory progress

The scholarships are available to students enrolled in any year of a full-time undergraduate course. Candidates must be the children or grandchildren of alumni of UNSW. Applications close early January.

The Apex Foundation for Research into Intellectual Disability Studentships (I,L)
- $1,000

The studentships are available to students preparing a thesis related to intellectual disability. Applications should be in the form of a letter which includes a curriculum-vitae and thesis plan and must be supported by a letter from the Head of School/Department. Applications should be sent to the Honorary Secretary, Apex Foundation Studentships, PO Box 311, Mt Evelyn Vic 3796. Applications close 31 May.

The Australian and New Zealand Council for the Care of Animals in Research and Teaching (ANZCCART) Student Award (I,L)
- $1,000 for attendance at the annual conference

Applicants can be Honours students from any discipline. The award provides assistance for a student to attend the annual conference. Applications are available from ANZCCART, PO Box 19 Glen Osmond, SA, 5064, Tel (08) 303 7325. Applications close in July.

The Australian Vietnam Veterans Trust Education Assistance Scheme (L)
- $3,500 pa
- Duration of the course

The scholarship is available to the children of Vietnam veterans who are aged under 25 at the time of application. The award is subject to the same income test as AUSTUDY. Applicants can be undertaking any year of a Bachelors course. Applications and further information are available from the Australian Vietnam War Veterans Trust National Office, PO Box K978, Haymarket NSW 1240, Tel (02) 9281 7077, Email: vvt@accsoft.com.au. Applications close 31 October.

The Ben Lexcen Sports Scholarships (I,L)
- $2,000 pa
- 1 year with the possibility of renewal

The scholarships are available to students who are accepted into a course of at least two years duration. Prospective applicants should have an outstanding ability in a particular sport and are expected to be active members of a UNSW Sports Club. Applications close late January.

The Esso Australia Ltd Geosciences Scholarship (I, L)
- Up to $3,000
- 1 year

The scholarship is for a full-time student seeking to undertake study in the final year (Stage 4) of a Bachelor of Science degree in Applied Geology or an equivalent Honours year, majoring in geology or geophysics. The successful applicant is expected to have an interest in petroleum related studies ie sedimentology, biostratigraphy, seismic/magnetic/gravity geophysical studies, basin studies, palynology or palaeontology. Selection is based on academic merit, the benefit the student will gain by being awarded the scholarship and can include consideration of financial need. Applications close 30 November.

The Girls Realm Guild Scholarships (L)
- Up to $1,500 pa
- 1 year with the prospect of renewal subject to satisfactory progress and continued demonstration of need

The scholarships are available only to female students under 35 years of age who are enrolling in any year of a full-time undergraduate course. Selection is based on academic merit and financial need. Applications close 25 March.

The Grains Research and Development Corporation (GRDC) Undergraduate Honours Scholarship (I,L)
- $6,000 (ie $5,000 to the student and $1,000 to the host School/Department).
- 1 year

Applicants must be undertaking a full-time Honours program. Study in an area of significance to the grains industry will be viewed favourably. A letter of application, including a curriculum-vitae, academic record, letter of support from the Head of School/Department and two referees' supporting statements, should be sent to GRDC Undergraduate Honours Scholarship, PO Box E6, Queen Victoria Terrace, Canberra ACT 2600, Tel (02) 62725528. Applications close early November.

The Great Barrier Reef Marine Park Authority Research Support (I,L)
- $1,500

Applicants must be undertaking a full-time Honours year or PhD research project that could contribute to the planning and managing work undertaken by the Great Barrier Reef Marine Park Authority. Applications and further information may be obtained from the Executive Officer, Great Barrier Reef Marine Park Authority, PO Box 1379, Townsville QLD 4810, Tel (077) 818811. Applications close mid-December.

The Ian Somervaille Scholarships (L)
- Up to $3,000
- 1 year

The scholarships are available to immediate family members (ie. children, parents, brothers or sisters) of UNSW staff members or their married or de facto partners. Applicants must be full-time students enrolling in any year of an undergraduate course leading to the degree of Bachelor at UNSW. Selection will be based on academic merit, aptitude and commitment to the proposed course. Consideration may be given in cases of hardship or disadvantage. Applications close 31 January.

The National Health and Medical Research Council (NHMRC) Training Scholarship for Aboriginal Health Research (L,R)
- $16,135 - $23,997 pa (depending on qualifications)
- Up to 3 years
Applicants must be undertaking an undergraduate or postgraduate degree which includes, or leads to, research relevant to Aboriginal health. Applications will be assessed in terms of previous qualifications and experience. Consideration will be given to prior knowledge and experience of Aboriginal culture and health. Applications close late July.

The NSW Ministry for the Arts Scholarships (L,R,C)
- $5,000 - $25,000 (depending on the award)
The NSW Government offers a number of scholarships and awards to writers, artists and scholars living in NSW. Further information is available from the New South Wales Ministry for the Arts, GPO Box 5341, Sydney NSW 2000, Tel (02) 9228 3533, Fax (02) 9228 4722.

The RGC Scholarship in Economic Geology (L)
- $5,000
- 1 year
The scholarship is available to a student entering Stage 4 of the Applied Geology course or an Honours year in geology in the Science course and who is proposing to undertake a field project relevant to economic geology. Letters of application and requests for information should be directed to RGC, Gold Fields House, 1 Alfred St, Sydney NSW 2000. Applications close 31 January.

The River Basin Management Society Ernest Jackson Memorial Research Grants (L,L)
- Up to $2,000
The scholarship assists PhD and Masters students undertaking research in the field of river basin management. Fourth year Honours students are encouraged to apply. Further information is available from RBMS, PO Box 113, Forest Hill Vic 3131, Tel (03) 9816 6896. Applications close in April.

The RSPCA Alan White Scholarship (L,L)
- $2,500
Applicants should be undertaking original research to improve the understanding and welfare of animals. A letter of application should be sent to the Executive Officer, RSPCA Australia, PO Box E369, Queen Victoria Terrace, Canberra ACT 2600, Tel (02) 62311437. Applications close 31 March.

The Rural Allied Health Placement Grants (L)
- Up to $500
Grants are available to students undertaking rural placements, who are in the final two years of an undergraduate course in dietetics, diagnostic radiography, occupational therapy, pharmacy, physiotherapy, podiatry, social work, speech pathology, psychology (honours) or any year of a postgraduate course in dietetics or psychology (Masters). Applications are available from the NSW Health Rural Health Support Unit, Tel (02) 6640 2302, Fax (02) 6640 2499, Email: rhsu@nor.com.au, web: www.nor.com.au/community/rhsu. Applications close 15 May. Session Two applications close in August.

The Rural Allied Health Scholarships (L)
- $5,750
Scholarships are available to students who are in the final two years of a four year undergraduate course in Aboriginal Health, dietetics, diagnostic radiography, occupational therapy, pharmacy, physiotherapy, podiatry, social work, speech pathology, or the final year of psychology (honours) degree or any year of a Masters qualification in dietetics or psychology. Applications are available from the NSW Health Rural Health Support Unit, Tel (02) 6640 2302, Fax (02) 6640 2499, Email: rhsu@nor.com.au, web: www.nor.com.au/community/rhsu. Applications close late September.

The Sam Cracknell Memorial Scholarship (i,L)
- Up to $1,500
- 1 year
The Scholarship is available to students undertaking, or proposing to undertake, studies at UNSW on mining geology. To be eligible, applicants must be enrolled in, or proposing to enrol in, a course of at least two years duration at UNSW. Applicants should possess an outstanding ability in a particular sport. It is desirable, but not essential, that an applicant's family home is located in the St George/Sutherland Shire region. Each applicant will be assessed on the basis of outstanding ability in a particular sport. Consideration may also be given to an applicant's leadership qualities, potential to contribute to the wider life of the University, any social and economic circumstances which may affect the applicant and academic merit. Application must be made using the Ben Lexcen Scholarship application form. An interview may be required. Applications will normally close on 31 January.

The Ukrainian Studies Foundation of Australia Endowed Scholarship (L,L)
- $1,000 in 2000, $1,500 from 2001
- 1 year only
The Scholarship is available to students undertaking, or proposing to undertake, postgraduate or honours level studies at UNSW on a Ukrainian topic/theme, or comparative Ukrainian/Australian topic/theme. Selection will be based on academic merit and the reasons for undertaking the current and/or proposed studies. Applications will normally close on January 31.

The University Honours Year Scholarships (L,L)
- $1,000
- 1 year
A number of scholarships will be awarded on the basis of academic merit for students entering an 'add-on' honours year, ie the honours year in a degree course which is normally a pass degree but which has the option of a further year of study at Honours level. Applications close 30 November.

The W.S. and L.B. Robinson Scholarship (L)
- Up to $6,500 pa
- 1 year renewable for the duration of the course subject to satisfactory progress
Applicants must have completed their schooling in Broken Hill or have parents who reside in Broken Hill. Applicants should be undertaking a course related to the mining industry, for example courses in mining engineering, geology, electrical and mechanical engineering, metallurgical process engineering, chemical engineering or science. A letter of application should be sent to Pasminco Mining, PO Box 460, Broken Hill, NSW 2880. Applications close 30 September.


The St George Students' Association Lexcen Scholarship (L)
- $2,000
- 1 year only
Two Scholarships will be awarded annually to high achieving sports persons undertaking, or proposing to undertake, study at UNSW. To be eligible, applicants must be enrolled in, or proposing to enrol in, a course of at least two years duration at UNSW. Applicants should possess an outstanding ability in a particular sport. It is desirable, but not essential, that an applicant's family home is located in the St George/Sutherland Shire region. Each applicant will be assessed on the basis of outstanding ability in a particular sport. Consideration may also be given to an applicant's leadership qualities, potential to contribute to the wider life of the University, any social and economic circumstances which may affect the applicant and academic merit. Application must be made using the Ben Lexcen Scholarship application form. An interview may be required. Applications will normally close on 31 January.
Faculty Scholarships

Faculty of Life Sciences

The Dean's Honours Year Scholarship (I,L)
- $2,500
- 1 year only

One Scholarship is available for a student undertaking an Honours Year in the Faculty of Life Sciences. Selection will be based on academic merit. The Scholarship cannot be held concurrently with a Faculty of Life Sciences Undergraduate Scholarship or a University Honours Year Scholarship. Applications close 30 January.

Biological Science

The Alton and Neryda Fancourt Chappie Biological Science Scholarship (I,L)
- $1,000
- 1 year

The scholarship is available to a student undertaking the Honours year in the School of Biological Science at UNSW. Selection will be based on academic merit. Applications close 30 April.

Faculty of Science and Technology

The Brother Vincent Cotter Honours Scholarship in Physics (L)
- $1,000
- 1 year only

Applicants must be proposing to undertake the fourth year Honours program in the School of Physics at UNSW. Selection will be based on academic merit and the applicants reasons for undertaking the course. Applications will normally close on 31 January.

The H.C. & M.E. Porter Memorial Scholarship (I,L)
- Up to $3,000
- 1 year

The scholarship is available to a full-time student undertaking an Honours year in Chemistry, Mathematics or Physics in the Faculty of Science and Technology. Applications close 20 December in the year prior to the proposed Honours year.

Chemistry

The Howard Memorial Scholarship for Honours in Chemistry (L)
- HECS liability, $4,000 living allowance
- 1 year

Applicants must be undertaking the Honours Year in the School of Chemistry. Students who will not be completing their Pass degree until the end of Session One, in the following year can apply. Benefits for these students will not commence until completion of the Pass degree. Selection is based on academic merit and a demonstrated capacity for research. Applications close 31 October.

Mathematics

The Buchwald Award in Applied Mathematics (I,L)
- Up to $400
- 1 year

One scholarship is available for a student in the final year of the Honours course in Applied Mathematics. Applications close 31 March.

The George Szekeres Award (I,L)
- $300
- 1 year

The scholarship is available to students entering the final year of the Honours course in Pure Mathematics. Applications close 31 March.
Travel Scholarships

General

The Arthur Anderson Study Abroad Scholarship (L)
- Up to $2,500
The scholarship provides financial assistance to undergraduate students to undertake a period of study/research in the Arthur Anderson offices in Singapore. Applicants must be full-time students undertaking study in law, commerce, or economics. Applicants must normally be intending to undertake the final year of study and to complete the travel prior to completion of the final year. Applications are also open to students undertaking an official exchange program with a university in Asia. Further information and application forms are available from the International Student Centre. Applications normally close 31 July in the year prior to the final year of study.

The Association of International Education Japan (AIEJ) Short-Term Student Exchange Promotion Program (Inbound) Peace and Friendship Scholarships (L)
- 50,000 yen (settling-in allowance), 100,000 yen per month, plus airfare
- Ten months to one year
Applicants must be accepted by a Japanese University under a student exchange program agreement with UNSW. Students must initially apply directly to a Japanese University through the International Student Centre at UNSW. The Japanese host university will recommend candidates to AIEJ and students must apply as directed by the host university. Applications close in February, May and September each year.

The AT&T Leadership Award (I,L,R,C)
- US$5,000
The award is open to students who will be commencing full-time undergraduate or postgraduate study in the United States between January and September in the year of application. The scholarship is open to students from the following Asia/Pacific countries: Australia, China, Hong Kong, India, Indonesia, Japan, Republic of Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand. Information and applications are available from the U.S. Consulate General, USIS, Level 59 MLC Centre, 19-20 Martin Place, Sydney NSW 2000, Tel (02) 9662 3016. Applications close 15 September.

The Australia-Korea Foundation/National Korean Studies Centre Exchange Scholarships (L)
- Up to $2,500
The scholarships provide financial assistance to undergraduate students who have been accepted as exchange students by a Korean University. Information and applications are available from the Programs Co-ordinator, National Korean Studies Centre, PO Box 218, Hawthorn Vic 3122, Email nksc@swin.edu.au. Applications close early January.

The Australia-Korea Foundation Undergraduate Bursaries (L)
- $1,000
- 1 year
Bursaries are available for students commencing the first year of an undergraduate course intending to study the Korean language. Information and applications are available from the Programs Co-ordinator, National Korean Studies Centre, PO Box 218, Hawthorn Vic 3122, Email nksc@swin.edu.au. Applications close in December.

Churchill Fellowships (L)
- Tuition, travel and living allowances
Churchill Fellowships provide financial support for Australian Citizens to undertake study, training or projects overseas. Fellowships will not normally be awarded for higher academic or formal qualifications. Applicants must be over 18 years of age. Further information and applications are available from the Chief Executive Officer, The Winston Churchill Memorial Trust, 218 Northbourne Ave, Braddon ACT 2612, Tel (02) 6247 8333. Applications close late February.

DAAD - The German Academic Exchange Service Scholarships (L)
Application forms for the following scholarships are available from the Consulate General of the Federal Republic of Germany, PO Box 204, Woollahra NSW 2025.

One-Semester German Studies Scholarships
- DM1,000 a month living allowance, travel assistance of DM2,500 and the health insurance contribution
- One semester
Applications must be in their third year of German Studies. Applications close 1 July.

Deutschlandkundlicher Winterkurs
- DM3,500 to assist with travel and living expenses and course fees
Undergraduate and postgraduate students from all fields with at least two years University level German (with a better than B average) may apply for this scholarship. The students should be aged from 19 to 32 and proposing to undertake the 8 week German studies course (in German) at the University of Freiburg. The course provides language instruction and concentrates on historical and cultural aspects of contemporary Germany for students with some knowledge of German and a background in German Studies. Applications close 1 August.

Greek Government Scholarships (L)
- Tuition fees, monthly subsidy plus other allowances
Scholarships are available for undergraduate and postgraduate study in Greece. Applicants must be Australian citizens. Further information is available from the Embassy of Greece, 9 Turrana St, Yarralumla ACT 2600, Tel (02) 6273 3011. Applications normally close late March.
The Harry Manson Scholarship (L)

- $4,000, payable on receipt of evidence that the travel will take place within three months
- 1 year only

Up to five Scholarships will be awarded annually to promote the growing international dimension of UNSW. Applicants should be enrolled in, or proposing to enrol in the first year of an undergraduate course at UNSW. The Scholarships are to be used either for an approved Study Exchange program or other overseas project in the second or later year of a course at UNSW. Each applicant will be assessed on the basis of academic merit, ability to contribute to the wider life of the University, and a statement detailing the benefits to be gained and/or the reasons for the proposed travel. Applications will normally close on 30 November of the year preceding the first year of study at UNSW. The scholarships will normally be awarded at the time students are enrolling at UNSW for the first time. Should awards become available later in the year a second selection may be undertaken with a closing date of 30 September of the first year of study at UNSW.

The Harvard Travel Scholarships (L)

- $15,000 contribution towards fees, travel and living expenses
- One-off payment

The scholarship will be awarded by the Vice-Chancellor on the basis of recommendations from the Deans of the Faculties. Candidates must have completed at least 2 years full-time (or the part-time equivalent) of an undergraduate course at the UNSW and have an impressive academic record. Award of the scholarship is subject to the recipient gaining entry to the Harvard-Radcliffe Visiting Undergraduate Program. Applications close mid-November for travel in the following year.

The International Exchange Travel Scholarships (L)

- Up to $1,500
- 1 year

The scholarships were established to encourage UNSW students to participate in the University's formal international exchange programs. Students must be undergraduates embarking on a period of study overseas which will count toward their UNSW degree. Awards will be granted on the basis of academic merit. Further information is available from the International Student Centre, Tel (02) 9385 5333.

Italian Government Scholarships (L)

- 1 million Italian lira per month
- 2-24 months

Scholarships are open to Australian citizens to undertake research and language studies in Italy. Applicants must be aged under 35 and application forms are available from the International Student Centre. Applications normally close 31 July In the year prior to the first year of study.

Japan Airlines Scholarships (L)

- Air travel, insurance, tuition, accommodation, textbooks and a daily allowance

The Scholarships are available for undergraduate students to participate in a summer session of Japanese language and cross-cultural studies, home stays in Tokyo and participation at a symposium featuring regional experts. A knowledge of Japanese is not necessary. Further information and applications are available from Level 14, 201 Sussex Street, Sydney NSW 2000, Tel (02) 9272 1151. Applications normally close mid-April.

The Japanese Government (Monbusho) Scholarships (L)

Scholarships are available to Australian Citizens for study in Japan for postgraduate research or five years of undergraduate study. Applicants must be willing to study the Japanese language and receive instruction in Japanese. Further information and applications are available from Monbusho Scholarships, Embassy of Japan, 112 Empire Circuit, Yarralumla ACT 2600, Tel (02) 6272 7268, Fax (02) 6273 1848. Applications close early July.

Learn Arabic in Cairo Scholarship (L,L)

- Course fees, AUD$70 per month living allowance
- 6 months

Scholarships are available to undertake the Arabic as a Foreign Language course in Cairo. Applications are available from the Embassy of the Republic of Egypt, 1 Darwin Avenue, Yarralumla ACT 2600, Tel (02) 6273 4437, Fax (02) 6273 4279. Applications close 1 July.

The Malik Chaiken Overseas Exchange Scholarship (L)

- $4,000
- 1 year

A scholarship is available for a third or later year student in a Science or Engineering degree program in the Faculty of Life Sciences, Science and Technology or Engineering. Applicants must have applied for the Malcolm Chaiken Scholarship for 1998 or later, and be undertaking an official overseas exchange program. It is expected that the first scholarship will be awarded for travel in 2000. Applications close 30 September.

The Mitsui Education Foundation Scholarship (L)

A three week scholarship to Japan is available to a young Australian national to help promote goodwill between the two countries. Candidates should be full-time undergraduate students in their first degree course who have not previously been to Japan. The successful student will travel to Japan during November and December. Further information regarding applications and participating institutions is available from info@mitsui.com.au. Application forms close mid-July.

The NSW Travelling Art Scholarship (L)

- $25,000

The scholarship is available to an emerging visual artist to undertake a course of study or training overseas for one or two years. Guidelines and applications are available from the NSW Ministry for the Arts, GPO Box 5341, Sydney 2001, Tel (02) 9228 5533. Applications normally close in July.

Queen’s Trust Grants (L)

- Up to $15,000

The Queen’s Trust provides grants to Australian Citizens aged 18-26 years, for the pursuit of excellence in their chosen fields. Projects are supported for the advancement of Australian youth, development of community leadership and/or other skills which will be of benefit to Australia. Information and applications may be obtained from the Queen’s Trust, Tel 1800 033 625. Applications close late April.

The R.C. Sutton/Jardine Matheson Scholarship (L)

- Up to $1,000

The scholarship is to provide financial assistance to undergraduate students to undertake a period of study/research in the R.C. Sutton/Jardine Matheson offices in Asia. Applicants must be full-time students undertaking study in law, commerce, or economics. Applicants must normally be intending to undertake their final year of study and to complete the travel prior to completion of the final year. Applications are also open to students undertaking an official exchange program with a university in Asia. Further information and application forms are available from the International Student Centre. Applications normally close 31 July in the year prior to the final year of study.
The Rotary Foundation Ambassadorial Scholarships (L, L)
The Rotary Foundation offers scholarships to study or train in another country where Rotary clubs are located. Applicants must have completed at least two years of a university or college course, or have completed high school and have been employed for at least two years. Applicants must also be Citizens of a country in which there is a Rotary club. Information regarding scholarship availability, closing dates and applications should be obtained from the applicant's local Rotary club.

The Russian Scholarships (L)
- Payment of an allowance and medical cover
Scholarships are available to Australian citizens to undertake undergraduate or postgraduate study in journalism, law, economics, international relations or medicine in Russia. Applications normally close in May.

The Ship for World Youth Program (L)
- Economy airfare, accommodation, local trips and meals
- Awarded every second year
The objective of this program is to promote understanding and mutual friendship between the youth of Japan and other parts of the world and to foster the spirit of international cooperation. The successful applicants will visit Japan to participate in the program for the period January to March. Students should be aged from 20 to 29, able to participate in the whole program, be in good physical and mental condition, able to speak English and Japanese, have an interest in and an understanding of Japan, and be engaged in youth activities. The next round of scholarships will be available in 2001. Applications close early July 2000.

The Sir Charles Mackerras / Australia-Britain Society Music Scholarship (L)
- 8,000 pounds sterling
The scholarship is open to outstanding young conductors, composers and repetiteurs, aged between 21 and 30 who are likely to be influential leaders in the field of music, to undertake study in the United Kingdom or the Czech republic for at least six months. Applicants must be Australian Citizens or Permanent Residents. Application forms are available from the British Council, PO Box 88, Edgecliff NSW 2027, Tel (02) 9326 2022, Fax (02) 9327 4868, Email bcsydney@sprint.com. Applications close early November.

The STA Travel Grant (L, L)
- Up to $3,000
Applicants must be undertaking study leading to a degree or diploma of the University and be members of the University Union. The grant is awarded on the basis of significant contribution to the community life of the University involving a leadership role in student affairs and the University Union and the relevance and merit of the proposed travel to the student's academic program or University Union activities. Applications close mid-April.

The Swedish Institute Guest Scholarships (L, L)
- SEK 7,100 per month living allowance
- 9 months (1 academic year)
The scholarships are open to students and researchers who wish to travel to Sweden for study or research which cannot equally well be pursued in countries other than Sweden. Applicants must establish contact with a Swedish University willing to accept the applicant for the proposed studies. Initial requests for application forms must be made in writing, and should include the applicant's name and address, nationality, educational background, work experience, knowledge of any languages, statement of the purpose of the study or research in Sweden, and a copy of a letter of invitation from a Swedish University Department. Applications are available from the Swedish Institute, Department for Exchanges in Education and Research, Box 7434, SE-103 91, Stockholm, Sweden. Email: grantinfo@si.se. Web: http://www.si.se. Requests for application forms must reach the Swedish Institute before 1 December.

Swiss Government Scholarships (L)
- Tuition fees, living allowance, medical insurance and assistance with airfares
- 1 academic year
One scholarship is available for art/music and two for other disciplines, to undertake postgraduate study or attend an art school/conservatory in Switzerland. Applicants will be required to pass a language test in German or French. Applicants must be aged under 35. Applications close early October.

The Turkish Government Language & Culture and Higher Education Scholarships (L, L)
Scholarships are available to high school graduates to undertake study at a Turkish University. Students may be required to undertake a one year Turkish language course before commencement of the degree. The scholarships pay a monthly allowance for the duration of the course. Scholarships are also available to university graduates who would like to attend Turkish Language and Culture Summer Courses conducted by the Turkish Studies Centre. Further information is available from the Embassy of the Republic of Turkey, 60 Mugga Way, Red Hill ACT 2603. Applications close 30 May for Language and Culture Scholarships, and 15 July for Higher Education Scholarships.

Yokoyama Scholarship Awards (L)
Assistance may be available for undergraduate and postgraduate study at a Japanese University.
Information is available from Mr Masao Iwashita, Secretary-General, Yokoyama Scholarship Foundation, 6F Shiozaki Building, 2-7-1 Hirakawacho, Chiyoda-Ku, Tokyo 102 Japan, Tel (813) 3238 2913, Fax (813) 5275 1677.
Vacation Scholarships

Some Schools offer scholarships for the long vacation period from December to February each year. Students should contact the relevant School office for information.

The CSIRO Vacation Scholarships (I,L)
- $420 per week
- 8 to 12 weeks between December and February
The scholarships are open to postgraduate and undergraduate students who have completed no less than three years of a full-time course in Physics, Mathematics, Computer Science, Electrical Engineering, or a closely allied subject. Research projects are carried out under the individual supervision of a research engineer or scientist. Applications are available on the web at http://www.atnf.csiro.au/educate/summer_vacation.html. Applications close early August.

The Australian Kidney Foundation Summer Vacation Scholarships (I,L)
- Up to $900
- 6 to 8 weeks
The scholarships are open to undergraduate students who have completed at least one year of full-time study in Medicine or a course related to Biological Science. The proposed research project must be related to the kidney and the urinary tract, and carried out at a university department during the summer vacation period. Applications are available from the Medical Director’s Office, Australian Kidney Foundation, GPO Box 9993, Adelaide SA 5001, Tel (08) 8267 4555, Fax (08) 8267 4450, Email: m.romeo@unsw.edu.au. Applications close 31 October.

ANU Summer Research Scholarships (I,L)
- $130 per week, plus full board and travel
- 8-12 weeks
Scholarships are offered to undergraduate students for short research projects in Physics, Chemistry, Astronomy, Biological Sciences, Computer Sciences, Engineering, Medical Sciences, Earth Sciences, Pacific and Asian Studies, Social Sciences and Environmental Sciences, at the Institute of Advanced Studies, ANU. Further information and applications are available from Anna Weidemann, Summer Research Scholarship Program, The Australian National University, Canberra ACT 0200, Tel (02) 6249 3765, Fax (02) 6249 5995, Email: schlssec@rsc.anu.edu.au. Applications close late August.

Cooperative Research Centre for Food Industry Innovation Vacation Scholarships (I,L)
- Up to $2000
- 8 to 12 weeks between November and March
The scholarships are open to final year undergraduate students enrolled in courses in one or more of the following disciplines: biochemistry, biotechnology, bioprocess engineering, chemistry, food science, food technology, immunology, microbiology, or molecular biology. Research projects must be related to one of the research programs of the CRC. Application Kits are available from September, and further information is available from Ms M Romeo, Education Officer, CRC for Food Industry Innovation, c/-Department of Biotechnology, UNSW, Sydney NSW 2052, Tel (02) 9385 1298, Fax (02) 9385 1015, Email: m.romeo@unsw.edu.au. Applications close early October.

The Dried Fruits Research and Development Council (DFRDC) Studentships (I,L)
- $2,500 pa to cover travel, accommodation, mentor’s honorarium, host practice costs, student stipend
- Two weeks per year for up to four years
Scholarships are available during the long vacation period for research projects related to cardiovascular function and disease. Applicants should normally have completed at least two years of an appropriate degree course in the biological sciences. Preference will be given to applicants who have had little or no laboratory experience. Applications close early September.

The Heart Foundation Vacation Scholarships
Scholarships are available during the long vacation period for research projects related to cardiovascular function and disease. Applicants should normally have completed at least two years of an appropriate degree course in the biological sciences. Preference will be given to applicants who have had little or no laboratory experience. Applications close early September.

The National Multiple Sclerosis Society of Australia Summer Vacation Scholarships (L)
- $200 per week
- 6 to 8 weeks between November and March
The scholarships are open to undergraduate students completing three or four years of a full-time course leading to an honours degree in medicine, science, or the biological or health sciences. Research projects must be relevant to multiple sclerosis and carried out at a university department during the summer vacation period. Applications close mid-August.

The Novo Nordisk Student Research Scholarship (I,L)
- $1,000 to $1,500
- 6 to 9 weeks over the vacation period
The scholarship is available for diabetes-related research at the Department of Endocrinology, Prince of Wales Hospital and is open to students enrolled at any tertiary institution in Australia. Preference will, however, be given to students enrolled in an undergraduate degree in Science or Medicine at UNSW. Selection will be based on interest in research in diabetes mellitus and academic performance. Further information is available from Associate Professor Bernie Tuch, Prince of Wales Hospital, Tel (02) 9382 4814. Applications close 31 October.
Faculty Vacation Scholarships

Faculty of Life Sciences

Faculty of Life Sciences Vacation Scholarships (I,L)
• $1,000 - 2,000
• 4 to 8 weeks over the summer vacation period
Applicants must be enrolled in an undergraduate course which allows the scholar to proceed to an honours program in the Faculty of Life Sciences. Selection will be based on academic merit and demonstrated interest in a research discipline of the Faculty of Life Sciences. Applications close 30 October.
Further information is available from the Faculty of Life Sciences Office.

Faculty of Science and Technology

Chemistry

The School of Chemistry Summer Vacation Scholarships (I,L)
• Up to $250 per week
• Up to 8 weeks

Summer Vacation Scholarships are available to undertake research with staff members of the School of Chemistry. Students completing their first year may receive up to $500, for 4 weeks research. Students in their second or third year may receive up to $250 per week for 8 weeks. Further information is available from Dr D.N. Duffy, Executive Assistant, School of Chemistry, UNSW, Tel (02) 9385 4693, Fax (02) 9385 6141, Email d.duffy@unsw.edu.au. Applications close in mid-October.

Mathematics

Vacation Scholarships in Mathematics (I,L)
• $350 per week
• At least 6 weeks
Vacation scholarships are available for research in the School of Mathematics. Applicants should be enrolled in third year of a mathematics or statistics course and be interested in further study. Scholarships may also be available for exceptional second year students. Additional information is available on the web at: http://www.maths.unsw.edu.au or by contacting Dr Brian Jefferies, School of Mathematics, UNSW, Tel (02) 9385 7086, Email b.jefferies@unsw.edu.au. Applications close in mid-October.

Physics

Vacation Scholarships in Physics (I,L)
• $250 per week
• Up to 6 weeks
Vacation scholarships are available to work with research groups in the School of Physics. Applicants should normally have completed their third year of study and be intending to continue to honours and perhaps postgraduate study in Physics. Exceptional second year students may also be considered. Further information can be obtained from Dr Michael Box, School of Physics, UNSW, Tel (02) 9385 4545, Email m.box@unsw.edu.au. Applications close in mid-October.
Postgraduate Scholarships

Following are details of scholarships available to postgraduate students at UNSW. The scholarships are listed by Faculty and course (eg scholarships in Science and Technology or Engineering) or whether they are available to undertake travel. If students from more than one Faculty are able to apply the scholarship is listed in the General Scholarships section.

For further information contact:
The Scholarships and Student Loans Unit
The University of New South Wales
Sydney 2052 Australia
Tel (02) 9385 3100/3101/1462
Fax (02) 9385 3732
Email scholarships@unsw.edu.au

General Scholarships

Main programs of assistance for postgraduate study

The Australian Postgraduate Awards (APA) (L,R)
- $16,135 pa (1999 rate). Other allowances may also be paid.
- Up to 2 years for a Masters by Research, 3 years for a PhD degree. PhD students may apply for up to 6 months extension in certain circumstances
Applicants must have graduated, or be proposing to graduate in the current academic year, with Honours 1 or equivalent. Students with Permanent Resident status should normally have lived in Australia continuously for 12 months before the year of study.

The Australian Development Scholarship (ADS) (I)
- Tuition fees, medical cover, airfare and a stipend.
- Duration of the course
This award is for international students from selected countries only. Information and applications can only be obtained from Australian Diplomatic Posts or Australian Education Centres in the home country. Applications normally close at least 12 months before the year of study.

The International Postgraduate Research Scholarships (IPRS) (I,R)
- Tuition fees and medical cover only
- 2 years for a Masters by Research, 3 years for a PhD degree
Eligibility is confined to postgraduate research students who are Citizens of countries other than Australia or New Zealand. Applications close 29 October.

The Anthony Rothe Scholarship (I,L,R)
- $28,000 pa plus allowances
- Up to 3 years
Applications are open to postgraduate students proposing to undertake a PhD in a field related to the causes, prevention, treatment or cure of leukaemia and allied blood disorders. Information and applications are available from The Secretary, Anthony Rothe Memorial Trust, c/- Brigden & Partners, GPO Box 2564, Sydney NSW 2001. Applications close late August.

The Apex Foundation for Research into Intellectual Disability Research Grants (I,L,R)
Grants may be awarded for new or existing research projects in any discipline concerned with the causes, diagnosis, prevention or treatment of intellectual disability and allied conditions. Applications can be obtained from the Hon. Secretary, Apex Foundation for Research into Intellectual Disability Limited, PO Box 311, Mount Evelyn VIC 3796. Applications close late July.

The Arthritis Foundation of Australia Research & Professional Education Awards (L,R)
- $5,000 - $32,000 pa
- 1 to 3 years
Scholarships, fellowships and grants are available to support research projects into arthritis, osteoporosis and other musculoskeletal disorders. Applicants must be enrolled in studies leading to a Masters by Research or PhD. Further information and applications are available from The Arthritis Foundation of Australia, GPO Box 121, Sydney NSW 2001, Tel (02) 9552 6085, Fax (02) 9552 6078. Applications close early June.

The Asthma Foundation of New South Wales Research Scholarships (I,L,R)
- To be determined
- 1 to 3 years
The scholarships are available for research into asthma including the basic medical services or clinical and psychological investigations. Further information is available from The Asthma Foundation of NSW, Unit 1 "Garden Mews", 82-86 Pacific Highway, St Leonards NSW 2065, Applications close in early August.

The Australian Brewers Foundation Alcohol Related Medical Research Postgraduate Scholarships (I,L,R)
- Similar to the NHMRC (see NHMRC entry)
- 1 year
Similar to the NHMRC. The scholarships are available to support research into the medical, social and public health aspects of moderate, hazardous or harmful alcohol consumption. Information and applications are available from ABF-Medical Research

Other General Scholarships

Indigenous Researchers Development Scheme (L,R)
- At least $3,000
- Up to 3 years
The Scholarships are awarded to support research projects by Aboriginal and Torres Strait Islander researchers in the biological, mathematical, physical, chemical, engineering, earth and applied sciences and the humanities and social sciences, which are likely to lead to a significant conceptual advance in understanding of a subject or lead to the solution of an important practical problem. Further information and applications are available from the Research Office, UNSW, Tel (02) 9385 1074 or the Research Office Web site: http://www.ro.unsw.edu.au. Applications close mid-June.
Applications close mid-September.

The Australian Coral Reef Society (ACRS) Inc Student Grants (I,L,R,C)
• $1,000 (plus $1,500 Walker prize for the best proposal)
The grant is open to students who are enrolled at an Australian University in a PhD or MSc involving research on coral reefs. Recipients must be a member of, or willing to join the ACRS. Applications normally close late November.

Australian Food Industry Science Centre (AFISC) Scholarships (I,L,R)
• $25,000 pa plus allowances
• Up to 2 years for a Masters by Research, 3 years for a PhD
It is expected that applicants will be of Honours 1 or high 2A standard or equivalent. Graduates from non-food technology disciplines, such as engineering, mathematics and physics, are also encouraged to apply. Further information and applications are available from AFISC, Private Bag 16, Sneydes Road, Werribee VIC 3030, Tel(03) 9742 0111. Applications close early November.

The Australian Federation of University Women (I,L,R,C)
Each year the Federation offers to its members a number of awards for study in Australia and overseas. Details of awards are included in a booklet available from the Australian Federation of University Women Inc, 215 Clarence Street, Sydney NSW 2000, Tel (02) 9299 8988.

The Australian Institute of Nuclear Science and Engineering (AINSE) Postgraduate Research Awards (I,L,R)
• $7,500 supplement to an APA or equivalent scholarship and $5,500 pa for facility costs plus allowances
• Up to 3 years
The Institute offers awards for postgraduate students whose research projects are associated with nuclear science or its applications. Applicants must be eligible for an APA or equivalent scholarship after having completed a Bachelor of Engineering or Bachelor of Science with Honours. At least one month per year must be spent at the Institute at Lucas Heights, NSW. Applications close early December.

The Australian Kidney Foundation Grants and Scholarships (I,L,R)
The AKF supports research into the causes, prevention and treatment of disorders of the kidneys and urinary tract. Programs include Medical Research Seeding Grants, Medical Research Equipment Grants, Biomedical Research Scholarships and Summer Vacation Scholarships. Applications are available from the Medical Director's Office, Australian Kidney Foundation, GPO Box 9993, Adelaide SA 5001, Tel (08) 8267 4555, Fax (08) 8267 4450, Email: ttaylor@terra.net.au. Applications close 30 June.

The Australian and New Zealand Council for the Care of Animals in Research and Teaching (ANZCCART) Student Award (I,L,R,C)
• $1,000 for attendance at the annual conference
Applications can be postgraduate students from any discipline. The award provides assistance for a student to attend the annual conference. Applications are available from ANZCCART, PO Box 19, Glen Osmond, SA, 5064, Tel (08) 303 7325. Applications close in July.

The Australian Pain Relief Association and Australian Pain Society PhD Scholarship (L,R)
• $16,750 pa plus allowances
• Up to 3 years subject to satisfactory progress
Applicants must hold an Honours 1 degree and be proposing to undertake a PhD in the mechanism, diagnosis, treatment or epidemiological features of acute or chronic (including cancer) pain. Further information and applications are available from the Australian Pain Society Secretariat, PO Box 629, Willoughby NSW 2068, Tel (02) 9439 6744. The award is offered bi-annually. Applications close early November.

The Australian Society for Microbiology (L,R,C)
• $100 - $10,000
The Australian Society for Microbiology (ASM) provides prizes and awards, for study, research and projects related to Microbiology. More information can be obtained from the ASM National Office, Unit 23/20 Commercial Rd, Melbourne VIC 3004, Tel (03) 9867 8699, Fax (03) 9867 8699.

The Australian Spinal Research Foundation Postgraduate Research Awards (I,L,R)
• Equivalent to Australian Postgraduate Award (see APA entry under General)
• Up to 2 years for a Masters by Research or 3 years for a PhD degree
Applicants must be undertaking a Masters by Research or PhD in an area designed to contribute to an understanding of the anatomical and physiological mechanisms underlying chiropractic care or the clinical efficiency of chiropractic care and management procedures. Information and applications are available from the Australian Spinal Research Foundation, PO Box 1047, Springwood Qld 4127, Tel (07) 3808 4098, Fax (07) 3808 8109, Email: t.flack@qut.edu.au. Applications close mid-October.

The Captain Reg Saunders Scholarship (L,R,C)
• $3,000
• Up to 4 years
Applicants must be Aboriginals or Torres Strait Islanders eligible to commence a university degree in the area of psychology, nursing, applied science, social work or education. Further information and applications are available from the Aboriginal Education Program, UNSW, Tel (02) 9385 3805.

The Cooperative Research Centre for Eye Research and Technology (CRCERT) Postgraduate Research Scholarship (I,L,R)
• $15,321 - $19,827 pa (depending on the type of research)
• 3 years
The scholarship is available for full-time PhD studies in subjects such as optometry, microbiology, biochemistry, optics, materials...
Applications close mid-December.

The Clean Air Society of Australia and New Zealand Inc Postgraduate Research Award (L,R,C)
- $5,000 pa
- 1 year, with a possible 1 year extension
The scholarship is open to students enrolled in a Masters degree program with a significant research component connected with air quality. Applications close early February.

The CSIRO Division of Fisheries Supplementary PhD Awards (L,R)
- $10,000 pa
- Up to 3 years
This scholarship is a supplement to any primary scholarship (e.g., APA) for PhD study in marine studies, environmental studies, zoology, botany, broadly-based life sciences, economics and mathematics. Applications close early March.

The Dairy Research and Development Corporation (DRDC) Postgraduate Scholarships and Study Awards (L,R)
Awards to undertake full-time postgraduate research degrees are available in a wide range of disciplines including dairy manufacturing, farm research, economics and marketing, and agricultural extension. New and experienced applicants are welcome to apply. Guidelines and applications are available from the Scholarships and Student Loans Unit or DRDC, Level 3, 84 William Street, Melbourne VIC 3000, Tel (03) 9602 5300. Applications close 31 October.

The Forest and Wood Products Research and Development Corporation (FWPRDC) Scholarships (L,R)
- Up to $25,000 pa
- Up to 3 years
The scholarships are open to students undertaking a postgraduate research degree at an Australian University. Selection is based on academic merit and the relevance of the project to FWPRDC Programs. Further information and applications are available from the Executive Director, FWPRDC, PO Box 157, Bond University Qld 4229, Fax (07) 5578 7911. Applications close early October.

The Garnett Passe and Rodney Williams Memorial Foundation Research Scholarships in Otolaryngology (L,R)
- $15,364 pa for science graduates, $22,850 pa for medical graduates, plus allowances
- 3 years
The scholarships are available to medical or science graduates for research in Otolaryngology or in related fields of biomedical science. Applicants must be enrolled in a postgraduate degree in Australia or New Zealand. Information and applications are available from the Garnett Passe and Rodney Williams Memorial Foundation, Pelham House, 165 Bouverie St, Carlton VIC 3053, Tel (03) 9349 2622, Fax (03) 9349 2615. Applications close early October.

The Gerontology Foundation Grant-In-Aid (L,R,C)
- Up to $5,000 for a specific research project
Grants-In-Aid are awarded to students who have not had their work published in a refereed journal and who have not won any research grants in open competition. The grant supports a proposed scientific investigation topic specified by the Foundation. Information and applications are available from The Executive Officer, Gerontology Foundation of Australia Inc, PO Box 199, Annandale NSW 2038. Applications normally close late July.

The Gowrie Scholarship Trust Fund (L,R)
- $4,000 pa
- 2 years
Applicants must be members of the Forces or children (or grandchildren or lineal descendants) of members of the Forces who were on active service during the 1939-45 War. Tenable at tertiary institutions in Australia and overseas. Applications close early October.

The Grains Research and Development Corporation (GRDC) Junior Research Fellowship (L,R)
- $21,000 pa plus up to $3,000 to the supporting institution, some conference/workshop attendance allowances
- Up to 3 years
Applicants must be undertaking full-time PhD studies in fields of high priority to the grains industry. Applications close mid-October.

The Great Barrier Reef Marine Park Authority Research Support (L,R)
- $1,000
Applicants must be undertaking a full-time Masters or PhD research project that could contribute to planning and managing the Great Barrier Reef Marine Park and to the Reef's ecologically sustainable development. Applications and further information may be obtained from the Executive Officer, Great Barrier Reef Marine Park Authority, PO Box 1379, Townsville QLD 4810, Email: k.lally@gbrmpa.gov.au. Applications close mid December.

The Harold G. Conde Memorial Fellowship (L,R,C)
- $5,000 pa subject to the availability of funds
- Up to 3 years
Applicants should be honours graduates. The Fellowship is a supplementary award to be held in conjunction with another scholarship and is for postgraduate study or research in a field related to the electricity industry. Applications close early April.

The Julian Small Foundation Annual Research Grant (L,R)
- Up to $5,000
Applications are open to postgraduate and undergraduate students undertaking research and involved in the study of law, or industrial relations. Selection will be based on a research proposal which outlines how the research will advance thinking and practice in the area of employment law and industrial relations in Australia. Applications close mid-August.

The June Opie Fellowship (L,R,C)
- NZD$12,000
- 1 year
The award is administered by the University of Auckland and is available to Citizens and Permanent Residents of Australia, Canada and New Zealand, and is designed as an incentive for students of high academic achievement who have a severe disability. It is primarily intended for those who plan to undertake postgraduate study with a view to preparing themselves for a role in the professions, in politics or more particularly in university teaching and research and who have disability issues as a continuing.
POSTGRADUATE SCHOLARSHIPS

**Land and Water Resources Research and Development Corporation (LWRRDC) Postgraduate Research Scholarships (L,L,R)**

- **$20,000 pa plus $5,000 for operating expenses**
- **2 years for Masters, 3 years for a PhD degree**

General Research Scholarships are available for research that will lead to better management, sustainable use and conservation of land, water and vegetation resources in Australia. Irrigation Research Scholarships are specifically for research that will lead to better management, sustainable use and conservation of natural resources in Australia. Applications are available from the Scholarships and Student Loans Unit or LWRRDC, GPO Box 2182, Canberra ACT 2601, Tel (02) 62573379. Applications close early October.

**The Lionel Murphy Postgraduate Scholarship (L,R,C)**

- **$15,000 pa for study in Australia, up to $30,000 for study overseas**
- **1 year**

Applicants must be intending to undertake a postgraduate degree in Law, Science, Legal Studies or other appropriate discipline. Preference will be given to applicants who propose to study the law and legal system in a social context, science/law or international law. Information and application forms are available from the Lionel Murphy Foundation, GPO Box 4545, Sydney NSW 2001, Tel (02) 9223 5151, Fax (02) 9223 5267. Applications close mid-September.

**The MBF Health Research Awards- Postgraduate Research Scholarships**

- **Similar to NHMRC guidelines**

The scholarships are open to students undertaking an MD or PhD in the areas of preventative health care, disease/drug management, evaluation of health care delivery outcomes, health policy evaluation and public health promotion/communication. Applications are available from The Executive Assistant, Research Team, Medical Benefits Fund of Australia Ltd, 97-99 Bathurst St, Sydney NSW 2000. Tel (02) 9323 9158. Fax (02) 9323 9168. Applications close late February.

**The Meat and Livestock Australia (MLA) Studentships and Junior Research Fellowships (L,R,C)**

- **$15,888 pa for study in a Masters or Diploma, $20,000 for a PhD in Australia or US$17,500 for study overseas, plus airfares, insurance and allowances**
- **2 years for Studentships (Masters or Diploma), 3 years for Junior Research Fellowships (PhD)**

Applicants should be proposing to undertake research in disciplines relevant to the Australian meat and livestock industry. Applications close late September.

**The Menzies Research Scholarship In Allied Health Sciences (L,R)**

- **Up to $24,000 pa**
- **2 years**

The scholarship is awarded to stimulate research in the non-medical allied health disciplines. Applicants should be full-time students, who have completed the first stage of a PhD program. Applications are available from The Menzies Foundation, 210 Clarendon St, East Melbourne VIC 3002, Fax (03) 9417 7049. Applications close late June.

**The Minerals Council of Australia Student Research Award (L,L,R)**

- **$500 plus travel and accommodation for the Environmental Workshop**

The award is open to scholars who have completed or are undertaking postgraduate studies, and is aimed at encouraging excellence in student research and communication in the field of environmental management in mining. The award will be judged on a paper written for and presented at the Minerals Council of Australia's Environmental Workshop. Nominations close early May.

**The National Health and Medical Research Council (NHMRC) Training Scholarship for Aboriginal Health Research (L,R)**

- **$16,135 - $23,997 pa (depending on qualifications)**
- **Up to 3 years**

Applicants must be undertaking an undergraduate or postgraduate degree which includes, or leads to, research relevant to Aboriginal health. Applications will be assessed in terms of previous qualifications and experience. Consideration will be given to prior knowledge and experience of Aboriginal culture and health. Applications close early August.

**The National Health and Medical Research Council (NHMRC) Dora Lush Biomedical Postgraduate Scholarships (L,R)**

- **$16,135 pa, $20,997 for HIV/AIDS research, $17,888 for special initiative scholars, plus allowances**
- **Up to 3 years**

Applicants must have completed a Science degree with Honours, or equivalent, at the time of submission of the application. Current APA holders or students enrolled in the final year of an Honours degree at the time of application are not eligible. Applications close early August.

**The National Health and Medical Research Council (NHMRC) Medical and Dental Postgraduate Scholarships (L,R)**

- **$23,997 pa plus allowances**
- **Up to 3 years**

The scholarships are open to medical and dental graduates to undertake full-time research. Applications are particularly encouraged for research in the following special initiative areas: Aboriginal health and disease, prostate cancer, alcohol and substance abuse, nursing and allied health services, dementia, schizophrenia, injury and HIV/AIDS. Applications close early August.

**The National Health and Medical Research Council (NHMRC) Public Health Postgraduate Scholarships (L,R)**

- **$23,997 pa (medical/dental graduates), $16,135 pa (other graduates), $20,822 pa for HIV/AIDS research, $17,888 pa for special incentive scholars, plus allowances**
- **Up to 3 years**

The scholarships are open to medical/dental or health related graduates to obtain training in public health research. Applications are particularly encouraged for research in the following special initiative areas: Aboriginal health and disease, prostate cancer, alcohol and substance abuse, nursing and allied health services, dementia, schizophrenia, injury and HIV/AIDS. Applications close early August.
Applications close in late January. Applications for fee courses to pay HECS for their course rather than course fees. These scholarships allow postgraduate students enrolled in full-time research to extend their professional experience in order to re-enter the workforce. Preference will be given to women enrolling in courses which have a low female enrolment. Selection will take into account the applicant's academic merit, her personal statement, including details of a well-planned future career path, and referee's support. The scholarship is tenable for the duration of the course.

The National Heart Foundation of Australia Postgraduate Medical and Science Research Scholarships (L,R)

• $17,637 pa (science), $23,257 pa (medical) plus $1,200 departmental allowance
• Up to 3 years subject to satisfactory progress

The National Tertiary Education Union (NTEU) Scholarship for the Study of Industrial Relations and Unionism in Australian Tertiary Education (I,L,R)

• $5,000 pa
• Up to 3 years

The National Multiple Sclerosis Society of Australia Postgraduate Research Scholarships (L,R)

• Same as NHMRC scholarship stipends for medical and biomedical graduates
• Up to 2 years

The NSW Ministry for the Arts Scholarships (L)

• $5,000 - $25,000 (depending on the award)

The Pig Research and Development Corporation (PRDC) Postgraduate Top-Up Scholarships (L,R)

• Up to a maximum of $21,000 as a supplement to other scholarships, plus allowances

The Postgraduate Equity Scholarships (L,C)

• Substitution of HECS for tuition fees
• Duration of the course if eligibility criteria continue to be satisfied

Financial Need HECS Substitution Scholarships

Applicants must be in receipt of a full allowance from the Department of Social Security (DSS), Department of Veteran Affairs, or AUSTUDY.

HECS Substitution for Scholarships for Women

A limited number of scholarships are provided to women enrolling in postgraduate courses after a period of absence from study and/or employment who are seeking to extend their professional experience in order to re-enter the workforce. Preference will be given to women enrolling in courses which have a low female enrolment. Selection will take into account the applicant's academic merit, her personal statement, including details of a well-planned future career path, and referee's support. The scholarship is tenable for the duration of the course.

The Re-Entry Scholarship for Women (I,L,R,C)

• $16,135 pa (equivalent to the Australian Postgraduate Award)
• 1 year

The River Basin Management Society Ernest Jackson Memorial Research Grants (L,R)

• $5,000 pa as a supplement to an APA

The Ronald Henderson Postgraduate Scholarships (L,R)

• $5,000 pa as a supplement to an APA
• Up to 2 years for Masters by Research, 3 years for a PhD

The RSPCA Alan White Scholarship (L,L,R)

• $2,500

Applications should be undertaking original research to improve the understanding and welfare of animals. Applicants must have a sound academic record and demonstrate a major commitment to animal welfare issues. A letter of application including two referees and academic transcripts, should be sent to the Executive Officer, RSPCA Australia, PO Box E369, Queen Victoria Terrace, Canberra ACT 2600, Tel (02) 62311437. Applications close in late October.

The National Tertiary Education Union (NTEU) Scholarship for the Study of Industrial Relations and Unionism in Australian Tertiary Education (I,L,R)

• $5,000 pa
• Up to 3 years

Applicants must have made or intend to make an application for candidacy for a Masters by Research or PhD in a topic which covers some aspect of industrial relations, policy issues and/or unionism related to Australian tertiary education. Further information is available from NTEU, PO Box 1323, South Melbourne VIC 3205, Tel (03) 9254 1910. Applications close early November.

The NSW Government offers a number of scholarships and awards to writers, artists and scholars living in NSW. Further information is available from the New South Wales Ministry for the Arts, GPO Box 5341, Sydney NSW 2000, Tel (02) 9228 3533, Fax (02) 9228 4722.

The Pig Research and Development Corporation (PRDC) Postgraduate Top-Up Scholarships (L,R)

• Up to a maximum of $21,000 as a supplement to other scholarships, plus allowances

Applicants must be proposing study in qualifications in economics, commerce or business management, or employment who are seeking to extend their professional experience in order to re-enter the workforce. Preference will be given to women enrolling in courses which have a low female enrolment. Selection will take into account the applicant's academic merit, her personal statement, including details of a well-planned future career path, and referee's support. The scholarship is tenable for the duration of the course.

The Re-Entry Scholarship for Women (I,L,R,C)

• $16,135 pa (equivalent to the Australian Postgraduate Award)
• 1 year

Applicants must be women who have been out of full-time paid professional employment for a period of time and who wish to take up or resume a full-time research or coursework program of postgraduate study. Priority will be given to applicants wishing to update their research skills or to those who wish to gain further experience in order to return to employment in industry, business or education. Applicants must be able to demonstrate a well-planned career path. A letter of application and curriculum vitae should be forwarded to the Scholarships and Student Loans Unit, UNSW. Applications close 31 October.

The River Basin Management Society Ernest Jackson Memorial Research Grants (L,R)

• $5,000 pa as a supplement to an APA

The Ronald Henderson Postgraduate Scholarships (L,R)

• $5,000 pa as a supplement to an APA
• Up to 2 years for Masters by Research, 3 years for a PhD

The scholarships are open to graduates who intend to commence Masters or PhD studies in social economics, and who obtain an APA or equivalent university postgraduate award. Applicants may be proposing study in qualifications in economics, commerce or arts. Information and applications are available from the Ronald Henderson Research Foundation, 5th Floor, 165 Flinders Lane, Melbourne VIC 3000, Tel (03) 9654 8299, Fax (03) 9650 7501, Email: lance@creativeaccess.com.au. Applications close in April.

The Ronald Henderson Postgraduate Scholarships (L,R)

• $5,000 pa as a supplement to an APA
• Up to 2 years for Masters by Research, 3 years for a PhD

The scholarships are open to graduates who intend to commence Masters or PhD studies in social economics, and who obtain an APA or equivalent university postgraduate award. Applicants may be proposing study in qualifications in economics, commerce or arts. Information and applications are available from the Ronald Henderson Research Foundation, 5th Floor, 165 Flinders Lane, Melbourne VIC 3000, Tel (03) 9654 8299, Fax (03) 9650 7501, Email: lance@creativeaccess.com.au. Applications close in April.

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The Re-Entry Scholarship for Women (I,L,R,C)

• $16,135 pa (equivalent to the Australian Postgraduate Award)
• 1 year

Applicants must be women who have been out of full-time paid professional employment for a period of time and who wish to take up or resume a full-time research or coursework program of postgraduate study. Priority will be given to applicants wishing to update their research skills or to those who wish to gain further experience in order to return to employment in industry, business or education. Applicants must be able to demonstrate a well-planned career path. A letter of application and curriculum vitae should be forwarded to the Scholarships and Student Loans Unit, UNSW. Applications close 31 October.

The River Basin Management Society Ernest Jackson Memorial Research Grants (L,R)

• $5,000 pa as a supplement to an APA

The Ronald Henderson Postgraduate Scholarships (L,R)

• $5,000 pa as a supplement to an APA
• Up to 2 years for Masters by Research, 3 years for a PhD

The scholarships are open to graduates who intend to commence Masters or PhD studies in social economics, and who obtain an APA or equivalent university postgraduate award. Applicants may be proposing study in qualifications in economics, commerce or arts. Information and applications are available from the Ronald Henderson Research Foundation, 5th Floor, 165 Flinders Lane, Melbourne VIC 3000, Tel (03) 9654 8299, Fax (03) 9650 7501, Email: lance@creativeaccess.com.au. Applications close in April.

The Re-Entry Scholarship for Women (I,L,R,C)

• $16,135 pa (equivalent to the Australian Postgraduate Award)
• 1 year

Applicants must be women who have been out of full-time paid professional employment for a period of time and who wish to take up or resume a full-time research or coursework program of postgraduate study. Priority will be given to applicants wishing to update their research skills or to those who wish to gain further experience in order to return to employment in industry, business or education. Applicants must be able to demonstrate a well-planned career path. A letter of application and curriculum vitae should be forwarded to the Scholarships and Student Loans Unit, UNSW. Applications close 31 October.

The River Basin Management Society Ernest Jackson Memorial Research Grants (L,R)

• $5,000 pa as a supplement to an APA

The Ronald Henderson Postgraduate Scholarships (L,R)

• $5,000 pa as a supplement to an APA
• Up to 2 years for Masters by Research, 3 years for a PhD

The scholarships are open to graduates who intend to commence Masters or PhD studies in social economics, and who obtain an APA or equivalent university postgraduate award. Applicants may be proposing study in qualifications in economics, commerce or arts. Information and applications are available from the Ronald Henderson Research Foundation, 5th Floor, 165 Flinders Lane, Melbourne VIC 3000, Tel (03) 9654 8299, Fax (03) 9650 7501, Email: lance@creativeaccess.com.au. Applications close in April.

The Re-Entry Scholarship for Women (I,L,R,C)

• $16,135 pa (equivalent to the Australian Postgraduate Award)
• 1 year

Applicants must be women who have been out of full-time paid professional employment for a period of time and who wish to take up or resume a full-time research or coursework program of postgraduate study. Priority will be given to applicants wishing to update their research skills or to those who wish to gain further experience in order to return to employment in industry, business or education. Applicants must be able to demonstrate a well-planned career path. A letter of application and curriculum vitae should be forwarded to the Scholarships and Student Loans Unit, UNSW. Applications close 31 October.
The Rural Allied Health Placement Grants (L,R)

- Up to $500
Grants are available to students undertaking a postgraduate course in dietetics or psychology (Masters). Applications are available from the NSW Health Rural Health Support Unit, Tel (02) 6640 2302, Fax (02) 6640 2499, Email: rhsu@nor.com.au, web: www.nor.com.au/community/rhsu. Session One applications close 15 May. Session Two closing dates are available in August.

The Rural Allied Health Scholarships (L)

- $5,750
Scholarships are available to students in any year of a postgraduate course in dietetics or psychology (Masters). Applications are available from the NSW Health Rural Health Support Unit. Tel (02) 6640 2302, Fax (02) 6640 2499, Email: rhsu@nor.com.au, web: www.nor.com.au/community/rhsu. Applications close late September.

The Rural Industries Research and Development Corporation (RIRDC) Postgraduate Scholarships (L,R)

- 21,500 pa plus $3,500 to the host institution
- Up to 3 years
The scholarships are available for postgraduate study in rural research and development in areas of interest to the Corporation. Applicants must hold an Honours 1 or 2/1 degree in an appropriate discipline. Applications from mature age students with rural industry experience are particularly encouraged. Applications close in early November.

The Social Policy Research Centre (SPRC) Postgraduate Research Scholarship (L,R)

- $16,135 pa (equivalent to the APA), plus allowances
- 3 years for a PhD
Applicants should hold a Bachelor's Degree with at least Honours 2/1 in any of the fields of study relevant to social policy. The successful candidate will be enrolled in a relevant School of the University but will undertake research at the Centre. Prospective applicants must contact the School in which they wish to enrol. Application packages are available from the Administrator, Social Policy Research Centre, UNSW, Tel (02) 9385 3833. Applications close late November.

The State Librarian's Metcalfe Scholarship at UNSW (L,R,C)

- At least $2,000
The scholarship is open to suitably qualified applicants to undertake a Masters or PhD in the areas of librarianship, marketing or technology. Selection will be based on academic merit, the outline for the proposed area of study and demonstrated interest in librarianship. Applications normally close 30 November.

The Sugar Research and Development Corporation (SRDC) Postgraduate Scholarships (L,R)

- $22,000 pa plus $3,000 to the host institution
- Up to 3 years
The scholarships are available to foster research in disciplines compatible with the SRDC's research priorities. Applicants should hold an Honours degree or equivalent and have a strong motivation to make a professional career in the sugar industry. Further information and applications are available from the Executive Director, Sugar Research and Development Corporation, PO Box 12050, Brisbane Elizabeth St Qld 4002, Tel (07) 3210 0495, Fax (07) 3210 0506. Applications close mid-September.

The Sydney Gay and Lesbian Business Association Scholarship (L, R, C)

- $1,500
- 1 year
The scholarship is provided to encourage the participation of gay men and lesbians in business and management careers. Scholarships are available to full-time students in Commerce or the AGSM. Applicants must be gay or lesbian. Applications normally close 15 April.

The Telstra Research Laboratories Postgraduate Research Fellowship (L,R)

University departments may apply for the Fellowships for one or more of their PhD students who are undertaking research relevant to the telecommunications industry in the fields of electrical engineering, computer science, science, psychology, social science or economics or other appropriate course. Further information is available from the Fellowship Applications Officer, Telstra Research Laboratories, Box 249, Rosebank MDC, Clayton VIC 3169. Email: c.zaman@trl.telstra.com.au. Applications close late September.

The Ukrainian Studies Foundation of Australia Endowed Scholarship (L,L)

- $1,000 in 2000, $1,500 from 2001
- 1 year only
The Scholarship is available to students undertaking, or proposing to undertake, postgraduate or honours level studies at UNSW on a Ukrainian topic/theme, or comparative Ukrainian/Australian topic/theme. Selection will be based on academic merit and the reasons for undertaking the current and/or proposed studies. Applications will normally close on January 31.

United Uranium Trust Fund Scholarship

This Scholarship is available for the study of nuclear science and technology at the Australian Nuclear Science and Technology Organisation (ANSTO) or other designated institution. Applicants must be under 40 years of age. Further information and applications are available from ANSTO on telephone (02) 9543 3111.

VSDD Deafness Projects (L)

Tertiary Education Scholarships may be awarded to deaf students undertaking tertiary courses related to deafness, deaf education, or fields which will advance the interests of deaf people. Applicants must be Permanent Residents of Australia. Further information is available from the VSDC-Services for Deaf Children, PO Box 6466, St Kilda Rd Central, Melbourne Vic 3004. Applications close mid-May.

The Wenkart Foundation Grants (L,R)

- Up to $22,000 pa
- 2 years with the possibility of renewal
Applicants must be undertaking full-time research in clinical, biomedical or health related clinical sciences. The grants will not be available again until the 1999 academic year. Applications close mid-May.

The Zonta International Amelia Earhart Awards (L,R)

- US$6,000
- 1 year
Applicants must be women who have completed one year graduate study in an aero-space related science or engineering degree. Further information and applications are available from Zonta International, 557 West Randolph St, Chicago, Illinois 60661-2206, USA, Tel +1 312 930 5948, Fax +1 312 930 0951. Applications close early November.
Faculty Scholarships

Faculty of Life Sciences

Biological Science

The Australian Biological Resources (ABRS) Postgraduate Research Scholarship (L,R)
- $16,135 pa (subject to annual review to match the APA)
- Up to 3 years for a PhD
Applicants should be proposing to undertake full-time study in a PhD, in an area of relevance to ABRS taxonomic principles. Applicants should hold an Honours 1 or 2/1 degree in an appropriate discipline and be strongly motivated to make a professional career as a taxonomist. Permanent residents must have had 12 months continuous residence in Australia. Application forms are available on the web at http://www.anbg.gov.au/abrs/grants/html/schol.htm. Applications close early October.

The Faulding Florey Medal (L,R)
- $30,000
The prize is to be awarded every two years to an Australian researcher who is actively working in Australia or overseas for a major discovery in biomedical sciences of benefit to human health. Details are on the Tall Poppy website: www.tallpoppies.net.au. Nominations close mid-April.

Psychology

The John Clark Memorial Award in Psychology (L,R,C)
- $1,000
- 1 year
Applicants must be enrolled in a postgraduate degree program in Psychology undertaking research in an area concerned with the ongoing problems of the community, particularly the behaviour of the 'whole person' in a social milieu. Applications close late October.

Faculty of Science and Technology

Chemistry

The School of Chemistry APA Bridging Scholarship (L,R)
- $11,000
- 1 year
Applicants must be undertaking a full-time PhD in the School of Chemistry and an applicant for an Australian Postgraduate Award (APA). The scholarships are available to students who were unsuccessful in their application for an APA. Selection will be based on the students application for an APA. The APA is awarded on the basis of academic merit, publications, research potential and referee's report. APA applications close 30 September.

The School of Chemistry IPRS Living Allowance Scholarships (L,R)
- $11,000
- Up to 3 years, with a possible 6 month extension
The scholarships are available to students undertaking a full-time PhD in the School of Chemistry and in receipt of an International Postgraduate Research Scholarship (IPRS). Selection will be based on the students application for an IPRS. The IPRS is awarded on the basis of academic merit, publications, research potential and referee's report. IPRS applications close 30 September.

The School of Chemistry Supplementary Teaching Scholarship (l,L,R)
- $5,000 (taxable)
- Up to 3 years, with a possible 6 month extension
Applicants must be undertaking a full-time PhD in the School of Chemistry and in receipt of an International Postgraduate Research Scholarship (IPRS), an Australian Postgraduate Award (APA), or a School of Chemistry APA Bridging Scholarship. Scholarship recipients are required to perform 3 hours of teaching each week for 28 weeks per annum. Selection will be based on the students application for an IPRS or APA. The IPRS and APA are awarded on the basis of academic merit, publications, research potential and referee's report. IPRS applications close 30 September, APA applications close 31 October.

Materials Science and Engineering

The Sir Rupert Myers Postgraduate Scholarship in Materials Science and Engineering (L,R,C)
- $5,000 pa
- 1 year, renewable up to 3 years
Applicants must hold an Honours degree in materials science and engineering, or a related field. The scholarships are available for study towards a postgraduate degree in the School of Materials Science and Engineering. Information is available from the School of Materials Science and Engineering, University of New South Wales, 2052, Tel (02) 9385 4436. Applications close in December.

Optometry

The Brien A. Holden Postgraduate Research Scholarship (L,R)
- Tuition fees, living allowance (approx $15,000 pa), travel and other allowances
- Up to 3 years, annually renewable
Scholarships are available for full-time study leading to the degree of Master of Science or PhD at the Cooperative Research Centre for Eye Research and Technology (CRCERT) at UNSW. The scholarship is open to international students, with special consideration given to applicants from developing countries. Selection will be based on academic merit, the reasons for the proposed study and financial need. Applications close late October.

The Contact Lens Society of Australia Scholarship (L,R,C)
- $3,500 pa
The scholarship is provided to enable a graduate in optometry, medicine, or other appropriate discipline to undertake the degree of Master of Science or PhD in the School of Optometry. Enquiries to The Secretary, Contact Lens Society, Tel (02) 9243 3997.

Physics

The Gordon Godfrey Scholarship in Theoretical Physics (L,R)
- $1,500 pa
- 2 years
The scholarship is provided to enable a student to undertake a research degree in theoretical physics. The scholarship may be held concurrently with another award. Information is available from the School of Physics, Tel (02) 9385 4553/5649.
Travel Scholarships

Students in receipt of postgraduate scholarships not listed below may, if the scholarships conditions allow, spend a period of time overseas undertaking research relevant to their Australian qualification.

General Travel

AAUW Educational Foundation Awards (I,L,R,C)
The American Association of University Women (AAUW) offers a range of scholarships and fellowships for full-time study in the United States. Additional information may be obtained from the Association’s website: http://www.aauw.org

AAUW Educational Foundation International Fellowships (I,L,R,C)
• US$16,000
• 1 year
The American Association of University Women (AAUW) offers Fellowships for full-time postgraduate study or research in the United States for one academic year. Applicants must be females who have earned the equivalent of a United States Bachelor’s degree and who are not US Citizens or Permanent Residents. Applicants can be preparing to undertake study in a broad range of disciplines including arts and humanities, physical and biological sciences, social sciences, law, economics, political sciences, or studies important to changing the lives of women and girls. International fellows can also qualify for a supplemental grant (US$5,000-$7,000) to support a community action project designed to improve the lives of women and girls for study in the fellow’s home country in the year immediately following the fellowship year. Application packs are available from the AAUW Educational Foundation, Customer Centre, Dept 141, N. Dodge St, Iowa City, IA 52243-4030 USA. Applications close mid-January for the Fellowship year commencing in July.

The ACSANZ Postgraduate Awards for Canadian Studies (I,L,R)
• Up to $2,800 towards a research trip to Canada
The Association of Canadian Studies in Australia and New Zealand will offer grants to postgraduate students wishing to undertake a short research trip to Canada. Applicants must be enrolled in a Masters or Doctoral degree at an Australian or New Zealand university. Grants will be for research into all areas of academic enquiry that have a distinctly Canadian orientation, for example in the humanities, social and political sciences and some branches of the health and environmental sciences. Information and applications are available from the Academic Relations Officer, Canadian High Commission, Commonwealth Avenue, Canberra, ACT 2600, Tel (02) 6273 3844, Fax (02) 6270 4083. Email co.cnbra@cnbra01.x400.gc.ca. Applications close late September.

The Asian Studies Library Awards (ASLA) (L,R)
• $250 to $800 in a lump sum
Applicants must be undertaking a Masters by Research or PhD. The award provides a contribution towards the travel costs to centres with Asian collections to undertakelibrary research. Further information and application forms are available from the Project Co-ordinator, Asian Studies Library Awards, Collection Management Division, Library ANU, Canberra ACT 2600. Applications close mid-June.

The Association of International Education Japan (AIEJ) Short-Term Student Exchange Promotion Program (Inbound) Scholarships (I,L,R,C)
• 50,000 yen (settling-in allowance), 80,000 yen per month, plus airfare
• Six months to one year
Applicants must be accepted by a Japanese University under a student exchange program agreement with UNSW. Students must initially apply directly to a Japanese University through the International Student Centre at UNSW. The Japanese host university will recommend candidates to AIEJ and students must apply as directed by the host university. Applications close in February, May and September each year.

The Association of International Education Japan (AIEJ) Short-Term Student Exchange Promotion Program (Inbound) Peace and Friendship Scholarships (I,L,R,C)
• 50,000 yen (settling-in allowance), 100,000 yen per month, plus airfare
• Ten months to one year
Applicants must be accepted by a Japanese University under a student exchange program agreement with UNSW. Students must initially apply directly to a Japanese University through the International Student Centre at UNSW. The Japanese host university will recommend candidates to AIEJ and students must apply as directed by the host university. Applications close in February, May and September each year.

Association of University Women Educational Foundation-Charles & June Ross International Fellowship (L,R,C)
• US$15,400
• 1 year
The fellowship is available to Australian women who have graduated from an Australian University and who are proposing to undertake one year of full-time postgraduate study or research in the United States. Applicants must be members of the Australian Federation of University Women or AAUW and intend to return to Australia to pursue their professional career. Information and applications are available only from AAUW Educational Foundation, PO Box 4030, Iowa City, Iowa 52243-4030, USA, Tel +1 319 337 1716, Fax +1 319 337 2201. Applications close late November.

The AT&T Leadership Award (I,L,R,C)
• US$5,000
The award is open to students who will be commencing full-time undergraduate or postgraduate study in the United States between January and September in the year of application. The scholarship is open to students from the following Asia/Pacific countries: Australia, China, Hong Kong, India, Indonesia, Japan, Republic of Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand. Information and applications are available from the U.S. Consulate General, USIS, Level 59 MLC Centre, 19-20 Martin Place, Sydney NSW 2000, Tel (02) 9662 3016. Applications close 15 September.

The Australian Academy of Science International Exchange Programs (L,R)
The Academy administers exchange programs which support collaborative research between professional Australian scientists and technologists with countries such as the UK, France, Germany, Taiwan, China, Korea and Japan. The programs provide funds for living and travelling costs. Applicants must be Australian citizens who hold a PhD degree or equivalent. Information is available from
The Australia-Korea Foundation Awards (L,R,C)
The AKF provides assistance to Korean language graduates who will be undertaking teacher training in the Korean language, or for work-experience programs. Information and applications are available from the Programs Co-ordinator, National Korean Studies Centre, PO Box 218, Hawthorn Vic 3122. Email: nksc@swin.edu.au.

The Australian Bicentennial Scholarships and Fellowships Scheme (L,R,C)
- 4,000 pounds sterling
- At least 3 months

Awards are available for study or research in the United Kingdom in any discipline, where it can be demonstrated that there is an advantage to be gained from a period of study in the U.K. Applicants must be enrolled as postgraduate students at an Australian higher education institution and who are usually resident in Australia. Applications are available from the Secretary, Sir Robert Menzies Centre for Australian Studies, University of London, 28 Russell Square, London, WC1B 5DS, UK, Tel +44 171 580 5876, Fax +44 171 580 9627, Email: mcintyre@sas.ac.au. Applications close early November.

The Australian Federation of University Women (AFUW) (L,R,C)
Each year the Federation offers to its members a number of awards for study in Australia and overseas. Details of awards are included in a booklet available from the Australian Federation of University Women Inc, 215 Clarence Street, Sydney NSW 2000, Tel (02) 9299 9888.

The British Aerospace Australia Chevening Scholarship (L,R,C)
- Tuition fees, maintenance allowance, airfare
- 1 year

The scholarship is available for study in an approved, one-year MSc course in aerospace engineering at a British university. Applicants must hold, or expect to complete before October, an Honours 1 or 2:1 degree. Application forms are available from the British Council, PO Box 88, Edgecliff NSW 2027, Tel (02) 9326 2022, Fax (02) 9327 4868. Applications close late October.

The British Chevening Scholarships (L,R,C)
- Tuition fees, maintenance allowance and return airfare
- 3 months to 1 year

The awards are intended for outstanding graduates and young professionals with the potential to rise to senior positions in the private or public sectors and will contribute to Australian-British relations and understanding. The awards are tenable for postgraduate study at British universities. Application forms are available from the British Council, PO Box 88, Edgecliff NSW 2027, Tel (02) 9326 2022, Fax (02) 9327 4868. Applications close in October.

British Council Postgraduate Bursaries (L,R)
- Return economy airfare plus monthly stipend of 450 pounds
- 3 months

The scholarships are available for students enrolled in a full-time PhD who are proposing to spend three months at a British University or similar institution to take advantage of British expertise, equipment or data. Applications should be received by the British Council a minimum of 6 months prior to departure. Further information and applications are available from the British Council, PO Box 88, Edgecliff NSW 2027, Tel 9326 2022, Fax 9327 4868.

The Cambridge Commonwealth Trust Scholarships (L,R,C)
The Cambridge Commonwealth Trust administers several scholarships for Australian Citizens to undertake postgraduate study at the University of Cambridge. Scholarship application forms should be requested from the University of Cambridge when applying for admission. Information and applications are available from The Board of Graduate Studies, 4 Mill Lane, Cambridge CB2 1RZ, United Kingdom. By submitting one Scholarship Application Form, applicants will be considered for all the Trust's scholarships for which they are eligible. Information on how to apply is available from the Honorary Secretary, Australian Committee of the Cambridge Australia Trust, GPO Box 93, Canberra ACT 2601, Tel (02) 6248 7744, Fax (02) 6248 6287. Applications for admission to Cambridge close 31 January and scholarship applications close 30 April in the following year.

The Cancer Research Fellowship Programme (I,L,R)
- Travel expenses and living allowances
- 1 year

Applicants should be engaged in research in medicine or the allied sciences and intending to pursue a career in cancer research. The awards are tenable at the International Agency for Research on Cancer in France, or any other suitable institution abroad. Areas of research include epidemiology, biostatistics, environmental and viral carcinogenesis and mechanisms of carcinogenesis. Applications are available from the International Agency for Research on Cancer, 150 cours Albert-Thomas, 69372 Lyon Cedex 08, France, tel 72 73 84 85, Fax 72 73 85 75. Applications normally close in December.

Churchill Fellowships (L)
- Tuition, travel and living allowances

Churchill Fellowships provide financial support for Australian Citizens to undertake study, training or projects overseas. Fellowships will not normally be awarded for higher academic or formal qualifications however. Applicants must be over 18 years of age. Further information and applications are available from the Chief Executive Officer, The Winston Churchill Memorial Trust, 218 Northbourne Ave, Braddon ACT 2612, Tel (02) 6247 8333. Applications close late February.

The Commonwealth Scholarship and Fellowship Plan (CSFP) (L,R,C)
- Varies for each country. Generally covers travel, living expenses, tuition fees, books and equipment, approved medical expenses
- Usually 2-3 years depending on the country

CSFP provides opportunities for Commonwealth students to undertake advanced academic study in other Commonwealth countries. Candidates should be Commonwealth Citizens who hold an undergraduate degree. Applications close at different times depending on the country in which the study is proposed.

The Coral Sea Scholarship (L,R,C)
- $3,000 per month, plus $2,500 travel entitlement
- Up to 3 months

The award is for applicants holding a tertiary qualification who are proposing study in the United States, to investigate a problem or opportunity relevant to Australian business or industry. Applicants must be Australian Citizens (Permanent Residents are not eligible). Further information and applications are available from the Fulbright Home Page, http://sunsite.anu.edu.au/education/fulbright, or by
contacting the Program Officer, Australian-American Educational Foundation, GPO Box 1559, Canberra ACT 2601, Tel (02) 6247 9331, Email rachel@aaef.anu.edu.au. Applications close 30 September.

DAAD- The German Academic Exchange Service Scholarships (L,R,C)

Application forms and information (Including closing dates) for the following scholarships are available from the Embassy of the Federal Republic of Germany, 119 Empire Circuit, Yarralumla, Canberra ACT 2600.

One-Year Scholarships
• Monthly allowance between DM1,000 and DM1,700, airfares, health and accident insurance, and tuition fees
• 1 year

Scholarships are available for graduate studies in Germany. Applicants must be aged 32 or under and hold a Bachelors degree (or equivalent). A working knowledge of German is required of those who study arts, others may receive additional language training prior to the commencement of the scholarship. Applications normally close in September.

Research Grants
• Monthly stipend of DM1,700, health insurance contribution and travel assistance of DM2,500
• 2 to 6 months

PhD students can apply for assistance to undertake a short period of research in Germany. Applicants must be aged 32 or under.

Information Visits by Groups of Professors and Students
Groups (minimum of 10 persons, maximum of 20 persons) of professors and students can apply for assistance to visit Germany with the intention of increasing the knowledge of specific German topics. The program offers support in making travel and study arrangements and may include some financial assistance (based on the length of the stay and the number of persons undertaking the study tour). The period of stay must be between 7 and 21 days. No tours will be organised for July or August.

Deutschlandkundlicher Winterkurs
• Course fees, DM3,500 to assist with travel and living expenses, health insurance
• 8 weeks (3 January - 21 February)

Undergraduate and postgraduate students from all fields with at least two years university-level German may apply for this scholarship. Applicants must be Australian or New Zealand Citizens, aged from 19 to 32 and proposing to undertake a German Studies course (In German) at the Albert-Ludwigs University of Freiburg. The course provides language instruction and concentrates on historical and cultural aspects of contemporary Germany for students with a background in German Studies. Applications usually close in early August.

East West Center Graduate Degree Fellowship (L,R,C)
• Accommodation, monthly stipend of US$600, tuition fees, health insurance plus allowances
• 12 months with a possible one year extension

The Fellowships are available for postgraduate study at the University of Hawaii, preferably at Masters level. Citizens of the United States and Asian or Pacific countries are eligible to apply. Potential applicants must request an application package direct from the East West Centre, Awards Services Officer, Burns Hall 2066, 1601 East-West Road, Honolulu Hawaii 96849-1601, USA, Tel +1 808 944 7735, Fax +1 808 944 7730. Applications close early October.

The English-Speaking Union (NSW Branch) Scholarship (L,R,C)
• Up to $8,000

The scholarship assists graduates who, at the outset of their careers, are seeking to further their education overseas. The scholarship is open to Australian citizens living in NSW or the ACT, whose intention it is to return to Australia after undertaking study overseas. Further information is available from The English-Speaking Union (NSW Branch), PO Box A2156, Sydney South NSW 1235, Tel (02) 9231 0667. Applications close early June.

Frank Knox Memorial Fellowships (L,R,C)
• US$15,000 pa plus tuition fees and health insurance
• 1 year with the possibility of renewal for a further year

Applicants must be undertaking, or near completion of, a postgraduate qualification at an Australian University. The scholarships are tenable at one of Harvard University's graduate schools. Applications close early October.

The Fulbright Postgraduate Student Awards (L,R)
• Up to $32,530, depending on the type of award, with the possibility of other allowances (eg return airfares and tuition fees)
• 1 year

Students planning to undertake an American higher degree or engage in research towards an Australian higher degree in any field can apply for the Fulbright Student Awards. Four other privately sponsored awards are available - The Engineering Award, The Aboriginal and Torres Strait Islander People Award, The Visual and Performing Arts Award, and The Tim Matthews Memorial Award in Statistics and Related Disciplines. Applicants must be Australian Citizens who have completed an Honours degree (or equivalent). Further information and applications are available from the Fulbright Home Page, http://sunsite.anu.edu.au/education/fulbright Tel (02) 6247 9331, Email: rachel@aaef.anu.edu.au. Applications close 30 September.

The Golda Meir Scholarship (L,R,C)
• Tuition (some allowances may be paid)
• 1 year

The Golda Meir scholarships are available to graduates who are wishing to pursue a course in Jewish studies, religious studies, Israel studies or Middle East studies, who meet the relevant requirements for the Graduate Year Program at the Hebrew University's Rothberg School for Overseas Students. Application forms are available from the Australian Friends of the Hebrew University, 36 Hawthorn Road, South Caulfield VIC 3162, Tel (03) 9272 5511.

The Gowrie Scholarship Trust Fund (L,R)
• $4,000 pa
• 2 years

Applicants must be members of the Forces or children (or grandchildren or lineal descendants) of members of the Forces who were on active service during the 1939-45 War. Special consideration may be given to cases of financial hardship. Applications close October.

Greek Government Scholarships (L,R,C)
• Tuition fees, monthly subsidy plus other allowances

Scholarships are available for undergraduate and postgraduate study in Greece. Applicants must be Australian citizens. Further information is available from the Embassy of Greece, 9 Turrana St, Yarralumla ACT 2600, Tel (02) 6273 3011. Applications normally close late March.
The Harkness Academic Fellowships (L,R,C)
- Some allowances and tuition fees for study in the USA
- 12-21 months

The Academic Fellowships cover academic study and research. Applicants should be active in the public, business or voluntary sectors with an outstanding record of achievement. Special consideration may be given to studies in health care and related community issues. Applications are available on written request from the Harkness Fellowship, PO Box 836, Belconnen ACT 2606. Applications close early September.

The Harkness Mid-Career Fellowships (L,R,C)
- Professional travel allowance
- 7-12 months

The Mid-career Fellowships are provided to support study and practical experience. Applicants should be active in the public, business or voluntary sectors with an outstanding record of achievement. Special consideration may be given to studies in health care and related community issues. Applications are available from Sylvia Browning, CHERE, University of Sydney, Level 6, Building F, 88 Mallett St Camperdown NSW 2050. Tel (02) 9351 0900 Fax (02) 9351 0930 http://www.cmwf.org Applications close late September.

The Italian Government Scholarships (L)
- 1 million Italian lira per month
- 2 to 24 months

Scholarships are open to Australian citizens to undertake research and language studies in Italy. Applicants must be aged under 35 years. Further information is available from the Italian Embassy, 12 Grey St, Deakin ACT 2600, Tel (02) 6273 3333, Fax (02) 6273 4223. Applications close early March.

The Japanese Government (Monbusho) Scholarships (L)
- Scholarships are available to Australian Citizens for study in Japan for postgraduate research or five years of undergraduate study. Applicants must be willing to study the Japanese language and receive instruction in Japanese. Further information and applications are available from Monbusho Scholarships, Embassy of Japan, 112 Empire Circuit, Yarralumla ACT 2600, Tel (02) 6272 7268, Fax (02) 6273 1848. Applications close early July.

The Kobe Steel Postgraduate Scholarship (L,R,C)
- Maintenance allowance of at least 7,000 pounds sterling plus tuition fees and travelling expenses
- Up to 2 years with the possibility of extension

The scholarship is tenable at St Catherine's College, Oxford University. The scholarship will be awarded to outstanding individuals who display qualities of leadership, excellence in sport and language studies in Italy. Applicants must be aged under 35 and hold, or expect to complete before October, an Honours 1 or 2/1 degree. Application forms are available from the British Council, PO Box 88, Edgecliff NSW 2027, Tel (02) 9326 2022, Fax (02) 9327 4868. Applications close late October.

The Korean Government Scholarships (L)
- Tuition fees, living allowance, travel and other allowances
- Duration of course

Scholarships are available to Australian citizens for Masters or PhD study in Korea. Preference will be given to applicants with a knowledge of the Korean language. Information and applications are available from the Embassy of the Republic of Korea, 113 Empire Circuit, Yarralumla ACT 2600, Tel (02) 6273 3044, Fax (02) 6293 4839. Applications close early May.

The Lloyd's Register of Shipping Chevening Scholarship (L,R,C)
- Tuition fees, maintenance allowance, airfare
- 1 year

Two scholarships are available to graduates with proven academic merit and leadership potential, to pursue a postgraduate course at a British University. One scholarship is for a one-year MSc course in Marine Engineering/Naval Architecture, and the other is for a one-year MSc course in Environmental Sciences. Applicants must hold, or expect to complete before October, an Honours 1 or 2/1 degree. Application forms are available from the British Council, PO Box 88, Edgecliff NSW 2027, Tel (02) 9326 2022, Fax (02) 9327 4868. Applications close late October.

The Meat Research Corporation (MRC) Studentships and Junior Research Fellowships (L,R,C)
- Some allowances and tuition fees for study in the USA
- 2 years for Studentships (Masters or Diploma), 3 years for a PhD in Australia or US$17,500 for study overseas, plus airfares, insurance and allowances
- 2 years for Studentships (Masters or Diploma), 3 years for Junior Research Fellowships (PhD)

Applications should be proposing to undertake research in disciplines relevant to the Australian meat and livestock industry. Applications normally close late September.
The Menzies Scholarships (L,R,C)
The Menzies Scholarships are intended to provide funds for Australian Citizens (aged 21 to 45) who wish to travel to Britain to undertake a course of research and to write a paper on a subject of concern and importance to the relationship between the Australian and British communities. Tertiary qualifications are preferred but the awards are not restricted to graduates or students. Information and applications are available from the Australia-Britain Society, GPO Box 551, Sydney NSW 2000, Tel (02) 223 5244. Applications normally close October.

Nanyang Technological University Singapore Research Scholarships (L,L,R)
- Tuition fees plus S$1,400-$1,500 per month allowance
- 2 years for a Masters, 3 years for a PhD degree
Research scholarships are available to graduates with good Honours degrees to undertake postgraduate study. Information and application forms are available from The Registrar, Nanyang Technological University. Email: geleong@ntu.edu.sg, Fax: +65 7911604.

The NSW Ministry for the Arts Scholarships (L)
- $5,000 - $25,000 (depending on the award)
The NSW Government offers a number of scholarships and awards to writers, artists and scholars living in NSW. Further information is available from The New South Wales Ministry for the Arts, GPO Box 5341, Sydney NSW 2000, Tel (02) 9228 3533, Fax (02) 9228 4722.

The Oxford Nuffield Medical Fellowship (L,R)
- Between 27,525 and 31,945 pounds sterling pa (subject to tax), plus travel expenses
- 2 years with a possible one year extension
The scholarship is tenable for postgraduate study at Oxford University. Applicants must be aged between 19 and 25 and have an honours degree or equivalent. Selection for the scholarship will be based on academic and personal achievements and community spirit. Further information is available on the Rhodes home page http://www.usyd.edu.au/su/rhodes. Applications close 1 September.

Overseas Research Students Awards Scheme (United Kingdom) (L,L,R)
- Difference in tuition fees for a ‘home’ and an ‘overseas’ student
The ORS Scheme provides partial remission of tuition fees to overseas students of outstanding merit and research potential. The awards are open to graduates who will be commencing full-time research studies at a participating institution in the United Kingdom, and who will be liable to pay tuition fees at the overseas student rate. Information and applications must be obtained directly from the Registrar or Secretary of the institution students are applying to in the United Kingdom. Applications normally close in April in the year of tenure.

Queen’s Trust Grants (L)
- Up to $15,000
The Queen’s Trust provides grants to Australian Citizens aged 18-28 years, for the pursuit of excellence in their chosen fields. Support is provided for projects studying the advancement of Australian youth, development of community leadership and/or other skills which will be of benefit to Australia. Information and applications may be obtained from the Queen’s Trust, Tel 1800 033 625. Applications close in late April.

The Rhodes Scholarship (L,R,C)
- Tuition fees, assistance with travel expenses, up to $17,500 allowance
- 2 years, with a possible one year extension
The scholarship is tenable for postgraduate study at Oxford University. Applicants must be aged between 19 and 25 and have an honours degree or equivalent. Selection for the scholarship will be based on academic and personal achievements and community spirit. Further information is available on the Rhodes home page http://www.usyd.edu.au/su/rhodes. Applications close 1 September.

The Robert Gordon Menzies Scholarship to Harvard (L,R,C)
- Up to $25,000 towards tuition fees, living expenses or travel costs (students who enrol in the Harvard Business School may be eligible for an additional $12,000)
- 1 year
The scholarships are tenable at one of the Harvard University graduate schools. Applicants must be an Honours graduate of an Australian university who intend to return to Australia after studies at Harvard or to represent Australia overseas. Applicants must be eligible for, and have applied for admission to a degree program in a graduate school of Harvard University. The scholarships are awarded on the basis of academic excellence and personal qualities such as leadership and public duty. Applications and additional information may be obtained from the Administrative Officer, Council and Board Secretariat, ANU, Canberra ACT 0200. Fax (02) 6279 8524, Email: cabs.admin@anu.edu.au, Website: http://www.anu.edu.au/cabs/scholarships. Applications close at the end of December.

The Russian Scholarships (L,R,C)
- Payment an allowance and medical cover
Scholarships are available to Australian citizens to undertake undergraduate or postgraduate study in journalism, law, economics, international relations or medicine in Russia. Applications normally close in May.

The Sir Charles Mackerras / Australia-Britain Society Music Scholarship (L)
- 8,000 pounds sterling
The scholarship is open to an outstanding young conductor, composer or repetiteur, aged between 21 and 30 who is likely to be an influential leader in the field of music, to undertake study in the United Kingdom or the Czech republic for at least six months. Application forms are available from the British Council, PO Box 88, Edgecliff NSW 2027, Tel (02) 9326 2022, Fax (02) 9327 4688, Email: bcs@sydney.sprint.com. Applications close early November.

The STA Travel Grant (L,L,R,C)
- Up to $3,000
Applicants must be undertaking study leading to a degree or diploma of the University and a member of the University Union. The grant is awarded on the basis of significant contribution to the community life of the University involving a leadership role in student affairs and the University Union and the relevance and merit of the proposed travel to the student’s academic program or University Union activities. Applications close mid-April.
The Swedish Institute Guest Scholarships (L,L)
- SEK 7,100 per month living allowance
- 9 months (1 academic year)

The scholarships are open to students/researchers who wish to travel to Sweden for studies/research which cannot equally well be pursued in countries other than Sweden. Applicants must establish contact with a Swedish University willing to accept the applicant for the proposed studies. Initial requests for application forms must be made in writing, including the applicant’s name and address, nationality, educational background and work experience, knowledge of any languages, statement of the purpose of study/research in Sweden, and a copy of a letter of invitation from a Swedish University Department. Requests for applications should be sent to the Swedish Institute, Department for Exchanges in Education and Research, Box 7434, SE-103 91, Stockholm, Sweden. Email: grantinfo@si.se. Web site: http://www.si.se.

Requests for application forms must reach the Swedish Institute before 1 December.

Swiss Government Scholarships (L,R,C)
- Tuition fees, living allowance, medical insurance and assistance with airfares
- 1 academic year

One scholarship is available for art/music and two for other disciplines, to undertake postgraduate study or attend an art school/conservatory in Switzerland. Applicants will be required to pass a language test in German or French. Applicants must be aged under 35. Applications close early October.

The Tokyo Metropolitan Government Foreign Student Scholarship Program (L,R,C)
- 200,000 yen per month, tuition and travel expenses, plus allowances
- Up to 2.5 years

Scholarships are available for a Masters degree or postgraduate research at Tokyo Metropolitan University, or Tokyo Metropolitan Institute of Technology. Applicants must be aged under 35 years, be Australian Citizens from New South Wales, and be graduates of a university in NSW. Applications close early April.

The Turkish Government Language & Culture and Higher Education Scholarships (L,L)

Scholarships are available to high school graduates to undertake study at a Turkish University. Students may be required to undertake a one year Turkish language course before commencement of the degree. The scholarships pay a monthly allowance for the duration of the course. Scholarships are also available to university graduates who would like to attend Turkish Language and Culture Summer Courses conducted by Turkish Studies Centre. Further information is available from the Embassy of the Republic of Turkey, 60 Mugga Way, Red Hill ACT 2603. Applications close 30 May for Language and Culture Scholarships, and 15 July for Higher Education Scholarships.

University College London Scholarships

The University College London offers various scholarships to students from overseas, who hold an offer of admission to a full-time programme of study at UCL. Applicants must be self-financing and liable to pay tuition fees at the rate for overseas students. Information and applications are available from the International Office, University College London, Gower St, London WC1E 6BT, UK, Tel +44 171 380 7708, Fax +44 171 380 7380, Email: international@ucl.ac.uk.

Yokoyama Scholarship Awards (L,R,C)

Assistance may be available for undergraduate and postgraduate study at a Japanese University. Information is available from Mr. Masao Iwashita, Secretary-General, Yokoyama Scholarship Foundation, 6F Shiozaki Building, 2-7-1 Hirakawacho, Chiyoda-Ku, Tokyo 102 Japan, Tel (813) 3238 2913, Fax (813) 5275 1677.
Prizes

The following information summarises prizes awarded by the University. Prizes are grouped by level as follows: Undergraduate, common Undergraduate/Postgraduate, Postgraduate. Within these groups prizes are listed under the faculty, school or department in which they are awarded. Prizes which are not specific to any school are listed under General. Law prizes are awarded only for students enrolled in the LLB or Jurisprudence programs.

Information regarding the establishment of new prizes may be obtained from the Student Information and Systems Office.

Prize information is normally provided in the following format:

- Prize value
- Conditions

Undergraduate Prizes

The University of New South Wales

(General Category for Prizes) The Heinz Harant Challenge Prize

- $1000 (bi-annual prize)
  For an original piece of assessable work submitted in the program of completing a General Education course

The Spirit of Reconciliation Prize

- $150
  For the best piece of work with an Aboriginal theme, emphasising the importance of reconciliation, undertaken by a student in any faculty

The Sydney Technical College Union Award

- $400 and a bronze medal
  For leadership in student affairs combined with marked academic proficiency by a graduand

The UNSW Human Rights Essay Prize

- $400
  For the best research essay on a Human Rights topic by a student enrolled at the University of New South Wales proceeding to a Bachelor degree

Faculty of Life Sciences

The Faculty of Life Sciences Prize for 1st Year Science

- $250
  For outstanding performance in Year 1 of the Science program (3930 or 3970)

The Faculty of Life Sciences Prize for 2nd Year Science

- $250
  For outstanding performance in Year 2 of the Science program (3930 or 3970)

The Faculty of Life Sciences Prize for 3rd Year Science

- $250
  For outstanding performance in Year 3 of the Science program (3930 or 3970)

The Faculty of Life Sciences Prize for 1st Year Advanced Science

- $250
  For outstanding performance in Year 1 of the Advanced Science program (3990 or 3931)

Faculty of Life Sciences Prize for 2nd Year Advanced Science

- $250
  For outstanding performance in Year 2 of the Advanced Science program (3990 or 3931)

The Faculty of Life Sciences Prize for 3rd Year Advanced Science

- $250
  For outstanding performance in Year 3 of the Advanced Science program (3990 or 3931)
The Faculty of Life Sciences Prize for 4th Year Advanced Science

- $250
For outstanding performance in Year 4 of the Advanced Science program (3990 or 3931)

School of Applied Bioscience

The Amersham Modern Techniques Prize in Biotechnology

- $250
For the best performance in BIOT3061 Monoclonal Antibody and Genetic Techniques in Biotechnology

The Baldwin Shelston Waters Prize

- $300
For the best performance in BIOT3071 Commercial Biotechnology in the Bachelor of Science degree program

The Nestlé Australia Limited Prize

- $200
For the best performance in FOOD1400 Project in the Bachelor of Science in Food Science and Technology degree program

The Wilfred B S Bishop Prize

- $75
For the best overall performance in the Bachelor of Science in Food Science and Technology degree by a student who has made a significant contribution to staff and student activities

School of Anatomy

The Dami Atapattu Prize

- $100
For the best performance in Year 1 Anatomy (ANAT1006) in program 3801 Bachelor of Science (Medicine) Bachelor of Medicine Bachelor of Surgery or 3840 Bachelor of Arts Bachelor of Science (Medicine) Bachelor of Medicine Bachelor of Surgery

The Jane Skillen Prize in Anatomy

- $250
For the highest average mark in any three Year 3 Anatomy courses by a graduand in the Bachelor of Science degree program with a major in Anatomy

The Maurice (Toby) Arnold Prize

- $100
For the highest mark in Anatomy (including all sub-disciplines) in Year 2 of program 3801 Bachelor of Science (Medicine) Bachelor of Medicine Bachelor of Surgery or 3840 Bachelor of Arts Bachelor of Science (Medicine) Bachelor of Medicine Bachelor of Surgery

The Paxinos & Watson Prize

- $200
For the best performance in ANAT3411 Neuroanatomy 1 in the Bachelor of Science degree program

The Prize in Practical Anatomy

- $200
For the best performance in Practical Anatomy (including Radiological Anatomy) in Year 2 of program 3801 Bachelor of Science (Medicine) Bachelor of Medicine Bachelor of Surgery or 3840 Bachelor of Arts Bachelor of Science (Medicine) Bachelor of Medicine Bachelor of Surgery

The Winifred Dickes Rost Prize

- $100
For outstanding merit in Anatomy in the final year of the Bachelor of Science degree program

Schools of Anatomy, Physiology and Pharmacology and Psychology

The Istvan Tork Prize in Neuroscience

- $100
For the best performance by a Year 4 Honours student who completed a thesis in the field of Neuroscience in the Schools of Psychology or Anatomy or Physiology and Pharmacology

School of Biochemistry and Molecular Genetics

The Australasian Association of Clinical Biochemists Prize

- $100, 1 year Associate Membership of the Association and a plaque
For the best performance in BIOC3261 Human Biochemistry in the Bachelor of Science degree program

The Beckman Coulter Prize

- $200
For the best performance in the Year 4 Biochemistry Honours program in the Bachelor of Science degree program

The School Prize

- $200
For the best performance in the examinations in level 2 Biochemistry courses in the Bachelor of Science degree program

The Johnson & Johnson Research Pty Ltd Prize

- $200
For the best performance in BIOC3271 Molecular Cell Biology
The Life Technologies Prize
• $200
For the best performance in BIOC3281 Recombinant DNA Techniques and Molecular Biology

The School Prize
• $200
For the best performance in the examinations in level 3 Biochemistry courses in the Bachelor of Science degree program

The W J O’Sullivan Prize
• $200
For the best performance in BIOC2329 Medical Biochemistry and Genetics

School of Chemical Engineering and Industrial Chemistry

The Abbott Laboratories Pty Limited Prize
• $200
For the best performance in Year 4 of the Bachelor of Engineering in Chemical Engineering degree program

The Australasian Corrosion Association (NSW Branch) Award
• $150 and 1 year membership of the Association
For the best performance in INDC3041 Corrosion in the Chemical Industry

The Australian Institute of Energy (AIE) Prize
• $150
For the best performance in a course selected by the Head of School

The BHP Engineering Prize
• $150
For the best performance in Year 3 of the Bachelor of Engineering in Chemical Engineering degree program

The Bristol-Myers Squibb Prize
• $200
For the best performance in CHEN4030 Environmental Pollution Control

The Cargill Australia Prize
• $500
For the best performance in CHEN4120 Process Plant Management and Operation

The Dorr-Oliver Prize
• $200
For the best performance in CHEN3040 Separation Processes 1

The Dow Corning / Millenium Inorganic Chemicals Prize
• $500
For the best performance in the Environmental Management component of CHEN4100 Professional Electives

The Dow Corning Prize
• $300
For the best performance in CHEN4081 Design Project

The Dow Corning Prize
• $300
For the best performance in CHEN4090 Research Project

The Fuel Technology Staff Prize
• $200
For the best performance in FUEL4090 Fuel and Energy Research Project

The Goodman Fielder Ingredients Prize
• $250
For the best performance in CHEN3090 Chemical Engineering Applications

The National Starch & Chemical Prize
• $500
For the best performance in POLY3010 Polymer Science

The Norman Prize in Chemical Engineering
• $1000
For the best project (CHEN4090 Research Project) in the final year in Fuel Technology in the Bachelor of Engineering in Chemical Engineering degree program

The Simon Carves Australia Prize
• $200
For the best performance in CHEN3060 Process Plant Engineering

The Simon Carves Australia Prize
• $200
For meritorious performance in CHEN4081 Design Project

The Waste Service NSW Prize
• $200
For meritorious performance in the Environmental Management component of CHEN4100 Professional Electives

The Wattyl Australia / James Hardie Prize
• $400
For meritorious performance in the Environmental Management component of CHEN4100 Professional Electives
The Western Mining Corporation Ltd Prize
- $150
  For the best performance in CHEN2050 Chemical Engineering Laboratory 1

The Western Mining Corporation Ltd Prize
- $150
  For the best performance in CHEN3080 Chemical Engineering Laboratory 2

School of Chemistry

The Bosworth Prize in Physical Chemistry
- $200 and a bronze medal
  For the best performance in CHEM3011 Physical Chemistry in the Bachelor of Science degree program

The Inglis Hudson Bequest
- $15
  For the best performance in CHEM2021 Organic Chemistry

The Jeffery Bequest
- $100
  For the best performance in CHEM2021 Organic Chemistry

The June Griffith Memorial Prize
- $60
  For the best performance in Level 1 Chemistry courses in the Bachelor of Science degree program

The Merck Sharp & Dohme (Australia) Pty Limited Prize
- $150
  For the best performance in Level 2 Chemistry courses in the Board of Studies in Science and Mathematics

The Merck Sharp & Dohme (Australia) Pty Limited Prize
- $150
  For the best performance in Level 3 Chemistry courses in the Board of Studies in Science and Mathematics

The RACI Analytical Chemistry Group Prize
- $150
  For the best performance in CHEM3041 Analytical Chemistry and CHEM3141 Advanced Analytical Chemistry

The School of Chemistry Honours Thesis Prize
- $200
  For the best performance in the Honours Research Project (thesis and oral examination) in the Bachelor of Science degree program

The University of New South Wales Chemical Society George Wright Prize
- $100
  For meritorious performance in Level 2 Chemistry courses

The University of New South Wales Chemical Society Parke-Pope Prize
- $100
  For meritorious performance in Level 3 Chemistry courses

School of Geography

The Jack Mabbutt Medal
- A bronze medal
  For the best performance in the Year 4 Project in Applied Geography in the Bachelor of Science degree program

The Jack Mabbutt Prize
- $150
  For the best performance by a student in Year 3 of the Bachelor of Arts or Bachelor of Science degree program proceeding to Honours in Geography

School of Geology

The F C Loughnan Prize for First Year Geology
- $100
  For the best performance in the Geology component in Year 1 of the Bachelor of Science degree program

The F C Loughnan Prize in Applied Geology
- $340
  For the best performance in the Geology component in Year 3 of the Bachelor of Science degree program

The Lorant Eotvos Prize
- $300 and a bronze medal
  For the best performance in GEOL4111 Advanced Geological Techniques in the final year of the Bachelor of Science in Applied Geology or the Bachelor of Science in Applied Geology at Honours level program

The Prospectors Suunto Prize
- A Suunto tandem (compass clinometer)
  For meritorious performance in the field work associated with Year 2 of programs 2500 Geology or 3000 Applied Geology
The Rio Tinto Ore Deposits Prize
• $200
For the best overall performance in a Year 3 Economic Geology course, or in any course or courses which may be substituted therefore in the Bachelor of Science degree program

The Structural Geology Field Prize
• $100 and winner's name engraved on Perpetual Trophy
For the best performance in the Year 3 Structural Geology Field Tutorial in the Bachelor of Science in Applied Geology program or the Bachelor of Science program in the Board of Studies in Science and Mathematics (Geology Program)

School of Materials Science and Engineering

The ANSTO Prize
• $100
For the best performance in Year 4 of the Bachelor of Engineering in Ceramic Engineering degree program

The Austral Bricks Prize
• $100
For the best performance in Year 3 of the Bachelor of Engineering in Ceramic Engineering degree program

The Australasian Ceramic Society Prize
• $100
For the highest overall program aggregate by a student completing the final year of the Bachelor of Engineering in Ceramic Engineering degree program

The Australasian Corrosion Association (NSW) Prize
• $150
For the best performance in MATS1213 Design for Corrosion Control in the Bachelor of Metallurgical Engineering degree program

The Carpenter Advanced Ceramics Prize
• $100
For the best overall academic performance in Year 2 of the Bachelor of Engineering in Ceramic Engineering degree program

The Hugh Muir Prize
• $275
For the best performance by a student in the final year seminar class, or who in the opinion of the Head of School, has contributed most to the corporate life of the School of Materials Science and Engineering

The Charles Parsons Prize (Year 2 Textile Management)
• $500
For the best performance in Year 2 Textile courses in the Bachelor of Science in Textile Management degree program

The Charles Parsons Prize (Year 2 Textile Technology)
• $500
For the best performance in Year 2 Textile courses in the Bachelor of Science in Textile Technology degree program

The Charles Parsons Prize (Year 3 Textile Management)
• $500
For the best performance in Year 3 Textile courses in the Bachelor of Science in Textile Management degree program

The Charles Parsons Prize (Year 3 Textile Technology)
• $500
For the best performance in Year 3 Textile courses in the Bachelor of Science in Textile Technology degree program

The Commercial Minerals Limited Prize
• $200
For the best performance in MATS2133 Ceramic Raw Materials in the Bachelor of Engineering in Ceramic Engineering degree program

The C R Luckock Prize
• $60
For the best performance in Meat Science

The Fernz Minerals Prize
• $250
For the most aptitude and technique shown in the combined laboratory courses MATS2153 Ceramic Processing Laboratory and MATS2203 Physico-Chemical Ceramics Laboratory (with each course receiving one half of the weighting for the average) in the Bachelor of Engineering in Ceramic Engineering degree program

The Ferro Corporation (Australia) Prize
• $250
For the best performance in MATS2123 Ceramic Process Principles 2 in the Bachelor of Engineering in Ceramic Engineering degree program

The Hugh Muir Prize
• $275
For the best performance by a student in the final year seminar class, or who in the opinion of the Head of School, has contributed most to the corporate life of the School of Materials Science and Engineering
The Institute of Materials Engineering Australasia Prize
• $200 and 1 year membership of the Institute
For the best performance in MATS1022 Materials Process Principles

The J B Speakman Prize
• $50
For the best undergraduate thesis in the final year of the Bachelor of Science in Textile Technology or Textile Management degree program

The Max Hatherly Prize
• $275
For the best performance in MATS1002 Microstructural Analysis

The Thermal Ceramics Australia Pty Ltd Prize
• $200
For the best performance in MATS2254 Ceramic Engineering Design in the Bachelor of Engineering in Ceramic Engineering degree program

The Monier PGH Prize
• $1000
For the best performance by a graduating student in the Bachelor of Engineering in Ceramic Engineering degree program

The National Farmers' Federation Prize
• $150
For excellent academic attainment by a graduating student in the Bachelor of Science in Wool and Pastoral Sciences degree program

The R J Webster Prize
• $250
For the best performance throughout the Bachelor of Science in Textile Technology or Textile Management degree program

The Sialon Ceramics Prize
• $100
For the best performance in an honours thesis that reflects an advancement in the technology and development of advanced ceramics in the Bachelor of Engineering in Ceramic Engineering degree program

The Taylor Ceramic Engineering Prize
• $150
For the greatest overall amount of ingenuity shown in professional activities by a graduating student in the Bachelor of Engineering in Ceramic Engineering degree program

The Welding Technology Institute of Australia Prize
• Books worth approximately $200 and 1 year membership of the Institute
For the best performance in MATS1214 Welding and Other Joining Processes

The Western Mining Corporation Limited Prize
• $150
For the best overall performance in Year 3 full-time (or its part-time equivalent) in the Bachelor of Metallurgical Engineering or Bachelor of Science (Technology) in Metallurgy degree program

School of Mathematics

The Applied Mathematics Prize
• $100
For excellence in Level 3 Applied Mathematics courses in a Bachelor degree or Diploma program

The C H Peck Prize
• $200
For the best performance in Year 2 Mathematics by a student proceeding to Year 3 in the School of Mathematics

The Head of School's Prize
• $100
For excellence in four or more Mathematics units in Year 2 in a Bachelor degree or Diploma program

The Textile Institute Prize
• 1 year membership to the Institute
For the best performance in the Bachelor of Science in Textile Technology or Textile Management degree program

The J R Holmes Prize
• $100
For the best performance in Level 3 Pure Mathematics courses in a Bachelor degree or Diploma program
The J R Holmes Prize
• $100
For excellence in at least 4 pass-level Pure Mathematics Level 3 units, taken over no more than two consecutive years by a student in the Bachelor of Science, Bachelor of Arts or Bachelor of Education degree program.

The Michael Mihailavitch Erihman Award
• $1000
For the best performance in a Mathematics Program, in examinations conducted by the School of Mathematics in any one year.

The School of Mathematics Prize
• $100
For the best performance in MATH1131 Mathematics 1A or MATH1141 Higher Mathematics 1A, and MATH1231 Mathematics 1B or MATH1241 Higher Mathematics 1B in a Bachelor degree or Diploma program.

The Statistical Society of Australia (NSW Branch) Prize
• $200
For the best performance in Theory of Statistics courses.

The Towers Perrin Fourth Year Prize
• $200
For the best performance in the Year 4 project in the Bachelor of Science at Honours level within the School of Mathematics.

The Towers Perrin Third Year Prize
• $200
For the best performance in both MATH3610 Higher Pure Mathematics 3 - Real Analysis and MATH3620 Higher Pure Mathematics 3 - Functional Analysis or in MATH3181 Applied Mathematics 3 - Optimal Control Theory.

School of Microbiology and Immunology

The Bio-Rad Prize in Immunology
• $250
For the best performance in MICR3051 Immunology 2.

The Clinical Microbiology Update Programme Prize
• $300
For the best performance in MICR3081 Bacteria and Disease.

The Jackson Prize
• $500
For the best Honours student in MICR4013 Microbiology 4 (Honours).

School of Optometry

The ACBO Prize
• Textbooks or visual therapy equipment worth approximately $150
For the best overall performance throughout the Bachelor of Optometry program in Binocular and Children's Vision.

The Bausch & Lomb Prize
• $200 and a plaque
For the best overall performance in Year 3 of the Bachelor of Optometry program.

The BOC Ophthalmic Instruments Prize
• Colour Vision Test
For the best overall performance throughout the Bachelor of Optometry program in Colour Vision.

The Designs for Vision Prize
• Products valued at approximately $250
For the best overall performance throughout the Bachelor of Optometry program in Primary Care Optometry.

The ESSILOR Australia Pty Limited Prize
• $200
For the best performance in OPTM3301 Visual Science 3 and OPTM3309 Ocular Science 3.

The Head of School’s Prize
• A pocket ophthalmoscope set valued at approximately $500
For distinguished performance throughout the Bachelor of Optometry program.

The Hoya Lens Australia Pty Limited Prize
• $250
For the best overall performance in Ocular and Visual Science throughout the Bachelor of Optometry degree program.

The Hydron Pty Limited Prize
• $250
For the best performance in OPTM4311 Clinical Optometry 4A, OPTM4312 Clinical Optometry 4B and OPTM4313 Clinical Optometry 4C in the Bachelor of Optometry degree program.
The Hydron Pty Limited Prize

- $250
For the best overall performance in Year 4 of the Bachelor of Optometry degree program

The Optometrists Association Australia Prize

- $500
For outstanding academic performance in the Bachelor of Optometry program

The Optometric Vision Research Foundation Prize

- $250
For the best research project in the final year of the Bachelor of Optometry degree program

The Perkins Optical Products Pty. Ltd. Prize

- $200
For the best overall performance throughout the Bachelor of Optometry program in Dispensing

The Perkins Optical Products Pty. Ltd. Prize

- $200
For the best overall performance in OPTM2105 Optics and the Eye III

The Protector Technologies Pty. Ltd. Prize

- $150
For the best overall performance throughout the Bachelor of Optometry program in Public Health and Occupational Optometry

The Safilo Australia Prize

- $150
For the best performance in OPTM2102 Clinical Optometry 2A and OPTM2202 Clinical Optometry 2B

The SOLA Optical Australia Pty. Ltd. Prize

- $200
For the best overall performance in OPTM3302 Clinical Optometry III

The Theo Kannis Prize for Clinical Optometry

- $250
For the best overall performance in Clinical Optometry throughout the Bachelor of Optometry degree program

The Wesley Jessen Pty Limited Prize

- A trial fitting set of contact lenses
For the best overall performance throughout the Bachelor of Optometry program in Contact Lens

School of Physics

The Australian Institute of Physics Prize

- $200 and 1 year membership of the Institute
For the highest aggregate in any three units from PHYS3010 Quantum Mechanics, PHYS3050 Nuclear Physics, PHYS3021 Statistical Mechanics and Solid State Physics, PHYS3030 Electromagnetism, PHYS3060 Advanced Optics, or PHYS3041 Experimental Physics A in the Bachelor of Science degree program

The B L Turtle Memorial Astrophysics Prize

- $150
For the best performance in PHYS3160 Astrophysics in the Bachelor of Science degree program

The Bob Dalglish Prize

- $100
For the best performance in a competition based on the use of microcomputers in PHYS1601 Computer Applications

The Bob Dalglish Prize

- $100
For the best performance in a project carried out within PHYS2601 Computer Applications

The Coherent Scientific Prize for Lasers, Optoelectronics & Applications

- $250
For the best performance in PHYS3710 Lasers and Applications or PHYS3760 Laser and Optoelectronics Technology Laboratory 1

The Gordon and Mabel Godfrey Award in Theoretical Physics 3

- $200
For the best performance in a selection of Year 3 Theoretical Physics courses chosen from: PHYS3510 Advanced Mechanics, Fields and Chaos PHYS3530 Advanced Quantum Physics PHYS3550 General Relativity and PHYS3560 Relativistic Electrodynamics and Plasmas Physics

The Gordon and Mabel Godfrey Award in Theoretical Physics 4

- $200
For excellence in PHYS4503 Theoretical Physics 4 (Honours) in the Bachelor of Science degree program at honours level

The Head of School's Prize in Physics

- $50
For the best Year 4 Honours thesis in Physics in the Bachelor of Science degree program

The Nilsen Prize in Electronics

- Electronic test equipment valued at approximately $200
For excellence in PHYS3630 Electronics or PHYS3041 Experimental Physics A and PHYS3760 Laser and Optoelectronics Technology Laboratory 1
The Nucletron Prize in Experimental Physics
- $200
  For the best performance in PHYS3041 Experimental Physics A in Year 3 of the Bachelor of Science degree program

The Physics Staff Prize for Physics 1
- $100
  For the best performance in PHYS1002 Physics 1

The Physics Staff Prize for Physics 2
- $150
  For the highest aggregate in PHYS2001 Mechanics and Computational Physics, PHYS2011 Electromagnetism and Thermal Physics, PHYS2021 Quantum Physics and Relativity and PHYS2031 Laboratory in the Bachelor of Science degree program

The Physics Staff Prize for Physics Honours
- $200
  For the best performance in the Physics Honours Year in the Bachelor of Science degree program

School of Physiology and Pharmacology

The D I McCloskey Prize for Physiology/Pharmacology Honours
- $100
  For the best performance in PHPH4218 Physiology 4 Honours or PHPH4258 Pharmacology Honours in program 3801 Bachelor of Science (Medicine) Bachelor of Medicine Bachelor of Surgery in the Faculty of Medicine or program 3970 Bachelor of Science in the Board of Studies in Science and Mathematics

The D N Wade Prize for Medical Pharmacology
- $100
  For the best performance in PHPH3055 Medical Pharmacology in program 3801 Bachelor of Science (Medicine) Bachelor of Medicine Bachelor of Surgery, 3821 Bachelor of Science Bachelor of Medicine Bachelor of Surgery or 3840 Bachelor of Arts Bachelor of Science (Medicine) Bachelor of Medicine Bachelor of Surgery

The Doerenkamp-Zbinden Prize in Pharmacology
- $100
  For the highest aggregate in PHPH3152 Pharmacology in the Bachelor of Science degree program

The F C Courtice Prize
- $100
  For the best performance in PHPH2118 Medical Physiology 1 in program 3801 Bachelor of Science (Medicine) Bachelor of Medicine Bachelor of Surgery, 3821 Bachelor of Science Bachelor of Medicine Bachelor of Surgery or 3840 Bachelor of Arts Bachelor of Science (Medicine) Bachelor of Medicine Bachelor of Surgery

School of Psychology

The Australian Psychological Society Prize
- $300
  For the best performance in Psychology 4 Honours

The Milon Buneta Prize
- $100
  For the best performance in Year 2 of the Bachelor of Science (Psychology) degree program

The Psychology Staff Prize
- $80
  For the best performance in Year 2 Psychology

School of Science and Technology Studies

The Ronayne Prize
- $150
  For the best First Class Honours result in the Year 4 (Honours) program in the Bachelor of Science or Bachelor of Arts in Science and Technology Studies degree program at Honours level
### Undergraduate and Postgraduate Prizes

**School of Geology**

**The Laric V Hawkins Prize**
- $500
  For the best Field Project Report involving a substantial component of Geophysics in a postgraduate program, Year 4 of the Applied Geology program, or an equivalent Honours program in the Science or Advanced Science program

**School of Safety Science**

**The Softway Operating Systems Prize**
- $2,000
  For the best performance in any advanced level Operating Systems subject by a student in an undergraduate or postgraduate coursework degree in the School of Computer Science and Engineering

### Postgraduate Prizes

**School of Applied Bioscience**

**The Spruson and Ferguson Patent and Trade Mark Prize**
- $250
  For the best performance in the Seminar Research presentation in the Master of Science or Doctor of Philosophy degree programs in the Department of Food Science and Technology

**School of Materials Science and Engineering**

**The Malcolm Chaikin Prize**
- $200 and a bronze medal
  For an outstanding PhD thesis in the Department of Textile Technology

**School of Psychology**

**The College of Organisational Psychologists, NSW Section Prize**
- $250
  For the best overall contribution to Organisational Psychology by a student in the Master of Psychology (Applied) degree program

**School of Safety Science**

**The Blackmores Ltd Prize for In Vitro Toxicology Laboratory Science**
- $250
  For the best performance in Chemical Safety and Applied Toxicology (CSAT) laboratory based course or project report on in-vitro toxicology in a postgraduate program in the School of Safety Science
The National Safety Council of Australia Prize in Occupational Health and Safety

- $250
For the best performance by a graduating student in the Master of Science and Technology in Occupational Health and Safety degree program

The Neil Adams Ergonomics Prize

- $500
For the best performance in three courses, one of which is an Ergonomics course, in the Ergonomics Program in the School of Safety Science

The Quality Occupational Health personnel Pty Ltd Prize

- $250
For the best performance in SESC9300 Effective Behaviour in Organisations by a student in a postgraduate program in the School of Safety Science

The Safety Institute of Australia (NSW Division) Bill Lessels' Memorial Prize for Graduate Diploma in Safety Science

- $250
For the best overall performance by a graduating student in the Graduate Diploma in Safety Science degree program

The Neil Adams Ergonomics Prize

- $500
For the best overall performance by a graduating student in the Graduate Diploma in Safety Science degree program

The School of Safety Science Qualifier’s Prize

- $250
For consistent performance in a coursework Masters degree by a student who began studies as a graduate qualifier in the School of Safety Science

The Quality Occupational Health personnel Pty Ltd Prize

- $250
For the best performance in SESC9300 Effective Behaviour in Organisations by a student in a postgraduate program in the School of Safety Science

The Safety Institute of Australia (NSW Division) Bill Lessels' Memorial Prize for Master of Safety Science

- $250.00
For the best overall performance by a graduating student in the Master of Safety Science degree program

The Whiteley Industries Prize

- $200
For the best performance in SESC9820 Chemical Safety and Toxicology in a postgraduate program in the School of Safety Science

The Workcover NSW Prize

- $300
For the best performance in SESC9211 Risk Management in a postgraduate program in the School of Safety Science
The University of New South Wales • Kensington Campus

Theatres
Applied Science Theatre F11
Athol Lykke Theatre C27
Biomedical Theatres E27
Central Lecture Block (CLB) E19
Clancy Auditorium C24
Classroom Block (Western Grounds) H3
Fig Tree Theatre B14
Helferton Theatres (Dwyer, Mellor, Murphy, Nyholm, Smith) E12
Io Myers Studio D9
Keith Burrows Theatre J14
Macauley Theatre E15
Mathews Theatres D23
Parade Theatre E3
Physics Theatre K14
Rex Vowels Theatre F17
Science Theatre F11
Webster Theatres C27

Buildings
AGSM G27
Applied Science F10
Arcade D24
Barker Apartments N13
Basser College C18
Baxter College D14
Biological Sciences D26
Blockhouse G6
Chancellery C22
Civil Engineering H22
Dalton F12
Electrical Engineering G17
Goldstein College D16
Golf House A27
Helferton E12
International House C6
Geography and Surveying K17
Goosbell F20
Kensington College (Office) C17
Library (University) E21
Library Stage 2 F21
Mechanical Engineering J17
Main K15
Mathews F23
Morven Brown C20
Myers, Sir Rupert M15
New College L6
Newton J12
NIDA D2
Parking Station (Barker Street) N18
Parking Station (Botany Street) H25
Pavilions, The E24
Philip Baxter College D14
Quadrangle E15
Red Centre H13
Roundhouse E6
Sam Cracknell Pavilion H8
Samuels F25
Shalom College N9
Squarehouse E4
The Scientia G19
University Regiment J2
Valentine Annex E22
Wallace Wurth School of Medicine C27
Warrane College M7
Webster, Sir Robert G14
Willis Annex E18

Faculty Offices
Arts and Social Sciences C20
Australian Graduate School of Management AGSM G27
Built Environment H13
Comerice and Economics F20
Engineering K17
Law (Library Stage 2) F21
Life Sciences D26
Medicine B27
Science and Technology E12

School Offices
Accounting E15
Anatomy B27
Applied Bioscience D26
Architecture Program H13
Banking and Finance F20
Biochemistry and Molecular Genetics D26
Biological Science D26
Building Construction
Management Program H13

Business Law and Taxation E15
Chemical Engineering and Industrial Chemistry F10
Chemistry E12
Civil and Environmental Engineering H20
Community Medicine D26
Computer Science and Engineering K17
Economics F20
Education Studies F23
Electrical Engineering and Telecommunications G17
English C20
Geography F10
Geology F10
Geomatic Engineering B27
Health Services Management F25
History C20
Industrial Design Program H13
Industrial Relations and Organisational Behaviour F20
Information, Archive and Library Studies F23
Information Systems E15
Interior Architecture Program H13
International Business E15
Landscape Architecture Program H13
Law (Library Stage 2) F21
Marketing F20
Materials Science and Engineering E8
Mathematics H13
Mechanical and Manufacturing Engineering J17
Media and Communications G15
Medical Education C27
Medical Education C27
Microbiology and Immunology D26
Mining Engineering K15
Modern Language Studies C20
Music and Music Education G15
Optometry M15
Paediatrics C27
Pathology C27
Petroleum Engineering D12
Philosophy C20
Physics K15
Physiology and Pharmacology C27
Planning and Urban Development Program H13
Political Science C20
Psychology F23
Safety Science B11a
Science and Technology Studies C20

Services
Aboriginal Student Centre A29
Access Scheme – Equity and Diversity Unit E15
Accommodation – Housing Office E15
Admissions and Enrolment – Student Centre C22
Biomedical Library F23
Campus Conferencing C22
Campus Services B14a
Cashier C22
Careers and Employment Office E15
Chaplains E4
Child Care Centres - House at Pooh Corner N8
Kangas House G14
Tiggers/Honey Pot – 34 Botany St.
Co-op program M15
CONTACT E15
Counselling Service E15
Educational Testing Centre E4
Equity and Diversity Unit E15
Facilities Department C22
Health Service E15
Housing Office E15
Human Resources C22
Law Library F21
NewSouthWales Student Centre C22
Public Affairs and Development C22
Publishing and Printing Services C22
Religious Services E4
Research Office M15
Roundtable Conferencing and Catering E4
SECURITY/Lost Property/Parking H13
Sports Association H8
Student Centre C22
Student Guild E15
Student Recruitment Office C22
Unisearch Limited M15
University Gymnasium B5
University Union Blockhouse G6
Roundhouse E6
Squarehouse E4
UNSW Bookshop E15
UNSW International H13
The University of New South Wales • Kensington Campus
This Handbook has been specifically designed as a source of detailed reference information for first year, re-enrolling undergraduate and postgraduate students.

Separate Handbooks are published for:
- Arts and Social Sciences
- Built Environment
- College of Fine Arts
- Commerce and Economics
- Engineering
- Law
- Medicine
- Science
- Australian Graduate School of Management (AGSM)
- Australian Taxation Studies Program (ATAX)
- University College
- Australian Defence Force Academy (ADFA)
- General Education.

For further information about the University – its organisation; staff members; description of disciplines; scholarships; prizes and so on, consult the University Calendar (Summary Volume). For further information on student matters, consult the UNSW Student Guide.