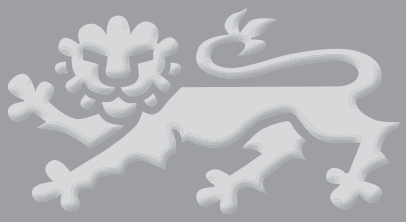

2007 handbook

Science

The University of Sydney

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Acknowledgments

The Arms of the University

Sidere mens eadem mutato
Though the constellation may change
the spirit remains the same.

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Disclaimer
The information in this handbook was as accurate as possible at the time of printing. The University reserves the right to make changes to the information in this handbook, including prerequisites for units of study, as appropriate. Students should check with faculties for current, detailed information regarding units of study.

All updates to the information in this handbook can be found at www.usyd.edu.au/handbooks/handbooks_admin/updates.shtml

Disability
Accessible versions of this document in Microsoft Word are available at www.usyd.edu.au/handbooks/handbooks_disability/index.shtml

Resolutions
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Important dates – How to use a handbook

University semester and vacation dates for 2007

Summer School lectures	**Dates**
December program	Monday 11 December to Friday 28 February
Main program	Thursday 4 January to Friday 28 February
Late January program	Friday 12 January to Friday 28 February
Winter School lectures	**Dates**
For the latest dates please refer to http://www.summer.usyd.edu.au/winter/	
Semester One	**Dates**
International student orientation (Semester One)	Monday 12 February to Thursday 15 February
Lectures begin	Monday 5 March
AVCC Common Week/non-teaching Easter period	Friday 6 April to Friday 13 April
International Application Deadline (Semester Two) *	Monday 30 April
Last day of lectures	Friday 8 June
Study vacation	Monday 11 June to Friday 15 June
Examination period	Monday 18 June to Saturday 30 June
Semester ends	Saturday 30 June
AVCC Common Week/non-teaching period	Monday 2 July to Friday 6 July
Semester Two	**Dates**
International student orientation (Semester Two)	Monday 16 July to Thursday 19 July
Lectures begin	Monday 23 July
AVCC Common Week/non-teaching period	Monday 24 September to Friday 28 September
International application deadline (Semester One 2008)*	Wednesday 31 October*
Last day of lectures	Friday 26 October
Study vacation	Monday 29 October to Friday 2 November
Examination period	Monday 5 November to Saturday 17 November
Semester ends	Saturday 17 November

*Deadlines for application to the USydMP and BDent are different. Please see: www.acer.edu.au/tests/universit/gamsat

Last dates for withdrawal or discontinuation for 2007

Semester One units of study	**Dates**
Last day to add a unit	Friday 16 March
Last day for withdrawal	Saturday 31 March
Last day to discontinue without failure (DNF)	Friday 27 April
Last to discontinue (Discontinued – Fail)	Friday 8 June
Semester Two units of study	**Dates**
Last day to add a unit	Friday 3 August
Last day for withdrawal	Friday 31 August
Last day to discontinue without a failure (DNF)	Friday 7 September
Last day to discontinue (Discontinued – Fail)	Friday 26 October
Last day to withdraw from a non-standard unit of study	Census date of the unit, which must not be earlier than 20 per cent of the way through the period of time during which the unit is undertaken
Public holidays	**Dates**
Australia Day	Friday 26 January
Good Friday	Friday 6 April
Easter Monday	Monday 9 April
Anzac Day	Wednesday 25 April
Queen's Birthday	Monday 11 June
Labour Day	Monday 1 October

What is a handbook?

The handbook is an official publication and an essential guide for every student who studies at the University of Sydney. It is an important source of enrolment information. It can also help you with more than just planning your course of study.

As a student at the University of Sydney you need to be aware of course structures and content, who your lecturers are, as well as examination procedures. You should also become familiar with University policies and faculty rules and regulations. The handbook will supply a lot of this information.

It will also point you to places and people around the University who can help you with enquiries about library loans, childcare, fees, casual employment, places to eat and stay, support groups and much, much more.

What new students need to know

- terminology used for courses and programs of study
- semester dates and examination periods
- important contact details
- how to plan your study program
- rules and policies on assessment, satisfactory progression, honours etc.
- what University services are available and where to find them
- how to get around your campus

At the beginning of many of these chapters there will be explanations to help you proceed further.

Where to find what

Course terminology

University terminology – like 'credit point', 'unit of study', 'WAM' etc – can be found at the back of all handbooks.

Definitions of all terminology are located in the General University information section under **Abbreviations and Glossary**, at the back of this handbook.

Dates

The start and finish dates of semester can be found in the front section of the handbook. Summer School dates are in the General University section at the back of the handbook.

Contents and index

The comprehensive **contents** section at the front of the handbook explains the details you'll find within each chapter.

You'll find information like:

- how and where to contact Faculty staff
- how to select your units of study and programs
- a list of degrees
- detailed information on all units of study – classified by unit identifiers (a four-alpha, four-digit code and a title)
- electives and streams
- scholarships and prizes
- information specific to faculties

The **index** lists units of study only. It allows you to check every reference which refers to your unit of study within the handbook.

Colour-coded sections

- Ivory – for undergraduate courses
- Blue – for postgraduate courses

Faculty rules and regulations

Faculty resolutions are the rules and regulations pertaining to a specific faculty. They can generally be found in their own chapter, or next to the relevant units of study.

These should be read along with the University's own *Coursework Rule 2000 (as amended)* which can be found in the general University information towards the back of the book. Together they outline the agreement between student and faculty, and student and University. Senate resolutions are located in the University Calendar.

General University information

This is information about the University in general, rather than information specific to the faculty. This information is at the back of the book and includes, among other things:

- the University Coursework Rule
- the PhD Rule
- University terminology and abbreviations
- campus maps to help you find your way around
- Summer School information
- international student information
- student services

Course planner

You might like to plot the course of your degree as you read about your units of study. This planner can be found at the back of the handbook.

Timetables

For information about personal timetables, centrally timetabled units of study, and venue bookings, see http://www.usyd.edu.au/studentcentre/timetabling.shtml.

For the session calendar, see http://web.timetable.usyd.edu.au/calendar.jsp

Students with a disability

Accessible versions of this document, including word, pdf and html versions are available at http://www.usyd.edu.au/handbooks/handbooks_disability/.

You can find information on Disability Services in the General University information section of the handbook. The Service can provide information regarding assistance with enrolment and course requirement modifications where appropriate.

For details on registering with the Service and online resources see the Disability Services website http://www.usyd.edu.au/disability.

Handbook updates

The information in the handbook is current at the time of publication. Updated information to handbooks and references to University policies such as plagiarism and special consideration, among others can be found in the University's website.

Feedback regarding the Handbook is welcome.
Visit http://www.usyd.edu.au/handbooks/

Contents

Important dates – How to use a handbook **i**

University semester and vacation dates for 2007 i

Last dates for withdrawal or discontinuation for 2007 i

What is a handbook? ii

What new students need to know ii

Where to find what ii

Timetables ii

Students with a disability ii

Handbook updates ii

Faculty of Science Handbook **1**

Message from the Dean 1

Introduction 2

University dates 2

1. Contact information and policies **3**

The Faculty of Science 3

Schools, departments, centres 3

Key policies for students 6

Special Arrangements and Special Consideration 6

Special Arrangements 6

Special Consideration 7

Code of Conduct for students 7

Student plagiarism: Coursework policy and procedures 8

Part A – Purpose 8

Part B – Preliminary 8

4. Definitions 8

Part C – Preventing plagiarism 9

Faculty life and representation 10

Employment for graduates in Science 10

2. Undergraduate degree regulations **11**

Undergraduate Resolutions 11

University of Sydney (Coursework) Rule 2000 (as amended) 11

Bachelor of Science 11

Bachelor of Medical Science 14

Bachelor of Psychology 16

Bachelor of Science and Technology 17

Bachelor of Information Technology 19

Bachelor of Computer Science and Technology 21

Bachelor of Science combined degrees 24

Bachelor of Science (Advanced)/MBBS 24

Bachelor of Medical Science/MBBS 26

Bachelor of Science and Bachelor of Laws (BSc/LLB) 28

Bachelor of Science and Bachelor of Arts 29

Bachelor of Commerce and Bachelor of Science 32

Joint Resolutions with the Faculties of Engineering and Science (BE/BSc) 34

Bachelor of Engineering Bachelor of Science combined degree 34

Bachelor of Engineering Bachelor of Science double degree 34

Joint Resolutions of the Faculties of Engineering and Science (BE/BMedSc) 35

Bachelor of Engineering/Bachelor of Medical Science 35

Bachelor of Education (Secondary: Science)/Bachelor of Science or Bachelor of Science (Advanced) 35

Bachelor of Education (Secondary: Mathematics)/Bachelor of Science or Bachelor of Science (Advanced) 36

Bachelor of Education (Secondary)/Bachelor of Science (Psychology) 36

Bachelor of Science/Bachelor of Nursing 36

Bachelor of Applied Science (Exercise and Sport Science)/Bachelor of Science (Nutrition) 36

Bachelor of Liberal Studies 37

Bachelor of Liberal Studies (Honours) 37

Bachelor of Liberal Studies (International) 37

Bachelor of Arts and Sciences 37

Bachelor of Arts and Sciences (Honours) 37

3. Bachelor of Science, BSc(Adv), BSc(Adv Maths), BSc(Adv)/MBBS **39**

Enrolment day FAQs 39

Enrolment guide by major 40

Bachelor of Science (BSc) 44

Bachelor of Science (Advanced) 45

Bachelor of Science (Advanced Mathematics) 46

Combined Science/Medicine degrees 47

Table 1: Bachelor of Science 48

4. Bachelor of Science specialist degree programs **89**

Enrolment day FAQs 89

Bachelor of Science (Bioinformatics) 90

Table 1A: Bachelor of Science (Bioinformatics) 91

Bachelor of Science (Environmental) 92

Table 1B: Bachelor of Science (Environmental) 93

Bachelor of Science (Marine Science) 94

Table 1C: Bachelor of Science (Marine Science) 95

Bachelor of Science (Molecular Biology and Genetics) 98

Table 1D: Bachelor of Science (Molecular Biology and Genetics) 99

Bachelor of Science (Molecular Biotechnology) 100

Table 1E: Bachelor of Science (Molecular Biotechnology) 101

Bachelor of Science (Nutrition) 102
Table 1F: Bachelor of Science (Nutrition) 103

5. Bachelor of Medical Science and BMedSc/MBBS 105
Enrolment day FAQs 105
Bachelor of Medical Science (BMedSc) 106
Combined BMedSc/MBBS degree 108
Table IV – Bachelor of Medical Science 109

6. Bachelor of Psychology 111
Enrolment day FAQs 111
Bachelor of Psychology (BPsych) 112

7. Bachelor of Science and Technology 115
Enrolment day FAQs 115
Bachelor of Science and Technology (BST) 116
Enrolment guide by major 117
Table VII - Bachelor of Science and Technology 118

8. Bachelor of Computer Science and Technology and Bachelor of Information Technology 123
Enrolment day FAQs 123
Bachelor of Computer Science and Technology (BCST) 124
Bachelor of Computer Science and Technology (Advanced) 125
Bachelor of Information Technology (BIT) 126
Table III: Bachelor of Information Technology 127
Table IIIA: Bachelor of Information Technology Majors 135

9. Combined degrees 143
Enrolment day FAQs 143
Combined BAppSc (Exercise and Sport Science)/BSc (Nutrition) degrees 144
Table 1F: Bachelor of Science (Nutrition) 145
Combined Science/Law degrees (BSc/LLB) 147
Table II: Law units of study 148
Combined Science/Arts degree 149
Combined Engineering/Science degrees 150
Double degree in Science/Engineering 151
Combined Science/Commerce degrees 152
Combined Nursing/Science degrees 153
Combined Education/Science degrees 154
Bachelor of Liberal Studies (BLibStud) 155
Combined Engineering/Medical Science degrees 157

10. Undergraduate units of study 159
Unit of study descriptions 159
Aerospace, Mechanical and Mechatronic Engineering 159
Agricultural Chemistry and Soil Science 159
Agricultural Chemistry Honours 160
Anatomy and Histology 162
Biochemistry 165
Bioinformatics 169
Biological Sciences 170
Cell Pathology 177
Chemical Engineering 178
Chemistry 178
Civil Engineering 184
Computational Science 184
Electrical Engineering 185
Environmental Science 185
Environmental Studies 186
Financial Mathematics and Statistics 187
Geosciences 187
History and Philosophy of Science 197
Immunobiology major 200
Immunology 200
Information Technologies 201
Law units of study 209
Liberal Studies units of study 211
Marine Science 212
Mathematics and Statistics 214
Statistics Intermediate units of study 223
Statistics senior units of study 223
Media and Communications units of studies 225
Medical Science units of study 226
Medicinal Chemistry 229
Microbiology 229
Microbiology Honours 231
Molecular Biology and Genetics 231
Molecular Biotechnology 233
School of Molecular and Microbial Biosciences 233
Nanoscience and Technology 234
Neuroscience 234
Nutrition 234
Pharmacology 235
Physics 237
Physiology 245
Plant Science 248
Psychology 252
Virology 255

11. Talented Student Program 257
Overview 257
Selection 257
Range of TSP structures 257
Constraints on TSP structure 257
The TSP process 257
TSP coordinators 258

12. Honours in the Faculty of Science 259
Honours units of study 262

13. Information for students on Outbound Exchange 267

Postgraduate degrees 269
Postgraduate degrees, graduate diplomas and graduate certificates 269
1. Degrees of Doctor 269
2. Degrees of Master 269

3. Graduate Diplomas 269
4. Graduate Certificates 269
University of Sydney (Coursework) Rule 2000 (as amended) 270

14. Doctorates in the Faculty of Science **271**
Research doctorate degrees 271
Doctor of Science (DSc) 271
Doctor of Philosophy (PhD) 271
Doctor of Clinical Psychology/Master of Science (DCP/MSc) 271
Unit of study descriptions 272
Doctor of Clinical Neuropsychology/Master of Science (DCN/MSc) 274
Presentation of theses – for research degrees 274
Resolutions 275
Doctor of Science (DSc) 275
Doctor of Philosophy 275
Doctor of Clinical Psychology/Master of Science 275

15. Master's research degrees **277**
Research degrees 277
Master of Science (MSc) 277
Master of Science (Environmental Science) 277
Resolutions 278
Master of Science (MSc) 278
Master of Science (Environmental Science) 279

16. Postgraduate coursework: Graduate Diploma in Science **281**
Resolutions 281
Graduate Diploma in Science (GradDipSc) 281

17. Postgraduate coursework: Applied Science degrees **283**
Graduate Certificate in Applied Science 283
Graduate Diploma in Applied Science 283
Master of Applied Science 283
Resolutions 283
Graduate Certificate in Applied Science 283
Graduate Diploma in Applied Science 283
Master of Applied Science 283
Table 1 Bioinformatics 284
Table 2 Coastal Management 284
Table 3 Environmental Science 285
Table 4 Health Psychology 285
Table 5 Microscopy and Microanalysis 285
Table 6 Molecular Biotechnology 286
Table 7 Neuroscience 286
Table 8 Nutrition and Dietetics 286
Table 9 Psychology of Coaching 287
Table 10 Spatial Information Science 287
Table 11 Wildlife Health and Population Management 287

18. Postgraduate coursework: Bioethics degrees **289**
Graduate Certificate in Bioethics (GradCertBEth) 289
Graduate Certificate in Bioethics (Biotechnology) (GradCertBEthBTech) 289
Graduate Certificate in Bioethics (Clinical Ethics) (GradCertBEthClinEth) 289
Graduate Diploma in Bioethics (GradDipBEth) 289
Master of Bioethics (MBEth) 289
Master of Bioethics (Honours) (MBEthHon) 289
Resolutions 292
Graduate Certificate in Bioethics (GradCertBEth) 292
Graduate Certificate in Bioethics (Biotechnology) (GradCertBEthBTech) 292
Graduate Certificate in Bioethics (Clinical Ethics) (GradCertBethClinEth) 292
Graduate Diploma in Bioethics (GradDipBEth) 292
Master of Bioethics (MBEth) 292
Master of Bioethics (Honours) (MBEthHon) 292

19. Postgraduate courses: Bioinformatics **295**
Graduate Certificate in Applied Science (Bioinformatics) 295
Graduate Diploma in Applied Science (Bioinformatics) 295
Master of Applied Science (Bioinformatics) 295
Resolutions 297
Graduate Certificate in Applied Science (Bioinformatics) 297
Graduate Diploma in Applied Science (Bioinformatics) 297
Master of Applied Science (Bioinformatics) 297

20. Postgraduate coursework: Coastal Management degrees **301**
Graduate Certificate in Applied Science (Coastal Management) 301
Graduate Diploma in Applied Science (Coastal Management) 301
Master of Applied Science (Coastal Management) 301
Resolutions 303
Graduate Certificate in Applied Science (Coastal Management) 303
Graduate Diploma in Applied Science (Coastal Management) 303
Master of Applied Science (Coastal Management) 303

21. Postgraduate coursework: Environmental Science degrees **305**
Master of Environmental Science and Law 305
Unit of study descriptions 305
Resolutions 308
Master of Environmental Science and Law 308
Environmental Science Applied Science degrees 309
Graduate Certificate in Applied Science (Environmental Science) 309
Graduate Diploma in Applied Science (Environmental Science) 309
Master of Applied Science (Environmental Science) 309
Resolutions 312
Graduate Certificate in Applied Science (Environmental Science) 312
Graduate Diploma in Applied Science (Environmental Science) 312

Master of Applied Science (Environmental Science) 312

22. Postgraduate coursework: History and Philosophy of Science degrees **315**

Graduate Certificate in Science (History and Philosophy of Science) 315
Resolutions 316
Graduate Certificate in Science (History and Philosophy of Science) 316

23. Postgraduate coursework: Information Technology degrees **319**

Graduate Diploma in Computing 319
Computing units of study 320
Degrees in Information Technology Management 321
Graduate Certificate in Information Technology Management 321
Graduate Diploma in Information Technology Management 321
Master of Information Technology Management 321
Units of study available in 2007 322
Core units of study 322
Core Research Path units of study 323
Elective units of study 323
Degrees in Information Technology 325
Graduate Certificate in Information Technology 325
Graduate Diploma in Information Technology 325
Master of Information Technology 325
Units of study available in majors in 2007 327
Foundational units of study 329
IT project units 335
Resolutions 335
Graduate Diploma in Computing 335
Resolutions 336
Graduate Certificate in Information Technology Management 336
Graduate Diploma in Information Technology Management 336
Master of Information Technology Management 336
Resolutions 338
Graduate Certificate in Information Technology 338
Graduate Diploma in Information Technology 338
Master of Information Technology 338

24. Postgraduate coursework: Medical Physics degrees **341**

Master of Medical Physics 341
Graduate Diploma in Medical Physics 341
Resolutions 342
Master of Medical Physics 342
Graduate Diploma in Medical Physics 342

25. Postgraduate coursework: Microscopy and Microanalysis degrees **345**

Graduate Certificate in Applied Science (Microscopy and Microanalysis) 345
Graduate Diploma in Applied Science (Microscopy and Microanalysis) 345
Master of Applied Science (Microscopy and Microanalysis) 345
Resolutions 347
Graduate Certificate in Applied Science (Microscopy and Microanalysis) 347
Graduate Diploma in Applied Science (Microscopy and Microanalysis) 347
Master of Applied Science (Microscopy and Microanalysis) 347

26. Postgraduate coursework: Molecular Biotechnology degrees **349**

Graduate Certificate in Applied Science (Molecular Biotechnology), 349
Graduate Diploma in Applied Science (Molecular Biotechnology) 349
Master of Applied Science (Molecular Biotechnology) 349
Resolutions 350
Graduate Certificate in Applied Science (Molecular Biotechnology) 350
Graduate Diploma in Applied Science (Molecular Biotechnology) 350
Master of Applied Science (Molecular Biotechnology) 350

27. Postgraduate coursework: Neuroscience degrees **353**

Graduate Certificate in Applied Science (Neuroscience) 353
Graduate Diploma in Applied Science (Neuroscience) 353
Master of Applied Science (Neuroscience) 353
Resolutions 354
Graduate Certificate in Applied Science (Neuroscience) 354
Graduate Diploma in Applied Science (Neuroscience) 354
Master of Applied Science (Neuroscience) 354

28. Postgraduate coursework: Nutrition and Dietetics degrees **357**

Master of Nutrition and Dietetics 357
Resolutions 358
Master of Nutrition and Dietetics 358
Master of Nutritional Science 359
Resolutions 360
Master of Nutritional Science 360
Applied Science (Nutrition and Dietetics) 361

29. Postgraduate coursework: Psychology degrees **363**

Graduate Diploma in Psychology 363
Resolutions 363
Graduate Diploma in Psychology 363
Graduate Diploma in Science (Psychology) 364
Resolutions 366
Graduate Diploma in Science (Psychology) 366
Psychology of Coaching 367
Graduate Certificate in Applied Science (Psychology of Coaching) 367
Graduate Diploma in Applied Science (Psychology of Coaching) 367

Master of Applied Science (Psychology of Coaching) 367
Resolutions 369
Graduate Certificate in Applied Science (Psychology of Coaching) 369
Graduate Diploma in Applied Science (Psychology of Coaching) 369
Master of Applied Science (Psychology of Coaching) 369
Health Psychology degrees 371
Graduate Certificate in Applied Science (Health Psychology) 371
Graduate Diploma in Applied Science (Health Psychology) 371
Master of Applied Science (Health Psychology) 371
Resolutions 374
Graduate Certificate in Applied Science (Health Psychology) 374
Graduate Diploma in Applied Science (Health Psychology) 374
Master of Applied Science (Health Psychology) 374

30. Postgraduate coursework: Spatial Information Science degrees **377**
Unit of study descriptions 377
Resolutions 377
Graduate Certificate in Applied Science (Spatial Information Science) 377

31. Postgraduate coursework: Wildlife Health and Population Management Degrees **379**
Graduate Certificate in Applied Science (Wildlife Heath and Population Management) 379
Graduate Diploma in Applied Science (Wildlife Heath and Population Management) 379
Master of Applied Science (Wildlife Heath and Population Management) 379
Resolutions 381
Graduate Certificate in Applied Science (Wildlife Health and Population Management) 381
Graduate Diploma in Applied Science (Wildlife Health and Population Management) 381
Master of Applied Science (Wildlife Health and Population Management) 381

32. Staff **383**
Faculty of Science 383
Faculty and Student Information Office 383
Marketing and Communication unit 383
Agricultural Chemistry and Soil Science 383
Anatomy and Histology 384
Biological Sciences 384
Chemistry 386
Geosciences 387
Discipline of Infectious Diseases and Immunology 388
Immunology 388
Infectious Diseases 388
Information Technologies 388
Mathematics and Statistics 389
Molecular and Microbial Biosciences 391
Honorary appointments 391
Microbiology 393
Molecular Biotechnology 393
Pathology 393
Pharmacology 394
Physics 394
Physiology 396
Psychology 397
Other units 399

33. Scholarships **401**
Undergraduate prizes and scholarships 401
Postgraduate Prizes and Scholarships 407

The Sydney Summer and Winter Schools **409**
Advantages 409
How to apply 409
Census dates – Summer School 2007 409
Withdrawal and Refund policy 409
Transferring between Summer School units 409
Summer School scholarships 409
For more information 409

University of Sydney (Coursework) Rule 2000 (as amended) **411**
University Coursework Rule 411
Preliminary 411
Rules relating to coursework award courses 411

University of Sydney (Doctor of Philosophy (PhD)) Rule 2004 **415**
Part 1 – Preliminary 415
Part 2 – Admission to candidature 415
Part 3 – Supervision 416
Part 4 – Candidature 416
Part 5 – Submission of thesis 416

General University information **419**
Accommodation Service 419
Admissions Office 419
Applying for a course 419
Assessment 420
Careers Centre 420
Casual Employment Service 420
Centre for Continuing Education 420
Centre for English Teaching (CET) 420
Child care 420
Client Services, Information and Communications Technology (ICT) 420
The Co-op Bookshop 421
Counselling Service 421
Disability Services 421
Equity Support Services 421
Email 421
Enrolment 421
Environmental Policy 421
Examinations 421
Fees 422
Financial Assistance Office 422

Freedom of Information 422
Graduations Office 422
(Grievances) Appeals 422
HECS and Fees Office 422
HELP 423
Information and Communications Technology 423
International Office 423
International Student Support Unit 423
Koori Centre and Yooroang Garang 423
Learning Centre 423
Library 424
Mathematics Learning Centre 424
Multimedia and Educational Technologies in Arts (META) Resource Centre (Languages and E-Learning) 424
MyUni Student Portal 424
Part-time, full-time 424
Policy online 425
Privacy 425
Scholarships for undergraduates 425
Services for Students 425
Student Centre 425
Student Identity Cards 425
Student Services 425
The Sydney Summer School 425
The University of Sydney Foundation Program (USFP) 425
Timetabling Unit 426
University Health Service 426

Student organisations and International students **427**
Student organisations 427
International students 428

Abbreviations **429**

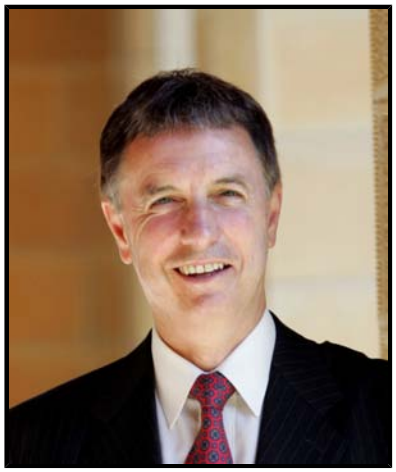
Glossary **433**

Index of units of study **445**

Maps and Course planner **455**

Faculty of Science Handbook

Message from the Dean



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

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

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

David Day
Dean

Introduction

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

Chapter 1 is the 'who and where' of the Faculty, names and locations of people and offices you are likely to need to contact during the year. It also contains information on some important University policies. It is essential that students become familiar with these policies.

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

Chapters 3–9 contain information on undergraduate degrees offered by the Faculty of Science. These chapters contain enrolment advice for undergraduates as well as frequently asked questions and important policy affecting students in the Faculty. You will find enrolment guides and a degree planner to assist you to plan your degree. You should read the particular chapter devoted to your degree in conjunction with the resolutions in chapter 2.

Chapter 10 contains degree tables and unit of study descriptions for undergraduates. If you want to know what a unit of study is and how it fits into your degree plan, this is the best place to look. You should read this chapter in conjunction with chapters 2 and your degree chapter.

Chapter 11 introduces the Faculty's Talented Student Program and gives contact details for coordinators in participating departments and schools.

Chapter 12 has information for Honours students.

Chapter 13 is for all Science students considering taking up the opportunity to study on exchange overseas at a partner institution.

Chapters 14–31 are for postgraduate students. Each chapter contains enrolment advice, unit of study descriptions and resolutions for specific postgraduate degrees offered by the Faculty.

The staff of the Faculty are listed under their School or Department in **chapter 32**.

Chapter 33 contains summary scholarships and prizes information for both undergraduate and postgraduate students.

The **General University Information and the Glossary** are handy reference pages for all sorts of services on campus or to explain that obscure term.

The **unit of study index** is a useful reference tool for students who want to locate information on a particular unit.

University dates

Please see the University Dates page for a listing of all current semester, holiday and examination dates within the University of Sydney.

1. Contact information and policies

This chapter is intended to give School and Department staff contact details. Following these details, you will some key policies. Students enrolled in units of study offered by the faculty of Science must familiarise themselves with these policies. Towards the end of the chapter, you find information on Faculty life and representation, and employment for graduates in science. Information in this section is accurate as at 2 September 2006.

The Faculty of Science

Faculty and Student Information Office
Level 2, Carslaw Building F07
University of Sydney NSW 2006

Counter hours
Mon–Thur 10am to 4pm, Friday 10am to 1pm
Phone: +61 2 9351 3021
Fax: +61 2 9351 4846
Email: faculty@science.usyd.edu.au
Web: www.science.usyd.edu.au

Degree advisers	
BSc (Advanced Maths):	A/Prof Don Taylor
BSc (Bioinformatics):	Dr Lars Jermiin
BSc (Environmental):	A/Prof Gavin Birch
BSc (Marine Science):	Dr Peter Cowell
BSc (Molecular Biology & Genetics):	Prof Iain Campbell
BSc (Molecular Biotechnology):	A/Prof Kevin Downard
BSc (Nutrition):	A/Prof Samir Samman
B Medical Science:	A/Prof Ian Spence
B Computer Science & Technology:	Dr Geoff Kennedy
B Information Technology:	Dr Irena Koprinska
B Psychology:	A/Prof Iain McGregor
B Liberal Studies:	Dr Margaret Charles
B Science Media & Communications:	Contact Faculty of Science Office

Schools, departments, centres

Agriculture, Food & Natural Resources

Room 304, McMillan Building A05
Phone: +61 2 9351 6926
Fax: +61 2 9351 2945
Email: dean@agric.usyd.edu.au
Web: www.agric.usyd.edu.au/su/agric/

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

Discipline of Anatomy and Histology

Room S463, Anderson Stuart Building F13
Phone: +61 2 9351 2497
Fax: +61 2 9351 2813
Email: enquiries@anatomy.usyd.edu.au
Web: www.anatomy.usyd.edu.au
Head of Department: Professor Bill Webster

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

Biochemistry

see Molecular and Microbial Biosciences

Bosch Institute

Medical Foundation Building K25
92-94 Parramatta Road
Camperdown NSW 2050
Phone: +61 2 9351 2841
Fax: +61 2 9351 4195
Email: bosch@bosch.org.au
Web: www.bosch.org.au
Director: Professor Nick Hunt

School of Biological Sciences

Science Road Cottage A10
Phone: +61 2 9351 2848
Fax: +61 2 9351 2558
Email: office@bio.usyd.edu.au
Web: www.bio.usyd.edu.au
Head of School: Associate Professor Michael B Thompson

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

Cell Pathology

see Pathology

Central Clinical School

Immunology Discipline

Room 648, Blackburn Building D06
Phone: +61 2 9351 7308 Fax: +61 2 9351 3969
Email: hbriscoe@med.usyd.edu.au
Web: www.infectiousdiseasesandimmunology.med.usyd.edu.au
Head of Discipline: Professor Warwick Britton

Academic adviser	
All years:	A/Prof Helen Briscoe

Infectious Diseases Discipline
Room 676, Blackburn Building D06
Phone: +61 2 9351 2412 Fax: +61 2 9351 4731
Email: charbour@infdis.usyd.edu.au
Web: www.infectiousdiseasesandimmunology.med.usyd.edu.au
Head of Discipline: Associate Professor Colin Harbour

Academic adviser	
All years:	A/Prof Colin Harbour

School of Chemistry
School of Chemistry F11
Phone: +61 2 9351 4504 Fax: +61 2 9351 3329
Email: enquiries@chem.usyd.edu.au
Web: www.chem.usyd.edu.au
Head of School: tba

Academic advisers	
Junior year:	Dr Adam Bridgeman
Intermediate year:	Dr P J Rutledge
Senior year:	Dr Rob Baker
Honours year:	Dr Lou Rendina
Graduate adviser:	Dr R J Clarke

Computational Science
see Physics

Computer Science
see Information Technologies

Centre for Research on Ecological Impacts of Coastal Cities
Old Geology Building A11
Phone: +61 2 9351 4835 Fax: +61 2 9351 6713
Email: eicc@bio.usyd.edu.au
Web: www.eicc.bio.usyd.edu.au
Director: Professor Antony J Underwood

Academic adviser	
Graduate:	Prof Antony Underwood

Environmental Studies
Admin: Room 348, Madsen Building F09
Phone: +61 2 9351 2912 Fax: +61 2 9351 3644
Web: http://www.usyd.edu.au/envsci/
Director: Dr Gavin Birch
Enquiries: Lubos Spatina,
Geosciences enquiry desk, room 348 Madsen Building

Academic advisers	
Undergraduate:	Lubos Spatina (contact)
Graduate:	Lubos Spatina (contact)

Fruit Fly Research Centre
Botany Building A12
Phone: +61 2 9351 2298 Fax: +61 2 9351 4771
Email: ffrc@bio.usyd.edu.au
Web: www.bio.usyd.edu.au/fruitfly/index.htm
Chair: To be advised

School of Geosciences
Geology and Geophysics: The Demountables Geography: Room 469, Madsen Building F09
Phone: +61 2 9351 2886 Fax: +61 2 9351 3644
Email: c.thornley@geosci.usyd.edu.au
Web: www.geosci.usyd.edu.au/
Head of School: Dr Geoffrey Clarke

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

History and Philosophy of Science Unit
Room 441, Carslaw Building F07
Phone: +61 2 9351 4226 Fax: +61 2 9351 4124
Email: hps@science.usyd.edu.au
Web: www.usyd.edu.au/hps/
Director: Dr Hans Pols

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

Immunology
see Central Clinical School

Infectious Diseases
see Central Clinical School

School of Information Technologies
School of IT Building J12
1 Cleveland Street
Phone: +61 2 9351 3423 Fax: +61 2 9351 3838
Email: admin@it.usyd.edu.au
Web: www.it.usyd.edu.au
Head of School: To be advised

Academic advisers	
Undergraduate:	Dr Geoffrey Kennedy
Junior Year:	Dr Josiah Poon
Intermediate Year:	Dr Vera Chung
Senior Year:	Dr Kalina Yacef
Honours year:	Dr Bernhard Scholz
Graduate (coursework):	Dr Liaquat Hossain
Graduate (research):	Dr Bjorn Landfeldt

University of Sydney Institute of Marine Science
Phone: to be advised Fax: +61 2 9351 3644
Web: www.usyd.edu.au/marine
Director: to be advised

Academic advisers	
Undergraduate:	Dr Peter Cowell, A/Prof Ross Coleman
Graduate:	A/Prof Ross Coleman

School of Mathematics and Statistics
Carslaw Building F07
Phone: +61 2 9351 4533 Fax: +61 2 9351 4534
Email: firstyear@maths.usyd.edu.au, enq@maths.usyd.edu.au, statenq@maths.usyd.edu.au, pg-director@maths.usyd.edu.au
Web: www.maths.usyd.edu.au

Head of School: Professor Nalini Joshi

Academic advisers	
Junior year:	Student Office, Carslaw 520 Ms Sandra Britton
Intermediate year	
Applied Mathematics:	Dr Rosemary Thompson
Mathematical Statistics:	Dr Michael Stewart
Pure Mathematics:	Dr Bill Palmer
Senior year	
Applied Mathematics:	Dr Chris Cosgrove
Mathematical Statistics:	Dr Marc Raimondo
Pure Mathematics:	Dr Donald Cartwright
Honours year	
Applied Mathematics:	Dr Peter Buchen
Mathematical Statistics	Dr Laurentiu Paunescu
Pure Mathematics:	Dr Shelton Peiris
Graduate adviser:	Dr David Easdown & Dr Andrew Mathas

Microbiology

See Molecular and Microbial Biosciences

Australian Key Centre for Microscopy and Microanalysis

Room LG21, Madsen Building F09
Phone: +61 2 9351 2351 Fax: +61 2 9351 7682
Email: kcentre@emu.usyd.edu.au
Web: www.emu.usyd.edu.au
Director: Professor Simon Ringer

Academic adviser	
Graduate:	Dr Lilian Soon

School of Molecular and Microbial Biosciences

Email: studentsupport@mmb.usyd.edu.au
Web: www.mmb.usyd.edu.au
Head of School: Professor Ian Caterson

Biochemistry Discipline

Room 435, Biochemistry/Microbiology Building G08
Phone: +61 2 9036 5417/5416
Fax: +61 2 9351 5858
Email: hod.biochem@mmb.usyd.edu.au
Head of Discipline: Professor Iain Campbell

Microbiology Discipline

Room 435, Biochemistry/Microbiology Building G08
Phone: +61 2 9036 5417/5416
Fax: +61 2 9351 4571
Email: hod.micro@mmb.usyd.edu.au
Head of Discipline: Dr Dee Carter

Human Nutrition unit

Room 435, Biochemistry/Microbiology Building G08
Phone: +61 2 9351 3757
Fax: +61 2 9351 5858
Email: hod.hnu@mmb.usyd.edu.au
Head of Discipline: Associate Professor Samir Samman

Molecular Biotechnology

Room 473, Biochemistry/Microbiology Building G08
Phone: +61 2 9351 8680 Fax: +61 2 9351 6022
Email: enquiries@biotech.usyd.edu.au
Head of Discipline: A/Prof Kevin Downard

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

Nutrition

See School of Molecular & Microbial Sciences

Department of Pathology

Room 501, Blackburn Building D06
Phone: +61 2 9351 2414/2600
Fax: +61 2 9351 3429
Email: fi@pathology.usyd.edu.au
Web: www.med.usyd.edu.au/path/
Head of Department: Professor Nicholas King

Academic advisers	
Undergraduate:	Dr Bob Bao and Professor Nicholas King
Honours:	Associate Professor Brett Hambly
Graduate:	Dr Roger Pamphlett

Discipline of Pharmacology

Room 215, Blackburn Building D06
Phone: +61 2 9351 2408 Fax: +61 2 9351 3868
Email: nimmir@pharmacol.usyd.edu.au
Web: www.usyd.edu.au/su/pharmacology/
Head of Department: Associate Professor Ian Spence

Academic advisers	
Pharmacology	
Intermediate year:	Contact the discipline office for the Unit of Study coordinator
Senior year:	Contact the discipline office for the Unit of Study coordinator
Honours year:	Dr Jasmine Henderson
Graduate adviser:	A/Prof Robert Vandenberg

School of Physics

Room 202, School of Physics A28
Phone: +61 2 9351 3037 Fax: +61 2 9351 7726
Email: student_support@physics.usyd.edu.au
Web: www.physics.usyd.edu.au
Head of School: Associate Professor Anne Green

Academic advisers	
Junior Year:	Dr John O'Byrne
Intermediate year:	Dr Gordon Robertson
Senior Year:	A/Prof Tim Bedding
Honours:	Dr Stephen Bartlett

Academic advisers	
Graduate adviser:	Dr Serdar Kuyucak
Computational Science:	Dr Mike Wheatland

Discipline of Physiology

Room E212, Anderson Stuart Building F13
Phone: +61 2 9351 3478 Fax: +61 2 9351 8400
Email: liaison@physiol.usyd.edu.au
Web: www.physiol.usyd.edu.au
Head of Department: Associate Professor Rebecca Mason

Academic advisers	
Intermediate year:	Dr Meloni Muir
Medical Science:	To be advised
Senior year:	Prof Roger Dampney Dr Bill Phillips Dr Cathy Leamey Dr Dario Protti
Honours year:	Prof David Allen
Graduate adviser:	Prof Max Bennett

Key Centre for Polymer Colloids

Phone: +61 2 9351 6968 Fax: +61 2 9351 8651
Email: gilbert@chem.usyd.edu.au
Web: www.kcpc.usyd.edu.au
Director: Professor Robert G Gilbert

School of Psychology

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

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

Key policies for students

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

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

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

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

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

Intellectual property
Students and staff should be familiar with University of Sydney policies on intellectual property. The relevant policy is the *University of Sydney (Intellectual Property) Rule 2002* as found at:
http://www.usyd.edu.au/senate/policies/Intellectual_Property_Rule.pdf
and the Intellectual Property Guide at:
http://www.usyd.edu.au/senate/policies/Intellectual_Property_Rule_Guide.pdf

Additional important policies
The *University of Sydney (Coursework Rule)* contains important policies for all students. A faculty has authority to determine what constitutes satisfactory progress for all students enrolled in award courses in that faculty, in accordance with the policies and directions of the Academic Board.
You may need to refer to the *Coursework Rule* from time to time, particularly in trelation to:

- Discontinuation of enrolment and suspension of candidature
- Unsatisfactory progress and exclusion

Refer to relevant sections of the Coursework Rule at the back of this handbook

Special Arrangements and Special Consideration

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

Special Arrangements

The Special Arrangements for Examination and Assessment policy is designed to support and assist students who are experiencing difficulty in meeting their assessment requirements due to competing essential community commitments.

Special Arrangements may be made available to any student enrolled within a Faculty of
Science unit of study, who is unable to meet assessment requirements or attend examinations, because of one or more of the following situations:

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

Special Arrangements may only be considered in the above circumstances if the commitment falls on the same day as an assessment task or examination. Special Arrangements will not be made if the commitment falls before or after the assessment task or examination.

The Application for Special Arrangements must be submitted no later than seven (7) days prior to the due date of the assessment or examination for which alternative arrangements are being sought.

Students may elect to include details on preparation time required for the essential commitment (for example, travel time, training camps etc) but the Faculty of Science is under no obligation to make additional arrangements for preparation time.

This information should be noted on the Application Form, and supporting documentation detailing the tasks and time required to prepare must be submitted (in addition to the documents listed above).

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

To apply for Special Arrangements the student must:

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

Students will be notified of the academic judgement concerning their application for Special Consideration by the Faculty of Science, via an email to their University email account.

Special Consideration

Generally, serious illness or misadventure will be taken into account when considering a student's academic performance in a course or units of study. There is, however, a clear distinction between longstanding illness or difficulties which prevent students from attending classes or completing required work or which seriously interfere with their capacity to study for long periods, and short-term serious illness or misadventure that may prevent a well-prepared student from sitting for an examination or completing a particular assignment.

Applications must be received within seven (7) days from the end of the period for which consideration is sought (i.e. from the assignment due date or date of examination).

To apply for Special Consideration a student must:

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

Students will be notified of the academic judgement concerning their application for Special Consideration by the Faculty of Science, via an email to their University email account.

Code of Conduct for students

1. Principles

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

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

The University reaffirms its commitment to:

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

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

2. Coverage

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

Definitions

In this Code of Conduct:

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

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

4. Personal conduct

All students must:

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

5. Academic conduct

All students must:

- ensure that their enrolment and progress in their award course is lawful and consistent with the statutes, rule and resolutions of the University of Sydney.
- Students must not enrol in additional units of study outside the degree resolutions even if the student information system allows it when enrolling online.
- It is a student's responsibility to maintain current information in the student information system, and observe key dates and deadlines;

- read all official correspondence from the University, including email;
- act ethically and honestly in the preparation, conduct, submission and publication of academic work, and during all forms of assessment, including formal examinations and informal tests;
- avoid any activity or behaviour that would unfairly advantage or disadvantage another student academically;
- conform to the University's requirements for working with humans, animals and biohazards;
- behave professionally, ethically and respectfully in all dealings with the University's learning partners during extramural placements and practicums; and
- use the University's resources, including information and communication technology resources, in a lawful and ethical manner and for University purposes only, unless express permission has been granted for non-University or private usage.

6. Authority

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

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

Student plagiarism: Coursework policy and procedures

Part A – Purpose

1. Academic honesty and prohibition on plagiarism

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

(2) The University of Sydney is opposed to and will not tolerate Plagiarism. It is the responsibility of all students to:

- (a) ensure that they do not commit or collude with another person to commit Plagiarism;
- (b) report possible instances of Plagiarism; and
- (c) comply with this Policy and Procedure.

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

Part B – Preliminary

2. Commencement and coverage

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

3. Authority

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

4. Definitions

In this Policy and Procedure:
Acknowledgement of the Source means identifying at least:

1. the author or person who owns the Work; and
2. the place from which the Work or part of the Work was sourced.

Dishonest Plagiarism is defined by Part B Clause 7.
Examiner means the person responsible for assessing the Work.
Legitimate Cooperation means any constructive educational and intellectual practice that aims to facilitate optimal learning outcomes through interaction between students, including:

1. researching, writing and/or presenting joint Work;
2. discussion of general themes and concepts;
3. interpretation of assessment criteria;
4. informal study/discussion groups; and
5. strengthening and development of academic writing skills through peer assistance.

Negligent Plagiarism is defined by Part B Clause 6.
Nominated Academic means the relevant Heads of School and/or Associate Deans responsible for handling Plagiarism, as nominated by the Dean of the Faculty in accordance with the University's Delegations of Authority.
Plagiarism is defined by Part B Clause 5.
Work means ideas, findings or written and/or published material.
Written Warning means a warning issued under Part D Clauses 11(2)(b) or 12(4)(b).

5. Plagiarism

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

(2) Plagiarism includes presenting Work for assessment, publication, or otherwise, that includes:

- (a) sentences, paragraphs or longer extracts from published or unpublished Work (including from the Internet) without Acknowledgement of the Source; or
- (b) the Work of another person, without Acknowledgement of the Source and presented in a way that exceeds the boundaries of Legitimate Cooperation.

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

6. Negligent Plagiarism

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

(2) Negligent Plagiarism often arises from a student's fear of paraphrasing or writing in their own words, and/or ignorance of this Policy and Procedure. It arises from:

- (a) failure to follow appropriate referencing practices;
- (b) failure to determine or verify and acknowledge the source of the Work.

7. Dishonest plagiarism

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

(2) Alleged Plagiarism will be deemed to be alleged Dishonest Plagiarism where:

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

Part C – Preventing plagiarism

8. Compliance statements

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

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

Part D – Procedure for dealing with plagiarism

9. Procedural fairness

The University is committed to dealing with student Plagiarism in accordance with the principles of procedural fairness, including the right of a student to:

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

10. Identification and assessment of alleged Plagiarism

(1) Where an Examiner detects or is made aware of alleged Plagiarism by a student, the Examiner must report the alleged Plagiarism to a Nominated Academic.

(2) Where:

- (a) an Examiner reports alleged Plagiarism to a Nominated Academic; or
- (b) a Nominated Academic otherwise becomes aware of alleged Plagiarism;

the Nominated Academic must, in consultation with the Examiner, make a preliminary assessment of whether the alleged Plagiarism would, if proven, constitute Negligent Plagiarism or Dishonest Plagiarism.

(3) The Nominated Academic and the Examiner will make a preliminary assessment of whether the alleged Plagiarism would, if proven, constitute Negligent Plagiarism or Dishonest Plagiarism on a case by case basis, taking into account factors such as:

- (a) the extent of the alleged Plagiarism measured against the student's original contribution to the Work;
- (b) the percentage value of the Work in the unit of study or course;
- (c) the student's overall academic performance in the unit of study or course; and
- (d) the circumstances in which the Plagiarism is alleged to have occurred.

11. Negligent plagiarism

(1) Cases of alleged Negligent Plagiarism will be handled by the Nominated Academic in accordance with this clause and with Part D Clause 9 (Procedural Fairness) above.

(2) Where, following discussion with the student, a Nominated Academic forms the view that the Student is guilty of Negligent Plagiarism, the Nominated Academic will:

- (a) counsel the student by explaining referencing guidelines, providing a copy of this Policy and Procedure, and referring the student to services for assistance; and
- (b) issue a Written Warning about the consequences of any subsequent breaches of this Policy.

(3) A copy of a Written Warning issued under Clause 11(2)(b) above must be:

- (a) signed and dated by the Nominated Academic and the student;
- (b) retained by the student; and
- (c) placed on a central file maintained by the Registrar.

(4) Where, following discussion with the student, the Nominated Academic forms the view that the student is guilty of Negligent Plagiarism, the Nominated Academic may also take other appropriate action, including:

- (a) requiring the student to resubmit the Work for assessment;
- (b) requiring the student to undertake another form of assessment;
- (c) requiring the student to undertake other remedial action; or
- (d) applying a fail grade to the Work or part thereof.

12. Dishonest Plagiarism

(1) Cases of alleged Dishonest Plagiarism will be handled in accordance with this clause and with Part D Clause 9 (Procedural Fairness) above.

(2) The Nominated Academic will make a preliminary assessment of whether the alleged Dishonest Plagiarism is serious enough, if proven, to constitute potential student misconduct under Chapter 8 of the University of Sydney By-Law 1999 (as amended).

(3) In making his or her assessment under Part D Clause 12(2) above, the Nominated Academic will take into account:

- (a) whether the student has previously received a Written Warning;
- (b) the extent of the alleged Dishonest Plagiarism measured against the student's original contribution to the Work;
- (c) the percentage value of the Work in the unit of study or course;
- (d) the capacity of the alleged Dishonest Plagiarism to adversely affect the student's peers and/or teachers; and
- (e) the capacity of the alleged Dishonest Plagiarism to impact adversely on the actual or perceived academic standards of the University.

(4) Where the Nominated Academic assesses that the alleged Dishonest Plagiarism is not serious enough, if proven, to constitute potential student misconduct under Chapter 8 of the University of Sydney By-Law 1999 (as amended), the Nominated Academic will, following discussion with the student:

- (a) counsel the student by explaining referencing guidelines, providing a copy of this Policy and Procedure, and referring the student to services for assistance; and
- (b) issue a Written Warning about the consequences of any subsequent breaches of this Policy.

(5) A copy of a Written Warning issued under Part D Clause 12(4)(b) above must be:

- (a) signed and dated by the Nominated Academic and the student;
- (b) retained by the student; and
- (c) placed on a central file maintained by the Registrar.

(6) Where the Nominated Academic assesses that the alleged Dishonest Plagiarism is not serious enough, if proven, to constitute potential student misconduct under Chapter 8 of the University of Sydney By-Law 1999 (as amended), the Nominated Academic may also, following discussion with the student, take other appropriate action, including:

- (a) requiring the student to resubmit the Work for assessment;
- (b) requiring the student to undertake another form of assessment;
- (c) requiring the student to undertake other remedial action;
- (d) applying a fail grade to the Work or part thereof; or
- (e) applying a fail grade to the unit of study.

(7) Where the Nominated Academic assesses that the alleged Dishonest Plagiarism is serious enough, if proven, to constitute potential student misconduct under Chapter 8 of the *University of*

Sydney By-Law 1999 (as amended), the Nominated Academic will refer the alleged Dishonest Plagiarism to the Registrar.

(8) The Nominated Academic will refer the alleged Dishonest Plagiarism to the Registrar in all cases of alleged Dishonest Plagiarism where the student has previously received a Written Warning.

13. Appeals

An appeal by a student against a decision made under Part D Clauses 11(4)(a)-(d) and 12(6)(a)-(e) of this Procedure will be handled by the University in accordance with the Resolutions of Senate and the Academic Board on Student Appeals against Academic Decisions.

Faculty life and representation

Student membership of the Faculty

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

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

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

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

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

Sydney University Science Society (SCISOC)

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

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

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

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

Member societies

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

Employment for graduates in Science

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

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

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

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

2. Undergraduate degree regulations

Undergraduate Resolutions

This chapter contains the regulations governing undergraduate degrees throughout the University and the regulations governing undergraduate degrees offered by the Faculty of Science.

1. The degrees in the Faculty of Science shall be:
1.1 Bachelor of Science (BSc), which shall also incorporate the specially designated streams:
1.1.1 Bachelor of Science (Advanced) (BSc(Advanced))
1.1.2 Bachelor of Science (Advanced Mathematics) (BSc(Advanced Mathematics))
1.1.3 Bachelor of Science (Marine Science) (BSc(Marine Science))
1.1.4 Bachelor of Science (Molecular Biology & Genetics) (BSc(Molecular Biology & Genetics))
1.1.5 Bachelor of Science (Molecular Biotechnology) (BSc(Molecular Biotechnology))
1.1.6 Bachelor of Science (Nutrition) (BSc (Nutrition))
1.2 Bachelor of Medical Science (BMedSc), which is offered in the following designated combined degree courses:
1.2.1 Bachelor of Medical Science/Bachelor of Medicine and Bachelor of Surgery (BMedSc/MBBS)
1.2.2 Bachelor of Engineering/Bachelor of Medical Science (BE/BMedSc)
1.3 Bachelor of Psychology (BPsych)
1.4 Bachelor of Science and Technology (BST)
1.5 Bachelor of Information Technology (BIT)
1.6 Bachelor of Computer Science and Technology (BCST), which shall also incorporate the stream:
1.6.1 Bachelor of Computer Science and Technology (Advanced) (BCST(Advanced))
2. The Bachelor of Science is offered in the following designated combined degree courses:
2.1 Bachelor of Science (Advanced)/Bachelor of Medicine and Bachelor of Surgery (BSc(Adv)/MBBS)
2.2 Bachelor of Science/Bachelor of Laws (BSc/LLB)
2.3 Bachelor of Science and Bachelor of Arts (BSc/BA)
2.4 Bachelor of Commerce and Bachelor of Science (BCom/BSc)
2.5 Bachelor of Science and Bachelor of Engineering (BSc/BE)
2.6 Bachelor of Engineering and Bachelor of Science (BE/BSc)
2.7 Bachelor of Education (Secondary:Science) and Bachelor of Science (BEd(Secondary:Science)/BSc)
2.8 Bachelor of Education (Secondary:Mathematics) and Bachelor of Science (BEd(Secondary:Mathematics)/BSc)
2.9 Bachelor of Education (Secondary:Science) and Bachelor of Science (BEd(Secondary)/BSc(Psychology))
2.10 Bachelor of Nursing and Bachelor of Science (BN/BSc)
2.11 Bachelor of Science/Master of Nursing Practice (BSc/MNP)
2.12 Bachelor of Applied Science (Exercise and Sport Science)/Bachelor of Science (Nutrition)
3. The degrees in the Faculty of Science offered in conjunction with other faculties shall be:
3.1 Bachelor of Liberal Studies (BLibStud), which shall incorporate the streams:
3.1.1 Bachelor of Liberal Studies (International) (BLibStud(International)
3.1.2 Bachelor of Liberal Studies (Advanced) (BLibStud(Advanced))
3.2 Bachelor of Arts and Science (BAS)

Note the specific glossaries attached to each degree, and the generic glossary common to all degrees.

The regulations governing postgraduate award courses can be found at the end of each postgraduate degree chapter.

University of Sydney (Coursework) Rule 2000 (as amended)

The Resolutions in this chapter must be read in conjunction with the *University of Sydney (Coursework) Rule 2000 (as amended)* which sets out the requirements for all coursework courses, and the relevant Senate Resolutions, which are available in the University Calendar.

The Calendar can also be viewed on the Web at www.usyd.edu.au/publications/calendar/

The University Coursework Rule can be found at the back of this handbook.

Bachelor of Science

[Section 1]

1. **Admission**
1.1 All applications for admission to candidature to an undergraduate degree or combined undergraduate degree in the Faculty of Science will be subject to the Undergraduate Admissions policy of the University of Sydney.
1.3 A candidate for the BSc degree in any stream may apply to the Dean for permission to transfer candidature to any other stream.
2. **Units of study**
2.1 The units of study for the Bachelor of Science are set out under subject areas in Table I and Table VI, together with:
2.1.1 designation as junior, intermediate, senior or honours and, where appropriate, as advanced units of study
2.1.2 credit point values
2.1.3 assumed knowledge, corequisites and prerequisites
2.1.4 the semesters in which they are offered; and
2.1.5 the units of study with which they are mutually exclusive.
2.2 The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table I.
2.3 A student who enrols, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Science, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.
3. **Requirements for the pass degree**
3.1 *Bachelor of Science*
3.1.1 To qualify for the award of the Bachelor of Science, a student shall complete units of study having a total value of at least 144 credit points, including:
3.1.1.1 at least 96 credit points from Science subject areas;
3.1.1.2 at least one major from those included in Table I;
3.1.1.3 at least 12 credit points from the Science subject areas of Mathematics and Statistics;
3.1.1.4 at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics; and
3.1.1.5 no more than 60 credit points from Junior units of study.
3.1.2 A major in the BSc normally requires the completion of a minimum of 24 credit points of senior units of study in one Science area, including any units of study specified in the Table of undergraduate units of study as compulsory for that major.
3.1.3 A major in Psychology requires 48 credit points across intermediate and senior Psychology* units of study including PSYC(2111 or 2011), PSYC(2112 or 2012), PSYC(2113 or 2013) and PSYC(2114 or 2014). No other intermediate Psychology units can be counted towards the major.
3.1.3.1 The senior units must include at least one of PSYC3011, 3012, 3013 and 3014.*Note: HPSC3023 Psychology and Psychiatry History and Phil is available for Senior

Psychology students and will count towards a major in Psychology. Successful completion of this unit of study is essential for students intending to take the Theoretical Thesis option in Psychology Honours.

3.1.4 A maximum of 48 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculty of Science.

3.1.5 Units of study completed at the University of Sydney Summer School which correspond to units of study specified in sub-sections 2 and 3 may be credited towards the course requirements.

3.1.6 The testamur for the degree of Bachelor of Science shall specify the major(s) completed in order to qualify for the award.

3.2 *Bachelor of Science (Advanced)*

3.2.1 To qualify for the award of the pass degree in the BSc (Advanced) stream, a student shall complete the requirements for the BSc degree in sub-section 3.1 with the exception of 3.1.1.5 and in addition, except with the permission of the Dean:

3.2.1.1 include no more than 48 credit points from Junior units of study;

3.2.1.2 include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units;

3.2.1.3 include at least 48 credit points of Senior units of study of which at least 24 are completed at the Advanced level or as TSP units in a single Science subject area; and

3.2.1.4 maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment;

3.2.2 candidates who fail to maintain the required credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Advanced) candidates.

3.2.3 Candidates who fail to achieve a credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

3.2.4 Students who have completed at least 48 credit points may be permitted to transfer to the BSc (Advanced) stream from the BSc or other degree programs if:

3.2.4.1 their mark averaged over all attempted units of study is 75 or greater; and

3.2.4.2 they are able to enrol in the required number of Advanced level units or TSP units.

3.2.5 The testamur for the degree of Bachelor of Science (Advanced) shall specify the major(s) completed in order to qualify for the award.

3.3 *Bachelor of Science (Advanced Mathematics)*

3.3.1 To qualify for the award of the pass degree in the BSc (Advanced Mathematics) stream, a student shall complete the requirements for the BSc degree in subsection 3.1 with the exception of 3.1.1.5 and in addition, except with the permission of the Dean:

3.3.1.1 include no more than 48 credit points from Junior units of study;

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

3.3.1.3 include a major in Mathematics, Statistics or Financial Mathematics and Statistics;

3.3.1.4 include at least 48 credit points of senior units of study of which at least 24 are completed at the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics; and

3.3.1.5 maintain in intermediate and senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment;

3.3.2 candidates who fail to maintain the required credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Advanced Mathematics) candidates.

3.3.3 Candidates who fail to achieve a credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

3.3.4 Students who have completed at least 48 credit points may be permitted to transfer to the BSc (Advanced Mathematics) stream from the BSc or other degree programs if:

3.3.4.1 their mark averaged over all attempted units of study is 75 or greater; and

3.3.4.2 they are able to enrol in the required number of Advanced level units or TSP units.

3.3.5 The testamur for the degree of Bachelor of Science (Advanced Mathematics) shall specify the major(s) completed in order to qualify for the award.

3.4 *Other streams of the Bachelor of Science*

3.4.1 In order to qualify for the award of the pass degree in the following streams, a student shall, except with the permission of the Dean, complete the requirements for the BSc degree in subsection 3.1 with the exception of 3.1.1.2 and complete the units of study set out in the respective *Tables of undergraduate units of study*:

3.4.1.1 Marine Science Table IC

3.4.1.2 Molecular Biology and Genetics Table ID

3.4.1.3 Molecular Biotechnology Table IE: or

3.4.1.4 in order to qualify for the award of honours degree in the Nutrition stream, a student shall, except with the permission of the Dean, complete the requirements for the BSc degree in subsections 3.1 and 4 and complete the units of study set out in Table IF.

4. **Requirements for the honours degree**

4.1 There shall be honours courses in all Science subject areas listed in Table VI (Honours units of study).

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

4.2.1 have qualified for the award of a pass degree; or

4.2.2 be a graduate of the Faculty of Science; or

4.2.3 be a graduate holding a Bachelor of Science degree or an equivalent qualification from another institution;

4.2.4 have completed a minimum of 24 credit points of senior units of study relating to the intended honours course (or equivalent at another institution);

4.2.5 have achieved either:

4.2.5.1 a credit average in the relevant senior Science units of study; or

4.2.5.2 a SCIWAM of at least 60 (or equivalent at another institution); and

4.2.6 satisfy any additional criteria set by the Head of Department concerned.

4.3 Students shall complete the requirements for the honours course full-time over two consecutive semesters.

4.4 If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

4.5 To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in Table VI of undergraduate units of study, as prescribed by the Head of Department concerned.

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

4.7 Honours in the Bachelor of Science may be awarded in four classes as follows:

4.7.1 Class I (mark range: 80 and above)

4.7.2 Class II(1) (mark range: 75-79)

4.7.3 Class II(2) (mark range: 70-74)

4.7.4 Class III (mark range: 65-69)

4.8 A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.

4.9 A student may not re-attempt an honours course in a single subject area.

4.10 A student who is qualified to enrol in two honours courses may either:

4.10.1 complete the honours courses in the two subject areas separately and in succession; or

4.10.2 complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas.

4.11 A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.

5. **Transfer from the Bachelor of Engineering degree**

5.1 *Bachelor of Science/Bachelor of Engineering double degree*

5.1.1 A student enrolled for a Bachelor of Engineering degree may be permitted to transfer to the Faculty of Science to complete

a BSc degree at the end of Second Year or Third Year in the BE degree if:

5.1.1.1 except as provided in section 4.1.2 of the resolutions of the Bachelor of Engineering degree, all units of study attempted in the BE degree have been completed with a grade of pass or better;

5.1.1.2 at least 96 credit points from units of study in the BE degree have been completed;

5.1.1.3 the student is qualified to enrol in a major in a Science area; and

5.1.1.4 for admission to the Advanced streams, the student satisfies the requirements in subsections 3.2 and 3.3 of the Resolutions of the Faculty of Science relating to the BSc Degree.

5.1.2 Students will be under the supervision of the Faculty of Engineering for the period of BE degree enrolment and under the supervision of the Faculty of Science for the BSc enrolment and completion.

5.1.3 Units of study must be selected as shown in the Engineering Specialisation Tables for the core components of the chosen Engineering specialisation.

5.1.4 Units from the Science Faculty must be chosen from Table 1 of the Bachelor of Science as shown in the Science Faculty handbook to meet requirements of a Science major.

5.1.5 The Faculty Resolutions (which are reproduced in the Engineering and Science Handbooks, as the case may be) specify:

5.1.5.1 credit point values;

5.1.5.2 corequisites/prerequisites/assumed learning/assumed knowledge; and

5.1.5.3 any special conditions.

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

5.1.6.1 42 credit points of intermediate/senior units of study in Science subject areas; and

5.1.6.2 a major in a Science area.

5.1.7 To qualify for the award of the pass degree in the Advanced stream of the BSc a student shall meet the requirements in subsection 3.2.

5.1.7.1 To qualify for the award of the pass degree in the Advanced Mathematics stream of the BSc a student shall meet the requirements in subsection 3.3.

5.1.8 The requirements of subsection 5 must be completed in one year of full-time study or two years of part-time study.

5.1.9 Students who complete at least 42 but less than 48 credit points in the prescribed time limits may in the following year of enrolment in the BE complete the remaining units to satisfy the requirements of the Faculty of Science.

5.1.10 Students who complete less than 42 credit points may apply to be readmitted to the degree, subject to subsections 7-9 of the Resolutions of the Faculty of Science relating to the BSc degree.

5.1.11 Students who are so qualified may undertake an honours course in the BSc in accordance with subsection 4 relating to the BSc degree.

5.1.12 On completion of the requirements of the BSc degree or BSc Honours course, students will be eligible to resume their enrolment toward the BE degree according to the Faculty of Engineering resolutions for that degree.

5.1.13 Students may abandon the BSc degree enrolment at any stage and resume their enrolment in the BE degree.

5.1.14 Resolutions covering admission, enrolment restrictions, progression requirements, satisfactory progress, cross-institutional study and assessment criteria for the Engineering component of the double degree are equivalent to those for the BE degree and specialisations, as shown in the Faculty Handbook.

5.1.15 The Deans of the Faculties of Engineering and Science shall jointly exercise authority in any matter concerning the double degree not otherwise dealt with in these resolutions.

[Section 2]

6. **Details of units of study**

6.1 The units of study for the Bachelor of Science are listed in Table 1 and Table VI of these resolutions.

6.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

6.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

6.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

6.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

6.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

6.4.3 to pass any other examination of the unit of study that may apply.

6.5 All units of study for a particular subject area may not be available every semester.

6.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other undergraduate programs in the Faculty or elsewhere in the University.

7. **Enrolment in more/less than minimum load**

7.1 A candidate may not enrol in additional units of study once the degree requirements of 144 credit points have been satisfied, without first obtaining permission from the Dean.

7.2 Students may enrol on either a full-time or part-time basis.

8. **Cross-institutional study**

8.1 Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study at another institution and have that unit credited to his/her course requirements provided that either:

8.1.1 the unit of study content is material not taught in any corresponding unit of study in the University; or

8.1.2 the student is unable for good reason to attend a corresponding unit of study at the University.

9. **Restrictions on enrolment**

9.1 Units of study which overlap substantially in content are noted in the *Tables of undergraduate units of study*. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.

9.2 Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of Pass or better, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.

9.3 A student may not enrol in a unit of study which they have completed previously with a grade of Pass or better.

9.4 A candidate may not enrol in units of study having a total value of more than 30 credit points in a semester.

10. **Discontinuation of enrolment**

10.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

10.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

11. **Suspension of candidature**

11.1 A student may seek written permission from the Dean to suspend candidature in the course.

11.2 Suspension may be granted for a maximum of one year on any one application.

12. **Re-enrolment after an absence**

12.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

13. **Satisfactory progress**

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

14. **Time limit**

14.1 A candidate must complete all the requirements for the award of the degree within ten calendar years of admission to candidature or readmission without credit.

14.1.1 If a candidate is readmitted with credit, the Faculty will determine a reduced time limit for completion of the degree.

14.2 Students shall complete the requirements for the honours course full-time over two consecutive semesters.

14.2.1 If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

15. **Assessment policy**

15.1 Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

15.2 Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).

15.3 Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

16. **Credit transfer policy**

16.1 Credit will not be granted for units of study completed ten years or more prior to application, except with the permission of the Dean.

16.2 Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in Table I, or as non-specific credit.

16.3 The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units of study from other degrees for which credit is maintained or a degree has been conferred.

16.4 All students, notwithstanding any credit transfer, must complete at least 24 credit points of senior Science units of study towards a major taken at the University of Sydney.

17. **Candidates enrolled before 2005**

17.1 These resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2005.

17.2 With the permission of the Faculty of Science, candidates who first enrolled for the degree prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2008 choose to qualify for the degree under the old resolutions.

17.3 With the permission of the Faculty of Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

18. **Glossary for the BSc**

18.1 Completion of a unit of study means that the assessment requirements have been satisfied and a grade of Pass or better has been achieved.

18.2 Junior unit of study is a 1000 or first-year stage unit. Its prerequisites or assumed knowledge are non-tertiary qualifications and corequisites are other Junior units of study.

18.3 Intermediate unit of study is a 2000 or second-year stage unit. Its prerequisites or assumed knowledge are Junior or Intermediate units of study and corequisites are other intermediate units of study. (Specific to the Faculty of Science).

18.4 Senior unit of study is a 3000 or third-year stage unit. Its prerequisites or assumed knowledge are Junior, Intermediate or Senior units of study and corequisites are other Senior units of study. (Specific to the Faculty of Science.)

18.5 Honours unit of study is a 4000 or fourth-year stage unit offered within an honours course.

18.6 Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.

18.7 Major in the BSc normally requires the completion of a minimum of 24 credit points of Senior units of study in one Science area, including any units of study specified in the *Table of undergraduate units of study* as compulsory for that major. A student may not count a unit of study toward more than one major. (A major in Psychology requires 48 credit points of intermediate and senior Psychology units of study including PSYC(2111 or 2011), PSYC(2112 or 2012), PSYC(2113 or 2013) and PSYC(2114 or 2014). No other Intermediate Psychology units can be counted towards the major).

18.8 Dean means the Dean of Science.

18.9 Faculty means the Faculty of Science.

18.10 Science subject area means a defined field of study in science.

18.11 Degree means the degree of Bachelor of Science.

18.12 Requirements means coursework requirements for the award of the degree of Bachelor of Science.

18.13 Student means a person enrolled as a candidate for the degree of Bachelor of Science.

18.14 TSP means the Talented Student Program in the Faculty of Science.

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

Bachelor of Medical Science

[Section 1]

1. **Admission**

1.1 All applications for admission to candidature to an undergraduate degree or combined undergraduate degree in the Faculty of Science will be subject to the Undergraduate Admissions policy of the University of Sydney.

2. **Units of study**

2.1 The units of study for the Bachelor of Medical Science are set out in Table IV together with:

2.1.1 designation as junior, intermediate, senior or honours and, where appropriate, as advanced units of study

2.1.2 credit point values

2.1.3 assumed knowledge, corequisites and prerequisites

2.1.4 the semesters in which they are offered; and

2.1.5 the units of study with which they are mutually exclusive.

2.2 A student may enrol, in accordance with subsection 3.1.5, in a unit of study prescribed for a degree other than the Bachelor of Medical Science and shall satisfy the prerequisites, corequisites, qualifying and other requirements prescribed for such units of study for that other degree.

2.3 The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table IV.

2.4 There shall be honours units of study in Science subject areas listed in Table IV D.

3. **Requirements for the pass degree**

3.1 In order to qualify for the award of the Bachelor of Medical Science degree a student shall complete units of study having a total value of at least 144 credit points, including:

3.1.1 at least 48 credit points from junior units of study, comprising MBLG1001 and 12 credit points each from Chemistry, Mathematics and Physics or Computational Science and 6 credit points from Biology;

3.1.2 no more than 60 credit points from junior units of study;

3.1.3 48 credit points of Intermediate core units of study listed in Table IV;

3.1.4 at least 36 credit points of senior units of study taken from the subject areas of Anatomy/Histology, Biology (Genetics), Biochemistry, Cell Pathology, Immunology, Infectious Diseases, Microbiology, Pharmacology and Physiology;

3.1.5 no more than 12 credit points from units of study other than core units of study.

3.1.6 Units of study taken at the University of Sydney Summer School which correspond to units of study specified in subsection 3 may be credited towards the course requirements.

4. **Requirements for the honours degree**

4.1 Students may proceed to an honours course in the Bachelor of Medical Science.

4.2 In order to qualify to enrol in an honours course, students shall either:

4.2.1 have qualified for the award of the pass degree; or

4.2.2 be a pass graduate in Medical Science of the Faculty of Science; or

4.2.3 be a pass graduate holding a Bachelor of Medical Science degree or an equivalent qualification from another institution;

4.2.4 have completed a minimum of 24 credit points of senior units of study relating to the intended honours course (or equivalent at another institution);

4.2.5 have achieved either:

4.2.5.1 a credit average in the relevant senior Science units of study; or

4.2.5.2 a SCIWAM of at least 60 (or equivalent at another institution); and

4.2.5.3 satisfy any additional criteria set by the Head of Department concerned.

4.2.6 Students shall complete the requirements for the course full-time over two consecutive semesters.
4.2.6.1 If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.
4.3 To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in one subject area from those listed in Table IV D.
4.4 The grade of honours and the honours mark are determined by performance in the honours course.
4.4.1 Honours in the Bachelor of Science may be awarded in four classes as follows:
4.4.1.1 Class I (mark range: 80 and above)
4.4.1.2 Class II(1) (mark range: 75-79)
4.4.1.3 Class II(2) (mark range: 70-74)
4.4.1.4 Class III (mark range: 65-69)
4.4.2 A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.
4.5 A student who is qualified to enrol in two honours courses may either:
4.5.1 complete the honours courses in the two subject areas separately and in succession; or
4.5.2 complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas.
4.6 A student may not re-attempt an honours course in a single subject area.

[Section 2]

5. **Details of units of study**
5.1 The units of study for the Bachelor of Medical Science are listed in Table IV of these resolutions.
5.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
5.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
5.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
5.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
5.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
5.4.3 to pass any other examination of the unit of study that may apply.
5.5 All units of study for a particular subject area may not be available every semester.
5.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other undergraduate programs in the Faculty or elsewhere in the University.
6. **Enrolment in more/less than minimum load**
6.1 A candidate may not enrol in additional units of study once the degree requirements of 144 credit points have been satisfied, without first obtaining permission from the Dean.
6.2 Students may enrol on either a full-time or part-time basis.
7. **Cross-institutional study**
7.1 Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study at another institution and have that unit credited to his/her course requirements provided that either:
7.1.1 the unit of study content is material not taught in any corresponding unit of study in the University; or
7.1.2 the student is unable for good reason to attend a corresponding unit of study at the University.
8. **Restrictions on enrolment**
8.1 Except with the permission of the Dean, candidates may not enrol in an intermediate core unit of study until they have completed 42 credit points of junior units of study prescribed by the Faculty.
8.2 Except with the permission of the Dean, candidates may not enrol in a senior unit of study:
8.2.1 until they have gained credit for at least 42 credit points from core intermediate units of study; and
8.2.2 until they have completed the intermediate units of study prescribed as prerequisites for the senior unit of study, as set out in Table IV.
8.2.3 Enrolment in some senior units of study may be subject to a quota.
8.3 Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed satisfactorily, the Head of Department concerned may exempt the student from certain requirements of the unit of study requirements if satisfied that the relevant competence has been demonstrated.
8.4 A student may not enrol in a unit of study which they have completed previously with a grade of pass or better.
8.5 A candidate may not enrol in units of study having a total value of more than 30 credit points in a semester.
8.6 In satisfying the requirements of subsection 3.1.3 a student may not enrol in units of study which overlap substantially in content with units of study listed in subsection 3.1.4.
8.7 A student may not enrol without first obtaining permission from the Dean in:
8.7.1 additional units of study once the degree requirements of 144 credit points have been satisfied; or
8.7.2 units of study which may not be counted towards the course requirements.
9. **Discontinuation of enrolment**
9.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
9.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.
10. **Suspension of candidature**
10.1 A student may seek written permission from the Dean to suspend candidature in the course.
10.2 Suspension may be granted for a maximum of one year on any one application.
11. **Re-enrolment after an absence**
11.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.
12. **Satisfactory progress**
12.1 If a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.
13. **Time limit**
13.1 A candidate must complete all the requirements for the award of the degree within ten calendar years of admission to candidature or readmission without credit.
13.1.1 If a candidate is readmitted with credit, the Faculty will determine a reduced time limit for completion of the degree.
14. **Assessment policy**
14.1 Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.
14.2 Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).
14.3 Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.
15. **Credit transfer policy**
15.1 Credit will not be granted for units of study completed nine years or more prior to application, except with the permission of the Dean.
15.2 Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in Tables I or IV, or as non-specific credit.
15.3 The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units of study from other degrees for which credit is maintained or a degree has been conferred.
15.4 All students, notwithstanding any credit transfer, must complete at least 36 credit points of senior Science units of study in accordance with subsection 3.1.4.

16. **Candidates enrolled before 2005**

16.1 These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2005.

16.2 With the permission of the Faculty of Science, candidates who first enrolled for the degree prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2008 choose to qualify for the degree under the old resolutions.

16.3 With the permission of the Faculty of Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

17. **Specific glossary for the Bachelor of Medical Science**

17.1 AAM means the average mark over all units of study attempted in a given academic year (equivalent to the calendar year).

17.2 Completion of a unit of study means that the assessment requirements have been satisfied and a grade of pass or better has been achieved.

17.3 Intermediate unit of study is of second-year (2000) level. Its prerequisites or assumed knowledge are junior or intermediate units of study and corequisites are other intermediate units of study.

17.4 Senior unit of study is of third-year (3000) level. Its prerequisites or assumed knowledge are junior, intermediate or senior units of study and corequisites are other senior units of study.

17.5 Honours unit of study is a 4000 level unit offered within an honours course.

17.6 Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.

17.7 Dean means the Dean of Science.

17.8 Faculty means the Faculty of Science.

17.9 Degree means the Bachelor of Medical Science.

17.10 Requirements means coursework requirements for the award of the degree of Bachelor of Medical Science.

17.11 Student means a person enrolled as a candidate for the degree of Bachelor of Medical Science.

17.12 TSP means the Talented Student Program in the Faculty of Science.

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

Bachelor of Psychology

[Section 1]

1. **Admission**

1.1 All applications for admission to candidature to an undergraduate degree or combined undergraduate degree in the Faculty of Science will be subject to the Undergraduate Admissions policy of the University of Sydney.

2. **Units of study**

2.1 The units of study, which may be taken for the degree, are set out under subject areas in Table I together with:

2.1.1 designation as junior, intermediate, senior or honours and, where appropriate, as advanced units of study

2.1.2 credit point values

2.1.3 assumed knowledge, corequisites and prerequisites

2.1.4 the semesters in which they are offered; and

2.1.5 the units of study with which they are mutually exclusive.

2.2 The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table I.

2.3 A student who enrols, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Psychology, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

3. **Requirements for the degree**

3.1 To qualify for the award of the Bachelor of Psychology degree a student shall:

3.1.1 complete units of study having a total value of at least 192 credit points where:

3.1.1.1 at least 12 credit points are from Junior units of study in the Science subject area of Psychology, with an average grade of credit or better;

3.1.1.2 at least 54 credit points are from Intermediate and Senior units of study in the Science subject area of Psychology.

3.1.1.2.1 24 credit points are from Intermediate units of study PSYC2011 or 2111, PSYC2012 or 2112, PSYC2013 or 2113 and PSYC2014 or 2114 with an average grade of Distinction or better.

3.1.1.2.2 At least 30 credit points are from senior units of study in the Science subject area of Psychology which must include PSYC3010 and at least one of PSYC3011, 3012, 3013 and 3014. Except with the permission of the Faculty, the senior units must be completed with an average grade of Distinction or better.Note: HPSC3023 Psychology and Psychiatry: History and Phil is available for Senior Psychology students and will count towards a major in Psychology. Successful completion of this unit of study is essential for students intending to take the Theoretical Thesis option in Psychology Honours.

3.1.1.2.3 Candidates who fail to maintain the required average in Psychology units will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Psychology candidates.

3.1.1.2.4 Candidates who fail to achieve the required average in Psychology units in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science;

3.1.1.3 at least 96 credit points are from Science subject areas;

3.1.1.4 at least 12 credit points are from the Science subject areas of Mathematics and Statistics;

3.1.1.5 at least 12 credit points are Junior units of study from Science subject areas other than Psychology and Mathematics and Statistics; and

3.1.1.6 no more than 60 credit points are from Junior units of study;

3.1.2 complete 48 credit points from fourth year (honours) units of study in the Science subject area of Psychology with a grade of honours.

3.1.3 A maximum of 48 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculty of Science.

3.1.4 Units of study completed at the University of Sydney Summer School which correspond to units of study specified in subsections 2 and 3.1.3 may be credited towards the course requirements.

3.2 Students shall complete the requirements for the honours course full-time over two consecutive semesters.

3.3 If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

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

3.5 A student with an honours mark of 90 or greater and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.

3.6 A student may not re-attempt the Psychology honours course.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Bachelor of Psychology are listed in Table 1 of the resolutions of the Bachelor of Science.

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

4.4.3 to pass any other examination of the unit of study that may apply.

4.5 All units of study for a particular subject area may not be available every semester.

4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other undergraduate programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**

5.1 A candidate may not enrol in additional units of study once the degree requirements of 192 credit points have been satisfied, without first obtaining permission from the Dean.

5.2 Students may enrol on either a full-time or part-time basis.

6. **Cross-institutional study**

6.1 Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study at another institution and have that unit credited to his/her course requirements provided that either:

6.1.1 the unit of study content is material not taught in any corresponding unit of study in the University; or

6.1.2 the student is unable for good reason to attend a corresponding unit of study at the University.

7. **Restrictions on enrolment**

7.1 Units of study which overlap substantially in content are noted in the *Tables of undergraduate units of study*. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.

7.2 Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of Pass or better, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.

7.3 A student may not enrol in a unit of study which they have completed previously with a grade of Pass or better.

7.4 A candidate may not enrol in units of study having a total value of more than 30 credit points in a semester.

8. **Discontinuation of enrolment**

8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**

9.1 A student may seek written permission from the Dean to suspend candidature in the course.

9.2 Suspension may be granted for a maximum of one year on any one application.

10. **Re-enrolment after an absence**

10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**

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

12. **Time limit**

12.1 A candidate must complete all the requirements for the award of the degree within ten calendar years of admission to candidature or readmission without credit.

12.1.1 If a candidate is readmitted with credit, the Faculty will determine a reduced time limit for completion of the degree.

13. **Assessment policy**

13.1 Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

13.2 Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).

13.3 Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

14. **Credit transfer policy**

14.1 Credit will not be granted for units of study completed ten years or more prior to application, except with the permission of the Dean.

14.2 Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in Table I or as non-specific credit.

14.3 The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units from other degrees for which credit is maintained or a degree has been conferred.

14.4 All students, notwithstanding any credit transfer, must complete at least 30 credit points of Senior Psychology units at the University of Sydney.

15. **Candidates enrolled before 2005**

15.1 These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2005.

15.2 With the permission of the Faculty of Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

16. **Glossary for the Bachelor of Psychology**

16.1 Completion of a unit of study means that the assessment requirements have been satisfied and a grade of Pass or better has been achieved.

16.2 Junior unit of study is a 1000 or first-year stage unit. Its prerequisites or assumed knowledge are non-tertiary qualifications and corequisites are other Junior units of study.

16.3 Intermediate unit of study is a 2000 or second-year stage unit. Its prerequisites or assumed knowledge are Junior or Intermediate units of study and corequisites are other Intermediate units of study. (Specific to the Faculty of Science.)

16.4 Senior unit of study is a 3000 or third-year stage unit. Its prerequisites or assumed knowledge are junior, intermediate or senior units of study and corequisites are other senior units of study. (Specific to the Faculty of Science.)

16.5 Honours unit of study is a 4000 or fourth-year stage unit offered within an honours course.

16.6 Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.

16.7 Major in the Faculty of Science normally requires the completion of a minimum of 24 credit points of senior units of study in one Science area, including any units of study specified in the Table of undergraduate units of study as compulsory for that major.

16.7.1 A student may not count a unit of study toward more than one major. (A major in Psychology within the Bachelor of Psychology requires 54 credit points of Intermediate and Senior Psychology units of study including PSYC(2111 or 2011), PSYC(2112 or 2012), PSYC(2113 or 2013) and PSYC(2114 or 2014). No other Intermediate Psychology units can be counted towards the major).

16.8 Dean means the Dean of Science.

16.9 Faculty means the Faculty of Science.

16.10 Science subject area means a defined field of study in science.

16.11 Degree means the Bachelor of Psychology.

16.12 Requirements means coursework requirements for the award of the degree of Bachelor of Psychology.

16.13 Student means a person enrolled as a candidate for the degree of Bachelor of Psychology.

16.14 TSP means the Talented Student Program in the Faculty of Science.

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

Bachelor of Science and Technology

[Section 1]

1. **Admission**

1.1 All applications for admission to candidature to an undergraduate degree or combined undergraduate degree in the Faculty of Science will be subject to the Undergraduate Admissions policy of the University of Sydney.

2. **Units of study**

2.1 The units of study available for the Bachelor of Science and Technology are set out together with:

2.1.1 Units of study listed in Table I, Table III and Table VII in the Handbook of the Faculty of Science, excluding all units with INFS codes.

2.1.2 Units of study listed in Table A in the Handbook of the Faculty of Arts.

2.1.3 Units of study in Legal Studies units listed as available for study in the Bachelor of Arts and Sciences offered by the Faculty of Arts.

2.1.4 Units of study completed at the University of Sydney Summer or Winter School which correspond to units of study specified in 2.1.1 and 2.1.2 above.

2.1.5 These units of study are listed as in subsections 2.1.1 to 2.1.3, together with:

2.1.5.1 designation as junior, intermediate, senior or honours and, where appropriate, as advanced units of study

2.1.5.2 credit point values

2.1.5.3 assumed knowledge, corequisites and prerequisites

2.1.5.4 the semesters in which they are offered; and

2.1.5.5 the units of study with which they are mutually exclusive.

2.2 With the permission of the Dean of Science, candidates may count towards the degree a maximum of 36 credit points not specified in subsections 3.1 to 3.1.6.1 but from within the University.

2.3 A student who enrols, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Science and Technology, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

3. **Requirements for the pass degree**

3.1 To qualify for the award of the pass degrees a student shall complete 144 credit points comprising:

3.1.1 a minimum of 12 credit points from the Science subject areas of Mathematics and Statistics;

3.1.2 a minimum of 12 credit points in Experimental Science units of study from those specified in Table VIIb in the Handbook of Faculty of Science;

3.1.3 a minimum of 12 credit points in Science/Technology associated Humanities and Social Sciences units of study from those specified in TableVIIc in the Handbook of Faculty of Science;

3.1.4 a minimum of 12 credit points in Technology/Applied Science units of study from those specified in Table VIId in the Handbook of Faculty of Science;

3.1.5 a minimum of 72 credit points in senior or intermediate units of study, or in units of study normally taken at second or third year level or higher;

3.1.6 a major in the Faculty of Science specified in Table I or a major from the list of majors in Table VIIe in the Handbook of Faculty of Science.

3.1.6.1 A major in the BST requires a minimum of 36 credit points at 2000 and 3000 level including a minimum of 12 credit points at 3000 level except in the case of a major in a Science area which normally requires the completion of 24 credit points of senior units of study, in addition to any other units of study specified in the table as compulsory for that major.

3.7 The testamur for the degree of Bachelor of Science and Technology shall specify the major(s) completed.

3.8 Notwithstanding 3.1.6 above, where, in exceptional circumstances arising from prerequisites or other restrictions in certain discipline areas, a student is unable to complete the formal requirements of a major in the normal course of the degree but is nevertheless able to demonstrate depth of study in a specified discipline area within a faculty by the completion of a total of 36 intermediate and senior credit points including at least 12 senior credit points in a Faculty of Science, Faculty of Architecture or Faculty of Engineering discipline area, the Dean of Science may, on application from the student and a recommendation from the Head of Department, permit the student to graduate without a major. In such circumstances no major shall be specified on the transcript.

4. **Requirements for honours degree**

4.1 There shall be honours courses in all Science subject areas listed in Table VI (Honours units of study).

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

4.2.1 have qualified for the award of a pass degree; or

4.2.2 be a pass graduate of the Faculty of Science; or

4.2.3 be a pass graduate holding a Bachelor of Science and Technology degree or an equivalent qualification from another institution.

4.2.4 have completed a minimum of 24 credit points of senior units of study relating to the intended honours course (or equivalent at another institution);

4.2.5 have achieved either:

4.2.5.1 a credit average in the relevant senior Science units of study; or

4.2.5.2 a SCIWAM of at least 60 (or equivalent at another institution); and

4.2.5.3 satisfy any additional criteria set by the Head of Department concerned.

4.3 Students shall complete the requirements for the honours course full-time over two consecutive semesters.

4.4 If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

4.5 To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in the Table of undergraduate units of study, as prescribed by the Head of Department concerned.

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

4.7 Honours in the Bachelor of Science may be awarded in four classes as follows:

4.7.1 Class I (mark range: 80 and above)

4.7.2 Class II(1) (mark range: 75-79)

4.7.3 Class II(2) (mark range: 70-74)

4.7.4 Class III (mark range: 65-69)

4.8 A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.

4.9 A student may not re-attempt an honours course in a single subject area.

4.10 A student who is qualified to enrol in two honours courses may either:

4.10.1 complete the honours courses in the two subject areas separately and in succession; or

4.10.2 complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas.

4.11 A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.

[Section 2]

5. **Details of units of study**

5.1 The units of study for the Bachelor of Science and Technology are listed in subsection 2 of these resolutions.

5.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

5.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

5.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

5.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

5.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

5.4.3 to pass any other examination of the unit of study that may apply.

5.5 All units of study for a particular subject area may not be available every semester.

5.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other undergraduate programs in the Faculty or elsewhere in the University.

6. **Enrolment in more/less than minimum load**

6.1 A student may not enrol without first obtaining permission from the Dean of Science in additional units of study once the degree requirements of 144 credit points have been satisfied.

6.2 A student may not enrol in units of study having a total value of more than 30 credit points in a semester.

6.3 Students may enrol on either a full-time or part-time basis.

6.4 Full-time students normally take units of study with a total credit point value of 24 credit points per semester for 6 semesters.

7. **Cross-institutional study**

7.1 Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study at another institution and have that unit credited to his/her course requirements provided that either:

7.1.1 the unit of study content is material not taught in any corresponding unit of study in the University; or

7.1.2 the student is unable for good reason to attend a corresponding unit of study at the University.

8. **Restrictions on enrolment**

8.1 Units of study which overlap substantially in content are noted in Table I of units of study for the Bachelor of Science, in Table III for Bachelor of Computer Science & Technology and Table VII for the Bachelor of Information Technology and in the Tables of undergraduate units of study for the Bachelor of Arts, Bachelor of Engineering and Bachelor of Architecture.

8.1.1 Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.

8.2 Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of Pass or better, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.

8.3 A student may not enrol in a unit of study which they have completed previously with a grade of Pass or better.

8.4 A candidate may not enrol in units of study having a total value of more than 30 credit points in a semester.

9. **Discontinuation of enrolment**

9.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

9.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

10. **Suspension of candidature**

10.1 A student may seek written permission from the Dean to suspend candidature in the course.

10.2 Suspension may be granted for a maximum of one year on any one application.

11. **Re-enrolment after an absence**

11.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

12. **Satisfactory progress**

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

13. **Time limit**

13.1 A candidate must complete all the requirements for the award of the degree within ten calendar years of admission to candidature or readmission without credit.

13.1.1 If a candidate is readmitted with credit, the Faculty will determine a reduced time limit for completion of the degree.

14. **Assessment policy**

14.1 Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

14.2 Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).

14.3 Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

15. **Credit transfer policy**

15.1 Credit will not be granted for units of study completed more than nine years prior to application, except with the permission of the Dean of Science.

15.2 Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study from Table I, Table III or from Table VII or as non-specific credit.

15.3 The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units from other degrees for which credit is maintained or a degree has been conferred.

15.4 Except as provided by subsection 3.8, all students, notwithstanding any credit transfer, must complete a major at the University of Sydney from the list of majors in Table VIIe in the Handbook of Faculty of Science.

16. **Supervision**

16.1 Students shall be under the supervision of the Faculty of Science.

16.2 The Dean of the Faculty of Science shall exercise authority in any matter concerning the degree program not otherwise dealt with in the Resolutions of the Senate or Faculty.

17. **Glossary for the BST**

17.1 Completion of a unit of study means that the assessment requirements have been satisfied and a grade of Pass or better has been achieved.

17.2 Junior unit of study is a 1000 or first-year stage unit. Its prerequisites or assumed knowledge are non-tertiary qualifications and corequisites are other junior units of study.

17.3 Intermediate unit of study is a 2000 or second-year stage unit. Its prerequisites or assumed knowledge are Junior or Intermediate units of study and corequisites are other intermediate units of study.

17.4 Senior unit of study is a 3000 or third-year stage unit. Its prerequisites or assumed knowledge are junior, intermediate or senior units of study and corequisites are other senior units of study.

17.5 Honours unit of study is a 4000 or fourth-year stage unit offered within an honours course.

17.6 Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.

17.7 Major in the BST normally requires a minimum of 36 credit points at 2000 and 3000 level including a minimum of 12 credit points at 3000 level except in the case of a major in a Science area which normally requires the completion of 24 credit points of senior units of study, in addition to any other units of study specified in the table as compulsory for that major.

17.8 A student may not count a unit of study toward more than one major. (A major in Psychology requires 48 credit points of Intermediate and Senior Psychology units of study including PSYC(2111 or 2011),PSYC(2112 or 2012), PSYC(2113 or 2013) and PSYC(2114 or 2014). No other Intermediate Psychology units can be counted towards the major).

17.9 Dean means the Dean of Science.

17.10 Faculty means the Faculty of Science.

17.11 Science subject area means a defined field of study in science.

17.12 Degree means the degree of Bachelor of Science and Technology.

17.13 Requirements means coursework requirements for the award of the degree of Bachelor of Science or Bachelor of Arts.

17.14 Student means a person enrolled as a candidate for the degree of Bachelor of Science and Technology.

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

Bachelor of Information Technology

[Section 1]

1. **Admission**

1.1 All applications for admission to candidature to an undergraduate degree in the Faculty of Science will be subject to the Undergraduate Admissions policy of the University of Sydney.

1.2 The testamur for the BIT shall specify the stream for which it is awarded.

2. **Units of study**

2.1 The units of study, which may be taken for the degree, are set out in Table III and the Tables of units of study associated with the degrees of BSc, BA, BEc, and BE, all of which tables indicate:

2.1.1 designation as Junior, Intermediate, Senior or Honours and, where appropriate, as advanced units of study

2.1.2 credit point values
2.1.3 assumed knowledge, corequisites and prerequisites
2.1.4 the semesters in which they are offered; and
2.1.5 the units of study with which they are mutually exclusive.
2.2 The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table III.
2.3 A student who enrols, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Information Technology, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

3. **Requirements for the pass degree**

3.1 To qualify for the award of the degree a student shall complete units of study having a total value of at least 192 credit points, of which:
3.1.1 at least 144 credit points are from Table III, including:
3.1.2 at least 24 credit points from III(i) with average results of credit or better;
3.1.3 at least 72 credit points from III(iv) and/or III(v); and
3.1.4 either INFO3600 or INFO(4991 and 4992);
3.1.5 at least 18 credit points are from the Science subject areas of Mathematics and/or Statistics;
3.1.6 at least 36 credit points are from units which have codes starting other than INFO, COMP, ISYS, MULT, NETS, SOFT;
3.1.7 at most 72 credit points are from Junior units; and
3.1.8 at least 84 credit points are from Senior and/or Honours units.
3.2 Candidates who fail to maintain the required credit average in Table III(i) units will be transferred to candidature for the Bachelor of Computer Science and Technology degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Information Technology candidates.
3.3 Candidates who fail to achieve the required credit average in Table III(i) units in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Computer Science and Technology.
3.4 A major in the Bachelor of Information Technology normally requires the completion of 24 credit points of Senior and/or honours units of study, together with other junior and intermediate units, as specified in Table IIIA, except that any unit of study listed may be replaced by another unit which is mutually exclusive with it, for example, an Advanced equivalent:
3.4.1 a major in Principles of Computer Science - all units listed in Table IIIA(i) as core, and at least 6 credit points from units listed as electives;
3.4.2 a major in Information Systems - all units listed in Table IIIA(ii) as core, and at least 6 credit points from units listed as electives;
3.4.3 a major in Multimedia Technology - all units listed in Table IIIA(iii) as core, and at least 12 credit points from units listed as electives;
3.4.4 a major in Networks and Systems - all units listed in Table IIIA(iv) as core, and at least 6 credit points from units listed as electives;
3.4.5 a major in Software Development - all units listed in Table IIIA(v) as core, and at least 6 credit points from units listed as electives;
3.4.6 a major in Digital Design - all units listed in Table IIIA(vi) as core, and at least 12 credit points from units listed as electives;
3.4.7 a major in Computational Science - all units listed in Table IIIA(vii) as core and at least 12 credit points from units listed as electives.
3.4.8 a major in Language Technology - all units listed in Table IIIA(viii) and 4 credit points from units listed as electives.
3.5 It is not necessary to complete the requirements of any major in order to qualify for the award of the degree.
3.6 Units of study completed at the University of Sydney Summer School which correspond to units of study specified in Section 4 may be credited towards the course requirements.
3.7 The testamur for the degree of Bachelor of Information Technology shall specify the major(s) completed in the degree.

4. **Requirements for the Bachelor of Information Technology (Honours) degree**

4.1 There shall be an honours degree associated with the Bachelor of Information Technology.
4.2 Entry into the honours degree is only by transfer from the BIT.
4.3 To qualify to transfer into the Bachelor of Information Technology (Honours) degree, students shall:
4.3.1 have completed at least 144 credit points from the Bachelor of Information Technology degree or equivalent at another institution;
4.3.2 have completed a minimum of 24 credit points of units of study from Table III(iv) and/or III(v) associated with the degree of Bachelor of Information Technology or the equivalent at another institution;
4.3.3 have achieved either a credit average in the relevant units of study used to satisfy 4.3.2 above, or a SCIWAM of at least 60; and
4.3.4 satisfy any additional criteria set by the Head of Department concerned.
4.4 Once enrolled in the BIT (Honours) course, students shall complete the requirements for the honours course full-time, over two consecutive semesters.
4.5 If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.
4.6 To qualify for the award of the Bachelor of Information Technology (Honours) degree, students shall complete 192 credit points as outlined in sub-section 3, including at least 42 credit points from honours level units, including INFO4991, INFO4992 and INFO4999, with a result of at least 65 in INFO4999.
4.7 The degree of Bachelor of Information Technology (Honours) shall recognise the same majors as the BIT.
4.8 The testamur shall specify the major(s) completed in qualifying for the award. These majors will be noted independently from the grade of honours awarded.
4.9 The grade of honours and the honours mark are determined by performance in all Honours level units attempted.
4.10 Honours in the Bachelor of Information Technology may be awarded in four classes as follows:
4.10.1 Class I (mark range: 80 and above)
4.10.2 Class II(1) (mark range: 75-79)
4.10.3 Class II(2) (mark range: 70-74)
4.10.4 Class III (mark range: 65-69)
4.11 A student with an honours mark of 90 or greater and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.
4.12 A student may not re-attempt the Bachelor of Information Technology (Honours) course. However, students who fail to meet the requirements for the award of honours and who have not already satisfied the requirements of the BIT may elect to transfer back to the BIT. A student who does not meet the requirements for the award of honours and who has completed the requirements of the BIT shall graduate with the BIT degree.
4.13 A student who is qualified to enrol in two honours courses may either:
4.13.1 complete the honours courses in the two subject areas separately and in succession; or
4.13.2 complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas.
4.13.3 A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.

[Section 2]

5. **Details of units of study**

5.1 The units of study for the Bachelor Information Technology are listed in Table III of these resolutions.
5.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
5.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
5.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
5.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
5.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
5.4.3 to pass any other examination of the unit of study that may apply.

5.5 All units of study for a particular subject area may not be available every semester.
5.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other undergraduate programs in the Faculty or elsewhere in the University.

6. **Enrolment in more/less than minimum load**
6.1 A candidate may not enrol without first obtaining permission from the Dean in additional units of study once the degree requirements of 192 credit points have been satisfied.
6.2 Students may enrol on either a full-time or part-time basis.

7. **Cross-institutional study**
7.1 Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study at another institution and have that unit credited to his/her course requirements provided that either:
7.1.1 the unit of study content is material not taught in any corresponding unit of study in the University; or
7.1.2 the student is unable for good reason to attend a corresponding unit of study at the University.

8. **Restrictions on enrolment**
8.1 A candidate may not enrol in units of study having a total value of more than 30 credit points in a semester.
8.2 Units of study which overlap substantially in content are noted in the *Tables of undergraduate units of study*. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.
8.3 Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of Pass or better, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.
8.4 A student may not enrol in a unit of study which they have completed previously with a grade of pass or better.

9. **Discontinuation of enrolment**
9.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
9.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

10. **Suspension of candidature**
10.1 A student may seek written permission from the Dean to suspend candidature in the course.
10.2 Suspension may be granted for a maximum of one year on any one application.

11. **Re-enrolment after an absence**
11.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

12. **Satisfactory progress**
12.1 If a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

13. **Time limit**
13.1 A candidate must complete all the requirements for the award of the degree within ten calendar years of admission to candidature or readmission without credit.
13.1.1 If a candidate is readmitted with credit, the Faculty will determine a reduced time limit for completion of the degree.

14. **Assessment policy**
14.1 Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.
14.2 Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).
14.3 Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

15. **Credit transfer policy**
15.1 Credit will not be granted for units of study completed more than ten years prior to application, except with the permission of the Dean.
15.2 Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in Table III, or as non-specific credit.
15.3 The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units from other degrees for which credit is maintained or a degree has been conferred.
15.4 All students, notwithstanding any credit transfer, must complete at least 48 credit points of units from Table III(iv) and/or III(v) at the University of Sydney.

16. **Candidates enrolled before 2005**
16.1 These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2005.
16.2 With the permission of the Faculty of Science, candidates who first enrolled for the degree prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2008 choose to qualify for the degree under the old resolutions.
16.3 With the permission of the Faculty of Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

17. **Transfer between the BIT and other degrees**
17.1 Students who have completed at least 48 credit points may be permitted to transfer to the Bachelor of Information Technology degree from other degree programs, if their mark averaged over all attempted units of study is 70 or greater.
17.2 A quota may apply to the number of students allowed to transfer into the BIT in a given calendar year.
17.3 Students enrolled in the Bachelor of Information Technology who have satisfied the requirements of the BSc, BSc (Adv), BCST or BCST (Adv) degrees, or with permission of the Dean, may elect to discontinue their enrolment in the Bachelor of Information Technology degree and graduate with the BSc, BSc (Adv), BCST or BCST (Adv) degree, as appropriate.

18. **Specific glossary for the BIT**
18.1 Completion of a unit of study means that the assessment requirements have been satisfied and a grade of pass or better has been achieved.
18.2 Junior unit of study is a 1000 or first-year stage unit.
18.3 Intermediate unit of study is a 2000 or second-year stage unit.
18.4 Senior unit of study is a 3000 or third-year stage unit.
18.5 Honours unit of study is a 4000 or fourth-year stage unit offered within an honours course.
18.6 Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.
18.7 Dean means the Dean of Science.
18.8 Faculty means the Faculty of Science.
18.9 Science subject area means a defined field of study in science.
18.10 Degree means the Bachelor of Information Technology.
18.11 Requirements means coursework requirements for the award of the degree of Bachelor of Information Technology.
18.12 Student means a person enrolled as a candidate for the degree of Bachelor of Information Technology.
18.13 TSP means the Talented Student Program in the Faculty of Science.
18.14 SCIWAM means the weighted average mark calculated by the Faculty from the results for all intermediate and senior units of study with a weighting of 2 for intermediate units and 3 for senior units.

Bachelor of Computer Science and Technology

[Section 1]

1. **Admission**
1.1 All applications for admission to candidature to an undergraduate degree or combined degree in the Faculty of Science will be subject to the Undergraduate Admissions policy of the University of Sydney.
1.2 A candidate for the BCST degree in the advanced stream may apply to the Dean for permission to transfer candidature to the BCST.

1.3 The testamur for the degree of BCST shall specify the stream for which it is awarded.

2. **Units of study**

2.1 The units of study, which may be taken for the degree, are those that may be taken for the degree of Bachelor of Information Technology, the tables for which indicate:

2.1.1 designation as Junior, Intermediate, Senior or Honours and, where appropriate, as advanced units of study

2.1.2 credit point values

2.1.3 assumed knowledge, corequisites and prerequisites

2.1.4 the semesters in which they are offered; and

2.1.5 the units of study with which they are mutually exclusive.

2.2 The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table III.

2.3 A student who enrols, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Information Technology, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

3. **Requirements for the pass degree**

3.1 **Bachelor of Computer Science and Technology**

3.1.1 To qualify for the award of the BCST degree a student shall complete units of study having a total value of at least 144 credit points, of which:

3.1.1.1 at least 90 credit points are from Table III associated with the degree of Bachelor of Information Technology, including:

3.1.1.2 at least 24 credit points from III(i)

3.1.1.3 at least 36 credit points from III(iv) and/or III(v); and

3.1.1.4 at least 6 credit points from Table III(v)

3.1.1.5 at least 18 credit points are from the Science subject areas of Mathematics and/or Statistics;

3.1.1.6 at least 36 credit points are from units which have codes starting other than INFO, COMP, ISYS, MULT, NETS , SOFT;

3.1.1.7 at most 72 credit points are from junior units of study.

3.1.2 A major in an Information Technology subject area requires completion of units of study as specified in Table IIIA associated with the degree of Bachelor of Information Technology.

3.1.3 The testamur for the degree of BCST shall specify any majors completed.

3.1.4 Units of study completed at the University of Sydney Summer School which correspond to units of study specified in Section 7 may be credited towards the course requirements.

3.2 **Bachelor of Computer Science and Technology (Advanced)**

3.2.1 To qualify for the award of the pass degree in the BCST(Advanced) stream, a student shall complete the requirements for the BCST degree in sub-sections 3.1.1 to 3.1.1.7 so that except with the permission of the Dean:

3.2.1.1 they have completed at least 12 credit points of Intermediate units of study from Table III(i) and/or III(ii) which are at either the Advanced level or as TSP units;

3.2.1.2 they have completed at least 24 credit points from Table III(iv) and/or III(v) at either the Advanced level or the Honours level or as TSP units;

3.2.1.3 they have completed at least 48 credit points from senior or honours units of study; and

3.2.1.4 they have maintained in intermediate and senior units of study an average mark of 65 or greater in each year of enrolment;

3.2.2 Candidates who fail to maintain the required credit average will be transferred to candidature for the Bachelor of Computer Science and Technology degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Computer Science and Technology (Advanced) candidates.

3.2.3 Candidates who fail to achieve a credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Computer Science and Technology.

3.2.4 Students who have completed at least 48 credit points may be permitted to transfer to the BCST (Advanced) stream from the BCST if:

3.2.4.1 their mark averaged over all attempted units of study is 75 or greater; and

3.2.4.2 they are able to enrol in the required number of Advanced level units or TSP units.

4. **Requirements for the Honours degree**

4.1 There shall be honours courses in Computer Science and Information Systems. With permission of the Dean, candidates may be allowed to complete an honours course available in the Faculties of Science, Arts or Economics and Business, provided that the candidate's plan of study is appropriate for the degree.

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

4.2.1 have qualified for the award of the BCST degree; or

4.2.2 be a pass graduate of the Faculty of Science; or

4.2.3 be a pass graduate holding a degree equivalent to the BCST from another institution;

4.2.4 have completed a minimum of 24 credit points of units of study from Table III(iv) and/or III(v) associated with the degree of Bachelor of Information Technology (or equivalent at another institution);

4.2.5 have achieved either a credit average in the relevant units of study used to satisfy sub-section 4.2.4 above, or a SCIWAM of at least 60; and

4.2.6 satisfy any additional criteria set by the Head of Department concerned.

4.3 Students shall complete the requirements for the honours course full-time over two consecutive semesters.

4.4 If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

4.5 To qualify for the award of an honours degree, students shall complete while enrolled in an honours course, 48 credit points of units of study at honours level, of which at least 42 credit points must be from honours units listed in Tables III(iv) and III(v), including INF04991, INF04992 and INF04999.

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

4.7 Honours in the Bachelor of Science may be awarded in four classes as follows:

4.7.1 Class I (mark range: 80 and above)

4.7.2 Class II(1) (mark range: 75-79)

4.7.3 Class II(2) (mark range: 70-74)

4.7.4 Class III (mark range: 65-69)

4.8 A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.

4.9 A student may not re-attempt an honours course in a single subject area.

4.10 A student who does not meet the requirements for the award of honours, and who entered the honours course under clause 4.2.1, shall graduate with the BCST degree.

4.11 A student who is qualified to enrol in two honours courses may either:

4.11.1 complete the honours courses in the two subject areas separately and in succession; or

4.11.2 complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas.

4.12 A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.

[Section 2]

5. **Details of units of study**

5.1 The units of study for the Bachelor of Science and Technology are listed in Table III of the resolutions of the Bachelor of Information Technology.

5.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

5.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

5.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

5.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

5.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

5.4.3 to pass any other examination of the unit of study that may apply.

5.5 All units of study for a particular subject area may not be available every semester.

5.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other undergraduate programs in the Faculty or elsewhere in the University.

6. **Enrolment in more/less than minimum load**

6.1 A candidate may not enrol without first obtaining permission from the Dean in additional units of study once the degree requirements of 144 credit points have been satisfied.

6.2 Students may enrol on either a full-time or part-time basis.

7. **Cross-institutional study**

7.1 Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study at another institution and have that unit credited to his/her course requirements provided that either:

7.1.1 the unit of study content is material not taught in any corresponding unit of study in the University; or

7.1.2 the student is unable for good reason to attend a corresponding unit of study at the University.

8. **Restrictions on enrolment**

8.1 Units of study which overlap substantially in content are noted in the *Tables of undergraduate units of study*. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.

8.2 Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of Pass or better, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.

8.3 A student may not enrol in a unit of study which they have completed previously with a grade of Pass or better.

8.4 A candidate may not enrol in units of study having a total value of more than 30 credit points in a semester.

8.5 A student who has been awarded a Pass (Concessional) in a unit of study may repeat that unit but, if subsequently awarded a grade of pass or better, no further credit points will be gained unless the unit of study previously had not been credited under subsection 3.1.1.7.

9. **Discontinuation of enrolment**

9.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

9.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

10. **Suspension of candidature**

10.1 A student may seek written permission from the Dean to suspend candidature in the course.

10.2 Suspension may be granted for a maximum of one year on any one application.

11. **Re-enrolment after an absence**

11.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

12. **Satisfactory progress**

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

13. **Time limit**

13.1 A candidate must complete all the requirements for the award of the degree within ten calendar years of admission to candidature or readmission without credit.

13.1.1 If a candidate is readmitted with credit, the Faculty will determine a reduced time limit for completion of the degree.

14. **Assessment policy**

14.1 Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

14.2 Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).

14.3 Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

15. **Credit transfer policy**

15.1 Credit will not be granted for units of study completed more than ten years prior to application, except with the permission of the Dean.

15.2 Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in Table III, or as non-specific credit.

15.3 The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units of study from other degrees for which credit is maintained or a degree has been conferred.

15.4 All students, not withstanding any credit transfer, must complete at least 24 credit points from Tables III(iv) and/or III(v) at the University of Sydney.

16. **Candidates enrolled before 2005**

16.1 These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2005.

16.2 With the permission of the Faculty of Science, candidates who first enrolled for the degree prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2008 choose to qualify for the degree under the old resolutions.

16.3 With the permission of the Faculty of Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

17. **Specific glossary for the BCST**

17.1 Completion of a unit of study means that the assessment requirements have been satisfied and a grade of pass or better has been achieved.

17.2 Junior unit of study is a 1000 or first-year stage unit. Its prerequisites or assumed knowledge are non-tertiary qualifications and corequisites are other Junior units of study.

17.3 Intermediate unit of study is a 2000 or second-year stage unit. Its prerequisites or assumed knowledge are Junior or Intermediate units of study and corequisites are other Intermediate units of study.

17.4 Senior unit of study is a 3000 or third-year stage unit. Its prerequisites or assumed knowledge are Junior, Intermediate or Senior units of study and corequisites are other senior units of study.

17.5 Honours unit of study is a 4000 or fourth-year stage unit offered within an honours course.

17.6 Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.

17.7 Major in the Faculty of Science normally requires the completion of a minimum of 24 credit points of Senior units of study in one Science area, including any units of study specified in the Table of undergraduate units of study as compulsory for that major.

17.7.1 A student may not count a unit of study toward more than one major. (A major in Psychology requires 48 credit points of Intermediate and Senior Psychology units of study including PSYC(2111 or 2011), PSYC(2112 or 2012), PSYC(2113 or 2013) and PSYC(2114 or 2014). No other Intermediate Psychology units can be counted towards the major).

17.8 Major in the Faculty of Arts is normally 36 credit points from Senior units of study in an Arts subject area.

17.9 Major in the Faculty of Economics and Business is usually a three year sequence of study (in some cases a two year sequence) in a particular Economics and Business subject area.

17.10 Major in the Faculty of Education is 32 credit points from Senior units of study in the subject area of Education.

17.11 Faculty means the Faculty of Science.

17.12 Dean means the Dean of Science.

17.13 Science subject area means a defined field of study in science.

17.14 Degree means the Bachelor of Computer Science and Technology.

17.15 Requirements means coursework requirements for the award of the degree of Bachelor of Computer Science and Technology.

17.16 Student means a person enrolled as a candidate for the degree of Bachelor of Computer Science and Technology.
17.17 SCIWAM means the weighted average mark calculated by the Faculty from the results for all Intermediate and Senior units of study with a weighting of 2 for Intermediate units and 3 for Senior units.
17.18 TSP means the Talented Student Program in the Faculty of Science.

Bachelor of Science combined degrees

Bachelor of Science (Advanced)/MBBS

[Section 1]

1. **Admission**
1.1 All applications for admission to candidature for the combined Bachelor of Science (Advanced)/MBBS course will be subject to the Undergraduate Admissions policies of the Faculty of Science and of the Faculty of Medicine.
2. **Units of study**
2.1 The units of study for the Bachelor of Science (Advanced) are set out in Table I together with:
2.1.1 designation as junior, intermediate, senior or honours and, where appropriate, as advanced units of study
2.1.2 credit point values
2.1.3 assumed knowledge, corequisites and prerequisites
2.1.4 the semesters in which they are offered; and
2.1.5 the units of study with which they are mutually exclusive.
2.2 A student may enrol in a unit of study prescribed for a degree other than the Bachelor of Science (Advanced) and shall satisfy the prerequisites, corequisites, qualifying and other requirements prescribed for such units of study for that other degree.
2.3 The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table I.
2.4 There shall be honours units of study in Science subject areas listed in Table VI.
2.5 Units of study taken at the University of Sydney Summer School which correspond to units of study specified in subsections 4.1.1-4.1.3 may be credited towards the course requirements.
3. **Requirements for the award of the degrees**
3.1 To qualify for the award of the Bachelor of Science (Advanced)/MBBS degrees a student shall:
3.1.1 complete units of study having a total value of at least 336 credit points;
3.1.2 maintain an AAM of 80 or above in each of the first three years of the program;
3.1.3 satisfactorily complete five SMTP units in the first three years of the program; and
3.1.4 meet the requirements of the Bachelor of Science (Advanced) degree outlined below.
3.1.5 Students who fail to satisfy subsections 3.1.2 and/or 3.1.3 will be transferred to candidature for the Bachelor of Science (Advanced) degree.
3.1.6 To qualify for the award of the degrees of Bachelor of Medicine and Bachelor of Surgery, a student shall complete units of study having a total value of 192 credit points as required by the Resolutions of the Faculty of Medicine.
3.1.7 Students may abandon the combined degree course and elect to complete the BSc (Advanced) degree.
4. **Requirements for the award of the Bachelor of Science (Advanced)**
4.1 To qualify for the award of the pass degree in the BSc (Advanced) stream, a student shall complete the requirements for the BSc degree as described below with the exception of 5.1.5 and in addition, except with the permission of the Dean:
4.1.1 include no more than 48 credit points from Junior units of study;
4.1.2 include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units;
4.1.3 include at least 48 credit points of senior units of study of which at least 24 are completed at the Advanced level or as TSP units in a single Science subject area; and
4.1.4 maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment;
4.2 candidates who fail to maintain the required credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Advanced) candidates.
4.3 Candidates who fail to achieve a credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.
5. **Requirements for the award of the Bachelor of Science**
5.1 To qualify for the award of the Bachelor of Science, a student shall complete units of study having a total value of at least 144 credit points, including:
5.1.1 at least 96 credit points from Science subject areas;
5.1.2 at least one major from those included in Table I;
5.1.3 at least 12 credit points from the Science subject areas of Mathematics and Statistics;
5.1.4 at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics; and
5.1.5 no more than 60 credit points from Junior units of study.
5.2 A major in the BSc normally requires the completion of a minimum of 24 credit points of senior units of study in one Science area, including any units of study specified in the Table of undergraduate units of study as compulsory for that major.
5.3 A major in Psychology requires 48 credit points across intermediate and senior Psychology* units of study including PSYC (2111 or 2011), PSYC (2112 or 2012), PSYC (2113 or 2013) and PSYC (2114 or 2014). No other intermediate Psychology units can be counted towards the major.
5.4 The senior units must include at least one of PSYC 3011, 3012, 3013 and 3014.*Note: HPSC3023 Psychology & Psychiatry History & Phil is available for Senior Psychology students and will count towards a major in Psychology. Successful completion of this unit of study is essential for students intending to take the Theoretical Thesis option in Psychology Honours.
5.5 A maximum of 48 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculty of Science.
5.6 The testamur for the degree of Bachelor of Science shall specify the major(s) completed in order to qualify for the award.
6. **Requirements for the Honours degree**
6.1 Students who qualify to undertake honours in the Bachelor of Science (Advanced) degree may elect to do so either:
6.1.1 by suspending candidature from the MBBS degrees for one year, with the permission of the Faculty of Medicine; or
6.1.2 after completion of the combined course.
6.2 In order to qualify to enrol in an honours course in the Bachelor of Science (Advanced), students shall either:
6.2.1 have qualified for the award of the pass degree; or
6.2.2 be a graduate of the Faculty of Science; or
6.2.3 be a graduate holding a Bachelor of Science degree or an equivalent qualification from another institution;
6.2.4 have completed a minimum of 24 credit points of senior units of study relating to the intended honours course (or equivalent at another institution);
6.2.5 have achieved either:
6.2.5.1 a credit average in the relevant senior Science units of study; or
6.2.5.2 a SCIWAM of at least 60 (or equivalent at another institution); and
6.2.5.3 satisfy any additional criteria set by the Head of Department concerned.
6.3 Students shall complete the requirements for the course full-time over two consecutive semesters.
6.4 If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.
6.5 To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in one subject area from those listed in Table VI.
6.6 The grade of honours and the honours mark are determined by performance in the honours course.

6.6.1 Honours in the Bachelor of Science (Advanced) may be awarded in four classes as follows:
6.6.1.1 Class I (mark range: 80 and above)
6.6.1.2 Class II(1) (mark range: 75-79)
6.6.1.3 Class II(2) (mark range: 70-74)
6.6.1.4 Class III (mark range: 65-69)
6.6.2 A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.
6.7 A student who is qualified to enrol in two honours courses may either:
6.7.1 complete the honours courses in the two subject areas separately and in succession; or
6.7.2 complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas.
6.7.3 A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.
6.8 A student may not re-attempt an honours course in a single subject area.

7. **Supervision**
7.1 Students will be under the general supervision of the Faculty of Science until the end of the semester in which they complete the requirements for the Science degree. After that they will be under the general supervision of the Faculty of Medicine.
7.2 The Deans of the Faculties of Medicine and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in these resolutions.

[Section 2]

8. **Details of units of study**
8.1 The units of study for the Bachelor Science (Advanced) are listed in Table I of the resolutions for the Bachelor of Science.
8.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
8.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
8.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
8.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
8.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
8.4.3 to pass any other examination of the unit of study that may apply.
8.5 All units of study for a particular subject area may not be available every semester.

9. **Enrolment in more/less than minimum load**
9.1 A candidate may not enrol in additional units of study once the degree requirements of 336 credit points have been satisfied, without first obtaining permission from the Dean.
9.2 Students may enrol on either a full-time or part-time basis.

10. **Cross-institutional study**
10.1 Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study at another institution and have that unit credited to his/her course requirements provided that either:
10.1.1 the unit of study content is material not taught in any corresponding unit of study in the University; or
10.1.2 the student is unable for good reason to attend a corresponding unit of study at the University.

11. **Restrictions on enrolment**
11.1 Units of study which overlap substantially in content are noted in the tables of undergraduate units of study. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.

12. **Discontinuation of enrolment**
12.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
12.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

13. **Suspension of candidature**
13.1 A student may seek written permission from the Dean to suspend candidature in the course.
13.2 Suspension may be granted for a maximum of one year on any one application.

14. **Re-enrolment after an absence**
14.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

15. **Satisfactory progress**
15.1 If a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

16. **Time limit**
16.1 A candidate must complete all the requirements for the award of the degrees within ten calendar years of admission to candidature or readmission without credit.
16.1.1 If a candidate is readmitted with credit, the Faculty will determine a reduced time limit for completion of the degree.

17. **Assessment policy**
17.1 Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.
17.2 Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).
17.3 Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

18. **Credit transfer policy**
18.1 Credit will not be granted for units of study completed ten years or more prior to application, except with the permission of the Dean.
18.2 Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in Tables I, or as non-specific credit.
18.3 The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units of study from other degrees for which credit is maintained or a degree has been conferred.
18.4 All students, notwithstanding any credit transfer, must complete at least 24 credit points of senior Science units of study towards a major taken at the University of Sydney.

19. **Candidates enrolled before 2005**
19.1 These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2005.
19.2 With the permission of the Faculty of Science, candidates who first enrolled for the degree prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2008 choose to qualify for the degree under the old resolutions.
19.3 With the permission of the Faculty of Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

20. **Specific glossary for the Bachelor of Science (Advanced)/MBBS**
20.1 AAM means the average mark over all units of study attempted in a given academic year (equivalent to the calendar year).
20.2 Completion of a unit of study means that the assessment requirements have been satisfied and a grade of pass or better has been achieved.
20.3 Intermediate unit of study is of second-year (2000) level. Its prerequisites or assumed knowledge are junior or intermediate units of study and corequisites are other intermediate units of study.
20.4 Senior unit of study is of third-year (3000) level. Its prerequisites or assumed knowledge are junior, intermediate or senior units of study and corequisites are other senior units of study.
20.5 Honours unit of study is a 4000 level unit offered within an honours course.
20.6 Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.

20.7 Dean means the Dean of Science for the duration of the candidature for the Bachelor of Science (Advanced), and the Dean of Medicine for the duration of candidature for the MBBS.
20.8 Faculty means the Faculty of Science for the duration of candidature in the Bachelor of Science (Advanced) and the Faculty of Medicine for the duration of candidature in the MBBS.
20.9 Degree means the Bachelor of Science (Advanced)/MBBS.
20.10 Requirements means coursework requirements for the award of the degree of Bachelor of Science (Advanced)/MBBS.
20.11 Student means a person enrolled as a candidate for the degree of Bachelor of Science (Advanced)/MBBS.
20.12 TSP means the Talented Student Program in the Faculty of Science.
20.13 SCIWAM means the weighted average mark calculated by the Faculty from the results for all intermediate and senior units of study with a weighting of 2 for intermediate units and 3 for senior units.

Bachelor of Medical Science/MBBS

[Section 1]

1. **Admission**
1.1 All applications for admission to candidature to the combined Bachelor of Medical Science/MBBS course will be subject to the Undergraduate Admissions policies of the Faculty of Science and of the Faculty of Medicine.
1.2 A candidate may elect to abandon the combined degree course and elect to complete the BMedSc degree.
2. **Units of study**
2.1 The units of study for the Bachelor of Medical Science are set out in Table IV together with:
2.1.1 designation as junior, intermediate, senior or honours and, where appropriate, as advanced units of study
2.1.2 credit point values
2.1.3 assumed knowledge, corequisites and prerequisites
2.1.4 the semesters in which they are offered; and
2.1.5 the units of study with which they are mutually exclusive.
2.2 A student may enrol, in accordance with subsection 4.1.5, in a unit of study prescribed for a degree other than the Bachelor of Medical Science and shall satisfy the prerequisites, corequisites, qualifying and other requirements prescribed for such units of study for that other degree.
2.3 The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table IV.
2.4 There shall be honours units of study in Science subject areas listed in Table IV D.
2.5 Units of study taken at the University of Sydney Summer School which correspond to units of study specified in subsection 4 may be credited towards the course requirements.
3. **Requirements for the award of the degrees**
3.1 To qualify for the award of the BMedSc/MBBS degrees a student shall:
3.1.1 complete units of study having a total value of at least 336 credit points;
3.1.2 maintain an AAM of 80 or above in each of the first three years of the program;
3.1.3 satisfactorily complete five SMTP units in the first three years of the program; and
3.1.4 meet the requirements of the Bachelor of Medical Science degree.
3.1.5 Students who fail to satisfy 3.1.2 and/or 3.1.3 will be transferred to candidature for the Bachelor of Medical Science degree.
3.1.6 To qualify for the award of the degrees of Bachelor of Medicine and Bachelor of Surgery a student shall complete units of study having a total value of 192 credit points as required by the Resolutions of the Faculty of Medicine.
3.1.7 Students may abandon the combined degree course and elect to complete the Bachelor of Medical Science.
4. **Requirements for the award of the Bachelor of Medical Science**
4.1 In order to qualify for the award of the Bachelor of Medical Science degree a student shall complete units of study having a total value of at least 144 credit points, including:
4.1.1 at least 48 credit points from junior units of study, comprising MBLG1001 and 12 credit points each from Chemistry, Mathematics and Physics or Computational Science and 6 credit points from Biology;
4.1.2 no more than 60 credit points from junior units of study;
4.1.3 48 credit points of Intermediate core units of study listed in Table IV;
4.1.4 at least 36 credit points of senior units of study taken from the subject areas of Anatomy/Histology, Biology (Genetics), Biochemistry, Cell Pathology, Immunology, Infectious Diseases, Microbiology, Pharmacology and Physiology;
4.1.5 no more than 12 credit points from units of study other than core units of study.
4.1.6 Units of study taken at the University of Sydney Summer School which correspond to units of study specified in subsection 3 may be credited towards the course requirements.
5. **Requirements for the honours degree**
5.1 Students who qualify to undertake honours in the Bachelor of Medical Science degree may elect to do so either:
5.1.1 by suspending candidature from the MBBS degrees for one year, with the permission of the Faculty of Medicine; or
5.1.2 after completion of the combined course.
5.2 In order to qualify to enrol in an honours course in the BMedSc, students shall either:
5.2.1 have qualified for the award of the Bachelor of Medical Science degree; or
5.2.2 be a pass graduate in Medical Science of the Faculty of Science; or
5.2.3 be a pass graduate holding a Bachelor of Medical Science degree or an equivalent qualification from another institution;
5.2.4 have completed a minimum of 24 credit points of senior units of study relating to the intended honours course (or equivalent at another institution);
5.2.5 have achieved either:
5.2.5.1 a credit average in the relevant senior Science units of study; or
5.2.5.2 a SCIWAM of at least 60 (or equivalent at another institution); and
5.2.5.3 satisfy any additional criteria set by the Head of Department concerned.
5.3 Students shall complete the requirements for the course full-time over two consecutive semesters.
5.4 If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.
5.5 To qualify for the award of honours in the Bachelor of Medical Science degree, students shall complete 48 credit points of honours units of study in one subject area from those listed in Table IV D.
5.6 The grade of honours and the honours mark are determined by performance in the honours course.
5.6.1 Honours in the Bachelor of Medical Science may be awarded in four classes as follows:
5.6.1.1 Class I (mark range: 80 and above)
5.6.1.2 Class II(1) (mark range: 75-79)
5.6.1.3 Class II(2) (mark range: 70-74)
5.6.1.4 Class III (mark range: 65-69)
5.6.2 A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.
5.7 A student who is qualified to enrol in two honours courses may either:
5.7.1 complete the honours courses in the two subject areas separately and in succession; or
5.7.2 complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas.
5.8 A student may not re-attempt an honours course in a single subject area.
6. **Supervision**
6.1 Students will be under the general supervision of the Faculty of Science until the end of the semester in which they complete the requirements for the BMedSc degree. After that they will be under the general supervision of the Faculty of Medicine.
6.2 The Deans of the Faculties of Medicine and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in these resolutions.

[Section 2]

7. **Details of units of study**

7.1 The units of study for the Bachelor of Medical Science are listed in Table IV of these resolutions.

7.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

7.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

7.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

7.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

7.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

7.4.3 to pass any other examination of the unit of study that may apply.

7.5 All units of study for a particular subject area may not be available every semester.

8. **Enrolment in more/less than minimum load**

8.1 A candidate may not enrol in additional units of study once the degree requirements of 336 credit points have been satisfied, without first obtaining permission from the Dean.

8.2 Students may enrol on either a full-time or part-time basis.

9. **Cross-institutional study**

9.1 Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study at another institution and have that unit credited to his/her course requirements provided that either:

9.1.1 the unit of study content is material not taught in any corresponding unit of study in the University; or

9.1.2 the student is unable for good reason to attend a corresponding unit of study at the University.

10. **Restrictions on enrolment**

10.1 Except with the permission of the Dean, candidates may not enrol in an intermediate core unit of study until they have completed 42 credit points of junior units of study prescribed by the Faculty.

10.2 Except with the permission of the Dean, candidates may not enrol in a senior unit of study:

10.2.1 until they have gained credit for at least 42 credit points from core intermediate units of study; and

10.2.2 until they have completed the intermediate units of study prescribed as prerequisites for the senior unit of study, as set out in Table IV.

10.2.3 Enrolment in some senior units of study may be subject to a quota.

10.3 Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed satisfactorily, the Head of Department concerned may exempt the student from certain requirements of the unit of study requirements if satisfied that the relevant competence has been demonstrated.

10.4 A student may not enrol in a unit of study which they have completed previously with a grade of pass or better.

10.5 A candidate may not enrol in units of study having a total value of more than 30 credit points in a semester.

10.6 In satisfying the requirements of subsection 4.1.3 a student may not enrol in units of study which overlap substantially in content with units of study listed in subsection 4.1.4.

10.7 A student may not enrol without first obtaining permission from the Dean in:

10.7.1 additional units of study once the degree requirements of 144 credit points have been satisfied; or

10.7.2 units of study which may not be counted towards the course requirements.

11. **Discontinuation of enrolment**

11.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

11.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

12. **Suspension of candidature**

12.1 A student may seek written permission from the Dean to suspend candidature in the course.

12.2 Suspension may be granted for a maximum of one year on any one application.

13. **Re-enrolment after an absence**

13.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

14. **Satisfactory progress**

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

15. **Time limit**

15.1 A candidate must complete all the requirements for the award of the degrees within ten calendar years of admission to candidature or readmission without credit.

15.1.1 If a candidate is readmitted with credit, the Faculty will determine a reduced time limit for completion of the degree.

16. **Assessment policy**

16.1 Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

16.2 Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).

16.3 Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

17. **Credit transfer policy**

17.1 Credit will not be granted for units of study completed 10 years or more prior to application, except with the permission of the Dean.

17.2 Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in Tables I or IV, or as non-specific credit.

17.3 The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units of study from other degrees for which credit is maintained or a degree has been conferred.

17.4 All students, notwithstanding any credit transfer, must complete at least 36 credit points of senior Science units of study in accordance with subsection 3.1.4.

18. **Candidates enrolled before 2005**

18.1 These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2005.

18.2 With the permission of the Faculty of Science, candidates who first enrolled for the degree prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2008 choose to qualify for the degree under the old resolutions.

18.3 With the permission of the Faculty of Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

19. **Specific glossary for the Bachelor of Medical Science/MBBS**

19.1 AAM means the average mark over all units of study attempted in a given academic year (equivalent to the calendar year).

19.2 Completion of a unit of study means that the assessment requirements have been satisfied and a grade of pass or better has been achieved.

19.3 Intermediate unit of study is at second-year (2000) level. Its prerequisites or assumed knowledge are junior or intermediate units of study and corequisites are other intermediate units of study.

19.4 Senior unit of study is at third-year (3000) level. Its prerequisites or assumed knowledge are junior, intermediate or senior units of study and corequisites are other senior units of study.

19.5 Honours unit of study is a 4000 level unit offered within an honours course.

19.6 Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.

19.7 Dean means the Dean of Science for the duration of the candidature for the Bachelor of Medical Science, and the Dean of Medicine for the duration of candidature for the MBBS.

19.8 Faculty means the Faculty of Science for the duration of candidature in the Bachelor of Medical Science and Faculty of Medicine for the duration of candidature in the MBBS.
19.9 Degrees means the Bachelor of Medical Science/MBBS.
19.10 Student means a person enrolled as a candidate for the degree of Bachelor of Medical Science.
19.11 TSP means the Talented Student Program in the Faculty of Science.
19.12 SCIWAM means the weighted average mark calculated by the Faculty from the results for all intermediate and senior units of study with a weighting of 2 for intermediate units and 3 for senior units.

Bachelor of Science and Bachelor of Laws (BSc/LLB)

1. **Cross-Faculty management of combined degree course**
1.1 Students will be under the general supervision of the Faculty of Science until the end of the semester in which they complete the requirements for the Bachelor of Science.
1.2 They will then be under the general supervision of the Faculty of Law.
1.3 The Deans of the Faculty of Science and the Faculty of Law shall jointly exercise authority in any matter concerning the combined award course not otherwise dealt with in these Resolutions.
3. **Units of study**
3.1 The units of study which may be taken for the Bachelor of Science are set out under *Tables of units of study* in the Faculty of Science Handbook, together with:
3.1.1 credit point value;
3.1.2 the semesters in which they are offered;
3.1.3 the units of study with which they are mutually exclusive;
3.1.4 assumedknowledge/prerequisites/qualifying/corequisites/prohibition; and
3.1.5 any special conditions.
3.2 The units of study which may be taken for the Bachelor of Laws are set out in the *Undergraduate units of study table* in the Faculty of Law Handbook, together with:
3.2.1 designation as compulsory or optional;
3.2.2 credit point value;
3.2.3 the units of study with which they are mutually exclusive;
3.2.4 assumed knowledge/ prerequisites/ qualifying/ corequisites/ prohibition; and
3.2.5 any special conditions.
4. **Requirements for the Bachelor of Science and the Bachelor of Laws**
4.1 To qualify for the award of the pass degrees a student must complete successfully units of study amounting to a total of 240 credit points.
4.2 To qualify for the award of the pass degree of Bachelor of Science (BSc) in the Bachelor of Science and Bachelor of Laws combined degree program a student must complete 144 credit points in total, comprised of 48 credit points of LAWS units of study as listed below in 4.7 and 96 credit points from Science units of study set out under Table I of the Bachelor of Science, including:
4.2.1 at least 12 credit points from the Science subject areas of Mathematics and Statistics;
4.2.2 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
4.2.3 60 credit points of Intermediate/Senior units of study in Science subject areas; and
4.2.4 a major in a Science area.
4.3 To qualify for the award of the pass degree in the Bachelor of Science (Advanced) degree, a student must complete the requirements for the BSc degree in Section 4.2 above (except for 4.2.3) and in addition, except with the permission of the Dean of Science:
4.3.1 include no more than 48 credit points from Junior units of study;
4.3.2 include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units;
4.3.3 include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area;
4.3.4 maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.
4.4 To qualify for the award of the pass degree in the Bachelor of Science (Advanced Mathematics) degree, a student must complete the requirements for the BSc degree in Section 4.2 above (except for 4.2.3) and in addition, except with the permission of the Dean of Science:
4.4.1 include no more than 48 credit points from Junior units of study;
4.4.2 include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics;
4.4.3 include a major in Mathematics, Statistics or Financial Mathematics and Statistics;
4.4.4 include at least 48 credit points of senior units of study of which at least 24 are completed at the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics; and
4.4.5 maintain in intermediate and senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment;
4.5 Candidates in an Advanced stream of the BSc degree who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed in the Advanced stream.
4.6 Candidates in an Advanced stream of the BSc degree who fail to achieve a Credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.
4.7 To qualify for the degree of Bachelor of Laws (LLB), in the Bachelor of Science and Bachelor of Laws combined degree program, a student must complete units of study to the value of 144 credit points, made up of the following:
4.7.1 96 credit points of the compulsory units of study, which includes the 48 credit points of LAWS units of study listed below in subsection 4.8.1 and counted towards the Bachelor of Science.
4.7.2 48 credit points of the optional units of study in Chapter 2 of the Faculty of Law Handbook that must include:
4.7.2.1 a maximum of 40 credit points from the units of study listed in Part 1 of the Undergraduate Units of Study Table, and
4.7.2.2 a minimum of 8 credit points from the units of study listed in Part 2 of the *Undergraduate units of study table*.
4.8 Candidates in Science/ Law may credit the following subjects to both the Bachelor of Science and Bachelor of Laws (LLB);
4.8.1 Foundations of Law
4.8.2 Torts
4.8.3 Contracts
4.8.4 Torts and Contracts II
4.8.5 Processes of Justice
4.8.6 The Legal Profession
4.8.7 Criminal Law
4.8.8 International Law
4.8.9 Legal Research I
4.8.10 Legal Research II
4.9 Candidates in Combined Law must complete the law units of study in the following sequence:

Year	Unit of study	Credit points
Combined Law 1	Foundations of Law	6
	Legal Research I	0
	Torts	6
Combined Law 2	Processes of Justice	6
	Contracts	6
	Criminal	6
Combined Law 3	Torts and Contracts II	6
	International Law	6
	Legal Research II	0
Combined Law 2 or 3	The Legal Profession	6

4.9.1 On completion of the requirements for the degree of Bachelor of Science a student must then complete the following compulsory units of study towards the degree.

Year	Unit of study	Credit points
Combined Law 4	Federal Constitutional Law	8
	Administrative Law	8
	Real Property	8
	Corporate Law	8
	Equity	8
	Litigation	8
Combined Law 5	optional units of study selected from Part 1 and Part 2	48

4.10 Except with the permission of the Dean or Associate Dean (Undergraduate), candidates in a Combined Law program must successfully complete Foundations of Law before enrolling in any other Bachelor of Laws units of study.

4.11 Students must complete the requirements for the Bachelor of Science before proceeding to the Bachelor of Laws (unless they have permission from the Faculty of Law stating otherwise).

4.12 Students may elect to abandon the combined course and elect to complete a Bachelor of Science in accordance with the resolutions governing that degree.

5. **Requirements for Award of Honours**

5.1 Both the Bachelor of Science and the Bachelor of Laws may be awarded with honours.

5.2 Students who qualify to undertake Honours in the Bachelor of Science degree by completion of an Honours year in accordance with the resolutions of the Bachelor of Science may elect to do so:

5.2.1 by suspending candidature from the Bachelor of Laws degree for one year, with the permission of the Faculty of Law; or

5.2.2 undertake the honours course after completion of both degrees in the combined program.

5.2.3 Honours in the Bachelor of Science may be awarded in four classes: Class I, Class II(1), Class II(2) and Class III in accord with the resolutions of the Bachelor of Science.

5.2.4 A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.

5.3.1 Honours in the Bachelor of Laws may be awarded in two classes: Class I and Class II.

5.3.2 To qualify for the award of honours in the Bachelor of Laws (Honours) a student must obtain the following WAM across all Law units, including those taken as part of the combined award course and any failures:

5.3.2.1 First class honours are awarded to students who obtain an average mark of 75 per cent or higher (weighted in accordance with the credit points for each unit of study).

5.3.2.2 Second class honours are awarded to students who obtain an average mark of between 70 per cent and 74.9 per cent (weighted in accordance with the credit points for each unit of study).

5.3.3 Students who qualify for the award of first class honours, and whose work is of outstanding merit in the opinion of the Faculty, may be considered for the award of a University medal.

5.3.4 An honours year is not required.

Bachelor of Science and Bachelor of Arts

[Section 1]

1. **Admission**

1.1 All applications for admission to candidature to an undergraduate degree or combined degree in the Faculty of Science will be subject to the Undergraduate Admissions policy of the University of Sydney.

1.1.1 A candidate for the BSc, BSc(Advanced) or BSc(Advanced Mathematics) may apply to the Dean for permission to transfer candidature to any other stream.

1.2 Cross-Faculty Management of Combined Degree Course

1.2.1 The primary Faculty for management of the combined course is the Faculty of Science. The Deans of the Faculties of Arts and Science shall jointly exercise authority in any matter concerning the combined degrees not otherwise dealt with in these resolutions.

2. **Requirements for the degree**

2.1 To qualify for the award of the pass degrees a student shall complete from the *Table of undergraduate units of study* for the Bachelor of Science and from the *Table of units of study* for the Bachelor of Arts, units of study having a total value of 240 credit points, including:

2.1.1 no more than 96 credit points from junior units of study, with no more than 18 junior credit points from the same Arts subject area;

2.1.2 at least 96 credit points from Science subject areas, including

2.1.2.1 at least 12 credit points from the Science subject area of Mathematics and Statistics;

2.1.2.2 at least 24 credit points of junior units of study from at least two Science subject areas other than Mathematics & Statistics;

2.1.2.3 a major in a Science area as defined in Table I for the Bachelor of Science, normally requiring the completion of 24 credit points of senior units of study in one Science area, including any units of study specified in the table as compulsory for that major;

2.1.3 at least 72 credit points of senior units of study in Arts subject areas from Part A including

2.1.3.1 a Part A major consisting of 36 senior credit points in a single subject area listed in Part A of the table of units of study for the Bachelor of Arts or of at least 18 senior credit points from a Part A subject area combined with no more than 18 senior credit points from units of study approved by the Dean of Arts for cross-listing with the major, except in the case of Medieval Studies, Film Studies, European Studies and Asian Studies where the entire major may be cross-listed, and in such other subject areas as may be approved by the Dean of Arts;

2.1.3.2 no more than 64 senior credit points from the same Arts subject area.

2.1.4 A student may not count a unit of study toward more than one major.

2.1.5 The testamurs for the degrees of Bachelor of Science and Bachelor of Arts shall specify the major(s) completed in order to qualify for the awards.

3. **Specially designated streams**

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

3.2 **BSc(Advanced)**

3.2.1 To qualify for the award of the pass degree in the Advanced stream of the BSc degree, a student shall complete the requirements for the BSc degree in subsection 2 and in addition, except with the permission of the Dean:

3.2.1.1 include at least 12 credit points of Intermediate Science units of study at either the Advanced level or as TSP units;

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

3.2.1.3 maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

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

3.2.3 Students who have completed at least 48 credit points may be permitted to transfer to the BSc (Advanced) stream from the BSc or BSc (Advanced Mathematics) if:

3.2.3.1 their mark averaged over all attempted units of study is 75 or greater; and

3.2.3.2 they are able to enrol in the required number of Advanced level units or TSP units.

3.2.4 The testamur for the degree of Bachelor of Science (Advanced) shall specify the major(s) completed in order to qualify for the award.

3.3 **BSc (Advanced Mathematics)**

3.3.1 To qualify for the award of the pass degree in the Advanced Mathematics stream of the BSc degree, a student shall complete the requirements for the BSc degree in subsection 2 and in addition, except with the permission of the Dean:

3.3.1.1 include no more than 48 credit points from junior Science units of study;

3.3.1.2 include at least 12 credit points of intermediate units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics;

3.3.1.3 include a major in Mathematics, Statistics or Financial Mathematics and Statistics;

3.3.1.4 include at least 48 credit points of senior units of study of which at least 24 are completed at the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics; and

3.3.1.5 maintain in intermediate and senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

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

3.3.3 Students who have completed at least 48 credit points may be permitted to transfer to the BSc (Advanced Mathematics) stream from the BSc or BSc(Advanced) if:

3.3.3.1 their mark averaged over all attempted units of study is 75 or greater; and

3.3.3.2 they are able to enrol in the required number of Advanced level units or TSP units.

4. **Honours in Science and Arts**

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

4.2 There shall be honours courses in the following Science subject areas:

4.2.1 Agricultural Chemistry
4.2.2 Anatomy and Histology
4.2.3 Biochemistry
4.2.4 Biology
4.2.5 Cell Pathology
4.2.6 Chemistry
4.2.7 Computational Science
4.2.8 Computer Science
4.2.9 Environmental Studies
4.2.10 Geography
4.2.11 Geology
4.2.12 Geophysics
4.2.13 History and Philosophy of Science
4.2.14 Immunology
4.2.15 Information Systems
4.2.16 Marine Science
4.2.17 Applied Mathematics
4.2.18 Pure Mathematics
4.2.19 Microbiology
4.2.20 Molecular Biotechnology
4.2.21 Pharmacology
4.2.22 Physics
4.2.23 Physiology
4.2.24 Psychology
4.2.25 Soil Science
4.2.26 Mathematical Statistics

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

4.3.1 have qualified for the award of a pass degree;

4.3.2 have completed a minimum of 24 credit points of Senior units of study relating to the intended honours course;

4.3.3 have achieved either:

4.3.3.1 a credit average in the relevant Senior Science units of study; or

4.3.3.2 a SCIWAM of at least 60; and

4.3.3.3 satisfy any additional criteria set by the Head of Department concerned.

4.4 Students shall complete the requirements for the honours course full-time over two consecutive semesters.

4.5 If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

4.6 To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in the Table of undergraduate units of study, as prescribed by the Head of Department concerned.

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

4.8 Honours in the Bachelor of Science may be awarded in four classes as follows:

4.8.1 Class I (mark range: 80 and above)
4.8.2 Class II(1) (mark range: 75-79)
4.8.3 Class II(2) (mark range: 70-74)
4.8.4 Class III (mark range: 65-69)

4.9 A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean of Science, receive a bronze medal.

4.10 A student may not re-attempt an honours course in a single subject area.

4.11 A student who is qualified to enrol in two honours courses may either:

4.11.1 complete the honours courses in the two subject areas separately and in succession; or

4.11.2 complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean of Science.

4.12 There shall be honours courses in the following Arts subject areas:

4.12.1 Ancient History
4.12.2 Social Anthropology
4.12.3 Archaeology (Classical)
4.12.4 Archaeology (Near Eastern)
4.12.5 Archaeology (Prehistoric and Historical)
4.12.6 Art History and Theory
4.12.7 Australian Literature
4.12.8 Chinese Studies
4.12.9 Classics
4.12.10 Economics
4.12.11 Education
4.12.12 English
4.12.13 French Studies
4.12.14 Gender Studies
4.12.15 Germanic Studies
4.12.16 Government and International Relations
4.12.17 Greek (Ancient)
4.12.18 Hebrew (Classical)
4.12.19 History
4.12.20 Indonesian and Malay Studies (no guarantee of continuing availability of units)
4.12.21 Industrial Relations and Human Resource Management
4.12.22 Italian Studies
4.12.23 Japanese Studies
4.12.24 Jewish Civilisation, Thought and Culture
4.12.25 Korean Studies
4.12.26 Latin
4.12.27 Linguistics
4.12.28 Medieval Studies
4.12.29 Modern Greek Studies
4.12.30 Music
4.12.31 Performance Studies
4.12.32 Philosophy
4.12.33 Political Economy
4.12.34 Sanskrit
4.12.35 Sociology
4.12.36 Studies in Religion

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

4.13.1 have qualified for the award of the pass degree; and

4.13.2 have completed at least 48 senior credit points in the subject area concerned, completed at an average of credit level, or

4.13.3 have completed the requirements of the Faculties of Economics and Business, and Education and Social Work, for subject areas listed in Part B of the table of units of study for the BA, as appropriate; and
4.13.4 have met any other entry requirements as specified in the table of units of study for the BA, except that the entry requirement must not exceed 64 senior credit points in the subject area concerned; and
4.13.5 have the written approval of the Chair of department concerned.
4.14 A student who is qualified to enrol in two honours courses may either:
4.14.1 complete the honours courses in the two subject areas separately and in succession, or
4.14.2 complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean of Arts.
4.15 Candidature is normally full-time. Full-time students must complete the requirements over two consecutive semesters.
4.16 A student may seek permission from the Dean of Arts to undertake the honours course on a part-time basis. Part-time candidature must not exceed four consecutive semesters.
4.17 A student may seek written permission from the Dean of Arts to suspend candidature.
4.18 Suspension may be granted for a maximum period of one semester.
4.19 In the case of a student being granted suspension the student must not exceed five consecutive semesters, including the semester of suspension.
4.20 Students resuming the honours course after a period of suspension must advise the Faculty of Arts office in writing of their intention to re-enrol.
4.21 A student may not:
4.22.1 enrol in any fourth year unit of study without first qualifying for the award of the pass degree,
4.22.2 be awarded the pass degree while enrolled in final year honours, or
4.22.3 enrol concurrently in a fourth year unit of study and any other course or unit of study,
4.22.4 enrol in more than two fourth year units per semester.
4.23 Candidates for combined degrees are required to transfer to the single Bachelor of Arts candidature when enrolled in fourth year units of study.
4.24 To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study, comprising four, 12 credit point semester length units of study.
4.25 The grade of honours and the honours mark are determined by performance in the honours course.
4.26 The award of honours degrees, the level at which they are awarded and the award of the University Medal shall be determined by the Dean of Arts on the advice of the Faculty Honours Committee.
4.27 A student with an honours mark of 90 and a meritorious record in previous studies may be considered by the Dean of Arts on the advice of the Faculty Honours Committee for the award of the University Medal.
4.28 The testamur for the honours course shall specify the subject area or areas and the grade of honours, and the medal if awarded. It shall not include majors.
4.29 Students who fail or discontinue - fail final year honours may not re-enrol in it.

[Section 2]

5. **Units of study**
5.1 The units of study which may be taken for the degrees of Bachelor of Science and Bachelor of Arts are set out under subject areas in Tables I and VI for the Bachelor of Science and Table Part A and Part B for the Bachelor of Arts together with:
5.1.1 designation as junior, intermediate (in the case of Science units), senior or Honours, and where appropriate as Advanced, units of study
5.1.2 credit point values
5.1.3 corequisites/prerequisites/assumedlearning/assumed knowledge
5.1.4 the semesters in which they are offered
5.1.5 the units of study with which they are mutually exclusive
5.1.6 units of study in Part A of the table of units available to BA students cannot be cross-listed to majors in Part B of the table of units of study available to BA students
5.1.7 the faculty responsible for the unit of study; and
5.1.8 any special conditions.
5.2 The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table I.
5.3 Units of study completed at the University of Sydney Summer/Winter School which correspond to units of study in the table of units of study for the Bachelor of Arts and the Bachelor of Science may be credited towards the course requirements.
6. **Enrolment in more/less than minimum load**
6.1 A student may not enrol without first obtaining permission from the Dean in additional units of study once the combined degree requirements of 240 credit points have been satisfied.
6.2 Students may enrol on either a full-time or part-time basis.
7. **Cross-institutional enrolment**
7.1 Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study at another institution and have that unit credited to his/her course requirements provided that either
7.1.1 the unit of study content is material not taught in any corresponding unit of study in the University; or
7.1.2 the student is unable for good reason to attend a corresponding unit of study at the University.
8. **Restrictions on enrolment**
8.1 Units of study in subject areas in the Faculty of Arts which are restricted to a specific degree are as follows:
8.1.1 Bachelor of Arts Informatics - units of study with the prefix ARIN except ARIN2100 Web Tools available to Bachelor of Arts with departmental permission and ARIN3000 Technocultures available to Bachelor of Arts.
8.1.2 Bachelor of Arts (Media and Communications) - units of study with the prefix MECO
8.1.3 Bachelor of Social Sciences - units of study with the prefix SSCI
8.1.4 Bachelor of Arts (Honours), Bachelor of Arts (Asian Studies) (Honours), Bachelor of Arts (Languages) (Honours), Bachelor of Arts (Media and Communications) (Honours), Bachelor of Informatics (Honours), Bachelor of Social Sciences (Honours) - Bachelor of Arts and Sciences (Honours) all Fourth Year Honours units (4000 units)
8.1.5 Bachelor of Arts/Bachelor of Laws - units of study with the prefix LAWS
8.1.6 Bachelor of Arts and Sciences degree - units of study with the prefix SLSS
8.2 A student may not enrol in a language based unit of study, if, in the opinion of the Chair of the department involved, on the advice of the teacher of the unit, the student's linguistic knowledge or competence would unfairly advantage them over other students in the unit. If enrolment has already taken place, the Dean may direct that the student be withdrawn without penalty from the unit.
8.3 A candidate may not count a particular unit of study more than once towards the degrees or count two units of study which overlap substantially in content.
8.4 Units of study which overlap substantially in content are noted in the *Tables of undergraduate units of study*. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the combined course requirements.
8.5 A candidate may not enrol in units of study having a total value of more than 30 credit points in a semester.
9. **Time limits**
9.1 A candidate must complete all the requirements for the award of the degrees within ten calendar years of admission to candidature or readmission without credit. If a candidate is readmitted with credit, the Faculty will determine a reduced time limit for completion of the degrees.
10. **Repeating a unit of study**
10.1 Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of Pass or better, the Head of Department concerned may exempt the

student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.

10.2 A student may not enrol in a unit of study which they have completed previously with a grade of Pass or better.

11. **Discontinuation of enrolment**

11.1 Students may abandon the combined degree course and elect to complete either a Bachelor of Science or a Bachelor of Arts in accordance with the resolutions governing these degrees.

11.2 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course. Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

12. **Suspension of candidature**

12.1 A student may seek written permission from the Dean to suspend candidature in the combined course. Suspension may be granted for a maximum period of one year on any one application.

13. **Re-enrolment after an absence**

13.1 A student who intends to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First semester of the following year or the end of May for Second semester of the same year.

14. **Satisfactory progress**

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

15. **Assessment policy**

15.1 Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

15.2 Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).

15.3 Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

16. **Credit Transfer Policy**

16.1 Credit will not be granted for units of study completed more than 10 years prior to application, except with the permission of the Dean.

16.2 Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in Table I or as non-specific credit.

16.3 The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units of study from other degrees for which credit is maintained or a degree has been conferred.

16.4 All students, notwithstanding any credit transfer, must complete at least 24 credit points of Senior Science units of study towards a major taken at the University of Sydney.

17. **Candidates enrolled before 2006**

17.1 These Resolutions apply to all candidates for the degrees enrolling in units of study after 1 January, 2006.

17.2 With the permission of the Faculty of Science, candidates who first enrolled for the degrees prior to 2006 and have not had a period of suspension or exclusion may until 31 March 2009 choose to qualify for the degrees under the old resolutions.

17.3 With the permission of the Faculty of Science, candidates who first enrolled for the degrees as part-time candidates prior to 2006 and have not had a period of suspension or exclusion may until 31 March 2011 choose to qualify for the degrees under the old resolutions.

18. **Glossary for the BSc/BA**

18.1 Completion of a unit of study means that the assessment requirements have been satisfied and a grade of Pass or better has been achieved.

18.2 Junior unit of study is a 1000 or first-year stage unit. Its prerequisites or assumed knowledge are non-tertiary qualifications and corequisites are other Junior units of study

18.3 Intermediate unit of study is a 2000 or second-year stage unit. Its prerequisites or assumed knowledge are Junior or Intermediate units of study and corequisites are other Intermediate units of study. (Specific to the Faculty of Science).

18.4 Senior unit of study is a 3000 or third-year stage unit. Its prerequisites or assumed knowledge are Junior, Intermediate or Senior units of study and corequisites are other Senior units of study. (Specific to the Faculty of Science.)

18.5 Honours unit of study is a 4000 or fourth-year stage unit offered within an honours course.

18.6 Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.

18.7 Major in the BSc normally requires the completion of a minimum of 24 credit points of Senior units of study in one Science area, including any units of study specified in the *Table of undergraduate units of study* as compulsory for that major. A student may not count a unit of study toward more than one major. (A major in Psychology requires 48 credit points of Intermediate and Senior Psychology units of study including PSYC(2111 or 2011), PSYC(2112 or 2012), PSYC(2113 or 2013) and PSYC(2114 or 2014). No other Intermediate Psychology units can be counted towards the major).

18.8 Major in the Faculty of Arts is normally 36 credit points from Senior units of study in an Arts subject area.

18.9 Major in the Faculty of Economics and Business is usually a three year sequence of study (in some cases a two year sequence) in a particular Economics and Business subject area.

18.10 Major in the Faculty of Education is 36 credit points from Senior units of study in the subject area of Education.

18.11 Dean means the Dean of Science.

18.12 Faculty means the Faculty of Science.

18.13 Science subject area means a defined field of study in science.

18.14 Degrees means the degrees of Bachelor of Science and Bachelor of Arts.

18.15 Requirements means coursework requirements for the award of the degree of Bachelor of Science or Bachelor of Arts.

18.16 Student means a person enrolled as a candidate for the degrees of Bachelor of Science and Bachelor of Arts.

18.17 TSP means the Talented Student Program in the Faculty of Science.

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

Bachelor of Commerce and Bachelor of Science

Participating Faculties: Faculty of Economics and Business Faculty of Science

[Section 1]

1. **Cross-faculty management of the combined award course**

1.1 The Faculty of Economics and Business is the primary Faculty of management for the combined award course.

1.2 The Deans of the Faculty of Economics and Business and the Faculty of Science shall jointly exercise authority in any matter concerning the combined award course not otherwise dealt with in these Resolutions.

2. **Units of study**

2.1 The units of study which may be taken for the combined award course are set out under the tables of undergraduate units of study in the Faculty of Economics and Business Handbook, and the Undergraduate tables and units of study in the Faculty of Science Handbook together with:

2.1.1 designation as junior, intermediate, senior or honours level;

2.1.2 credit point value;

2.1.3 the units of study with which they are mutually exclusive;

2.1.4 the semesters in which they are offered;

2.1.5 corequisites/prerequisites/assumed learning/assumed knowledge;

2.1.6 the faculty responsible for the unit of study; and

2.1.7 any special conditions.

2.2 The Dean of the Faculty of Science may permit a student admitted to the Talented Student Program to undertake Science units of study other than those specified in Table I: Bachelor of Science in the Faculty of Science Handbook (see the tables of undergraduate units of study in the Faculty of Economics and Business Handbook).

3. **Requirements for the Bachelor of Commerce and Bachelor of Science**

3.1 To qualify for the award of the pass degrees a student must complete successfully units of study amounting to a total of 240 credit points (but no more than 96 credit points of junior units of study), including:

3.2 *In the Faculty of Economics and Business:*

3.2.1 at least 96 credit points (minimum of 48 senior credit points) of units of study from the Faculty of Economics and Business, as specified in the Faculty of Economics and Business Handbook, which must include;

3.2.1.1 7 core units of study (comprising 36 junior and 6 senior credit points), as specified in the Faculty of Economics and Business Handbook; and

3.2.1.2 either a major (minimum of 36 senior credit points) or an extended major (minimum of 48 senior credit points), comprising units of study as specified in the Faculty of Economics and Business Handbook, from one of the following subject areas:

3.2.1.2.1 Accounting;
3.2.1.2.2 Business Information Systems;
3.2.1.2.3 Commercial Law;
3.2.1.2.4 Economics;
3.2.1.2.5 Finance;
3.2.1.2.6 Industrial Relations and Human Resource Management;
3.2.1.2.7 International Business;
3.2.1.2.8 Management;
3.2.1.2.9 Management Decision Sciences; or
3.2.1.2.10 Marketing.

3.3 *In the Faculty of Science:*

3.3.1 at least 12 credit points of units of study from the Science subject area of Mathematics and Statistics;

3.3.2 24 credit points of junior units of study from at least two Science subject areas (excluding Mathematics and Statistics);

3.3.3 at least 60 credit points of intermediate and senior Science units of study;

3.3.4 a major (normally 24 senior credit points) comprising units of study specified in Table I: Bachelor of Science listed in the Undergraduate tables and units of study in the Faculty of Science Handbook.

3.4 In the Bachelor of Science (Advanced), those requirements specified in 4(2) and in addition, except with the permission of the Dean of the Faculty of Science:

3.4.1 include no more than 48 credit points of junior Science units of study;

3.4.2 include at least 12 credit points of intermediate Science units of study at either the advanced level or as TSP units;

3.4.3 include at least 48 credit points of senior Science units of study of which at least 24 credit points are units of study in a single Science subject area, taken at the advanced level (or as TSP units); and

3.4.4 maintain in intermediate and senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

3.5 In the Bachelor of Science (Advanced Mathematics), those requirements specified in 4(2) and in addition, except with the permission of the Dean of the Faculty of Science:

3.5.1 include no more than 48 credit points of junior Science units of study;

3.5.2 include at least 12 credit points of intermediate Mathematics and Statistics units of study at either the advanced level or as TSP units;

3.5.3 include at least 48 credit points of senior Science units of study of which at least 24 are completed at the advanced level (or as TSP units) in Mathematics and Statistics; and

3.5.4 maintain in intermediate and senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

4. **Transfer between Bachelor of Science streams**

4.1 Students in the Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics) streams who fail to maintain a Credit average will be transferred to the Bachelor of Science in the next year of enrolment with full credit for units completed in the Advanced or Advanced Mathematics stream.

4.2 Students in the Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics) streams who fail to achieve a Credit average across all units attempted in their final year of the degree will be awarded the Bachelor of Science.

4.3 To transfer to the Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics), a student must satisfy the following:

4.3.1 completion of at least 48 credit points;

4.3.2 an average of 75 or greater over all attempted units of study; and

4.3.3 be able to enrol in the required number of advanced level or TSP units.

5. **Requirements for the Honours degrees**

5.1 On completion of the Bachelor of Commerce and Bachelor of Science (or equivalent), students who are qualified to do so may undertake an honours year in either or both of the award courses.

5.2 Joint honours courses are also available.

5.3 To qualify for the award of honours in the Bachelor of Commerce a student must complete successfully an additional year of study (the honours year), as specified in the Faculty of Economics and Business Handbook.

5.3.1 The Bachelor of Commerce may be awarded with honours in any of the subject areas where honours units are listed in the *Table of undergraduate units of study* - Faculty of Economics and Business or, as approved by the Faculty of Economics and Business, with joint honours in two of these subject areas.

5.3.2 Honours may also be awarded in any other area offered by another Faculty of the University, as approved by the Faculty of Economics and Business.

5.3.3 To enrol in the honours year, a student must satisfy the following:

5.3.3.1 confirmation of the student's eligibility for entry to the honours year from the relevant Discipline(s)/Department; and

5.3.3.2 any other requirements for entry into the honours year set by the relevant Discipline(s)/Department and the Faculty of Economics and Business, unless otherwise approved by the Faculty of Economics and Business.

5.4 To qualify for the award of honours in the Bachelor of Science a student must complete successfully an additional year of study (the honours year), as specified in the Faculty of Science Handbook.

5.4.1 The Bachelor of Science may be awarded with honours in any of the subject areas in Table VI: Honours units of study listed in Undergraduate tables and units of study of the Faculty of Science Handbook or, as approved by the Faculty of Science, with joint honours in two of these subject areas.

5.4.2 To qualify to enrol in an honours course a student must satisfy the following:

5.4.2.1 have completed a minimum of 24 credit points of senior units of study relating to the intended honours course;

5.4.2.2 have achieved either a Credit average in the relevant senior Science units of study or a SCIWAM of at least 60; and

5.4.2.3 any additional criteria set by the Head of Department concerned.

5.5 The classes for the award of honours are specified in the following table:

Description	***Mark range***
Honours Class I and University Medal	90 to 100*
Honours Class I	80 to 100
Honours Class II (Division 1)	75 to 79
Honours Class II (Division 2)	70 to 74
Honours Class III	65 to 69
Pass	50 to 64
**Please note: This is a minimum criterion only, other criteria apply.*	

6. **Award of Bachelor of Commerce and Bachelor of Science**

6.1 A student who completes the requirements for the Bachelor of Commerce and the Bachelor of Science shall receive at graduation a separate testamur for each of the degrees.

6.2 The Bachelor of Commerce and the Bachelor of Science may be awarded in two grades, namely pass and honours.

6.2.1 The testamur for the pass degrees shall specify the major(s) completed.

6.2.2 The testamur for the honours degrees shall specify the subject area(s) and the class of honours.
6.2.3 It shall not include majors.
6.3 The Bachelor of Science may be awarded in the following streams:
6.3.1 Bachelor of Science;
6.2.2 Bachelor of Science (Advanced); or
6.2.3 Bachelor of Science (Advanced Mathematics).
6.3 Students may abandon the combined award course and elect to complete either the Bachelor of Commerce or the Bachelor of Science in accordance with the Resolutions governing those award courses.

Joint Resolutions with the Faculties of Engineering and Science (BE/BSc)

Bachelor of Engineering Bachelor of Science combined degree

1. A student may proceed concurrently to the degrees of Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics) and Bachelor of Engineering. Admission, progression and assessment criteria apply and are described in the resolutions for the BE specialisations shown above.
2.1 Students will be under the general supervision of the Faculty of Engineering for administrative matters.
2.2 The Faculty of Science and the Faculty of Engineering shall jointly exercise authority in any academic matter concerning the combined course not otherwise dealt with in these resolutions.
3.1 Units of study must be selected as shown in the Engineering Specialisation Tables for the core components of the chosen Engineering specialisation. Units from the Science Faculty must be chosen as shown in the Science Faculty handbook to meet requirements of a Science major.
3.2 The Faculty Resolutions (which are reproduced in the Engineering and Science Handbooks, as the case may be) specify:
3.2.1 credit point values;
3.2.2 corequisites/prerequisites/assumed learning/assumed knowledge; and
3.2.3 any special conditions.
4. **Requirements for the BE/BSc pass degree**
4.1 To qualify for the award of the pass degrees a student shall complete units of study having a total value of at least 240 credit points including:
4.1.1 96 credit points of units from Science subject areas,
4.1.2 a major in a Science area, and
4.1.3 Units of study as prescribed in the *Tables of BE Specialisation Requirements* for the specialisation that the student is pursuing.
4.2 To qualify for the award of the pass degree in the Advanced or Advanced Mathematics stream of the BSc a student shall in addition to the requirements of resolution 4.1:
4.2.1 complete at least 54 credit points of Intermediate/Senior Science units of study of which at least 36 shall be completed at the Advanced level or as TSP units;
4.2.2 complete at least 24 credit points of Senior Science units of study at the Advanced level or as TSP units in a single Science subject area; and
4.2.3 maintain in Intermediate and Senior Science units of study an average mark of 65 or greater in each year of enrolment.
5. **Requirements for honours degrees**
5.1 *BE with Honours*
5.1.1 On completion of the requirements for the combined degrees, a student may qualify for the award of BE degree with Honours in accordance with the requirements set out in the Resolutions of the Faculty of Engineering relating to the BE degree.
5.2 *BSc with Honours*
5.2.1 On completion of the requirements for the combined degrees, a student may be qualified to enrol in Honours in the Bachelor of Science.
5.2.2 To qualify for the award of the BSc with Honours, a student must complete successfully an additional year of study (the Honours year), as specified in the Faculty of Science Handbook.
6. Students may at any stage abandon the combined degree course and elect to complete either a BSc or a BE in accordance with the resolutions governing those degrees
7. Resolutions covering admission, enrolment restrictions, progression requirements, satisfactory progress, cross-institutional study and assessment criteria for the combined degree are equivalent to those for the BE degree and specialisations, as shown in the Faculty Handbook.
8. The Deans of the Faculties of Engineering and Science shall jointly exercise authority in any matter concerning the combined degrees not otherwise dealt with in these resolutions.

Bachelor of Engineering Bachelor of Science double degree

1. A student enrolled for a Bachelor of Engineering degree may be permitted to transfer to the Faculty of Science to complete a BSc degree at the end of Second Year or Third Year in the BE degree if:
1.1 except as provided in section 4.1.2, all units of study attempted in the BE degree have been completed with a grade of pass or better;
1.2 at least 96 credit points from units of study in the BE degree have been completed, of which no more than 12 credit points are from units of study with the grade of Pass (Concessional);
1.3 the student is qualified to enrol in a major in a Science area; and
1.4 for admission to the Advanced streams, the student satisfies the requirements in Section 3.2 or 3.3 of the Resolutions of the Faculty of Science relating to the BSc degree.
2. Students will be under the supervision of the Faculty of Engineering for the period of BE degree enrolment and under the supervision of the Faculty of Science for the BSc enrolment and completion.
3.1 Units of study must be selected as shown in the Engineering Specialisation Tables for the core components of the chosen Engineering specialisation.
3.2 Units from the Science Faculty must be chosen as shown in the Science Faculty handbook to meet requirements of a Science major.
3.3 The Faculty Resolutions (which are reproduced in the Engineering and Science Handbooks, as the case may be) specify:
3.3.1 credit point values;
3.3.2 corequisites/prerequisites/assumed learning/assumed knowledge; and
3.3.3 any special conditions.
4. To qualify for the award of the pass BSc degree a student shall complete units of study to a value of at least 48 credit points including:
4.1 42credit points of Intermediate/Senior units of study in Science subject areas; and
4.2 a major in a Science area.
5. To qualify for the award of the pass degree in the Advanced or Advanced Mathematics stream of the BSc a student shall in addition to the requirements of Section 4:
5.1 include at least 72 credit points of Intermediate/Senior Science units of study;
5.2 include at least 24 credit points of Senior Science units of study at the Advanced level or as TSP units in a single Science subject area; and
5.3 maintain in Intermediate and Senior Science units of study an average mark of 65 or greater in each year of enrolment.
6. The requirements of Sections 5 or 6 must be completed in one year of full-time study or two years of part-time study.
7.1 Students who complete at least 42 but less than 48 credit points in the prescribed time limits may in the following year of enrolment in the BE complete the remaining units to satisfy the requirements of the Faculty of Science.
7.2 Students who complete less than 42 credit points may apply to be readmitted to the degree, subject to Sections 92-95 of the Resolutions of the Faculty of Science relating to the BSc degree.
8. Students who are so qualified may undertake an honours course in the BSc in accordance with Sections 12-20 of the Resolutions of the Faculty of Science relating to the BSc degree.
9.1 On completion of the requirements of the BSc degree or BSc Honours course, students will be eligible to resume their

enrolment toward the BE degree according the Faculty of Engineering resolutions for that degree.

9.2 Students may abandon the BSc degree enrolment at any stage and resume their enrolment in the BE degree.

10. Resolutions covering admission, enrolment restrictions, progression requirements, satisfactory progress, cross-institutional study and assessment criteria for the Engineering component of the double degree are equivalent to those for the BE degree and specialisations, as shown in the Faculty Handbook.

11. The Deans of the Faculties of Engineering and Science shall jointly exercise authority in any matter concerning the double degree not otherwise dealt with in these resolutions.

Joint Resolutions of the Faculties of Engineering and Science (BE/BMedSc)

Bachelor of Engineering/Bachelor of Medical Science

1. **Requirements for the BE/BMedSc Course**

1.1 To qualify for the award of the BE/BMedSc combined degree a student must:

1.1.1 complete successfully units of study giving credit for a total of 240 credit points; and

1.1.2 satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

2. **Specialisations, streams or majors**

2.1 The combined award course, BE/BMedSc, will be awarded in all of the Engineering specialisations that are available for the BE degree and all majors as are applicable under the resolutions of the Faculty of Science.

3. **Requirements for the honours degree**

3.1 To qualify for the award of the honours degree a student must complete the honours requirements published in the Engineering Faculty Resolutions relating to the combined award course.

3.2.1 A student may proceed concurrently to the degrees of Bachelor of Medical Science, and Bachelor of Engineering.

3.2.2 Admission, progression and assessment criteria apply and are described in the resolutions for the BE specialisations shown above.

3.3 Students will be under the general supervision of the Faculty of Engineering for administrative matters.

3.4 The Faculty of Science and the Faculty of Engineering shall jointly exercise authority in any academic matter concerning the combined course not otherwise dealt with in these resolutions.

3.5.1 Units of study must be selected as shown in the Engineering Specialisation Tables for the core components of the chosen Engineering specialisation.

3.5.2 Units from the Science Faculty must be chosen as shown in the Science Faculty handbook to meet requirements of a Science major.

3.5.3 The Faculty Resolutions (which are reproduced in the Engineering and Science Handbooks, as the case may be) specify:

3.5.3.1 credit point values;

3.5.3.2 corequisites/prerequisites/assumed learning/ assumed knowledge; and

3.5.3.3 any special conditions.

4. **Requirements for the BE/BMedSc pass degree**

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

4.1.1 Units of study as prescribed in the *Tables of BE Specialisation Requirements* for the specialisation that the student is pursuing;

4.1.2 at least 24 credit points from Junior Science units of study (which may be common with those of 4.1.1, but including CHEM1102 Chemistry 1B, MBLG1001 Introductory Molecular Biology & Genetics and 12 credit points of Mathematics;

4.1.3 48 credit points of Intermediate core units of study as listed in Table IV of the Science Faculty Handbook of units of study for the BMedSc;

4.1.4 at least 24 credit points of Senior units of study taken from the subject areas of Anatomy/Histology, Biology (Genetics), Biochemistry, Cell Pathology, Immunology, Infectious Diseases, Microbiology, Pharmacology and Physiology;

4.1.5 a 12 credit point interdisciplinary thesis jointly supervised by departments from Engineering and Science.

5. **Requirements for honours degrees**

5.1 *BE with Honours*

5.1.1 On completion of the requirements for the combined degrees, a student may qualify for the award of BE degree with Honours in accordance with the requirements set out in the Resolutions of the Faculty of Engineering relating to the BE degree.

5.2 *BMedSc with Honours*

5.2.1 On completion of the requirements for the combined degrees, a student may be qualified to enrol in Honours in the Bachelor of Medical Science.

5.2.2 To qualify for the award of the BMedSc with Honours, a student must complete successfully an additional year of study (the Honours year), as specified in the Faculty of Science Handbook.

6. Students may at any stage abandon the combined degree course and elect to complete either a BMedSc or a BE in accordance with the resolutions governing those degrees.

7. Resolutions covering admission, enrolment restrictions, progression requirements, satisfactory progress, cross-institutional study and assessment criteria for the combined degree are equivalent to those for the BE degree and specialisations, as shown in the Faculty Handbook.

8. The Deans of the Faculties of Engineering and Science shall jointly exercise authority in any matter concerning the combined degrees not otherwise dealt with in these resolutions.

Bachelor of Education (Secondary: Science)/Bachelor of Science or Bachelor of Science (Advanced)

1. **Special provisions**

1.1 A student may proceed concurrently to the degrees of Bachelor of Education and Bachelor of Science or Bachelor of Science (Advanced). Refer to *Section 3* below.

1.2 No more than 100 credit points may be from Junior units of study.

2. **Program of study**

2.1 *Year I*

2.1.1 Junior units of study in Education, as specified in the *Table of units of study*, total of 12 credit points; and

2.1.2 Junior units of study in Mathematics, offered by the School of Mathematics and Statistics in the Faculty of Science, equivalent to 12 credit points; and

2.1.3 Junior units of study offered by the Faculty of Science, equivalent to 12 credit points, in an approved teaching area, selected from *Science Table 1*; and

2.1.4 Junior units of study offered by the Faculty of Science in an approved teaching area, equivalent to 12 credit points selected from *Science Table 1*.

2.2 *Year II*

2.2.1 Senior, 200 level, units of study in Education, as specified in the *Table of units of study*, total of 18 credit points; and

2.2.2 Senior units of study, in Curriculum and Professional Studies in Secondary Education, as specified in the *Table of units of study*, total of 6 credit points; and

2.2.3 Intermediate units of study in the minor sequence, 12 credit points, offered by the Faculty of Science selected from *Science Table 1*; and

2.2.4 Intermediate units of study in the major sequence, 12 credit points, offered by the Faculty of Science selected from *Science Table 1*.

2.3 *Year III*

2.3.1 Senior units of study in Education, selected from the *Table of units of study*, total of 6 credit points; and

2.3.2 Senior units of study in Curriculum and Professional Studies in Secondary Education, selected from the *Table of units of study*, including specified units, total of 30 credit points; and

2.3.3 Senior units of study in major sequence, total of 12 credit points, offered by the Faculty of Science, selected from *Science Table 1*.

2.4 *Year IV*

2.4.1 Two Senior, 300 level, units of study in Education selected from the *Table of units of study*, including specified units, total of 12 credit points;

2.4.2 Senior units of study in Curriculum and Professional Studies in Secondary Education, selected from the *Table of units of study*, including specified units, total of 24 credit points; and
2.4.3 Senior units of study in the major sequence, total of 12 credit points, offered by the Faculty of Science, selected from *Science Table 1*.
2.5 *Year V*
2.5.1 Curriculum and Professional Studies in Secondary Education as specified in the *Table of units of study*, 24 credit points; and
2.5.2 Senior or intermediate units of study, 24 credit points, in the major sequence, to complete requirements for award of the Bachelor of Science (Science).
3. **Requirements for award**
3.1 To qualify for the award of the pass degree in an Advanced stream of the BSc degree, a student shall complete the requirements for the BSc degree according to these resolutions and those of the Faculty of Science and, in addition, and except with the permission of the Dean of the Faculty of Science:
3.1.1 include at least 16 credit points of Intermediate units of study at either the Advanced level or as TSP units;
3.1.2 include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area; and
3.1.3 maintain in Intermediate and Senior units of study at the Advanced level in Science subject areas an average of 65 or greater in each year of enrolment.

Bachelor of Education (Secondary: Mathematics)/Bachelor of Science or Bachelor of Science (Advanced)

1. **Special provisions**
1.1 A student may proceed concurrently to the degrees of Bachelor of Education and Bachelor of Science or Bachelor of Science (Advanced Mathematics). Refer to *Section 3* below.
1.2 No more than 100 credit points may be from Junior units of study.
2. **Program of study**
2.1 *Year I*
2.1.1 Junior units of study in Education, as specified in the *Table of units of study*, total of 12 credit points; and
2.1.2 Junior units of study in Mathematics, offered by the School of Mathematics and Statistics in the Faculty of Science, total of 12 credit points; and
2.1.3 Junior units of study offered by the Faculty of Science, total of 12 credit points, in an approved teaching area, selected from *Science Table 1*; and
2.1.4 Junior units of study offered by the Faculty of Science total of 12 credit points.
2.2 *Year II*
2.2.1 Senior units of study in Education, as specified in the *Table of units of study*, total of 18 credit points; and
2.2.2 Senior units of study, in Curriculum and Professional Studies in Secondary Education, as specified in the *Table of units of study*, total of 6 credit points; and
2.2.3 Intermediate units of study, 12 credit points, in Mathematics and Statistics; and
2.2.4 Intermediate units of study offered by the Faculty of Science, total of 12 credit points, in the second approved teaching area selected from *Science Table 1*.
2.3 *Year III*
2.3.1 Senior units of study in Education, selected from the *Table of units of study*, 6 credit points; and
2.3.2 Senior units of study in Curriculum and Professional Studies in Secondary Education taken from those listed in the *Table of units of study*, including specified units, total of 30 credit points; and
2.3.3 Senior units of study in Mathematics and Statistics, 12 credit points, offered by the Faculty of Science.
2.4 *Year IV*
2.4.1 Two Senior, 300 level, units of study in Education selected from the *Table of units of study*, including specified units, total of 12 credit points; and
2.4.2 Senior units of study in Curriculum and Professional Studies in Secondary Education selected from the *Table of units of study*, including specified units, total of 24 credit points; and
2.4.3 Senior units of study in Mathematics and Statistics, 12 credit points, offered by the Faculty of Science.
2.5 *Year V*
2.5.1 Curriculum and Professional Studies in Secondary Education, as specified in the *Table of units of study*, total of 24 credit points;
2.5.2 Senior or intermediate units of study, 24 credit points, to complete requirements for award of the Bachelor of Science (Mathematics).
3. **Requirements for award**
3.1 To qualify for the award of the pass degree in an Advanced stream of the BSc degree, a student shall complete the requirements for the BSc degree according to these resolutions and those of the Faculty of Science and in addition, and except with the permission of the Dean of the Faculty of Science.
3.1.1 include at least 16 credit points of Intermediate units of study at either the Advanced level or as TSP units;
3.1.2 include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area; and
3.1.3 maintain in Intermediate and Senior units of study at the Advanced level in Science subject areas an average of 65 or greater in each year of enrolment.

Bachelor of Education (Secondary)/Bachelor of Science (Psychology)

1. *Year I*
1.1 Junior units of study in Education, as specified in the *Table of units of study*, total of 12 credit points; and
1.2 Specified Junior units of study in Psychology, 12 credit points; and
1.3 Junior units of study in Science, 24 credit points, of which 12 credit points must be in Mathematics and 12 in Chemistry.
2. *Year II*
2.1 Units of study in Education, as specified in the *Table of units of study*, total of 18 credit points; and
2.2 Specified Intermediate level units of study in Psychology, 18 credit points; and
2.3 Intermediate level units of study selected from *Science Table 1*, 12 credit points, which must be in the selected Science teaching subject.
3. *Year III*
3.1 Units of study in Education, as specified in the *Table of units of study*, total of 18 credit points; and
3.2 Specified Senior units of study in Psychology, 30 credit points.
4. *Year IV*
4.1 Units of study in Education, as specified in the *Table of units of study*, including professional experience, 24 credit points; and
4.2 Specified units of study in Psychology, 24 credit points.
5. *Year V*
5.1 Units of study in Education, as specified in the *Table of units of study*, including professional experience, 16 credit points; and
5.2 Specified units of study in Psychology, 20 credit points; and
5.3 Senior units of study selected from *Science Table 1*, 12 credit points, to complete study in the Science teaching subject.

Bachelor of Science/Bachelor of Nursing

For course resolutions: refer to the 2006 Faculty of Science handbook.

Bachelor of Applied Science (Exercise and Sport Science)/Bachelor of Science (Nutrition)

For course resolutions: refer to the 2007 Faculty of Health Sciences handbook.

Bachelor of Liberal Studies

1. To qualify for the award of the degree students must be admitted to candidature for the degree and complete 192 credit points in total, including:

1.1 at least 120 Intermediate or Senior credit points;

1.2 a major from Part A of the Faculty of Arts *Table of units of study*, consisting of 36 Senior credit points in a single subject area, or cross-listed between subject areas, as outlined in Section 3 *The major and cross-listing* in the Arts Undergraduate Resolutions;

1.3 a major from the Faculty of Science, as defined by that Faculty. The testamur for the degree shall specify all majors;

1.4 at least 30 credit points, including 18 Senior credit points, from units of study in one language subject area other than English from Part A of the Faculty of Arts *Table of units of study*;

1.5 a 6 credit point unit of study in communication and analytical skills, or in other academic skills as may be prescribed by the Faculty of Arts and Faculty of Science from time to time. (In 2007 the prescribed unit is one of ENGL1000, ENGL1007 or LNGS1001);

1.6 a minimum of 6 credit points in units of study in Mathematics or Statistics.

2. A Bachelor of Liberal Studies student who wishes to transfer to candidature for the Bachelor of Arts or Bachelor of Science degree should make written application to the Faculty of Arts or Faculty of Science, as appropriate.

3. If a Bachelor of Liberal Studies student has completed the requirements for the Bachelor of Arts, Bachelor of Arts (Asian Studies) or Bachelor of Science degree, the student may apply to the Faculty of Arts or Faculty of Science for the award of one of those degrees, on condition that candidature for the Bachelor of Liberal Studies will be abandoned.

Bachelor of Liberal Studies (Honours)

1. An honours course is available in the Faculty of Arts in the following subject areas:

1.1 Ancient History
1.2 Anthropology
1.3 Arabic Language and Literature
1.4 Arab World, Islam and the Middle East
1.5 Archaeology (Classical)
1.6 Archaeology (Near Eastern)
1.7 Archaeology (Prehistoric and Historical)
1.8 Art History and Theory
1.9 Asian Studies
1.10 Australian Literature
1.11 Biblical Studies
1.12 Chinese Studies
1.13 Cultural Studies
1.14 English
1.15 European Studies
1.16 Film Studies
1.17 French Studies
1.18 Gender Studies
1.19 Germanic Studies
1.20 Greek (Ancient)
1.21 Hebrew (Classical)
1.22 Hebrew (Modern)
1.23 History
1.24 Indonesian and Malay Studies
1.25 Italian Studies
1.26 Japanese Studies
1.27 Jewish Civilisation, Thought and Culture
1.28 Korean Studies
1.29 Latin
1.30 Linguistics
1.31 Medieval Studies
1.32 Modern Greek Studies
1.33 Music
1.34 Performance Studies
1.35 Philosophy
1.36 Sanskrit
1.37 Sociology
1.38 Studies in Religion

2. An honours course is available in all Faculty of Science subject areas.

3. To qualify for the award of the honours degree in a Faculty of Arts subject area students must complete the requirements outlined in Section 4 *Requirements for honours degrees* in the Arts Undergraduate Resolutions.

4. To qualify for the award of the honours degree in a Faculty of Science subject area students must complete the requirements as specified by the Faculty of Science.

Bachelor of Liberal Studies (International)

1. To qualify for the award of the degree a student must be admitted to candidature for the degree, complete the requirements for the Bachelor of Liberal Studies, and in addition, include in the required 192 credit points at least the equivalent of 24 credit points from units of study taken over a minimum of one semester while enrolled as an exchange student at an overseas university with which the University of Sydney has an Exchange Agreement.

2. To qualify to participate in an exchange program a student must have:

2.1 completed at least the equivalent of two semesters of full-time study (normally a minimum of 48 credit points completed towards the Bachelor of Liberal Studies; and

2.2 maintained an overall mark of 75 or greater over all units of study completed.

3. A student who has completed a minimum of 48 credit points towards a Bachelor of Liberal Studies candidature may, on application to the Faculty of Arts, be permitted to transfer to Bachelor of Liberal Studies (International) candidature if:

3.1 they have maintained an average of 75 or greater over all units of study attempted; and

3.2 they are able to qualify to participate in the University of Sydney Exchange program.

4. A Bachelor of Liberal Studies (International) student may, on application to the Faculty of Arts, transfer to Bachelor of Liberal Studies candidature at any time.

4.1 This provision includes those Bachelor of Liberal Studies (International) students who do not qualify, or are unable or unwilling to participate in a University of Sydney Exchange program.

5. A Bachelor of Liberal Studies (International) student who wishes to complete an honours degree must:

5.1 complete the requirements for the Bachelor of Liberal Studies (International) degree; and

5.2 be admitted as a Bachelor of Liberal Studies (Honours) candidate, and satisfy the requirements for that degree.

Bachelor of Arts and Sciences

1. To qualify for the award of the degree students must be admitted to candidature for the degree and complete 144 credit points in total, including:

1.1 a minimum of 24 credit points from Part A of the Faculty of Arts *Table of units of study*;

1.2 a minimum of 24 credit points from the Faculty of Science;

1.3 a minimum of 12 credit points from the Faculty of Economics and Business, in all areas except Accounting, Finance and Marketing;

1.4 a minimum of 12 credit points in Legal Studies units (units coded SLSS and LAWS1100) including SLSS1001 (Introduction to Socio-Legal Studies);

1.5 a minimum of 72 Intermediate or Senior credit points; and

1.6 a major, from either Part A of the Faculty of Arts *Table of units of study*, or from Table 1 of the Faculty of Science Handbook.

1.6.1 Where, in exceptional circumstances arising from prerequisites or other restrictions in certain discipline areas, a student is unable to complete the formal requirements of a major in the normal course of the degree but is nevertheless able to demonstrate depth of study in a specified discipline area within a faculty by the completion of 24 Senior credit points in a Faculty of Science discipline area or 36 Senior credit points in a Faculty of Arts discipline area, the Dean may, on application from the student and a recommendation from the chair or head of Department, permit the student to graduate without a major from the Faculty of Arts or Science. In such circumstances no major shall be specified on the testamur.

Bachelor of Arts and Sciences (Honours)

1. To qualify for the award of the honours degree students must complete the requirements outlined in Section 4 *Requirements for honours degrees* in the Arts Undergraduate Resolutions.

3. Bachelor of Science, BSc(Adv), BSc(Adv Maths), BSc(Adv)/MBBS

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

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

All students are expected to read the degree resolutions for their course before they commence their studies, and from time to time during their studies. Undergraduate degree resolutions appear in chapter 2. The table of undergraduate units of study available for the Bachelor of Science degree and degree streams is included towards the end of this chapter.

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

Special Arrangements

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

Special Consideration

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

Code of Conduct for Students

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

Student Plagiarism: Coursework Policy and Procedure

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

Details on Special Arrangements, Special Consideration, Code of Conduct for Students, and Student Plagiarism Policy are provided in chapter 1 of this handbook.

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

Enrolment day FAQs

What is a 'major'?

Students enrolled in the Bachelor of Science degree and its streams are required to complete at least one major. A major is a specialisation in the Senior year of your degree. It is useful to have an idea of what major, or group of majors, interest you now, so that you can plan your Junior and Intermediate years properly. The Bachelor of Science majors Neuroscience and Nanoscience and Technology require earlier planning than most others. If you are interested in these then read Table I (Bachelor of Science: at the end of this chapter) carefully and/or seek advice.

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

How many credit points should I take per semester?

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

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

Do I need to be full-time?

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

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

International students are required to be full-time.

Can I take units of study from other faculties?

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

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

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

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

Can I get receive credit for previous tertiary study?

Yes. The amount of credit you may receive depends on your individual circumstances, but in general the total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points from degrees that have been completed.

On the day that you enrol you must lodge an application for credit from previous study. Because of the large numbers of applications received at enrolment there can be a considerable delay in processing your application, but all credit offers will be sent to students well in advance of the last day to add a unit of study for the semester in which they enrol.

The Faculty must sight originals of your academic transcripts, as well as detailed descriptions of prior units of study completed, as at the time of completion of the units. Descriptions will normally be an extract from a Handbook or a unit of study syllabus/outline, and should include the credit point value, learning outcomes, assessment details, texts and references, and contact details for each unit of study. You must bring this information with on the day that you enrol.

On enrolment day you will have to make unit of study choices as if you have had no previous university of study. Alternatively, you may be able to obtain special permission to enrol in Intermediate or Senior units of study by taking a copy of your transcript and unit of study descriptions to Academic advisers for each individual unit of study. Unit of study Academic advisers are listed under unit of study descriptions in this Handbook.

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

Are there any bridging courses available?

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

Who can enrol in Advanced units of study?

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

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

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

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

What is the Talented Student Program?

The Talented Student Program (TSP) is tailored to meet students' individual needs and is restricted to the very top students.

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

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

Am I eligible for the Talented Student Program?

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

Enrolment guide by major

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

Agricultural Chemistry
Major not offered at the Advanced level.

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

Anatomy and Histology
Major not offered at the Advanced level.

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

Biochemistry
Major offered at the Advanced level.

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

Bioinformatics
Major at advanced level possible

12 credit points of Junior units of study in ordinary or advanced Mathematics including statistics + 6 credit points of Biology + MBLG1001 + 12 credit points of SOFT units + 12 credit points of elective units (from Table 1 or other faculties).

Biology
Major offered at the Advanced level.

Planning for a Biology major

12 credit points of Junior Biology/ Molecular Biology & Genetics are needed to enrol in Intermediate units of study in Biology. Students intending to major in Biology should take at least 12 credit points of Intermediate Biology. The Biology major is also offered at the Advanced level.

Recommended Junior combinations for a Biology major

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

Junior Biology Information

BIOL1001 – Concepts in Biology is an introductory unit recommended for students who have not studied HSC biology.
BIOL1101 – Biology – Ecosystems to Genes is recommended for students who have HSC biology.
BIOL1002 – Living Systems is suitable for students who want to go onto plant, animal or molecular biology.
BIOL1003 – Human Biology is suitable for students who specifically want to go onto human related units of study.

Assumed knowledge

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

Advanced Biology

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

Related Junior subject areas

It is recommended that you take 12 Junior credit points of Chemistry, preferably CHEM1101 and CHEM1102, or their equivalent, if you intend to proceed into any Intermediate year Biology, Biochemistry or Molecular Biology and Genetics units of study.

Cell Pathology

Major not offered at the Advanced level.

12 credit points of Junior units of study in each of Chemistry + Physics + Mathematics + Biology 1001 or 1101 or 1901 + Biology1002 or 1003 or 1902 or 1903.

Chemistry

Major offered at Advanced level.

Planning for a Chemistry major

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

Recommended Junior combinations for a Chemistry major

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

Junior Chemistry Information

CHEM1001 and 1002 are recommended for students whose Chemistry background is weak or non-existent. It is recommended that such students also take the Chemistry Bridging Course.
CHEM1101 and 1102 are recommended for students who have HSC Chemistry. Students intending to enrol in Intermediate and Senior Chemistry should take this level or higher.

Assumed knowledge

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

Advanced Chemistry and Special Studies

If you have a UAI of at least 96.4 and an HSC Chemistry result in the 80th percentile or better, you are eligible to choose Advanced Chemistry units. The Special Studies Program is designed for the truly exceptional Chemistry student and entry is by invitation only. The minimum requirement for entry to CHEM1903 is a UAI of 98.7 and an HSC Chemistry result in the 90th percentile or better.

Computational Science

Major offered at the Advanced level.

Planning for a Computational Science major

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

Recommended Junior combinations for a Computational Science major

COSC1001 + COSC1002 + SOFT1001 + SOFT1002 + 12 credit points of Junior Mathematics + 18 credit points selected in consultation with an adviser.

Junior Computational Science information

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

Advanced Computational Science

Junior COSC units of study are also offered at the Advanced level. To enrol in COSC1901 (Advanced) or COSC1902 (Advanced) you must have a UAI of 90 or more, or have a Distinction or better in another Junior COSC or SOFT unit.

Assumed knowledge

See individual units for entry requirements.

Computer Science

Major offered at the Advanced level.

SOFT1001 + SOFT1002 + MATH1001 + MATH1002 + MATH1005 + (MATH1003 or MATH1004) + 24 credit points of other Junior units of study. (Each of the above units of study can be replaced by the corresponding Advanced unit of study).

Environmental Studies

Major not offered at the Advanced level.

Recommended Junior combinations for an Environmental Studies major

For the major, in your first year, you should enrol in 12 credit points of Geosciences units. If you wish to take the second year units ENVI2111 and ENVI2112 you must include 12 credit points of junior Biology and and 12 credit points of junior Chemistry or Physics units respectively as part of your first year program.

For Bachelor of Science students, to work towards satisfying your degree requirements as well as the requirements for the major, you should enrol as described above, but you should also enrol in 12 credit points of junior mathematics.

Financial Mathematics and Statistics

Major offered at the Advanced level.

MATH1001 + MATH1002 + MATH1003 + MATH1005 + 24 credit points of other Junior units of study. Each of the above units of study may be replaced by the corresponding Advanced unit of study.

Geography

Major offered at the Advanced level.

Recommended combination for any Geography major stream is GEOS1001 + GEOS1002
12 credit points of Junior units of study in each of Mathematics + either Chemistry or Physics, and other units allowed.

Geology & Geophysics

Major offered at the Advanced level.

GEOS1001 + GEOS1003 and 12 cred points of
Mathematics + Physics and/or Chemistry. Physics/Chemistry and other units as allowed may be selected in consultation with an adviser.

History and Philosophy of Science

Major not offered at the Advanced level.

Planning for a major in History and Philosophy of Science

24 credit points of Junior study are needed to enrol in Intermediate units of study in the History and Philosophy of Science. Students intending to major in History and Philosophy of Science must take 6 credit points of Intermediate History and Philosophy of Science. We strongly encourage pursuit of a double major in History and Philosophy

of Science and another area of Science, with completion of the appropriate Junior units of study for that major.

Recommended Junior combinations

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

Related Junior subject areas

Students interested in related topics should consider taking the unit Concepts and Issues in Physical Science (PHYS1600) which serves as useful background for further studies in History and Philosophy of Science and counts as an Arts elective

Immunobiology
Major not offered at the Advanced level.

Immunology is offered at Intermediate and Senior levels. 24 credit points of Junior units of study from any of the science discipline areas is required for Intermediate study in Immunology. We recommend these include: BIOL1001 or 1101 or 1901 and BIOL1002 or 1902 or 1003 or 1903 and MATH1015 or MATH1005 or 1905 and CHEM1001 and 1002 or CHEM1101 /1901 and 1102 /1902. For the Immunobiology major the minimum requirement is 12 credit points of Senior Immunology and 12 credit points from the elective Senior units of study listed in Table I. Intermediate studies must include Introductory Immunology, IMMU2101. Intermediate Molecular Biology and Genetics units of study are highly recommended and students should note the prerequisites for each elective to determine their choice of concurrent Intermediate study units.

Information Systems
Major not offered at the Advanced level.

ISYS1003 + 6 credit points of a language unit (ENGL1005 or LNGS[1001 or 1002 or 1005]) +12 credit points of Junior Mathematics units of study + 24 credit points selected in consultation with an adviser.

Marine Science
BIOL1001 or 1101 or 1901 + BIOL1002 or 1902 + 12 credit points of Junior units of study in each of Geosciences + Mathematics + Chemistry or Physics + Mathematics.

Mathematics
Major offered at the Advanced level.

Planning for a Mathematics major

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

Recommended Junior combinations for a Mathematics major

MATH1001/1901/1906 + MATH1002/1902 + MATH1003/1903/1907 + MATH(1004/1904 or 1005/1905) + 36 other Junior credit points.

Junior Mathematics information

If you have HSC Mathematics: MATH1011, 1013, 1014 and 1015. Note that no progression to later year Mathematics is possible, except in very special circumstances.

If you have HSC Mathematics Extension 1: MATH1001, 1002 and two from MATH1003, 1004 or 1005 (all Normal).

Advanced Mathematics and Special Studies
If you have HSC Mathematics Extension 2, you are eligible to choose MATH1901, 1902, 1903 or 1904.

If you have HSC Mathematics Extension 2, or a result in Band E2 or better of HSC Mathematics Extension 1 you are eligible to choose MATH1905.

If you have a UAI of at least 98.5 and a result in Band E4 of HSC Mathematics Extension 2 you are eligible to apply for: MATH1906 – Mathematics (Special Studies Program) A.

Assumed knowledge

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

Mathematics in other majors

Statistics majors: must include MATH1015/1005/1905 and MATH1003/1903.
Computer Science majors: Should include MATH1005/1905.
Biological and other Life Science majors: should include MATH1015/1005/1905.

Medicinal Chemistry
Major offered at the Advanced level.

12 credit points of Junior units of study in each of Chemistry + Physics + Mathematics + BIOL1001 or 1101 or 1901 + BIOL1002 or 1003 or 1902 or 1903.

Microbiology
Major offered at the Advanced level.

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

Nanoscience and Technology
Major offered at the Advanced level.

Physics, Chemistry and Mathematics (including MATH1001/1901 + MATH1002/1902 + MATH1003/1903) + 12 credit points of other Junior units of study selected in consultation with an adviser.

Neuroscience
Major possible at the Advanced level.

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

Pharmacology
Major offered at the Advanced level.

12 credit points of Junior units of study in each of Chemistry + Physics + Mathematics + BIOL1001 or 1101 or 1901 + BIOL1002 or 1003 or 1902 or 1903.

Physics
Major offered at the Advanced level.

Planning for a Physics major

12 credit points of Junior Physics are needed to enrol in Intermediate units of study in Physics. Students intending to major in Physics should take at least 12 credit points of Intermediate Physics.

Recommended Junior combinations for a Physics major

12 credit points of Junior units of study in each of Physics + Mathematics (MATH1001/1901 + MATH 1002/1902 + MATH1003/1903 + 1005/1905) + 24 credit points of other Junior units of study selected in consultation with an adviser.

Junior Physics information

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

PHYS1001 (Regular) is for those who scored 65 or more in HSC Physics (or equivalent).

PHYS1002 (Fundamentals) is primarily for those who have not studied physics before, or who scored less than 65 in HSC Physics.

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

Students from any Semester 1 option may move into either PHYS1003 (Technological) or PHYS1004 (Environmental & Life Science). PHYS1003 (Technological) is designed for students interested in the physical sciences and engineering. PHYS1004 (Environmental & Life Science) is designed for students interested in environmental, medical and life sciences.

Advanced Physics

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

To enrol in PHYS1901 (Advanced) or PHYS1902 (Advanced) you must have a UAI of 96 or more or a HSC Physics result in Band 6 (or equivalent), or have successfully completed the other Junior Physics (Advanced) unit, or have a Distinction or better in the appropriate non-Advanced Junior Physics unit.

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

Assumed knowledge

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

Other Junior options

Students interested in Astronomy may enrol in PHYS1500 (Semester 2 only). It should be noted that PHYS1500 is a general interest course, has no mathematics or physics requirements and does not count towards the 12 credit points needed for progression to Intermediate Physics (or the BSc (Marine Science) program). Students wishing to pursue careers in Astronomy or Astrophysics should also take other Physics units in order to progress to Intermediate Physics.

Physiology

Major offered at the Advanced level.

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

Plant Science

Major offered at the Advanced level.

Recommended Junior combinations for a Plant Science major.

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

Psychology

Planning for a Psychology major

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

Recommended Junior combinations for a Psychology major

PSYC1001 + PSYC1002 + 12 credit points of Junior units of study in Mathematics including MATH1015 or 1005 or 1905 (statistics) + 12 credit points of Junior Science electives + 12 credit points of Junior electives.

Junior Psychology Information

PSYC1001 and 1002 provide an introduction to Psychology for all Psychology students.

Assumed Knowledge

All students are eligible to enrol in PSYC1001 and 1002. There is no assumed knowledge.

Soil Science

Major not offered at the Advanced level.

12 credit points of Junior units of study in each of Chemistry + Mathematics + Physics or Computer Science + 12 credit points from other areas.

Statistics

Major offered at the Advanced level.

Planning for a Statistics major

The Junior Mathematics, units MATH1005/1905 and MATH1001/1901/1906, are needed to enrol in Intermediate units of study in Statistics and MATH1003/1903/1907 are required to complete a major in Statistics. Students intending to major in Statistics should take 12 credit points of Intermediate Statistics. The Statistics major is also offered at the Advanced level.

Recommended Junior combinations for a Statistics major

See entry under Mathematics.

Junior Mathematics information

See entry under Mathematics.

Advanced Mathematics and Special Studies

See entry under Mathematics.

Assumed knowledge

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

Statistics in other majors

Computer Science majors: Should include MATH1005/1905.
Biological and other Life Science majors: should include MATH1015/1005/1905.

Bachelor of Science (BSc)

Degree Code: LH000

Summary of requirements
The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Enrolment guide
In your Junior year you should complete:

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

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

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

You should also note the following:

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

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

Units of study
The Science units of study available for this degree are set out in Table I: Bachelor of Science in this chapter. Unit descriptions follow in Chapter 10. You may also wish to refer to the handbooks of other faculties as the degree resolutions allow.

Honours
There will be Honours courses in all Science subject areas. Please refer to Honours Information and to Table VI: Honours units of study in chapter 12.

Sample Bachelor of Science

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	Elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	Elective		
		3	3	6	6	6		24
Year 2	1	Major 1 Intermediate 2XXX	Major 2 Intermediate or Science elective	Science elective	Elective			
		6	6	6	6			24
	2	Major 1 Intermediate 2XXX	Major 2 Intermediate or Science elective	Elective	Elective			
		6	6	6	6			24
Year 3	1	Major 1 3XXX	Major 1 3XXX	Major 2 or elective	Major 2 or elective			
		6	6	6	6			24
	2	Major 1 3XXX	Major 1 3XXX	Major 2 or elective	Major 2 or elective			
		6	6	6	6			24
							Total credit points:	144
Require: 144cp total, one major. 96cp Science, min. 36cp Junior Science incl. 12cp Maths, max. 60cp Junior.								

Require: 144 credit points total, one major. Minimum 96 credit points in Science, minimum 36 credit points in Junior Science, including 12 credit points of Maths. Maximum 60 credit points in Junior.

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission to the course varies from year to year.

Degree resolutions
See chapter 2.

Bachelor of Science (Advanced)

Degree Code: LH000 Stream: 4

Summary of requirements
The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Enrolment guide
In your Junior year you should complete:

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

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

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

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

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

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

Units of study
The Science units of study available for this degree are set out in Table I: Bachelor of Science towards the end of this chapter. Unit descriptions may be found in chpater 10. You may also wish to refer to the handbooks of other faculties as the degree resolutions allow.

Honours
There are Honours courses in all Science subject areas. Please refer to Honours Information and Table VI: Honours units of study in chapter 12.

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission to the Faculty varies from year to year.

Degree resolutions
See chapter 2.

Sample Bachelor of Science (Advanced)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH 1XXX	MATH 1XXX	Science elective A 1XXX/19XX	Science elective B 1XXX/19XX	Elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	Science elective A 1XXX/19XX	Science elective B 1XXX/19XX	Elective		
		3	3	6	6	6		24
Year 2	1	Major 1 Intermediate 29XX	Major 2 Intermediate or Science elective 2XXX	Intermediate or Senior Science elective	Intermediate or Senior elective			
		6	6	6	6			24
	2	Major 1 Intermediate 29XX	Major 2 Intermediate or Science elective 2XXX	Intermediate or Senior elective	Intermediate or Senior elective			
		6	6	6	6			24
Year 3	1	Major 1 39XX	Major 1 39XX	Major 2 or elective 3XXX	Major 2 or elective 3XXX			
		6	6	6	6			24
	2	Major 1 39XX	Major 1 39XX	Major 2 or elective 3XXX	Major 2 or elective 3XXX			
		6	6	6	6			24
							Total credit points:	144
Require: 144cp total, min. 96cp Science, max. 48cp Junior, min 36cp Junior Science incl. 12cp Maths, min. 48cp Senior, min. 12cp Intermediate Advanced and/or TSP, min. 24cp Senior Advanced and/or TSP major.								

Bachelor of Science (Advanced Mathematics)

Degree Code: LH000 Stream Code: 9

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Enrolment guide

In your Junior year you should complete:

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

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

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

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

Progression requirements

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

Plans of study

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

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science towards the end of this chapter. Unit descriptions may be found in chapter 10. You may also wish to refer to the handbooks of other faculties as the degree resolutions allow.

Honours

There are Honours courses in Mathematics and Statistics. Please refer to Honours Information and Table VI: Honours units of study in chapter 12

Discontinuation

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

Special permission

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

Transferring into the BSc (Advanced Mathematics)

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

Universities Admissions Index (UAI)

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

Degree resolutions

See chapter 2.

Sample Bachelor of Science (Advanced Mathematics)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH 1XXX	MATH 1XXX	Science elective A 1XXX/19XX	Science elective B 1XXX/19XX	Elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	Science elective A 1XXX/19XX	Science elective B 1XXX/19XX	Elective		
		3	3	6	6	6		24
Year 2	1	MATH 29XX	MATH 29XX	Intermediate or Senior elective	Intermediate or Senior elective			
		6	6	6	6			24
	2	MATH 29XX	MATH 29XX	Intermediate or Senior elective	Intermediate or Senior elective			
		6	6	6	6			24
Year 3	1	MATH 39XX	MATH 39XX	Major 2 or elective 3XXX	Major 2 or elective 3XXX			
		6	6	6	6			24
	2	MATH 39XX	MATH 39XX	Major 2 or elective 3XXX	Major 2 or elective 3XXX			
		6	6	6	6			24
							Total credit points:	144
Require: 144cp total, min. 96cp Science, max. 48cp Junior, min 36cp Junior Science incl. 12cp Maths, min. 48cp Senior, min. 12cp Intermediate Advanced and/or TSP, min. 24cp Senior Advanced and/or TSP major.								

Combined Science/Medicine degrees

Degree Codes: LH033/LH034

Summary of requirements
The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates.

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

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

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

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

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

Units of study
The Science units of study available for this degree are set out in Table I: Bachelor of Science in this chapter and Table IV: Bachelor of Medical Science in chapter five. Unit descriptions appear in chapter 10. The Medicine units of study available for this degree are set out in the Faculty of Medicine handbook.

Honours
Students who qualify to undertake Honours in the BSc (Adv) or BMedSc degree may elect to do so by either suspending their candidature from the MBBS degree for one year, or after completion of the combined course. Please refer to honours information in chapter 12, and to Table VI: Honours units of study in chapter 12.

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

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See chapter 2.

Table 1: Bachelor of Science

Table 1 lists units of study available to students in the Bachelor of Science and combined degrees. The units are available to students enrolled in other degrees in accordance with their degree resolutions.

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Agricultural Chemistry			
For a major in Agricultural Chemistry: the minimum requirement is 24 credit points from Senior units of study listed in this subject area.			
Intermediate units of study			
AGCH2003 **Rural Environmental Chemistry (Intro)**	6	**P** 12 credit points of Junior Chemistry **N** AGCH2001, AGCH2002, CHEM2404	Semester 1
Senior units of study			
AGCH3024 **Chemistry and Biochemistry of Foods**	6	**P** 12 credit points of Intermediate units from Molecular Biology and Genetics, Biochemistry or Chemistry **N** AGCH3016, AGCH3017, AGCH3025 *Note: Department permission required for enrolment*	Semester 1
AGCH3025 **Chemistry and Biochemistry of Foods A**	6	**P** 6 credit points of Intermediate units in Agricultural Chemistry, Chemistry or Biochemistry **N** AGCH3017, AGCH3024	Semester 1
AGCH3026 **Chemistry and Biochemistry of Foods B**	6	**P** 6 credit points of Intermediate Chemistry, Biochemistry or Agricultural Chemistry **C** AGCH3025 **N** AGCH3003, AGCH3005, AGCH4006	Semester 1
AGCH3030 **Rural Environmental Chemistry A**	6	**P** 6 credit points of either Intermediate Agricultural Chemistry, Chemistry, Biochemistry, Plant Science or Environmental Science **N** AGCH3020, AGCH3021, AGCH3022	Semester 1
AGCH3031 **Rural Environmental Chemistry B**	6	**P** 6 credit points of either Intermediate Agricultural Chemistry, Chemistry, Biochemistry, Plant Science or Environmental Science **N** AGCH3020, AGCH3021, AGCH3022	Semester 2
Anatomy and Histology			
For a major in Anatomy and Histology, the minimum requirement is 24 credit points from any ANAT, HSTO, EMHU or NEUR Senior units of study.			
Intermediate units of study			
The completion of 6 credit points of MBLG units of study is highly recommended			
ANAT2008 **Principles of Histology**	6	**A** General concepts in human biology **P** 12 credit points of Junior Biology or Junior Psychology **N** ANAT2001	Semester 1
ANAT2009 **Comparative Primate Anatomy**	6	**A** Knowledge of basic vertebrate biology **P** 12 credit points of Junior Biology or Junior Psychology or Junior Archaeology. **N** ANAT2002	Semester 2
ANAT2010 **Concepts of Neuroanatomy**	6	**A** Background in basic mammalian biology. **P** BIOL (1001 or 1901) and one of: BIOL (1002 or 1902 or 1003 or 1903) or PSYC (1001 and 1002). **N** ANAT2003	Semester 2
Senior units of study			
ANAT3004 **Cranial and Cervical Anatomy**	6	**A** General knowledge of biology. **P** ANAT2002 or ANAT2009 or BMED2803 or BMED2804 or BMED2805 or BMED2806 **N** ANAT3005 *The completion of 6 credit points of MBLG is highly recommended.*	Semester 2
ANAT3006 **Forensic Osteology**	6	**A** An understanding of basic human musculoskeletal anatomy. **P** Credit in ANAT2009 or Credit in ANAT2002 (for students who completed Intermediate study before 2005) *The completion of 6 credit points of MBLG is highly recommended.*	Semester 1
ANAT3007 **Visceral Anatomy**	6	**A** General knowledge of biology. **P** ANAT2009 or ANAT2010	Semester 1
ANAT3008 **Musculoskeletal Anatomy**	6	**A** Some knowledge of basic mammalian biology **P** ANAT2009 or ANAT2002 (for students who completed Intermediate study before 2005) or BMED2803 or BMED2804 or BMED2805 or BMED2806 **N** ANAT3005	Semester 2
HSTO3001 **Microscopy & Histochemistry Theory**	6	**A** Basic understanding of biology. **P** (ANAT2008 or ANAT2001) or (BMED 2803 or 2804 or 2805 or 2806) **C** HSTO3002	Semester 1
HSTO3002 **Microscopy & Histochemistry Practical**	6	**A** Basic understanding of biology. **P** (ANAT2008 or ANAT2001) or (BMED 2803 or 2804 or 2805 or 2806) **C** HSTO3001	Semester 1
NEUR3001 **Neuroscience: Special Senses**	6	**A** It is strongly recommended that students also take unit NEUR3002. PHSI2005 and ANAT2010 are assumed knowledge. **P** For BMedSc students: BMED(2801 or 2503) and BMED(2806 or 2505) For other students: (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **N** PHSI3001, NEUR3901	Semester 1
NEUR3901 **Neuroscience: Special Senses (Advanced)**	6	**A** PHSI2005 and ANAT2010 **P** For BMedSc students: Credit average in BMED(2801 or 2503) and BMED(2806 or 2505) For other students: Credit average in (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **N** NEUR3001, PHSI3001, PHSI3901 *Permission from the coordinators is required for entry into this course. It is strongly recommended that students also take unit NEUR3002 or NEUR3902.*	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
NEUR3002 **Neuroscience: Motor Systems & Behaviour**	6	**A** It is strongly recommended that students also take unit NEUR3001. ANAT2010 and PHSI2005 is assumed knowledge. **P** For BMedSc students: BMED(2801 or 2503) and BMED(2806 or 2505) For other students: (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **N** PHSI3001, NEUR3902	Semester 1
NEUR3902 **Neuroscience: Motor Systems & Behav. Adv**	6	**A** ANAT2010 and PHSI2005 is assumed knowledge. **P** For BMedSc students: Credit average in BMED(2801 or 2503) and BMED(2806 or 2505) For other students: Credit average in (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **N** NEUR3002, PHSI3001 *Permission from the coordinators is required for entry into this course. It is strongly recommended that students also take unit NEUR3001 or NEUR3901.*	Semester 1
ANAT3004 **Cranial and Cervical Anatomy**	6	**A** General knowledge of biology. **P** ANAT2002 or ANAT2009 or BMED2803 or BMED2804 or BMED2805 or BMED2806 **N** ANAT3005 *The completion of 6 credit points of MBLG is highly recommended.*	Semester 2
ANAT3008 **Musculoskeletal Anatomy**	6	**A** Some knowledge of basic mammalian biology **P** ANAT2009 or ANAT2002 (for students who completed Intermediate study before 2005) or BMED2803 or BMED2804 or BMED2805 or BMED2806 **N** ANAT3005	Semester 2
EMHU3001 **Electron Microscopy and Imaging/Theory**	6	**A** General concepts in Biology, and in Biochemistry or in Chemistry. **P** At least 12 cp of Intermediate Science units from any of the following: Anatomy & Histology, Biochemistry, Biology, Chemistry, Mathematics, Microbiology, Molecular Biology & Genetics, Pharmacology, Physics, Physiology or Statistics. For BMedSc students: either 36 cp of Intermediate units including BMed (2501, 2503 & 2505) or 42 cp of BMed Intermediate units including (2801, 2802, 2803 & 2806)	Semester 2
EMHU3002 **Electron Microscopy and Imaging/Prac**	6	**A** General concepts in Biology, Histology and in Biochemistry or in Chemistry. **P** 12 cp as follows: 6 cp from ANAT2008 OR 4 cp from ANAT2001 plus at least 6 cp OR 8 cp respectively of Intermediate Science units of study. For BMedSci: Either 36 credit points of intermediate units including BMed (2501, 2503 & 2505) or 42 credit points of BMed Intermediate units including BMed (2801, 2802, 2803 & 2806) **C** EMHU3001	Semester 2
HSTO3003 **Cells and Development: Theory**	6	**A** (i) An understanding of the basic structure of vertebrates; (ii) An understanding of elementary biochemistry and genetics. **P** For BSc students: ANAT2008 or ANAT2001 For BMedSc students: 42 credit points of Intermediate BMED units, including: BMED2801, 2802, 2805. **N** ANAT3002 *The completion of 6 credit points of MBLG is highly recommended.*	Semester 2
HSTO3004 **Cells and Development: Practical (Adv)**	6	**P** Note: This advanced unit of study is only available to select students who have achieved a mark of 65 or above in the following prerequisite units of study. For BSc students: ANAT2008 or ANAT2001 and any one of the following intermediate MBLG units (2071, 2971, 2771, 2871, 2001, 2101, 2901). For BMedSc students: 42 credit points of Intermediate BMED units, including: BMED2801, 2802, 2805. **C** HSTO3003 **N** ANAT3002 *The completion of 6 credit points of MBLG is highly recommended.*	Semester 2
NEUR3003 **Cellular and Developmental Neuroscience**	6	**A** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **P** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics **N** NEUR3903, PHSI3002, PHSI3902 *Enrolment in NEUR3004/3904 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.*	Semester 2
NEUR3903 **Cellular & Developmental Neurosci. (Adv)**	6	**A** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **P** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. Plus, students must have a CREDIT (or better) in NEUR3001/3901 and NEUR3002/3902. **N** NEUR3003, PHSI3002, PHSI3902 *Note: Department permission required for enrolment* *Enrollment in NEUR3004/3904 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other. Students must receive permission from the coordinators for enrollment.*	Semester 2
NEUR3004 **Integrative Neuroscience**	6	**A** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **P** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. **N** NEUR3904, PHSI3002, PHSI3902 *Enrolment in NEUR3003/3903 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.*	Semester 2
NEUR3904 **Integrative Neuroscience (Advanced)**	6	**A** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **P** For BMedSCI: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. Plus, students must have a CREDIT (or better) in NEUR3001/3901 and NEUR3002/3902. **N** NEUR3004, PHSI3002, PHSI3902 *Note: Department permission required for enrolment* *Enrollment in NEUR3003/3903 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other. Students must receive permission from the coordinators for enrollment.*	Semester 2
for other NEUR units, see the Physiology subject area entry in this table			

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Biochemistry			
For a major in Biochemistry, the minimum requirement is 24 credit points from senior units of study listed in this subject area.			
Intermediate units of study			
The completion of 6 credit points of MBLG units of study is highly recommended.			
BCHM2071 **Protein Biochemistry**	6	**A** CHEM (1101 and 1102) **P** 12 credit points of Junior Chemistry plus MBLG1001 **C** Recommended concurrent units of study: intermediate MBLG for progression to Senior Biochemistry, and/or Intermediate Chemistry. **N** BCHM2011, BCHM2971	Semester 1
BCHM2971 **Protein Biochemistry (Advanced)**	6	**P** 12 credit points of Junior Chemistry and Distinction in MBLG1001 **N** BCHM2011, BCHM2071	Semester 1
BCHM2072 **Human Biochemistry**	6	**P** Either MBLG1001 and 12 credit points of Junior Chemistry or either MBLG2071 or MBLG2971 **N** BCHM2972, BCHM2002, BCHM2102, BCHM2902, BCHM2112	Semester 2
BCHM2972 **Human Biochemistry (Advanced)**	6	**P** Distinction in one of (BCHM (2071 or 2971) or MBLG(2071 or 2971)) or (Distinction in MBLG1001 and Distinction average in all other Junior Science Units of Study undertaken). **N** BCHM2072, BCHM2002, BCHM2102, BCHM2902, BCHM2112	Semester 2
Senior units of study			
BCHM3071 **Molecular Biology & Biochemistry-Genes**	6	**P** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **N** BCHM3971, BCHM3001, BCHM3901	Semester 1
BCHM3971 **Molecular Biology & Biochem- Genes (Adv)**	6	**P** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3071, BCHM3001, BCHM3901	Semester 1
BCHM3081 **Mol Biology & Biochemistry- Proteins**	6	**P** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **N** BCHM3981, BCHM3001, BCHM3901	Semester 1
BCHM3981 **Mol Biology & Biochemistry- Proteins Adv**	6	**P** MBLG1001 and Distinction in12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3081, BCHM3001, BCHM3901	Semester 1
BCHM3072 **Human Molecular Cell Biology**	6	**P** (MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/MBLG2971or BCHM2071/2971 or BCHM2072/2972)) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804) **N** BCHM3972, BCHM3002, BCHM3902, BCHM3004, BCHM3904	Semester 2
BCHM3972 **Human Molecular Cell Biology (Advanced)**	6	**P** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/MBLG2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3072, BCHM3002, BCHM3004, BCHM3902, BCHM3904	Semester 2
BCHM3082 **Medical and Metabolic Biochemistry**	6	**P** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **N** BCHM3982, BCHM3002, BCHM3004, BCHM3902, BCHM3904	Semester 2
BCHM3982 **Medical and Metabolic Biochemistry (Adv)**	6	**P** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3082, BCHM3002, BCHM3004, BCHM3902, BCHM3904	Semester 2
BCHM3092 **Proteomics and Functional Genomics**	6	**P** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **N** BCHM3992, BCHM3098	Semester 2
BCHM3992 **Proteomics and Functional Genomics (Adv)**	6	**P** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3092, BCHM3098	Semester 2
Bioinformatics			
For a major in Bioinformatics, students must complete a minimum of 24 credit points from senior units of study in the Life Sciences, Statistics, and Computer Science including:-			
(A) At least one of BIOL3027 or BIOL3927 or BCHM3092 or BCHM3992;			
(B) At least one of STAT3012 or STAT3919 or STAT3014 or STAT3914			
(C) At least one of SOFT3300 or SOFT3600 or SOFT3301 or SOFT3601			
(D) At least one additional unit from A or B or C or BINF3101. BINF3101 cannot be credited to the major together with SOFT3300 or SOFT3600			
For further information on how to prepare for a major in Bioinformatics, please condult the Faculty of Science's web page (http://www.science.usyd.edu.au/fstudent/undergrad/course/)			
Bioinformatics major (A) units of study			
BIOL3027 **Bioinformatics and Genomics**	6	**P** 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **N** BIOL3927 *This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.*	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
BIOL3927 **Bioinformatics and Genomics (Advanced)**	6	**P** Distinction average in 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **N** BIOL3027	Semester 1
BCHM3092 **Proteomics and Functional Genomics**	6	**P** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **N** BCHM3992, BCHM3098	Semester 2
BCHM3992 **Proteomics and Functional Genomics (Adv)**	6	**P** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3092, BCHM3098	Semester 2
Bioinformatics major (B) units of study			
STAT3012 **Applied Linear Methods**	6	**P** STAT(2012 or 2912 or 2004) and MATH(1002 or 1902). **N** STAT3912, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
STAT3912 **Applied Linear Methods Advanced**	6	**P** (STAT2912 or Credit in STAT2004 or Credit in STAT2012) and MATH(2061 or 2961 or 1902). **N** STAT3012, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
STAT3014 **Applied Statistics**	6	**A** STAT(3012 or 3912). **P** STAT(2012 or 2912 or 2004). **N** STAT3914, STAT3002, STAT3902, STAT3006	Semester 2
STAT3914 **Applied Statistics Advanced**	6	**A** STAT3912 **P** STAT2912 or credit or better in (STAT2004 or STAT2012). **N** STAT3014, STAT3002, STAT3902, STAT3006, STAT3907	Semester 2
Bioinformatics major (C) units of study			
SOFT3300 **Software Development Project**	6	**P** INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations). **N** SOFT3600, SOFT3200, SOFT3700	Semester 1 Semester 2
SOFT3600 **Software Development Project (Advanced)**	6	**P** (INFO2110 or INFO2810 or INFO2000 or INFO2900) and (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2904 or COMP2004 or COMP2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations), and Distinction in any 2000-level or above IT-related unit. **N** SOFT3300, SOFT3200, SOFT3700	Semester 1 Semester 2
SOFT3301 **Software Construction 2**	6	**P** SOFT(2130 or 2830 or 2004 or 2904) or COMP2004 or COMP2904 **N** SOFT3601, SOFT3104, SOFT3804, COMP3008, COMP3908	Semester 1
SOFT3601 **Software Construction 2 (Advanced)**	6	**P** (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2004 or COMP2004 or COMP2904), and Distinction in any 2000-level or above SOFT or INFO unit. **N** SOFT3301, SOFT3104, SOFT3804, COMP3008, COMP3908	Semester 1
Bioinformatics major (D) units of study			
At least one unit of study from A or B or C or BINF3101. BINF3101 cannot be credited to the major together with SOFT3300 or SOFT3600			
BINF3101 **Bioinformatics Project**	6	**A** 12 credit points from Junior units of study in Software Development (SOFT) and/or Computational Science (COSC) **P** SOFT (2130 or 2830 or 2004 or 2904) and 12 credit points from Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and Genetics and/or Pharmacology **N** COMP3206, BINF3001	Semester 2
Biology			
For a major in Biology, the minimum requirement is 24 credit points from senior BIOL units of study listed in this subject area. Senior PLNT units and BIOL3009/3909, 3017/3917 may be counted towards a major in Biology or Plant science, not both			
Junior units of study			
BIOL1001 **Concepts in Biology**	6	**A** No previous knowledge required. Students who have not taken HSC biology are recommended to take the Biology Bridging Course (in February). Students who have completed HSC Biology are advised to enrol in BIOL1101 Ecosystems to Genes rather than BIOL1001. **N** BIOL1101, BIOL1901 *It is recommended that BIOL (1001 or 1101 or 1901) be taken before all Semester 2 Junior units of study in Biology.*	Semester 1 Summer Main
BIOL1101 **Biology - Ecosystems to Genes**	6	**P** HSC 2-unit Biology or equivalent. **N** BIOL1001, BIOL901 *It is recommended that BIOL (1001 or 1101 or 1901) be taken before all Semester 2 Junior units of study in Biology.*	Semester 1
BIOL1901 **Biology - Ecosystems to Genes (Advanced)**	6	**P** UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. **N** BIOL1001, BIOL1101 *Note: Department permission required for enrolment* *It is recommended that BIOL (1001 or 1101 or 1901) be taken before all Semester 2 Junior units of study in Biology.*	Semester 1
BIOL1002 **Living Systems**	6	**A** HSC 2-unit Biology. Students who have not undertaken an HSC biology course are strongly advised to complete a Biology Bridging Course (in February). **N** BIOL1902	Semester 2
BIOL1902 **Living Systems (Advanced)**	6	**P** UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. **N** BIOL1002, BIOL1904, BIOL1905 *Note: Department permission required for enrolment*	Semester 2
BIOL1003 **Human Biology**	6	**A** HSC 2-unit Biology. Students who have not taken HSC biology are recommended to take the Biology Bridging Course in February. **N** BIOL1903, EDUH1016	Semester 2 Summer Main

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
BIOL1903 **Human Biology (Advanced)**	6	**P** UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. **N** BIOL1003, BIOL1904, BIOL1905, EDUH1016 *Note: Department permission required for enrolment*	Semester 2
Intermediate units of study			
The completion of 6 credit points of MBLG units of study is highly recommended.			
BIOL2011 **Invertebrate Zoology**	6	**A** The content of BIOL (1002 or 1902) is assumed knowledge and students entering without BIOL (1002 or 1902) will need to do some preparatory reading. **P** BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For students in BSc (Marine Science) 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. **N** BIOL2911, BIOL2001, BIOL2101, BIOL2901 *The completion of 6 credit points of MBLG units of study is highly recommended.*	Semester 1
BIOL2911 **Invertebrate Zoology (Advanced)**	6	**A** The content of BIOL (1002 or 1902) is assumed knowledge and students entering without BIOL (1002 or 1902) will need to do some preparatory reading. **P** Distinction average in BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For students in BSc (Marine Science) 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **N** BIOL2011, BIOL2001, BIOL2101, BIOL2901 *The completion of 6 credit points of MBLG units of study is highly recommended.*	Semester 1
BIOL2016 **Cell Biology**	6	**P** 12 credit points of Junior Biology, or equivalent, e.g. BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1902 or 1003 or 1903 or 1904 or 1905) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For students in the BSc (Marine Science) 6 credit points of Junior Chemistry and either an additonal 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. **N** BIOL2916, BIOL2006, BIOL2106, BIOL2906 *The completion of MBLG1001 is highly recommended.*	Semester 1
BIOL2916 **Cell Biology (Advanced)**	6	**P** Distinction average in BIOL (1001 or 1101 or 1901) and one of BIOL (1002 or 1902 or 1003 or 1903 or 1904 or 1905) or MBLG1001 and 12 credit points of Junior Chemistry. For students in the BSc (Marine Science) 6 credit points of Junior Chemistry and either an additonal 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **N** BIOL2016, BIOL2006, BIOL2106, BIOL2906 *The completion of MBLG1001 is highly recommended. This is a core intermediate unit in the BSc (Molecular Biology and Genetics) award course.*	Semester 1
PLNT2001 **Plant Biochemistry and Molecular Biology**	6	**P** 12 credit points of Junior Chemistry and 12 credit points of Junior Biology (or with the Dean's permission BIOL1201 and BIOL1202) **N** PLNT2901, AGCH2001	Semester 1
PLNT2901 **Plant Biochem & Molecular Biology (Adv)**	6	**P** A Distinction average in 12 credit points of Junior Chemistry and 12 credit points of Junior Biology (or with the Dean's permission BIOL1201 and BIOL1202) **N** PLNT2001, AGCH2001	Semester 1
PLNT2002 **Aust Flora: Ecology and Conservation**	6	**A** The contents of BIOL (1002 or 1902) is assumed knowledge. Students wishing to enroll in Intermediate Biology (BIOL) and Plant Science (PLNT) units of study using BIOL (1003 or 1903) will need to do some preparatory reading. **P** 12 credit points from a combination of Junior BIOL or LWSC units of study including two of BIOL (1001, 1901, 1002, 1902, 1003, 1903) LWSC1002, MBLG1001 (or with the Dean's permission BIOL1201 and BIOL1202 may be substituted for the above). **N** PLNT2902, BIOL2004, BIOL2904	Semester 1
PLNT2902 **Aust Flora: Ecology & Conservation (Adv)**	6	**A** The contents of BIOL(1002 or 1902) is assumed knowledge. Students wishing to enroll in Intermediate Biology (BIOL) and Plant Science (PLNT) units of study using BIOL(1003 or 1903) will need to do some preparatory reading **P** Distinction average in 12 credit points from a combination of Junior BIOL or LWSC units of study including two of BIOL (1001, 1901, 1002, 1902, 1003, 1903) LWSC1002, MBLG1001 (or with the Dean's permission BIOL1201 and BIOL1202).These requirements may be varied and students with lower averages should consult the unit Executive Officer **N** PLNT2002, BIOL2004, BIOL2904	Semester 1
ENVI2111 **Conservation Biology and Applied Ecology**	6	**P** 24 credit points of Junior Science units, including 12 credit points of Junior Biology **N** ENVI2001, ENVI2911	Semester 1
ENVI2911 **Conservation Biology (Advanced)**	6	**P** Distinction average in BIOL(1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016. 12 credit points of Junior Chemistry (or for BSc (Marine Science) students 6 credit points of Junior Chemistry and 6 credit points of Junior Physics). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **N** ENVI2001, ENVI2111	Semester 1
BIOL2012 **Vertebrates and their Origins**	6	**A** The content of BIOL (1002 or 1902) is assumed knowledge and students entering without BIOL (1002 or 1902) will need to do some preparatory reading. **P** BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For students in BSc (Marine Science) 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. **N** BIOL2912, BIOL2002, BIOL2102, BIOL2902 *The completion of 6 credit points of MBLG units of study is highly recommended.*	Semester 2
BIOL2912 **Vertebrates and their Origins (Advanced)**	6	**A** The content of BIOL (1002 or 1902) is assumed knowledge and students entering without BIOL (1002 or 1902) will need to do some preparatory reading. **P** Distinction average in BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For students in BSc (Marine Science) 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **N** BIOL2012, BIOL2002, BIOL2102, BIOL2902 *The completion of 6 credit points of MBLG units of study is highly recommended.*	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
BIOL2017 **Entomology**	6	**A** BIOL (2011 or 2911 or 2001 or 2901) **P** 12 credit points of Junior Biology, or equivalent, e.g. BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For BSc (Marine Science) students 6 credit points of Junior Chemistry and either an additonal 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. **N** BIOL2917, BIOL2007	Semester 2
BIOL2917 **Entomology (Advanced)**	6	**A** BIOL (2011 or 2911 or 2001 or 2901) **P** Distinction average in 12 credit points of Junior Biology, or equivalent, e.g. BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1902 or 1003 or 1903) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For BSc (Marine Science) students: 6 credit points of Junior Chemistry and either an additonal 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **N** BIOL2007, BIOL2017	Semester 2
PLNT2003 **Plant Form and Function**	6	**A** The content of BIOL(1002 or 1902) is assumed knowledge and students entering from BIOL(1003 or 1903) will need to do some preparatory reading **P** 12 credit points of Junior Biology (or with the Dean's permission), BIOL1201 and BIOL1202 or BIOL1001 and ENVI1002 **N** PLNT2903, BIOL2003, BIOL2903, CROP2001	Semester 2
PLNT2903 **Plant Form and Function (Advanced)**	6	**A** The content of BIOL(1002 or 1902) is assumed knowledge and students entering from BIOL(1003 or 1903) will need to do some preparatory reading **P** Distinction average in 12 credit points of Junior Biology or BIOL1001 and ENVI1002 (or with the Dean's permission, BIOL1201 and BIOL1202) **N** PLNT2003, BIOL2003, BIOL2903, CROP2001	Semester 2
Senior units of study			
BIOL3010 **Tropical Wildlife Biology and Management**	6	**A** None, although Vertebrates and their Origins would be useful. **P** 12 credit points of intermediate level Biology. **N** BIOL3910 *Note: Department permission required for enrolment* *Dates: 11 February - 16 February 2007 Northern Territory followed by tutorials and practical classes at the University of Sydney 19 February - 23 February 2007.*	S1 Intensive
BIOL3910 **Tropical Wildlife Biol & Management Adv**	6	**A** None, although Vertebrates and their Origins would be useful. **P** Distinction average in 12 credit points of intermediate level Biology. **N** BIOL3010 *Note: Department permission required for enrolment* *Dates: 11 February - 16 February 2007 Northern Territory followed by tutorials and practicals at the University of Sydney 19 February - 23 February 2007.*	S1 Intensive
BIOL3017 **Fungi in the Environment**	6	**P** 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. **N** BIOL3917 *The completion of 6 credit points of MBLG units is highly recommended.*	S1 Intensive
BIOL3917 **Fungi in the Environment (Advanced)**	6	**P** Distinction average in 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. **N** BIOL3017 *The completion of 6 credit points of MBLG units is highly recommended.*	S1 Intensive
BIOL3006 **Ecological Methods**	6	**A** BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). **P** 12 credit points of intermediate level Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3906, BIOL3023, BIOL3923, MARS3102	Semester 1
BIOL3906 **Ecological Methods (Advanced)**	6	**A** BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3006, BIOL3023, BIOL3923, MARS3102	Semester 1
BIOL3011 **Ecophysiology**	6	**A** BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903). **P** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3911 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
BIOL3911 **Ecophysiology (Advanced)**	6	**A** BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903) **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **N** BIOL3011 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
BIOL3012 **Animal Physiology**	6	**P** 12 credit points of Intermediate Biology including BIOL (2012 or 2002 or 2003 or 2016 or 2006 or 2912 or 2902 or 2903 or 2916 or 2906) or PLNT (2003 or 2903). **N** BIOL3912 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
BIOL3912 **Animal Physiology (Advanced)**	6	**P** Distinction average in 12 credit points of Intermediate Biology including BIOL (2012 or 2002 or 2003 or 2006 or 2016 or 2912 or 2902 or 2903 or 2916 or 2906) or PLNT (2003 or 2903). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **N** BIOL3012 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
BIOL3013 **Marine Biology**	6	**A** MARS2006 **P** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3913 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
BIOL3913 **Marine Biology (Advanced)**	6	**A** MARS2006 **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3013 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
BIOL3018 **Applications of Recombinant DNA Tech**	6	**P** 12 credit points from MBLG (2001/2901//2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **N** BIOL3918	Semester 1
BIOL3918 **Applications of Recombinant DNA Tech Adv**	6	**P** Distinction average in12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **N** BIOL3018	Semester 1
BIOL3027 **Bioinformatics and Genomics**	6	**P** 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **N** BIOL3927 *This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.*	Semester 1
BIOL3927 **Bioinformatics and Genomics (Advanced)**	6	**P** Distinction average in 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **N** BIOL3027	Semester 1
BIOL3008 **Marine Field Ecology**	6	**A** Ecological Methods (BIOL3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly advised. **P** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3908, BIOL3040, BIOL3940, BIOL3024, BIOL3924, MARS3102 *Dates: 2 July 2007 - 9 July 2007*	S2 Intensive
BIOL3908 **Marine Field Ecology (Advanced)**	6	**A** Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly advised **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3008, BIOL3040, BIOL3940, BIOL3024, BIOL3924, MARS3102 *Dates: 2 July 2007 - 9 July 2007*	S2 Intensive
BIOL3007 **Ecology**	6	**A** Although not prerequisites, knowledge obtained from Ecological Methods (BIOL3006), and Marine Field Ecology (BIOL3008) and/or Terrestrial Field Ecology (BIOL3009), or the associated advanced units (BIOL3906, BIOL3908 and/or BIOL3909), is strongly recommended. **P** 12 credit points of Intermediate Biology; or ENVI2111 or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3907, BIOL3024, BIOL3924, BIOL3040, BIOL3940, BIOL3041, BIOL3941, BIOL3042, BIOL3942, MARS3102	Semester 2
BIOL3907 **Ecology (Advanced)**	6	**A** Although not prerequisites, knowledge obtained from Ecological Methods (BIOL3006), and Marine Field Ecology (BIOL3008) and/or Terrestrial Field Ecology (BIOL3009), or the associated advanced units (BIOL3906, BIOL3908 and/or BIOL3909), is strongly recommended. Students entering this unit of study should have achieved distinction average. **P** Distinction average in 12 credit points of Intermediate Biology; or ENVI2111 or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3007, BIOL3024, BIOL3924, BIOL3040, BIOL3940, BIOL3041, BIOL3941, BIOL3042, BIOL3942, MARS3102	Semester 2
BIOL3009 **Terrestrial Field Ecology**	6	**A** Ecological Methods (BIOL3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly recommended. **P** 12 credit points of intermediate level Biology. **N** BIOL3909, BIOL3041, BIOL3941, BIOL3042, BIOL3942, BIOL3024, BIOL3924	S2 Intensive
BIOL3909 **Terrestrial Field Ecology (Advanced)**	6	**A** Ecological Methods (BIOL3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly recommended. **P** Distinction average in 12 credit points of intermediate level Biology. **N** BIOL3009, BIOL3041, BIOL3941, BIOL3042, BIOL3942, BIOL3024, BIOL3924 *Students taking this unit of study will complete an individual research project on a topic negotiated with a member of staff. it is expected that much of the data collection will be completed during the field trip but some extra time may be needed during semester 2.*	S2 Intensive
BIOL3025 **Evolutionary Genetics & Animal Behaviour**	6	**P** 12 credit points from MBLG (2001/2901/2771/2871/2071/2971), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **N** BIOL3925, BIOL3928	Semester 2
BIOL3925 **Evolutionary Gen. & Animal Behaviour Adv**	6	**P** Distinction average in12 credit points from MBLG (2001/2901/2771/2871/2071/2971), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **N** BIOL3025, BIOL3928	Semester 2
BIOL3026 **Developmental Genetics**	6	**P** 12 credit points from MBLG (2001/2901/2071/2971/2771/2871) and MBLG (2002/2902/2072/2972). For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **N** BIOL3926	Semester 2
BIOL3926 **Developmental Genetics (Advanced)**	6	**P** Distinction average in 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), and MBLG (2002/2902/2072/2972). For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **N** BIOL3026	Semester 2

Cell Pathology

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

(i) CPAT3201 and CPAT3202; and

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

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Senior units of study			
The completion of 6 credit points of MBLG units of study is highly recommended.			
CPAT3201 **Pathogenesis of Human Disease 1**	6	**P** At least 6cp intermediate of one of the following: ANAT or BCHM or MBLG or BIOL or HPSC or MICR or PCOL or PHSI, or as the head of department determines.	Semester 2
CPAT3202 **Pathogenesis of Human Disease 2**	6	**P** At least 6cp intermediate of one of the following: ANAT or BCHM or MBLG or BIOL or HPSC or MICR or PCOL or PHSI, or as the head of department determines. **C** CPAT3201 *Note: Department permission required for enrolment*	Semester 2
HSTO3001 **Microscopy & Histochemistry Theory**	6	**A** Basic understanding of biology. **P** (ANAT2008 or ANAT2001) or (BMED 2803 or 2804 or 2805 or 2806) **C** HSTO3002	Semester 1
HSTO3002 **Microscopy & Histochemistry Practical**	6	**A** Basic understanding of biology. **P** (ANAT2008 or ANAT2001) or (BMED 2803 or 2804 or 2805 or 2806) **C** HSTO3001	Semester 1
HSTO3003 **Cells and Development: Theory**	6	**A** (i) An understanding of the basic structure of vertebrates; (ii) An understanding of elementary biochemistry and genetics. **P** For BSc students: ANAT2008 or ANAT2001 For BMedSc students: 42 credit points of Intermediate BMED units, including: BMED2801, 2802, 2805. **N** ANAT3002 *The completion of 6 credit points of MBLG is highly recommended.*	Semester 2
HSTO3004 **Cells and Development: Practical (Adv)**	6	**P** Note: This advanced unit of study is only available to select students who have achieved a mark of 65 or above in the following prerequisite units of study. For BSc students: ANAT2008 or ANAT2001 and any one of the following intermediate MBLG units (2071, 2971, 2771, 2871, 2001, 2101, 2901). For BMedSc students: 42 credit points of Intermediate BMED units, including: BMED2801, 2802, 2805. **C** HSTO3003 **N** ANAT3002 *The completion of 6 credit points of MBLG is highly recommended.*	Semester 2
BCHM3071 **Molecular Biology & Biochemistry-Genes**	6	**P** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **N** BCHM3971, BCHM3001, BCHM3901	Semester 1
BCHM3971 **Molecular Biology & Biochem- Genes (Adv)**	6	**P** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3071, BCHM3001, BCHM3901	Semester 1
BCHM3972 **Human Molecular Cell Biology (Advanced)**	6	**P** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/MBLG2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3072, BCHM3002, BCHM3004, BCHM3902, BCHM3904	Semester 2
BCHM3081 **Mol Biology & Biochemistry- Proteins**	6	**P** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **N** BCHM3981, BCHM3001, BCHM3901	Semester 1
BCHM3981 **Mol Biology & Biochemistry- Proteins Adv**	6	**P** MBLG1001 and Distinction in12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3081, BCHM3001, BCHM3901	Semester 1
BCHM3082 **Medical and Metabolic Biochemistry**	6	**P** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **N** BCHM3982, BCHM3002, BCHM3004, BCHM3902, BCHM3904	Semester 2
BCHM3982 **Medical and Metabolic Biochemistry (Adv)**	6	**P** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3082, BCHM3002, BCHM3004, BCHM3902, BCHM3904	Semester 2
MICR3011 **Microbes in Infection**	6	**P** At least 6 credit points of MBLG units and MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2807 and 2808). For BScAgr students: PLNT (2001 or 2901) and MICR (2022 or 2922). **N** MICR3911, MICR3001, MICR3901	Semester 1
MICR3911 **Microbes in Infection (Advanced)**	6	**P** At least 6 credit points of MBLG units and Distinction in MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including in BMED (2807 or 2808) with a Distinction in one of these two. For BScAgr students: PLNT (2001 or 2901) and MICR (2022 or 2922) including one Distinction. **N** MICR3011, MICR3001, MICR3901	Semester 1
MICR3012 **Molecular Biology of Pathogens**	6	**P** At least 6 credit points of MBLG units and MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802, 2807 and 2808). For BScAgr students: PLNT (2001 or 2901) and MICR2024. **N** MICR3912, MICR3002, MICR3902, MICR3003, MICR3903, MICR3004, MICR3904	Semester 2
MICR3912 **Molecular Biology of Pathogens (Adv)**	6	**P** At least 6 credit points of MBLG units and Distinction in MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 or 2807 or 2808) with a Distinction in one of these three. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. **N** MICR3012, MICR3002, MICR3902, MICR3003, MICR3903, MICR3004, MICR3904	Semester 2
MICR3022 **Microbial Biotechnology**	6	**P** At least 6 credit points of MBLG units and 6 credit points of Intermediate MICR units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 and 2807). For BScAgr students: PLNT (2001 or 2901) and MICR2024. **N** MICR3922, MICR3002, MICR3902	Semester 2
MICR3922 **Microbial Biotechnology (Advanced)**	6	**P** At least 6 credit points of MBLG units and Distinction in 6 credit points of Intermediate MICR units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 and 2807) with a Distinction in at least one of these two. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. **N** MICR3022, MICR3002, MICR3902	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
PHSI3005 **Human Cellular Physiology: Theory**	6	**A** 6 credit points of MBLG **P** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) For BMedSc: BMED (2801 and 2802). **N** PHSI3905, PHSI3004, PHSI3904 *It is highly recommended that this unit of study be taken in conjunction with PHSI3006.*	Semester 1
PHSI3905 **Human Cellular Physiology (Adv): Theory**	6	**A** 6 credit points of MBLG **P** Credit average in PHSI(2005 or 2905) and PHS(2006 or 2906) or in BMED (2801 and 2802). Students enroling in this unit should have a SciWAM of at least 68. **N** PHSI3005, PHSI3004, PHSI3904 *Note: Department permission required for enrolment* *It is highly recommended that this unit of study be taken in combination with PHSI3906*	Semester 1
PHSI3006 **Human Cellular Physiology: Research**	6	**P** Except for BMedSc students: PHSI (2005 or 2905) and PHSI(2006 or 2906) For BMedSc: BMED (2801 and 2802). **C** PHSI3005 **N** PHSI3906, PHSI3004, PHSI3904	Semester 1
PHSI3906 **Human Cellular Physiology (Ad): Research**	6	**A** 6 credit points of MBLG **P** Credit average in PHSI (2005 or 2905) and PHSI(2006 or 2906) or in BMED (2801 and 2802). Students enroling in this unit should have a SciWAM of at least 68. **C** PSYC3905 **N** PHSI3006, PHSI3004, PHSI3904 *Note: Department permission required for enrolment*	Semester 1
Information on these units may be found under the relevant teaching department entries.			
Chemistry			
For a major in chemistry, the minimum requirement is 24 credit points from senior units of study listed in this subject area, which must include the associated laboratory units.			
Junior units of study			
CHEM1001 **Fundamentals of Chemistry 1A**	6	**A** There is no assumed knowledge of chemistry for this unit of study, but students who have not undertaken an HSC chemistry course are strongly advised to complete a chemistry bridging course before lectures commence. **N** CHEM1101, CHEM1901, CHEM1109, CHEM1903, CHEM1909	Semester 1
CHEM1002 **Fundamentals of Chemistry 1B**	6	**P** CHEM (1001 or 1101) or equivalent **N** CHEM1102, CHEM1108, CHEM1902, CHEM1904, CHEM1908	Semester 2
CHEM1101 **Chemistry 1A**	6	**A** HSC Chemistry and Mathematics **C** Recommended concurrent units of study: 6 credit points of Junior Mathematics **N** CHEM1001, CHEM1109, CHEM1901, CHEM1903, CHEM1909	Semester 1 Semester 2 Summer Main
CHEM1102 **Chemistry 1B**	6	**P** CHEM (1101 or 1901) or a Distinction in CHEM1001 or equivalent **C** Recommended concurrent units of study: 6 credit points of Junior Mathematics **N** CHEM1002, CHEM1108, CHEM1902, CHEM1904, CHEM1908	Semester 1 Semester 2 Summer Main
CHEM1901 **Chemistry 1A (Advanced)**	6	**P** UAI of at least 96.4 and HSC Chemistry result in band 5 or 6, or Distinction or better in a University level Chemistry unit, or by invitation **C** Recommended concurrent unit of study: 6 credit points of Junior Mathematics **N** CHEM1001, CHEM1101, CHEM1109, CHEM1903, CHEM1909 *Note: Department permission required for enrolment*	Semester 1
CHEM1902 **Chemistry 1B (Advanced)**	6	**P** CHEM (1901 or 1903) or Distinction in CHEM1101 or equivalent **C** Recommended concurrent unit of study: 6 credit points of Junior Mathematics **N** CHEM1002, CHEM1102, CHEM1108, CHEM1904, CHEM1908 *Note: Department permission required for enrolment*	Semester 2
CHEM1903 **Chemistry 1A (Special Studies Program)**	6	**P** UAI of at least 98.7 and HSC Chemistry result in Band 6 **C** Recommended concurrent unit of study: 6 credit points of Junior Mathematics. **N** CHEM (1001 or 1101 or 1109 or 1901 or 1909) *Note: Department permission required for enrolment* *Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.*	Semester 1
CHEM1904 **Chemistry 1B (Special Studies Program)**	6	**P** Distinction in CHEM1903 **C** Recommended concurrent units of study: 6 credit points of Junior Mathematics. **N** CHEM1002, CHEM1102, CHEM1108, CHEM1902, CHEM1908 *Note: Department permission required for enrolment* *Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.*	Semester 2
Intermediate units of study			
CHEM2401 **Molecular Reactivity and Spectroscopy**	6	**P** CHEM (1102 or 1902 or 1904 or 1909 or 1612); 6 credit points of Junior Mathematics **N** CHEM2001, CHEM2101, CHEM2301, CHEM2311, CHEM2502, CHEM2901, CHEM2903, CHEM2911, CHEM2915	Semester 1
CHEM2402 **Chemical Structure and Stability**	6	**P** CHEM (1102 or 1902 or 1904 or 1909 or 1612); 6 credit points of Junior Mathematics **N** CHEM2202, CHEM2302, CHEM2902, CHEM2912, CHEM2916 *This is the main chemistry unit of study for students expecting to major in chemistry*	Semester 2
CHEM2403 **Chemistry of Biological Molecules**	6	**P** 12 credit points of Junior Chemistry; 6 credit points of Junior Mathematics **N** CHEM2001, CHEM2901, CHEM2311, CHEM2903, CHEM2913 *To enrol in Senior Chemistry in 2008 it will be a requirement that students complete CHEM (2401 or 2911 or 2915) and CHEM (2402 or 2912 or 2916). Students are advised that combinations of CHEM2 units that do not meet this requirement will generally not allow progression to Senior Chemistry.*	Semester 2
CHEM2404 **Forensic and Environmental Chemistry**	6	**P** 12 credit points of Junior Chemistry; 6 credit points of Junior Mathematics **N** CHEM3107, CHEM3197 *To enrol in Senior Chemistry in 2008 it will be a requirement that students complete CHEM (2401 or 2911 or 2915) and CHEM (2402 or 2912 or 2916). Students are advised that combinations of CHEM2 units that do not meet this requirement will generally not allow progression to Senior Chemistry.*	Semester 1
CHEM2911 **Molecular Reactivity & Spectroscopy Adv**	6	**P** Credit average or better in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. **N** CHEM2001, CHEM2101, CHEM2301, CHEM2311, CHEM2401, CHEM2502, CHEM2901, CHEM2903, CHEM2915	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
CHEM2912 **Chemical Structure and Stability (Adv)**	6	**P** Credit average or better in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. **N** CHEM2202, CHEM2302, CHEM2402, CHEM2902, CHEM2916	Semester 2
CHEM2913 **Chemistry of Biological Molecules (Adv)**	6	**P** CHEM (1902 or 1904 or 1909). 12 credit points of Junior Mathematics. Candidates for the BSc (Molecular Biology & Genetics) must achieve a Credit average in Junior units of study. Candidates for the BSc (Molecular Biotechnology) must achieve a Credit average in Junior units of study and a Distinction average in Junior Chemistry units of study. **N** CHEM2001, CHEM2101, CHEM2301, CHEM2311, CHEM2403, CHEM2502, CHEM2901, CHEM2903 *This unit of study is available to students in the Bachelor of Science (Molecular Biology and Genetics) and the Bachelor of Science (Molecular Biotechnology) degree programs only.*	Semester 2
CHEM2915 **Molecular Reactivity & Spectroscopy SSP**	6	**P** By invitation. High WAM and a Distinction average in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics **N** CHEM2001, CHEM2101, CHEM2301, CHEM2311, CHEM2401, CHEM2502, CHEM2901, CHEM2903, CHEM2911 *Note: Department permission required for enrolment* *The number of places in this unit of study is strictly limited and entry is by invitation only. Enrolment is conditional upon available places.*	Semester 1
CHEM2916 **Chemical Structure and Stability (SSP)**	6	**P** By invitation. High WAM and a Distinction average in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. **N** CHEM2202, CHEM2302, CHEM2402, CHEM2902, CHEM2912 *Note: Department permission required for enrolment* *The number of places in this unit of study is strictly limited and entry is by invitation only. Enrolment is conditional upon available places.*	Semester 2
Senior units of study			
CHEM3110 **Biomolecules: Properties and Reactions**	6	**P** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3910	Semester 1
CHEM3111 **Organic Structure and Reactivity**	6	**P** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3911	Semester 1
CHEM3112 **Materials Chemistry**	6	**A** CHEM2401 and CHEM2402 **P** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3912	Semester 1
CHEM3113 **Catalysis and Sustainable Processes**	6	**A** CHEM2401 and CHEM2402. **P** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3913	Semester 1
CHEM3910 **Biomolecules: Properties & Reactions Adv**	6	**P** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)) **N** CHEM3110	Semester 1
CHEM3911 **Organic Structure and Reactivity (Adv)**	6	**P** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3111	Semester 1
CHEM3912 **Materials Chemistry (Adv)**	6	**A** CHEM2401 and CHEM2402. **P** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3112	Semester 1
CHEM3913 **Catalysis and Sustainable Process (Adv)**	6	**A** CHEM2401 and CHEM2402. **P** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3113	Semester 1
CHEM3114 **Metal Complexes: Medicine and Materials**	6	**A** CHEM2401 and CHEM2402. **P** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3914	Semester 2
CHEM3115 **Synthetic Medicinal Chemistry**	6	**P** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3915	Semester 2
CHEM3116 **Membranes, Self Assembly and Surfaces**	6	**A** CHEM2401 and CHEM2402. **P** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3916	Semester 2
CHEM3117 **Molecular Spectroscopy & Quantum Theory**	6	**A** CHEM2401 and CHEM2402. **P** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3917	Semester 2
CHEM3914 **Metal Complexes: Medic. & Mater. (Adv)**	6	**A** CHEM2401 and CHEM2402. **P** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3114	Semester 2
CHEM3915 **Synthetic Medicinal Chemistry (Adv)**	6	**P** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3115	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
CHEM3916 **Membranes, Self Assembly & Surfaces (Adv**	6	**A** CHEM2401 and CHEM2402. **P** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3116	Semester 2
CHEM3917 **Mol. Spectroscopy & Quantum Theory (Adv)**	6	**A** CHEM2401 and CHEM2402. **P** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3117	Semester 2
Computational Science			
For a major in Computational Science the minimum requirement is 24 credit points chosen from the core or elective senior units of study listed for this subject area, of which at least 12 credit points must be from the core senior units of study.			
Junior units of study			
COSC1001 **Computational Science in Matlab**	3	**A** HSC Mathematics **N** COSC1901	Semester 2
COSC1901 **Computational Science in Matlab (Adv)**	3	**A** HSC Mathematics **P** UAI of at least 90, or COSC1902, or a distinction or better in COSC1002, SOFT (1001, 1002, 1901 or 1902). **N** COSC1001	Semester 2
COSC1002 **Computational Science in C**	3	**A** HSC Mathematics **N** COSC1902	Semester 2
COSC1902 **Computational Science in C (Adv)**	3	**A** HSC Mathematics **P** UAI of at least 90, or COSC1901, or a distinction or better in COSC1001, SOFT (1001, 1002, 1901 or 1902). **N** COSC1002	Semester 2
Senior core units of study			
COSC3011 **Scientific Computing**	6	**A** Programming experience in MATLAB **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. **N** COSC3911, COSC3001, COSC3901, PHYS3301, PHYS3901	Semester 1
COSC3911 **Scientific Computing (Advanced)**	6	**A** Programming experience in MATLAB **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. **N** COSC3011, COSC3001, COSC3901, PHYS3301, PHYS3901	Semester 1
COSC3012 **Parallel Computing & Visualisation**	6	**A** Programming experience in C and MATLAB or equivalent. **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. **N** COSC3912, COSC3002, COSC3902, COSC3601, PHYS3303, PHYS3933	Semester 2
COSC3912 **Parallel Computing & Visualisation (Adv)**	6	**A** Programming experience in C and MATLAB or equivalent. **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. **N** COSC3012, COSC3002, COSC3902, COSC3601, PHYS3303, PHYS3933	Semester 2
MATH3076 **Mathematical Computing**	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1001 or 1003 or 1901 or 1903 or 1906 or 1907) **N** MATH3976, MATH3016, MATH3916	Semester 1
MATH3976 **Mathematical Computing (Advanced)**	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1903 or 1907) or Credit in MATH1003 **N** MATH3076, MATH3016, MATH3916	Semester 1
Senior elective units of study			
BINF3101 **Bioinformatics Project**	6	**A** 12 credit points from Junior units of study in Software Development (SOFT) and/or Computational Science (COSC) **P** SOFT (2130 or 2830 or 2004 or 2904) and 12 credit points from Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and Genetics and/or Pharmacology **N** COMP3206, BINF3001	Semester 2
BIOL3006 **Ecological Methods**	6	**A** BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). **P** 12 credit points of intermediate level Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3906, BIOL3023, BIOL3923, MARS3102	Semester 1
BIOL3906 **Ecological Methods (Advanced)**	6	**A** BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3006, BIOL3023, BIOL3923, MARS3102	Semester 1
BIOL3027 **Bioinformatics and Genomics**	6	**P** 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **N** BIOL3927 *This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.*	Semester 1
BIOL3927 **Bioinformatics and Genomics (Advanced)**	6	**P** Distinction average in 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **N** BIOL3027	Semester 1
GEOS3003 **Dynamics of Continents and Basins**	6	**P** (6 credit points of Intermediate Geoscience units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOL3101, GEOS3903	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
GEOS3903 **Dynamics of Continents & Basins (Adv)**	6	**P** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) **N** GEOL3101, GEOS3003 *A Distinction in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 1
GEOS3004 **Geophysics, Imaging, Oil/Ore Production**	6	**P** 12 credit points of Intermediate Science units of study or CIVL2409 **N** GEOP3202, GEOS3904	Semester 2
GEOS3904 **Geophysics, Imaging, Oil/Ore Prod (Adv)**	6	**P** Distinction average in 24 credit points of Intermediate Science Units, or Distinction in (GEOL2923 or CIVL2409) **N** GEOL3202, GEOS3004 *Note: Department permission required for enrolment* *A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 2
GEOS3007 **Remote Sensing: Imaging the Earth**	6	**P** 12 credit points of Intermediate Science units of study or CIVL2409 **N** GEOL3101	Semester 1
GEOS3907 **Remote Sensing: Imaging the Earth (Adv)**	6	**A** Intermediate level geology **P** Distinction average in 12 credit points of Intermediate Science subjects or CIVL2409 **N** GEOL3101 or GEOS3007	Semester 1
GEOS3009 **Coastal Environments & Processes**	6	**P** (6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3909, MARS3003, MARS3105 ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 1
GEOS3016 **Seafloor Processes & Imaging**	6	**P** 12 credit points of Intermediate Geoscience or ((one of MARS2005 and MARS2905) and (one of MARS2006 and MARS2906)) **N** GEOS3916, MARS3005, MARS3106 ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 2
GEOS3916 **Seafloor Processing and Imaging (Adv)**	6	**P** Distinction average in (12 credit points of Intermediate Geoscience or ((one of MARS2005 & MARS2905) and (one of MARS2006 & MARS2906))) **N** GEOS3016, MARS3005, MARS3106 *Note: Department permission required for enrolment*	Semester 2
MATH3063 **Differential Equations & Biomaths**	6	**A** MATH2061 **P** 12 credit points of Intermediate Mathematics **N** MATH3020, MATH3920, MATH3003, MATH3923, MATH3963	Semester 1
MATH3963 **Differential Equations & Biomaths (Adv)**	6	**A** MATH2961 **P** 12 credit points of Intermediate Mathematics **N** MATH3020, MATH3920, MATH3003, MATH3923, MATH3063	Semester 1
MATH3078 **PDEs and Waves**	6	**A** MATH(2061/2961) and MATH(2065/2965) **P** 12 credit points of Intermediate Mathematics **N** MATH3978, MATH3018, MATH3921	Semester 2
MATH3978 **PDEs and Waves (Advanced)**	6	**A** MATH(2061/2961) and MATH(2065/2965) **P** 12 credit points of Intermediate Mathematics with at least Credit average **N** MATH3078, MATH3018, MATH3921	Semester 2
MULT3306 **Multimedia Computing and Processing**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** MULT3019, MULT3919, MULT3004, MULT3904, MULT3606, COMP3004, COMP3904	Semester 1
MULT3606 **Multimedia Computing & Processing (Adv)**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a COMP or MULT or SOFT unit at 2000-level or above. **N** MULT3019, MULT3919, MULT3004, MULT3904, MULT3306, COMP3004, COMP3904	Semester 1
STAT3011 **Stochastic Processes and Time Series**	6	**P** STAT (2011 or 2911 or 2001 or 2901) and MATH (1003 or 1903 or 1907). **N** STAT3911, STAT3003, STAT3903, STAT3005, STAT3905	Semester 1
STAT3911 **Stochastic Processes and Time Series Adv**	6	**P** (STAT2911 or credit in STAT2011) and MATH(1003 or 1903 or 1907). **N** STAT3011, STAT3003, STAT3903, STAT3005, STAT3905	Semester 1
STAT3012 **Applied Linear Methods**	6	**P** STAT(2012 or 2912 or 2004) and MATH(1002 or 1902). **N** STAT3912, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
STAT3912 **Applied Linear Methods Advanced**	6	**P** (STAT2912 or Credit in STAT2004 or Credit in STAT2012) and MATH(2061 or 2961 or 1902). **N** STAT3012, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
Computer Science			
For a major in Computational Science the minimum requirement is 24 credit points chosen from the senior units of study listed for this subject area			
Junior units of study			
INFO1003 **Foundations of Information Technology**	6	**A** Basic computer operations **N** INFO1000, INFS1000, ISYS1003, INFO1903	Semester 1 Semester 2
INFO1903 **Foundations of Information Tech (Adv)**	6	**A** Basic computer operations **P** UAI at least that for acceptance into BSc(Adv) degree program. **N** INFO1003, ISYS1003, INFO1000, INFS1000 *Note: Department permission required for enrolment*	Semester 1
SOFT1001 **Software Development 1**	6	**A** HSC Mathematics Extension 1 **N** SOFT1901, COMP1001, COMP1901, DECO2011	Semester 1 Semester 2
SOFT1901 **Software Development 1 (Adv)**	6	**A** HSC Mathematics Extension 1 **N** SOFT1001, COMP1001, COMP1901 *Note: Department permission required for enrolment* *Entry requires departmental permission, except for students in BSc(Adv), BCST(Adv) or BIT degrees*	Semester 1 Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
SOFT1002 **Software Development 2**	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 **N** SOFT1902, COMP1002, COMP1902 *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 1 Semester 2 Summer Main
SOFT1902 **Software Development 2 (Adv)**	6	**P** Distinction in one of SOFT (1001 or 1901) or COMP (1001 or 1901) **N** SOFT1002, COMP1002, COMP1902, DECO2011 *Note: Department permission required for enrolment in the following sessions: Semester 1* *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 1 Semester 2
Intermediate units of study			
COMP2160 **Data Structures**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP2111, COMP2811, COMP2002, COMP2902, COMP2860	Semester 1
COMP2860 **Data Structures (Advanced)**	6	**P** [SOFT (1002 or 1902) or COMP (1002 or 1902)] and Distinction in one COMP, SOFT or MATH unit. **N** COMP(2111 or 2811 or 2002 or 2902 or 2160)	Semester 1
INFO2110 **Systems Analysis and Modelling**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. **N** INFO (2000 or 2810 or 2900)	Semester 1
INFO2810 **Systems Analysis and Modelling (Adv)**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC units of study) or DECO2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. **N** INFO (2000 or 2110 or 2900)	Semester 1
INFO2120 **Database Systems 1**	6	**P** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC) or DECO2011 **N** INFO (2005 or 2820 or 2905).	Semester 2
INFO2820 **Database Systems 1 (Advanced)**	6	**P** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DEC2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. **N** INFO (2005 or 2120 or 2905)	Semester 2
SOFT2130 **Software Construction 1**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 2 Summer Main
SOFT2830 **Software Construction 1 (Adv)**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) and Distinction in one of these, or in any SOFT unit at 2000-level or above. **N** COMP (2004 or 2904) or SOFT (2004 or 2904 or 2130). *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 2
Senior units of study			
COMP3308 **Introduction to Artificial Intelligence**	6	**A** Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO1903 or SOFT1002 **P** 18 crpts of 2000-level units. **N** COMP(3002 or 3902 or 3608)	Semester 1
COMP3608 **Intro. to Artificial Intelligence (Adv)**	6	**A** Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO1903 or SOFT1002. **P** 18 crpts of 2000-level units, and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. **N** COMP(3002, 3902 or 3308)	Semester 1
COMP3309 **Algorithms**	6	**P** COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902). **N** COMP(3111 or 3811), COMP(3001 or 3901) or COMP3609	Semester 1
COMP3609 **Algorithms (Advanced)**	6	**P** COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902), and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. **N** COMP(3111 or 3811 or 3001 or 3901 or 3309)	Semester 1
MULT3306 **Multimedia Computing and Processing**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** MULT3019, MULT3919, MULT3004, MULT3904, MULT3606, COMP3004, COMP3904	Semester 1
MULT3606 **Multimedia Computing & Processing (Adv)**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a COMP or MULT or SOFT unit at 2000-level or above. **N** MULT3019, MULT3919, MULT3004, MULT3904, MULT3306, COMP3004, COMP3904	Semester 1
NETS3303 **Network Protocols & Programming**	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)). **N** NETS(3007 or 3907), COMP(3007 or3907) or NETS3603.	Semester 1
NETS3603 **Network Protocols & Programming (Adv)**	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. **N** NETS(3007 or 3907), COMP(3007 or3907) or NETS3303.	Semester 1
NETS3305 **Computer and Network Security**	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** NETS(3016 or 3916), NETS3605 or ELEC(5610 or 5616)	Semester 1
NETS3605 **Computer and Network Security (Advanced)**	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. **N** NETS(3016 or 3916), NETS3305 or ELEC(5610 or 5616)	Semester 1
SOFT3301 **Software Construction 2**	6	**P** SOFT(2130 or 2830 or 2004 or 2904) or COMP2004 or COMP2904 **N** SOFT3601, SOFT3104, SOFT3804, COMP3008, COMP3908	Semester 1
SOFT3601 **Software Construction 2 (Advanced)**	6	**P** (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2004 or COMP2004 or COMP2904), and Distinction in any 2000-level or above SOFT or INFO unit. **N** SOFT3301, SOFT3104, SOFT3804, COMP3008, COMP3908	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
SOFT3300 **Software Development Project**	6	**P** INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations). **N** SOFT3600, SOFT3200, SOFT3700	Semester 1 Semester 2
SOFT3600 **Software Development Project (Advanced)**	6	**P** (INFO2110 or INFO2810 or INFO2000 or INFO2900) and (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2904 or COMP2004 or COMP2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations), and Distinction in any 2000-level or above IT-related unit. **N** SOFT3300, SOFT3200, SOFT3700	Semester 1 Semester 2
COMP3310 **Theory of Computation**	6	**P** COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902). **N** COMP (2003 or 2903 or 3610)	Semester 2
COMP3610 **Theory of Computation (Advanced)**	6	**P** COMP (2160 or 2860 or 2111 or 2811 or 2002 or 2902), and Distinction in a COMP, SOFT, or MATH unit at 2000-level or above. **N** COMP (2003 or 2903 or 3310)	Semester 2
INFO3404 **Database Systems 2**	6	**P** INFO(2120 or 2820 or 2005 or 2905). **N** INFO (3005 or 3504 or 3905) or COMP (3005 or 3905)	Semester 2
INFO3504 **Database Systems 2 (Adv)**	6	**P** INFO (2005 or 2120 or 2820 or 2905),and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above. **N** INFO (3005 or 3404 or 3905) or COMP (3005 or 3905)	Semester 2
MULT3307 **Interactive Multimedia Systems**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2
MULT3607 **Interactive Multimedia Systems (Adv)**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a MULT or SOFT or INFO or COMP unit at 2000-level or above. **N** SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3307.	Semester 2
NETS3304 **Operating System Internals**	6	**P** (ELEC1601 or NETS(2008 or 2908) or COMP(2001 or 2901) or ELEC2601) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** NETS(3009 or 3909 or 3604), COMP(3009 or 3909). *Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enrol in this unit.*	Semester 2
NETS3604 **Operating Systems Internals (Advanced)**	6	**P** (ELEC1601 or NETS(2008 or 2908) or COMP(2001 or 2901) or ELEC2601) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. **N** NETS(3009 or 3909 or 3304), COMP(3009 or 3909) *Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enroll in this unit.*	Semester 2
SOFT3302 **Software Quality Assurance**	6	**P** (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))). **N** SOFT(3602 or 3103 or 3803)	Semester 2
SOFT3602 **Software Quality Assurance (Adv)**	6	**P** (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))), and Distinction in any 2000-level or above SOFT or INFO unit. **N** SOFT(3302 or 3103 or 3803) or, COMP(3008 or COMP3908)	Semester 2
Environmental Studies			
For a major in Environmental Studies, students are required to complete a minimum of 24 credit points from Senior units of study listed below, including at least 12 credit points from Senior ENVI units			
Junior units of study			
Students are recommended to take at least one of the following units of study			
GEOS1001, GEOS1901, GEOS1002, GEOS1902, GEOS1003, GEOS1903			
GEOS1001 **Earth, Environment and Society**	6	**N** GEOS1901, GEOG1001, GEOG1002, GEOL1001, GEOL1002, GEOL1902	Semester 1
GEOS1901 **Earth, Environment and Society Advanced**	6	**P** Departmental permission is required for enrolment. A UAI above 93 is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator. **N** GEOS1001, GEOG1001, GEOG1002, GEOL1001, GEOL1002, GEOL1902 *Note: Department permission required for enrolment*	Semester 1
GEOS1002 **Introductory Geography**	6	**N** GEOS1902, GEOG1001, GEOG1002	Semester 2
GEOS1902 **Introductory Geography (Advanced)**	6	**P** Departmental permission is required for enrolment. A UAI above 93 is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator. **N** GEOS1002, GEOG1001, GEOG1002 *Note: Department permission required for enrolment*	Semester 2
GEOS1003 **Introduction to Geology**	6	**N** GEOS1903, GEOL1002, GEOL1902	Semester 2
GEOS1903 **Introduction to Geology (Advanced)**	6	**P** Departmental permission is required for enrolment. A UAI above 93 is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator. **N** GEOL1002, GEOL1902, GEOS1003 *Note: Department permission required for enrolment*	Semester 2
Intermediate units of study			
The completion at least one of the following units of study is highly recommended:			
ENVI2111 **Conservation Biology and Applied Ecology**	6	**P** 24 credit points of Junior Science units, including 12 credit points of Junior Biology **N** ENVI2001, ENVI2911	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
ENVI2911 **Conservation Biology (Advanced)**	6	**P** Distinction average in BIOL(1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016. 12 credit points of Junior Chemistry (or for BSc (Marine Science) students 6 credit points of Junior Chemistry and 6 credit points of Junior Physics). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **N** ENVI2001, ENVI2111	Semester 1
ENVI2112 **Atmospheric Processes and Climate**	6	**P** 24 credit points of Junior Science units, including 12 credit points of Junior Chemistry or Physics **N** ENVI2002	Semester 2
GEOS2111 **Natural Hazards: a GIS Approach**	6	**P** 24 credit points of junior units of study including one of GEOS1001 or GEOS1002 or GEOS1003 or GEOG1001 or GEOG1002 or ENVI1002 or GEOL1001 or GEOL1002 **N** GEOG2411, GEOS2911	Semester 1
GEOS2113 **Making the Australian Landscape**	6	**P** 24 credit points of Junior units of study, including GEOS1002 or GEOS1003 or GEOS1902 or GEOS1903 or GEOG1001 or ENVI1002 or GEOL1001 or GEOL1002 or GEOL1902 **N** GEOS2913	Semester 1
GEOS2121 **Environmental and Resource Management**	6	**P** 24 credit points of junior units of study, including one of: GEOS1001 or GEOS1002 or GEOS1003 or GEOS1901 or GEOS1902 or GEOS1903 or ECOP1001 or ECOP1002 **N** GEOG2421, GEOL2202, GEOS2921	Semester 2
GEOS2122 **Urban Geography**	6	**P** 24 credit points of Junior units of study, including GEOS1001 or GEOS1002 or GEOS1003 or ECOP1001 or ECOP1002. **N** GEOS2922, GEOG2521	Semester 2
GEOS2911 **Natural Hazards: a GIS Approach Advanced**	6	**P** 24 credit points of junior units of study including GEOS1001 or GEOS1002 or GEOS1003 or GEOG1001 or GEOG 1002 or ENVI1002 or GEOL1001 or GEOL1002 **N** GEOG2411, GEOS2111	Semester 1
GEOS2921 **Environmental & Resource Management Adv**	6	**P** 24 credit points of Junior units of study, including a distinction in one of: GEOS1001 or GEOS1901 or GEOS1002 or GEOS 1902 or GEOS1003 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1001 or GEOG1002 **N** GEOG2421, GEOL2202, GEOS2121	Semester 2
GEOS2922 **Urban Geography (Advanced)**	6	**P** 24 credit points of Junior units of study, including a distinction in one of: GEOS1001 or GEOS1901 or GEOS1002 or GEOS 1902 or GEOS1003 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1001 or GEOG1002 **N** GEOS2122	Semester 2
Senior units of study			
ENVI3111 **Environmental Law and Ethics**	6	**A** Intermediate Environmental Science. **P** 12 credit points of Intermediate Science or Agriculture units. **N** ENVI3001, ENVI3003.	Semester 1
ENVI3112 **Environmental Assessment**	6	**A** Intermediate Environmental Science. **P** 12 credit points of Intermediate Science or Agriculture units. **N** ENVI3002, ENVI3004.	Semester 2
ENVI3113 **Environmental Economics and Planning**	6	**A** Intermediate Environmental Science **P** 12 credit points of Intermediate Science or Agriculture units **N** ENVI3001	Semester 1
ENVI3114 **Energy and the Environment**	6	**A** Junior Physics or Intermediate Environmental Science. **P** 12 credit points of Intermediate Science or Agriculture units. **N** ENVI3001, PHYS3600.	Semester 2
GEOS3014 **GIS in Coastal Management**	6	**P** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **N** GEOS3914, MARS3104. ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 2
GEOS3018 **Rivers: Science, Policy and Management**	6	**P** (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3918	Semester 1
GEOS3511 **Understanding Australia's Regions**	6	**P** 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study - one of GEOG2311,GEOG2321, GEOG2411, GEOG2411, GEOG2421, GEOG2511, GEOG2521, GEOS2111, GEOS2112, GEOS2113, GEOS2121, GEOS2122, GEOS2124, GEOS2911, GEOS2912, GEOS2921, GEOS2922, GEOS2924 **N** GEOS3911	Semester 1
GEOG3522 **Globalisation and Regions in Transition** *This unit of study is not available in 2007*	6	**P** 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **N** GEOG3203	
GEOS3914 **GIS in Coastal Management (Advanced)**	6	**P** Distinction average in 12 credit points of intermediate geography or geology units or 12 credit points of intermediate marine science units. **N** GEOS3014, MARS3104 *Note: Department permission required for enrolment* *A distinction average in prior Geography, Geology or Marine Science units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 2
GEOS3918 **Rivers: Science and Management (Adv)**	6	**P** Distinction average in (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3018	Semester 1
GEOS3911 **Understanding Australia's Regions (Adv)**	6	**P** Distinction average in 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study - one of GEOG2311,GEOG2321, GEOG2411, GEOG2411, GEOG2421, GEOG2511, GEOG2521, GEOS2111, GEOS2112, GEOS2113, GEOS2121, GEOS2122, GEOS2124, GEOS2911, GEOS2912, GEOS2921, GEOS2922, GEOS2924 **N** GEOS3511 *Note: Department permission required for enrolment*	Semester 1
Financial Mathematics and Statistics			
For a major in Financial Mathematics and Statistics, students are required to complete:			

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Junior units of study			
At least 12 credit points of junior units of study from the Science Subject Area of Mathematics including:-			
(i) MATH (1001 or 1901) and MATH (1002 or 1902) and MATH (1003 or 1903) and MATH (1005 or 1905)			
MATH1001 **Differential Calculus**	3	**A** HSC Mathematics Extension 1 **N** MATH1011, MATH1901, MATH1906, MATH1111	Semester 1 Summer Main
MATH1901 **Differential Calculus (Advanced)**	3	**A** HSC Mathematics Extension 2 **N** MATH1111, MATH1011, MATH1001, MATH1906 *Note: Department permission required for enrolment*	Semester 1
MATH1002 **Linear Algebra**	3	**A** HSC Mathematics Extension 1 **N** MATH1902, MATH1012, MATH1014	Semester 1 Summer Main
MATH1902 **Linear Algebra (Advanced)**	3	**A** HSC Mathematics Extension 2 **N** MATH1002, MATH1012, MATH1014 *Note: Department permission required for enrolment*	Semester 1
MATH1003 **Integral Calculus and Modelling**	3	**A** HSC Mathematics Extension 2 or MATH1001 or MATH1111 **N** MATH1013, MATH1903, MATH1907	Semester 2 Summer Main
MATH1903 **Integral Calculus and Modelling Advanced**	3	**A** HSC Mathematics Extension 2 or Credit or better in MATH1001 or MATH1901 **N** MATH1003, MATH1013, MATH1907 *Note: Department permission required for enrolment*	Semester 2
MATH1005 **Statistics**	3	**A** HSC Mathematics **N** MATH1905, MATH1015, ECMT Junior units of study, STAT1021, STAT1022	Semester 2 Summer Main
MATH1905 **Statistics (Advanced)**	3	**A** HSC Mathematics Extension 2 **N** MATH1005, MATH1015, ECMT Junior units of study, STAT1021, STAT1022 *Note: Department permission required for enrolment*	Semester 2
Core intermediate units of study			
18 credit points from the following units of study:			
(i) MATH2070 or 2970); and			
(ii) STAT (2011 or 2911) and STAT (2012 or 2912)			
MATH2070 **Optimisation and Financial Mathematics**	6	**A** MATH (1003 or 1903 or 1907) **P** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) **N** MATH2010, MATH2033, MATH2933, MATH2970, ECMT3510 *Students may enrol in both MATH2070 and MATH3075 in the same semester*	Semester 2
MATH2970 **Optimisation & Financial Mathematics Adv**	6	**A** MATH (1903 or 1907) or Credit in MATH1003 **P** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) **N** MATH2010, MATH2033, MATH2933, MATH2070 *Students may enrol in both MATH2970 and MATH3975 in the same semester*	Semester 2
STAT2011 **Statistical Models**	6	**P** MATH (1001 or 1901 or 1906 or 1011) and [MATH (1005 or 1905 or 1015) or STAT1021] **N** STAT2901, STAT2001, STAT2911	Semester 1
STAT2911 **Probability and Statistical Models (Adv)**	6	**P** MATH (1903 or 1907 or Credit in 1003) and MATH (1905 or Credit in 1005) **N** STAT2001, STAT2011, STAT2901	Semester 1
STAT2012 **Statistical Tests**	6	**A** STAT (2011 or 2002) **P** MATH (1005 or 1905 or 1015) **N** STAT2004, STAT2912	Semester 2
STAT2912 **Statistical Tests (Advanced)**	6	**A** STAT (2911 or 2901) **P** MATH1905 or Credit in MATH1005 **N** STAT2004, STAT2012	Semester 2
Senior units of study			
At least 24 credit points comprising the following units of study:			
(i) MATH(3075 or 3975) and STAT(3011 or 3911) and STAT(3012 or 3912)			
MATH3075 **Financial Mathematics**	6	**P** 12 credit points of Intermediate Mathematics **N** MATH3975, MATH 3015, MATH3933	Semester 2
MATH3975 **Financial Mathematics (Advanced)**	6	**P** 12 credit points of Intermediate Mathematics with at least Credit average **N** MATH3933, MATH3015, MATH3075	Semester 2
STAT3011 **Stochastic Processes and Time Series**	6	**P** STAT (2011 or 2911 or 2001 or 2901) and MATH (1003 or 1903 or 1907). **N** STAT3911, STAT3003, STAT3903, STAT3005, STAT3905	Semester 1
STAT3911 **Stochastic Processes and Time Series Adv**	6	**P** (STAT2911 or credit in STAT2011) and MATH(1003 or 1903 or 1907). **N** STAT3011, STAT3003, STAT3903, STAT3005, STAT3905	Semester 1
STAT3012 **Applied Linear Methods**	6	**P** STAT(2012 or 2912 or 2004) and MATH(1002 or 1902). **N** STAT3912, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
STAT3912 **Applied Linear Methods Advanced**	6	**P** (STAT2912 or Credit in STAT2004 or Credit in STAT2012) and MATH(2061 or 2961 or 1902). **N** STAT3012, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
(ii) One of the following units of study:- STAT(3013 or 3913), STAT(3014 or 3914), MATH(3078 or 3978), MATH(3076 or 3976), MATH3067 or INFO(3404 or 3504)			
STAT3013 **Statistical Inference**	6	**P** STAT(2012 or 2912 or 2003 or 2903). **N** STAT3913, STAT3001, STAT3901	Semester 2
STAT3913 **Statistical Inference Advanced**	6	**P** STAT(2912 or 2903). **N** STAT3013, STAT3001, STAT3901	Semester 2
STAT3014 **Applied Statistics**	6	**A** STAT(3012 or 3912). **P** STAT(2012 or 2912 or 2004). **N** STAT3914, STAT3002, STAT3902, STAT3006	Semester 2
STAT3914 **Applied Statistics Advanced**	6	**A** STAT3912 **P** STAT2912 or credit or better in (STAT2004 or STAT2012). **N** STAT3014, STAT3002, STAT3902, STAT3006, STAT3907	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
MATH3078 **PDEs and Waves**	6	**A** MATH(2061/2961) and MATH(2065/2965) **P** 12 credit points of Intermediate Mathematics **N** MATH3978, MATH3018, MATH3921	Semester 2
MATH3978 **PDEs and Waves (Advanced)**	6	**A** MATH(2061/2961) and MATH(2065/2965) **P** 12 credit points of Intermediate Mathematics with at least Credit average **N** MATH3078, MATH3018, MATH3921	Semester 2
MATH3076 **Mathematical Computing**	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1001 or 1003 or 1901 or 1903 or 1906 or 1907) **N** MATH3976, MATH3016, MATH3916	Semester 1
MATH3976 **Mathematical Computing (Advanced)**	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1903 or 1907) or Credit in MATH1003 **N** MATH3076, MATH3016, MATH3916	Semester 1
MATH3067 **Information and Coding Theory**	6	**P** 12 credit points of Intermediate Mathematics **N** MATH3007, MATH3010	Semester 2
INFO3404 **Database Systems 2**	6	**P** INFO(2120 or 2820 or 2005 or 2905). **N** INFO (3005 or 3504 or 3905) or COMP (3005 or 3905)	Semester 2
INFO3504 **Database Systems 2 (Adv)**	6	**P** INFO (2005 or 2120 or 2820 or 2905),and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above. **N** INFO (3005 or 3404 or 3905) or COMP (3005 or 3905)	Semester 2
Geography			
For a major in Geography, the minimum requirement is 24 credit points from senior units of study listed below which must include GEOS3015 and GEOS3018 OR at least 12 credit points from the following units: GEOS3511, GEOS3512, GEOS3513, GEOS3514, GEOG3521 and GEOS3522			
Junior units of study			
GEOS1001 **Earth, Environment and Society**	6	**N** GEOS1901, GEOG1001, GEOG1002, GEOL1001, GEOL1002, GEOL1902	Semester 1
GEOS1002 **Introductory Geography**	6	**N** GEOS1902, GEOG1001, GEOG1002	Semester 2
GEOS1901 **Earth, Environment and Society Advanced**	6	**P** Departmental permission is required for enrolment. A UAI above 93 is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator. **N** GEOS1001, GEOG1001, GEOG1002, GEOL1001, GEOL1002, GEOL1902 *Note: Department permission required for enrolment*	Semester 1
GEOS1902 **Introductory Geography (Advanced)**	6	**P** Departmental permission is required for enrolment. A UAI above 93 is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator. **N** GEOS1002, GEOG1001, GEOG1002 *Note: Department permission required for enrolment*	Semester 2
Intermediate units of study			
GEOG2321 **Fluvial and Groundwater Geomorphology**	6	**P** GEOG(2311 or 2001) or 36 credit points of Junior study including GEOG1001 or ENVI (1001 or 1002) or GEOL (1001 or 1002 or 1501). Students in the Bachelor of Resource Economics should have 36 credit points of study in Biology (or Land and Water Science), Chemistry and Mathematics. Students in the Bachelor of Land and Water Science should have ENVI1002, 12 credit points of Chemistry, 6 credit points of Biology, BIOM1002. **N** GEOG (2002 or 2302 or 2303) or MARS2002 or MARS2006	Semester 2
GEOS2111 **Natural Hazards: a GIS Approach**	6	**P** 24 credit points of junior units of study including one of GEOS1001 or GEOS1002 or GEOS1003 or GEOG1001 or GEOG1002 or ENVI1002 or GEOL1001 or GEOL1002 **N** GEOG2411, GEOS2911	Semester 1
GEOS2112 **Economic Geography of Global Development**	6	**P** 24 credit points of Junior units of study, including GEOS1001 or GEOS1002 or GEOS1003 or GEOS1901 or GEOS1902 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1002 or GEOG1001 **N** GEOS2912, GEOG2511	Semester 1
GEOS2113 **Making the Australian Landscape**	6	**P** 24 credit points of Junior units of study, including GEOS1002 or GEOS1003 or GEOS1902 or GEOS1903 or GEOG1001 or ENVI1002 or GEOL1001 or GEOL1002 or GEOL1902 **N** GEOS2913	Semester 1
GEOS2121 **Environmental and Resource Management**	6	**P** 24 credit points of junior units of study, including one of: GEOS1001 or GEOS1002 or GEOS1003 or GEOS1901 or GEOS1902 or GEOS1903 or ECOP1001 or ECOP1002 **N** GEOG2421, GEOL2202, GEOS2921	Semester 2
GEOS2122 **Urban Geography**	6	**P** 24 credit points of Junior units of study, including GEOS1001 or GEOS1002 or GEOS1003 or ECOP1001 or ECOP1002. **N** GEOS2922, GEOG2521	Semester 2
GEOS2124 **Fossils and Tectonics**	6	**P** 24 credit points of Junior units of study, including GEOS1003 or GEOS1903 **N** GEOS2924, GEOL2123, GEOL2124	Semester 2
GEOS2911 **Natural Hazards: a GIS Approach Advanced**	6	**P** 24 credit points of junior units of study including GEOS1001 or GEOS1002 or GEOS1003 or GEOG1001 or GEOG 1002 or ENVI1002 or GEOL1001 or GEOL1002 **N** GEOG2411, GEOS2111	Semester 1
GEOS2912 **Economic Geography of Global Dev. Adv.**	6	**P** 24 credit points of Junior units of study, including a distinction in one of: GEOS1001 or GEOS1901 or GEOS1002 or GEOS1902 or GEOS1003 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1001 or GEOG1002 **N** GEOS2112, GEOG2511	Semester 1
GEOS2921 **Environmental & Resource Management Adv**	6	**P** 24 credit points of Junior units of study, including a distinction in one of: GEOS1001 or GEOS1901 or GEOS1002 or GEOS 1902 or GEOS1003 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1001 or GEOG1002 **N** GEOG2421, GEOL2202, GEOS2121	Semester 2
GEOS2922 **Urban Geography (Advanced)**	6	**P** 24 credit points of Junior units of study, including a distinction in one of: GEOS1001 or GEOS1901 or GEOS1002 or GEOS 1902 or GEOS1003 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1001 or GEOG1002 **N** GEOS2122	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
GEOS2924 **Fossils and Tectonics (Advanced)**	6	**P** Distinction in GEOS1003 or Distinction average in 12 credit points of Junior Geoscience units (Geoscience is the disciplines of Geography, Geology and Geophysics) **N** GEOS2124, GEOL2123, GEOL2124	Semester 2
Senior units of study			
GEOG3521 **Sustainable Cities**	6	**P** 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **N** GEOG3921, GEOG3202	Semester 2
GEOS3009 **Coastal Environments & Processes**	6	**P** (6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3909, MARS3003, MARS3105 ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 1
GEOS3014 **GIS in Coastal Management**	6	**P** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **N** GEOS3914, MARS3104. ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 2
GEOS3015 **Environmental Geomorphology**	6	**A** Intermediate geomorphology/ physical geography/ geology. **P** 24 credit points of Intermediate units, including 6 credit points of Intermediate Geography. **N** GEOS3915	Semester 2
GEOS3016 **Seafloor Processes & Imaging**	6	**P** 12 credit points of Intermediate Geoscience or ((one of MARS2005 and MARS2905) and (one of MARS2006 and MARS2906)) **N** GEOS3916, MARS3005, MARS3106 ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 2
GEOS3017 **Global Energy-Exploration & Exploitation**	6	**P** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **N** GEOS3917, MARS3008. ** Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.*	Semester 1
GEOS3018 **Rivers: Science, Policy and Management**	6	**P** (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3918	Semester 1
GEOS3511 **Understanding Australia's Regions**	6	**P** 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study - one of GEOG2311,GEOG2321, GEOG2411, GEOG2411, GEOG2421, GEOG2511, GEOG2521, GEOS2111, GEOS2112, GEOS2113, GEOS2121, GEOS2122, GEOS2124, GEOS2911, GEOS2912, GEOS2921, GEOS2922, GEOS2924 **N** GEOS3911	Semester 1
GEOS3512 **Contemporary Global Geographies**	6	**P** 6 credit points of Intermediate units of study in Geography. **N** GEOS3912	Semester 1
GEOS3522 **Cities and Citizenship**	6	**P** 6 credit points of intermediate geography. **N** GEOG3203, GEOS3922	Semester 2
GEOS3053 **Asia-Pacific Field School-Assessment A**	6	**P** 6 credit points of Intermediate units of study in Geography. **C** GEOS3054 **N** GEOG3201, GEOS3953 *Note: Department permission required for enrolment* *Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.*	S1 Intensive
GEOS3054 **Asia-Pacific Field School-Assessment B**	6	**P** 6 credit points of Intermediate units of study in Geography. **C** GEOS3053 **N** GEOG3201, GEOS3954 *Note: Department permission required for enrolment* *Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.*	S1 Intensive
GEOG3921 **Sustainable Cities (Adv)**	6	**P** Distinction average 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **N** GEOG3521, GEOG3202	Semester 2
GEOS3909 **Coastal Environments and Processes (Adv)**	6	**P** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) **N** GEOS3009, MARS3003, MARS3105 *A distinction average in prior Geography or Geology units is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 1
GEOS3911 **Understanding Australia's Regions (Adv)**	6	**P** Distinction average in 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study - one of GEOG2311,GEOG2321, GEOG2411, GEOG2411, GEOG2421, GEOG2511, GEOG2521, GEOS2111, GEOS2112, GEOS2113, GEOS2121, GEOS2122, GEOS2124, GEOS2911, GEOS2912, GEOS2921, GEOS2922, GEOS2924 **N** GEOS3511 *Note: Department permission required for enrolment*	Semester 1
GEOS3912 **Contemporary Global Geographies (Adv)**	6	**P** Distinction in 6 credit points of Intermediate units of study in Geography. **N** GEOS3512 *Note: Department permission required for enrolment*	Semester 1
GEOS3914 **GIS in Coastal Management (Advanced)**	6	**P** Distinction average in 12 credit points of intermediate geography or geology units or 12 credit points of intermediate marine science units. **N** GEOS3014, MARS3104 *Note: Department permission required for enrolment* *A distinction average in prior Geography, Geology or Marine Science units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 2
GEOS3915 **Environmental Geomorphology (Advanced)**	6	**P** Distinction average in 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study. **N** GEOS3015 *Note: Department permission required for enrolment*	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
GEOS3916 **Seafloor Processing and Imaging (Adv)**	6	**P** Distinction average in (12 credit points of Intermediate Geoscience or ((one of MARS2005 & MARS2905) and (one of MARS2006 & MARS2906))) **N** GEOS3016, MARS3005, MARS3106 *Note: Department permission required for enrolment*	Semester 2
GEOS3917 **Global Energy Exploration (Advanced)**	6	**P** Distinction average in ((MARS(2005 or 2905) and MARS(2006 or 2906)), or 12 credit points of Intermediate Geoscience* units). **N** GEOS3017, MARS3008 ** Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.*	Semester 1
GEOS3918 **Rivers: Science and Management (Adv)**	6	**P** Distinction average in (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3018	Semester 1
GEOS3922 **Cities and Citizenship (Advanced)**	6	**P** Distinction average in 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **N** GEOS3522	Semester 2
GEOS3953 **Asia-Pacific Field School-A (Adv)**	6	**P** Distinction average in 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study. **C** GEOS3954 **N** GEOS3053 *Note: Department permission required for enrolment* *Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.*	S1 Intensive
GEOS3954 **Asia-Pacific Field School-B (Adv)**	6	**P** Distinction average in 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study **C** GEOS3953 **N** GEOS3054 *Note: Department permission required for enrolment* *Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.*	S1 Intensive
Geology & Geophysics			
For a major in Geology and Geophysics, the minimum requirement is 24 credit points from Senior units listed in this subject area, which must include GEOS3008			
GEOS1001 **Earth, Environment and Society**	6	**N** GEOS1901, GEOG1001, GEOG1002, GEOL1001, GEOL1002, GEOL1902	Semester 1
GEOS1003 **Introduction to Geology**	6	**N** GEOS1903, GEOL1002, GEOL1902	Semester 2
GEOS1901 **Earth, Environment and Society Advanced**	6	**P** Departmental permission is required for enrolment. A UAI above 93 is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator. **N** GEOS1001, GEOG1001, GEOG1002, GEOL1001, GEOL1002, GEOL1902 *Note: Department permission required for enrolment*	Semester 1
GEOS1903 **Introduction to Geology (Advanced)**	6	**P** Departmental permission is required for enrolment. A UAI above 93 is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator. **N** GEOL1002, GEOL1902, GEOS1003 *Note: Department permission required for enrolment*	Semester 2
Intermediate units			
GEOS2111 **Natural Hazards: a GIS Approach**	6	**P** 24 credit points of junior units of study including one of GEOS1001 or GEOS1002 or GEOS1003 or GEOG1001 or GEOG1002 or ENVI1002 or GEOL1001 or GEOL1002 **N** GEOG2411, GEOS2911	Semester 1
GEOS2112 **Economic Geography of Global Development**	6	**P** 24 credit points of Junior units of study, including GEOS1001 or GEOS1002 or GEOS1003 or GEOS1901 or GEOS1902 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1002 or GEOG1001 **N** GEOS2912, GEOG2511	Semester 1
GEOS2114 **Volcanoes, Hot Rocks and Minerals**	6	**P** GEOG1001, GEOL1001, GEOL1002, GEOS1003, GEOS1903 or ENVI1002 and 24 credit points of Junior Science units of study. **N** GEOL2111, GEOL2911, CIVL2409, GEOS2914	Semester 1 Summer Late
GEOS2121 **Environmental and Resource Management**	6	**P** 24 credit points of junior units of study, including one of: GEOS1001 or GEOS1002 or GEOS1003 or GEOS1901 or GEOS1902 or GEOS1903 or ECOP1001 or ECOP1002 **N** GEOG2421, GEOL2202, GEOS2921	Semester 2
GEOS2124 **Fossils and Tectonics**	6	**P** 24 credit points of Junior units of study, including GEOS1003 or GEOS1903 **N** GEOS2924, GEOL2123, GEOL2124	Semester 2
GEOS2911 **Natural Hazards: a GIS Approach Advanced**	6	**P** 24 credit points of junior units of study including GEOS1001 or GEOS1002 or GEOS1003 or GEOG1001 or GEOG 1002 or ENVI1002 or GEOL1001 or GEOL1002 **N** GEOG2411, GEOS2111	Semester 1
GEOS2912 **Economic Geography of Global Dev. Adv.**	6	**P** 24 credit points of Junior units of study, including a distinction in one of: GEOS1001 or GEOS1901 or GEOS1002 or GEOS1902 or GEOS1003 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1001 or GEOG1002 **N** GEOS2112, GEOG2511	Semester 1
GEOS2914 **Volcanoes, Hot Rocks and Minerals Adv**	6	**P** 24 credit points of Junior Science units of study and Distinction in one of GEOL1002 or GEOS1002 or ENVI1002.This requirement may be varied and students should consult the unit of study coordinator. **N** GEOL2001, CIVL2409, GEOS2114	Semester 1
GEOS2921 **Environmental & Resource Management Adv**	6	**P** 24 credit points of Junior units of study, including a distinction in one of: GEOS1001 or GEOS1901 or GEOS1002 or GEOS 1902 or GEOS1003 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1001 or GEOG1002 **N** GEOG2421, GEOL2202, GEOS2121	Semester 2
GEOS2924 **Fossils and Tectonics (Advanced)**	6	**P** Distinction in GEOS1003 or Distinction average in 12 credit points of Junior Geoscience units (Geoscience is the disciplines of Geography, Geology and Geophysics) **N** GEOS2124, GEOL2123, GEOL2124	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Senior units of study			
GEOS3003 **Dynamics of Continents and Basins**	6	**P** (6 credit points of Intermediate Geoscience units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOL3101, GEOS3903	Semester 1
GEOS3004 **Geophysics, Imaging, Oil/Ore Production**	6	**P** 12 credit points of Intermediate Science units of study or CIVL2409 **N** GEOP3202, GEOS3904	Semester 2
GEOS3006 **Mineral Deposits & Spatial Data Analysis**	6	**P** 12 credit points of Intermediate Science units of study or CIVL2409 **N** GEOL3103, GEOS3906	Semester 2
GEOS3007 **Remote Sensing: Imaging the Earth**	6	**P** 12 credit points of Intermediate Science units of study or CIVL2409 **N** GEOL3101	Semester 1
GEOS3008 **Field Geology and Geophysics**	6	**P** 12 credit points of Intermediate GEOS units **N** GEOL3103, GEOS3908	Semester 2
GEOS3009 **Coastal Environments & Processes**	6	**P** (6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3909, MARS3003, MARS3105 ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 1
GEOS3014 **GIS in Coastal Management**	6	**P** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **N** GEOS3914, MARS3104. ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 2
GEOS3016 **Seafloor Processes & Imaging**	6	**P** 12 credit points of Intermediate Geoscience or ((one of MARS2005 and MARS2905) and (one of MARS2006 and MARS2906)) **N** GEOS3916, MARS3005, MARS3106 ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 2
GEOS3017 **Global Energy-Exploration & Exploitation**	6	**P** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **N** GEOS3917, MARS3008. ** Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.*	Semester 1
GEOS3903 **Dynamics of Continents & Basins (Adv)**	6	**P** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) **N** GEOL3101, GEOS3003 *A Distinction in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 1
GEOS3904 **Geophysics, Imaging, Oil/Ore Prod (Adv)**	6	**P** Distinction average in 24 credit points of Intermediate Science Units, or Distinction in (GEOL2923 or CIVL2409) **N** GEOL3202, GEOS3004 *Note: Department permission required for enrolment* *A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 2
GEOS3906 **Mineral Deposits & Spatial Data Advanced**	6	**P** Distinction average in 12 credit points of Intermediate Science units of study or CIVL2409. **N** GEOS3006 *Note: Department permission required for enrolment* *A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 2
GEOS3907 **Remote Sensing: Imaging the Earth (Adv)**	6	**A** Intermediate level geology **P** Distinction average in 12 credit points of Intermediate Science subjects or CIVL2409 **N** GEOL3101 or GEOS3007	Semester 1
GEOS3908 **Field Geology and Geophysics (Advanced)**	6	**P** Distinction average in 12 credit points of Intermediate GEOS units **N** GEOS3008 *Note: Department permission required for enrolment* *A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 2
GEOS3909 **Coastal Environments and Processes (Adv)**	6	**P** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) **N** GEOS3009, MARS3003, MARS3105 *A distinction average in prior Geography or Geology units is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 1
GEOS3914 **GIS in Coastal Management (Advanced)**	6	**P** Distinction average in 12 credit points of intermediate geography or geology units or 12 credit points of intermediate marine science units. **N** GEOS3014, MARS3104 *Note: Department permission required for enrolment* *A distinction average in prior Geography, Geology or Marine Science units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 2
GEOS3916 **Seafloor Processing and Imaging (Adv)**	6	**P** Distinction average in (12 credit points of Intermediate Geoscience or ((one of MARS2005 & MARS2905) and (one of MARS2006 & MARS2906))) **N** GEOS3016, MARS3005, MARS3106 *Note: Department permission required for enrolment*	Semester 2
GEOS3917 **Global Energy Exploration (Advanced)**	6	**P** Distinction average in ((MARS(2005 or 2905) and MARS(2006 or 2906)), or 12 credit points of Intermediate Geoscience* units). **N** GEOS3017, MARS3008 ** Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.*	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
GEOS3918 **Rivers: Science and Management (Adv)**	6	**P** Distinction average in (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3018	Semester 1
History and Philosophy of Science			
For a major in History and Philosophy of Science, the minimum requirement is 24 credit points from senior units of study listed in this subject area. Students must include the core unit of HPSC3022 Science and Society (6cp) or HPSC3003 social Relations of Science (4cp)(last offered in 2003 and now superceded by HPSC3022)			
Junior units of study			
HPSC1000 **Bioethics**	6	**N** HPSC1900 *This Junior unit of study is highly recommended to Intermediate and Senior Life Sciences students.*	Semester 1
HPSC1900 **Bioethics (Advanced)**	6	**N** HPSC1000 *Enrolment in this unit is limited, and will be on a first-come first-served basis.*	Semester 1
Intermediate units of study			
HPSC2100 **The Birth of Modern Science**	6	**P** 24 credit points of Junior units of study **N** HPSC2002, HPSC2900	Semester 1
HPSC2900 **The Birth of Modern Science (Advanced)**	6	**P** Enrolment in the Talented Student Program or 24 credit points of Junior study with a Distinction average **N** HPSC2002, HPSC2100 *Enrolment in this unit is limited, and will be on a first-come, first-served basis.*	Semester 1
HPSC2101 **What Is This Thing Called Science?**	6	**P** 24 credit points of Junior units of study **N** HPSC2001, HPSC2901	Semester 2 Summer Late
HPSC2901 **What Is This Thing Called Science? (Adv)**	6	**P** Enrolment in the Talented Student Program or 24 credit points of Junior study with a Distinction average **N** HPSC2002, HPSC2100 *Enrolment in this unit is limited and will be on a first-come, first-served basis.*	Semester 2
Senior units of study			
HPSC3002 **History of Biological/Medical Sciences**	6	**A** HPSC (2001 and 2002) or HPSC (2100 and 2101) **P** At least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units	Semester 1
HPSC3022 **Science and Society**	6	**A** HPSC (2100 and 2101) or HPSC (2001 and 2002). **P** At least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units. **N** HPSC3003 *This unit is a requirement for HPS majors.*	Semester 1
HPSC3015 **History and Philosophy of Physics** *This unit of study is not available in 2007*	6	**A** HPSC (2100 and 2101) or HPSC (2001 and 2002) **P** HPSC (2001 and 2002) or (Credit or better in HPSC (2001 or 2002) and at least 24 credit points of Intermediate or Senior units of study). **N** HPSC3001, HPSC3106 *From 2006 the prerequisites will be: at least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units*	
HPSC3016 **The Scientific Revolution**	6	**A** HPSC (2100 and 2101) or HPSC (2001 and 2002) **P** At least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units. **N** HPSC3001, HPSC3106 *This unit will not be offered every year.*	Semester 2
HPSC3021 **Philosophy and Sociology of Biology** *This unit of study is not available in 2007*	6	**A** HPSC (2100 and 2101) or HPSC (2001 and 2002) **P** HPSC (2001 and 2002) or (Credit or better in HPSC (2001 or 2002) and at least 24 credit points of Intermediate or Senior units of study). **N** HPSC3103 *From 2006 the prerequisites will be: at least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units*	
HPSC3023 **Psychology & Psychiatry: History & Phil**	6	**A** Basic knowledge about the history of modern science as taught in HPSC2100 AND the principles of philosophy of science as taught in HPSC2101 AND knowledge of the various sub-disciplines within Psychology. **P** (at least 8 credit points of intermediate HPSC Units of study) OR (a CR or above in one HPSC intermediate Unit of Study) OR (12 intermediate credit points in psychology). **N** PSYC3202	Semester 1
HPSC3024 **Science and Ethics**	6	**P** At least 24 credit points of Intermediate or Senior units of study **N** HPSC3007 *This unit will not be offered every year.*	Semester 2
Immunobiology			
For a major in Immunobiology, the minimum requirement is 24 credit points comprising:			
(i) IMMU3102 Cellular and Molecular Immunology and IMMU3202 Immunology in Human Disease; and			
(ii) a minimum of 12 credit points from the following senior elective units of study: BCHM 3071/3971, BCHM 3081/3981, BCHM3072/3972, BCHM 3082/3982, BIOL3018/3918, BIOL3026/3926, BIOL3027/3927, CPAT3201, CPAT3202, MICR 3011/3911/PHSI3005/3905, PHSI 3006/3906, VIRO3001/3901, VIRO3002			
Intermediate units of study			
The completion of MBLG(2001 or 2101 or 2901) is highly recommended.			
IMMU2101 **Introductory Immunology**	6	**A** Junior Biology and Junior Chemistry. **P** 24 credit points of Junior units of study from any of the Science discipline areas. **N** IMMU2001, BMED2506, BMED2807 *This is a prerequisite unit of study for IMMU3102 and IMMU3202. The completion of 6 credit points of MBLG units of study is highly recommended.*	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Senior core units of study			
IMMU3102 **Molecular and Cellular Immunology**	6	**A** Intermediate biochemistry and molecular biology and genetics. **P** BMED2807 or BMED2506 or IMMU2101 or IMMU2001 and 6cp of Intermediate units of study from Biochemistry, or Biology or Microbiology or Molecular Biology and Genetics or Pharmacology or Physiology. **N** IMMU3002, BMED3003 *The completion of 6 CP of MBLG units of study is highly recommended. Concurrent study of IMMU3202 Immunology in Human Disease is strongly recommended.*	Semester 2
IMMU3202 **Immunology in Human Disease**	6	**A** Intermediate biochemistry and molecular biology and genetics. **P** BMED2807 or BMED2506 or IMMU2101 or IMMU2001 and 6cp of Intermediate units of study from Biochemistry, or Biology or Microbiology or Molecular Biology and Genetics or Pharmacology or Physiology. **N** IMMU3002, BMED3003 *The completion of 6CP of MBLG units of study is highly recommended. Concurrent study of IMMU3102 Molecular and Cellular Immunology is very strongly recommended.*	Semester 2
Senior elective units of study			
BCHM3071 **Molecular Biology & Biochemistry-Genes**	6	**P** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **N** BCHM3971, BCHM3001, BCHM3901	Semester 1
BCHM3971 **Molecular Biology & Biochem- Genes (Adv)**	6	**P** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3071, BCHM3001, BCHM3901	Semester 1
BCHM3081 **Mol Biology & Biochemistry- Proteins**	6	**P** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **N** BCHM3981, BCHM3001, BCHM3901	Semester 1
BCHM3981 **Mol Biology & Biochemistry- Proteins Adv**	6	**P** MBLG1001 and Distinction in12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3081, BCHM3001, BCHM3901	Semester 1
BCHM3072 **Human Molecular Cell Biology**	6	**P** (MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/MBLG2971or BCHM2071/2971 or BCHM2072/2972)) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804) **N** BCHM3972, BCHM3002, BCHM3902, BCHM3004, BCHM3904	Semester 2
BCHM3972 **Human Molecular Cell Biology (Advanced)**	6	**P** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/MBLG2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3072, BCHM3002, BCHM3004, BCHM3902, BCHM3904	Semester 2
BCHM3082 **Medical and Metabolic Biochemistry**	6	**P** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **N** BCHM3982, BCHM3002, BCHM3004, BCHM3902, BCHM3904	Semester 2
BCHM3982 **Medical and Metabolic Biochemistry (Adv)**	6	**P** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **N** BCHM3082, BCHM3002, BCHM3004, BCHM3902, BCHM3904	Semester 2
BIOL3018 **Applications of Recombinant DNA Tech**	6	**P** 12 credit points from MBLG (2001/2901//2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **N** BIOL3918	Semester 1
BIOL3918 **Applications of Recombinant DNA Tech Adv**	6	**P** Distinction average in12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **N** BIOL3018	Semester 1
BIOL3026 **Developmental Genetics**	6	**P** 12 credit points from MBLG (2001/2901/2071/2971/2771/2871) and MBLG (2002/2902/2072/2972). For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **N** BIOL3926	Semester 2
BIOL3926 **Developmental Genetics (Advanced)**	6	**P** Distinction average in 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), and MBLG (2002/2902/2072/2972). For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **N** BIOL3026	Semester 2
BIOL3027 **Bioinformatics and Genomics**	6	**P** 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **N** BIOL3927 *This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.*	Semester 1
BIOL3927 **Bioinformatics and Genomics (Advanced)**	6	**P** Distinction average in 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **N** BIOL3027	Semester 1
CPAT3201 **Pathogenesis of Human Disease 1**	6	**P** At least 6cp intermediate of one of the following: ANAT or BCHM or MBLG or BIOL or HPSC or MICR or PCOL or PHSI, or as the head of department determines.	Semester 2
CPAT3202 **Pathogenesis of Human Disease 2**	6	**P** At least 6cp intermediate of one of the following: ANAT or BCHM or MBLG or BIOL or HPSC or MICR or PCOL or PHSI, or as the head of department determines. **C** CPAT3201 *Note: Department permission required for enrolment*	Semester 2
MICR3011 **Microbes in Infection**	6	**P** At least 6 credit points of MBLG units and MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2807 and 2808). For BScAgr students: PLNT (2001 or 2901) and MICR (2022 or 2922). **N** MICR3911, MICR3001, MICR3901	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
MICR3911 **Microbes in Infection (Advanced)**	6	**P** At least 6 credit points of MBLG units and Distinction in MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including in BMED (2807 or 2808) with a Distinction in one of these two. For BScAgr students: PLNT (2001 or 2901) and MICR (2022 or 2922) including one Distinction. **N** MICR3011, MICR3001, MICR3901	Semester 1
PHSI3005 **Human Cellular Physiology: Theory**	6	**A** 6 credit points of MBLG **P** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) For BMedSc: BMED (2801 and 2802). **N** PHSI3905, PHSI3004, PHSI3904 *It is highly recommended that this unit of study be taken in conjunction with PHSI3006.*	Semester 1
PHSI3905 **Human Cellular Physiology (Adv): Theory**	6	**A** 6 credit points of MBLG **P** Credit average in PHSI(2005 or 2905) and PHS(2006 or 2906) or in BMED (2801 and 2802). Students enroling in this unit should have a SciWAM of at least 68. **N** PHSI3005, PHSI3004, PHSI3904 *Note: Department permission required for enrolment* *It is highly recommended that this unit of study be taken in combination with PHSI3906*	Semester 1
PHSI3006 **Human Cellular Physiology: Research**	6	**P** Except for BMedSc students: PHSI (2005 or 2905) and PHSI(2006 or 2906) For BMedSc: BMED (2801 and 2802). **C** PHSI3005 **N** PHSI3906, PHSI3004, PHSI3904	Semester 1
PHSI3906 **Human Cellular Physiology (Ad): Research**	6	**A** 6 credit points of MBLG **P** Credit average in PHSI (2005 or 2905) and PHSI(2006 or 2906) or in BMED (2801 and 2802). Students enroling in this unit should have a SciWAM of at least 68. **C** PSYC3905 **N** PHSI3006, PHSI3004, PHSI3904 *Note: Department permission required for enrolment*	Semester 1
VIRO3001 **Virology**	6	**A** MICR (2021 or 2921 or 2022 or 2922) **P** At least 6 credit points of MBLG units and at least 6 credit points in Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI or PLNT units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED2802. For BScAgr students: PLNT (2001 or 2901) and MICR2024. **N** VIRO3901 *Students are very strongly advised to complete VIRO (3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Session 2.*	Semester 1
VIRO3901 **Virology (Advanced)**	6	**A** MICR (2021 or 2921 or 2022 or 2922) **P** At least 6 credit points of MBLG units and at least 6 credit points including one Distinction in Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI or PLNT units. For BMedSc students: 42 credit points of Intermediate BMED units including Distinction in BMED2802. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. **N** VIRO3001 *Students are very strongly advised to complete VIRO (3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Session 2.*	Semester 1
VIRO3002 **Medical and Applied Virology**	6	**A** Intermediate microbiology, immunology, molecular biology and genetics. **P** 6 CP MBLG units and at least 6 CP from Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI units. For BMedSc Students: 42 credit points of Intermediate BMED units including BMED2807. *Students are very strongly recommended to complete VIRO(3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Semester 2.*	Semester 2
Information Systems			
For a major in Information systems, the minimum requirement is 24 credit points from senior units of study listed in this subject area.			
Junior units of study			
INFO1003 **Foundations of Information Technology**	6	**A** Basic computer operations **N** INFO1000, INFS1000, ISYS1003, INFO1903	Semester 1 Semester 2
INFO1903 **Foundations of Information Tech (Adv)**	6	**A** Basic computer operations **P** UAI at least that for acceptance into BSc(Adv) degree program. **N** INFO1003, ISYS1003, INFO1000, INFS1000 *Note: Department permission required for enrolment*	Semester 1
Intermediate units of study			
INFO2110 **Systems Analysis and Modelling**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. **N** INFO (2000 or 2810 or 2900)	Semester 1
INFO2810 **Systems Analysis and Modelling (Adv)**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC units of study) or DECO2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. **N** INFO (2000 or 2110 or 2900)	Semester 1
INFO2120 **Database Systems 1**	6	**P** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC) or DECO2011 **N** INFO (2005 or 2820 or 2905).	Semester 2
INFO2820 **Database Systems 1 (Advanced)**	6	**P** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DEC2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. **N** INFO (2005 or 2120 or 2905)	Semester 2
ISYS2140 **Information Systems**	6	**P** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901). **N** ISYS (2006 or 2007)	Semester 1
Senior units of study			
INFO3402 **Management of IT Projects and Systems**	6	**P** INFO (2000 or 2110 or 2810 or 2900). **N** ISYS (3000 or 3012)	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
ISYS3401 **Analytical Methods & Information Systems**	6	**P** ISYS (2140 or 2006) and INFO (2000 or 2110 or 2810 or 2900) and (MATH(1005 or 1015 or 1905) or STAT1021) and (ARIN1000 or ENGL1050 or ENGL1005 or LNGS1001 or LNGS1002 or LNGS1005 or any HPSC unit) **N** ISYS3015	Semester 1
ISYS3403 **IT Systems in Arts and Humanities**	6	**P** INFO (2000 or 2110 or 2810 or 2900) and INFO (2005 or 2120 or 2820 or 2905). **N** ISYS3113 or EBUS(3002 or 3004).	Semester 1
INFO3404 **Database Systems 2**	6	**P** INFO(2120 or 2820 or 2005 or 2905). **N** INFO (3005 or 3504 or 3905) or COMP (3005 or 3905)	Semester 2
INFO3504 **Database Systems 2 (Adv)**	6	**P** INFO (2005 or 2120 or 2820 or 2905),and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above. **N** INFO (3005 or 3404 or 3905) or COMP (3005 or 3905)	Semester 2
ISYS3400 **Information Systems Project**	6	**P** (INFO3402 or ISYS3012) and (ISYS (3401 or 3015) or ARIN2000). **N** ISYS3207	Semester 2
Marine Science			
For a major in Marine Science, the minimum requirement is 24 credit points of senior units listed in this subject area, which must include at least one BIOL and one GEOS unit. Intermediate units leading to a Marine Science major are 12 credit points of intermediate MARS or BIOL units, including MARS2006 or MARS2906.			
Intermediate units of study			
MARS2005 **Global Oceans (Introduction)**	6	**P** 24 credit points of Junior units of study from Science Discipline Areas. **N** MARS2001, MARS2905 *This is a qualifying unit for some Senior Marine Science units. Some Senior electives may have additional prerequisites.*	Semester 1
MARS2905 **Global Oceans (Introduction) (Advanced)**	6	**P** Credit average in 24 credit points of Junior Science units. **N** MARS2005, MARS2001 *This unit of study is available to advanced students only.*	Semester 1
MARS2006 **Marine Ecosystems and Geomorphology**	6	**A** MARS2005 **P** 24 credit points of Junior units of study from Science Discipline Areas. **N** MARS2002, MARS2906, GEOG2002 *This is a qualifying unit for Senior Marine Science units. Some Senior electives may have additional prerequisites.*	Semester 2
MARS2906 **Marine Ecosystems and Geomorphology Adv**	6	**P** Credit average in 24 credit points of Junior Science units **N** MARS2006, MARS2002, GEOG2002 *This unit of study is available to advanced students only.*	Semester 2
MARS2907 **Marine Science Field School (Advanced)**	6	**P** Credit average in 24 credit points of Junior Science units. **C** MARS2005 or MARS2905 **N** MARS2007, MARS2003 *This unit of study is available to advanced students only.*	S1 Intensive
Senior units of study			
BIOL3006 **Ecological Methods**	6	**A** BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). **P** 12 credit points of intermediate level Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3906, BIOL3023, BIOL3923, MARS3102	Semester 1
BIOL3007 **Ecology**	6	**A** Although not prerequisites, knowledge obtained from Ecological Methods (BIOL3006), and Marine Field Ecology (BIOL3008) and/or Terrestrial Field Ecology (BIOL3009), or the associated advanced units (BIOL3906, BIOL3908 and/or BIOL3909), is strongly recommended. **P** 12 credit points of Intermediate Biology; or ENVI2111 or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3907, BIOL3024, BIOL3924, BIOL3040, BIOL3940, BIOL3041, BIOL3941, BIOL3042, BIOL3942, MARS3102	Semester 2
BIOL3008 **Marine Field Ecology**	6	**A** Ecological Methods (BIOL3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly advised. **P** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3908, BIOL3040, BIOL3940, BIOL3024, BIOL3924, MARS3102 *Dates: 2 July 2007 - 9 July 2007*	S2 Intensive
BIOL3011 **Ecophysiology**	6	**A** BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903). **P** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3911 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
BIOL3013 **Marine Biology**	6	**A** MARS2006 **P** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3913 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
GEOS3003 **Dynamics of Continents and Basins**	6	**P** (6 credit points of Intermediate Geoscience units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOL3101, GEOS3903	Semester 1
GEOS3009 **Coastal Environments & Processes**	6	**P** (6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3909, MARS3003, MARS3105 ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 1
GEOS3014 **GIS in Coastal Management**	6	**P** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **N** GEOS3914, MARS3104. ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
GEOS3016 **Seafloor Processes & Imaging**	6	**P** 12 credit points of Intermediate Geoscience or ((one of MARS2005 and MARS2905) and (one of MARS2006 and MARS2906)) **N** GEOS3916, MARS3005, MARS3106 ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 2
GEOS3017 **Global Energy-Exploration & Exploitation**	6	**P** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **N** GEOS3917, MARS3008. ** Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.*	Semester 1
GEOS3018 **Rivers: Science, Policy and Management**	6	**P** (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3918	Semester 1
BIOL3906 **Ecological Methods (Advanced)**	6	**A** BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3006, BIOL3023, BIOL3923, MARS3102	Semester 1
BIOL3907 **Ecology (Advanced)**	6	**A** Although not prerequisites, knowledge obtained from Ecological Methods (BIOL3006), and Marine Field Ecology (BIOL3008) and/or Terrestrial Field Ecology (BIOL3009), or the associated advanced units (BIOL3906, BIOL3908 and/or BIOL3909), is strongly recommended. Students entering this unit of study should have achieved distinction average. **P** Distinction average in 12 credit points of Intermediate Biology; or ENVI2111 or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3007, BIOL3024, BIOL3924, BIOL3040, BIOL3940, BIOL3041, BIOL3941, BIOL3042, BIOL3942, MARS3102	Semester 2
BIOL3908 **Marine Field Ecology (Advanced)**	6	**A** Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly advised **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3008, BIOL3040, BIOL3940, BIOL3024, BIOL3924, MARS3102 *Dates: 2 July 2007 - 9 July 2007*	S2 Intensive
BIOL3911 **Ecophysiology (Advanced)**	6	**A** BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903) **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **N** BIOL3011 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
BIOL3913 **Marine Biology (Advanced)**	6	**A** MARS2006 **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3013 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
GEOS3903 **Dynamics of Continents & Basins (Adv)**	6	**P** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) **N** GEOL3101, GEOS3003 *A Distinction in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 1
GEOS3909 **Coastal Environments and Processes (Adv)**	6	**P** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) **N** GEOS3009, MARS3003, MARS3105 *A distinction average in prior Geography or Geology units is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 1
GEOS3914 **GIS in Coastal Management (Advanced)**	6	**P** Distinction average in 12 credit points of intermediate geography or geology units or 12 credit points of intermediate marine science units. **N** GEOS3014, MARS3104 *Note: Department permission required for enrolment* *A distinction average in prior Geography, Geology or Marine Science units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 2
GEOS3916 **Seafloor Processing and Imaging (Adv)**	6	**P** Distinction average in (12 credit points of Intermediate Geoscience or ((one of MARS2005 & MARS2905) and (one of MARS2006 & MARS2906))) **N** GEOS3016, MARS3005, MARS3106 *Note: Department permission required for enrolment*	Semester 2
GEOS3917 **Global Energy Exploration (Advanced)**	6	**P** Distinction average in ((MARS(2005 or 2905) and MARS(2006 or 2906)), or 12 credit points of Intermediate Geoscience* units). **N** GEOS3017, MARS3008 ** Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.*	Semester 1
GEOS3918 **Rivers: Science and Management (Adv)**	6	**P** Distinction average in (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3018	Semester 1
Mathematics			
For a major in Mathematics, the minimum requirement is 24 credit points from senior units of study listed in this subject area.			

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Junior units of study			
MATH1011 **Life Sciences Calculus**	3	**A** HSC Mathematics **N** MATH1111, MATH1001, MATH1901, MATH1906	Semester 1 Summer Main
MATH1014 **Introduction to Linear Algebra**	3	**A** HSC Mathematics or MATH1111 **N** MATH1012, MATH1002, MATH1902	Semester 2 Summer Main
MATH1111 **Introduction to Calculus**	6	**A** At least Year 10 Mathematics **N** MATH1001, MATH1901, MATH1011, MATH1906 *Note: Department permission required for enrolment* *Students with HSC Mathematics/Extension 1/Extension 2 (or equivalent) are prohibited.*	Semester 1
MATH1013 **Differential and Difference Equations**	3	**A** HSC Mathematics or MATH1111 **N** MATH1003, MATH1903, MATH1907	Semester 2
MATH1015 **Life Science Statistics**	3	**A** HSC Mathematics **N** MATH1005, MATH1905, STAT1021, STAT1022, ECMT Junior units of study.	Semester 1
MATH1001 **Differential Calculus**	3	**A** HSC Mathematics Extension 1 **N** MATH1011, MATH1901, MATH1906, MATH1111	Semester 1 Summer Main
MATH1002 **Linear Algebra**	3	**A** HSC Mathematics Extension 1 **N** MATH1902, MATH1012, MATH1014	Semester 1 Summer Main
MATH1003 **Integral Calculus and Modelling**	3	**A** HSC Mathematics Extension 2 or MATH1001 or MATH1111 **N** MATH1013, MATH1903, MATH1907	Semester 2 Summer Main
MATH1004 **Discrete Mathematics**	3	**A** HSC Mathematics Extension 1 **N** MATH1904, MATH2011	Semester 2 Summer Main
MATH1005 **Statistics**	3	**A** HSC Mathematics **N** MATH1905, MATH1015, ECMT Junior units of study, STAT1021, STAT1022	Semester 2 Summer Main
MATH1901 **Differential Calculus (Advanced)**	3	**A** HSC Mathematics Extension 2 **N** MATH1111, MATH1011, MATH1001, MATH1906 *Note: Department permission required for enrolment*	Semester 1
MATH1902 **Linear Algebra (Advanced)**	3	**A** HSC Mathematics Extension 2 **N** MATH1002, MATH1012, MATH1014 *Note: Department permission required for enrolment*	Semester 1
MATH1903 **Integral Calculus and Modelling Advanced**	3	**A** HSC Mathematics Extension 2 or Credit or better in MATH1001 or MATH1901 **N** MATH1003, MATH1013, MATH1907 *Note: Department permission required for enrolment*	Semester 2
MATH1904 **Discrete Mathematics (Advanced)**	3	**A** HSC Mathematics Extension 2 **N** MATH1004, MATH2011 *Note: Department permission required for enrolment*	Semester 2
MATH1905 **Statistics (Advanced)**	3	**A** HSC Mathematics Extension 2 **N** MATH1005, MATH1015, ECMT Junior units of study, STAT1021, STAT1022 *Note: Department permission required for enrolment*	Semester 2
MATH1906 **Mathematics (Special Studies Program) A**	3	**P** UAI of at least 98.5 and result in Band E4 HSC Mathematics Extension 2; by invitation **N** MATH1111, MATH1001, MATH1011, MATH1901 *Note: Department permission required for enrolment*	Semester 1
MATH1907 **Mathematics (Special Studies Program) B**	3	**P** Distinction in MATH1906; by invitation **N** MATH1003, MATH1013, MATH1903 *Note: Department permission required for enrolment*	Semester 2
Intermediate units of study			
MATH2061 **Linear Mathematics and Vector Calculus**	6	**P** MATH (1111 or 1001 or 1901 or 1906) and MATH (1014 or 1002 or 1902) and MATH (1003 or 1903 or 1907) **N** MATH2001, MATH2901, MATH2002, MATH2902, MATH2961, MATH2067	Semester 1 Summer Main
MATH2063 **Math Computing and Nonlinear Systems**	6	**P** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) **N** MATH2003, MATH903, MATH2006, MATH2906, MATH2963	Semester 1
MATH2069 **Discrete Mathematics and Graph Theory**	6	**P** 6 credit points of Junior level Mathematics **N** MATH2011, MATH2009, MATH2969	Semester 1
MATH2961 **Linear Mathematics & Vector Calculus Adv**	6	**P** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) **N** MATH2001, MATH2901, MATH2002, MATH2902, MATH2061, MATH2067	Semester 1
MATH2962 **Real and Complex Analysis (Advanced)**	6	**P** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) **N** MATH2007, MATH2907	Semester 1
MATH2963 **Math Computing & Nonlinear Systems (Adv)**	6	**P** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) **N** MATH2003, MATH2903, MATH2006, MATH2906, MATH2063	Semester 1
MATH2969 **Discrete Mathematics & Graph Theory Adv**	6	**P** 9 credit points of Junior Mathematics (advanced level or Credit at the normal level) **N** MATH2011, MATH2009, MATH2069	Semester 1
MATH2916 **Working Seminar A (SSP)**	3	**P** By invitation, High Distinction average over 12 credit points of Advanced Junior Mathematics *Note: Department permission required for enrolment*	Semester 1
MATH2065 **Partial Differential Equations (Intro)**	6	**P** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) **N** MATH2005, MATH2905, MATH2965, MATH2067	Semester 2
MATH2068 **Number Theory and Cryptography**	6	**P** 9 credit points of Junior level Mathematics including MATH (1002 or 1902) **N** MATH3024, MATH3009	Semester 2
MATH2070 **Optimisation and Financial Mathematics**	6	**A** MATH (1003 or 1903 or 1907) **P** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) **N** MATH2010, MATH2033, MATH2933, MATH2970, ECMT3510 *Students may enrol in both MATH2070 and MATH3075 in the same semester*	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
MATH2965 **Partial Differential Equations Intro Adv**	6	**P** MATH (2961 or Credit in 2061) or {MATH (2901 or Credit in 2001) and MATH (2902 or Credit in 2002)} **N** MATH2005, MATH 2905, MATH2065, MATH2067	Semester 2
MATH2968 **Algebra (Advanced)**	6	**P** 9 credit points of Junior Mathematics (advanced level or Credit at normal level) including (MATH1902 or Credit in MATH1002) **N** MATH2908, MATH2918, MATH2008	Semester 2
MATH2970 **Optimisation & Financial Mathematics Adv**	6	**A** MATH (1903 or 1907) or Credit in MATH1003 **P** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) **N** MATH2010, MATH2033, MATH2933, MATH2070 *Students may enrol in both MATH2970 and MATH3975 in the same semester*	Semester 2
MATH2917 **Working Seminar B (SSP)**	3	**P** By invitation, High Distinction average over 12 credit points of Advanced Junior Mathematics *Note: Department permission required for enrolment*	Semester 2
Senior units of study			
MATH3063 **Differential Equations & Biomaths**	6	**A** MATH2061 **P** 12 credit points of Intermediate Mathematics **N** MATH3020, MATH3920, MATH3003, MATH3923, MATH3963	Semester 1
MATH3065 **Logic and Foundations**	6	**P** 6 credit points of Intermediate Mathematics **N** MATH3005	Semester 1
MATH3068 **Analysis**	6	**P** 12 credit points of Intermediate Mathematics **N** MATH3008, MATH2007, MATH2907, MATH2962	Semester 1
MATH3076 **Mathematical Computing**	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1001 or 1003 or 1901 or 1903 or 1906 or 1907) **N** MATH3976, MATH3016, MATH3916	Semester 1
MATH3961 **Metric Spaces (Advanced)**	6	**A** MATH2961 or MATH2962 **P** 12 credit points of Intermediate Mathematics units **N** MATH3901, MATH3001	Semester 1
MATH3962 **Rings, Fields and Galois Theory (Adv)**	6	**A** MATH2961 **P** 12 credit points of Intermediate Mathematics **N** MATH3062, MATH3902, MATH3002 *Students are advised to take MATH2968 before attempting this unit.*	Semester 1
MATH3963 **Differential Equations & Biomaths (Adv)**	6	**A** MATH2961 **P** 12 credit points of Intermediate Mathematics **N** MATH3020, MATH3920, MATH3003, MATH3923, MATH3063	Semester 1
MATH3974 **Fluid Dynamics (Advanced)**	6	**A** MATH2961, MATH2965 **P** 12 credit points of Intermediate Mathematics with average grade of at least Credit **N** MATH3914	Semester 1
MATH3976 **Mathematical Computing (Advanced)**	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1903 or 1907) or Credit in MATH1003 **N** MATH3076, MATH3016, MATH3916	Semester 1
MATH3061 **Geometry and Topology**	6	**P** 12 credit points of Intermediate Mathematics **N** MATH3001, MATH3006	Semester 2
MATH3062 **Algebra and Number Theory**	6	**P** 12 credit points of Intermediate Mathematics **N** MATH3962, MATH3902, MATH3002, MATH3009 *Students are advised to take MATH(2068 or 2968) before attempting this unit.*	Semester 2
MATH3067 **Information and Coding Theory**	6	**P** 12 credit points of Intermediate Mathematics **N** MATH3007, MATH3010	Semester 2
MATH3075 **Financial Mathematics**	6	**P** 12 credit points of Intermediate Mathematics **N** MATH3975, MATH 3015, MATH3933	Semester 2
MATH3078 **PDEs and Waves**	6	**A** MATH(2061/2961) and MATH(2065/2965) **P** 12 credit points of Intermediate Mathematics **N** MATH3978, MATH3018, MATH3921	Semester 2
MATH3964 **Complex Analysis with Applications (Adv)**	6	**A** MATH2962 **P** 12 credit points of Intermediate Mathematics **N** MATH3904, MATH3915	Semester 2
MATH3966 **Modules and Group Representations (Adv)**	6	**A** MATH3962 **P** 12 credit points of Intermediate Mathematics **N** MATH3906, MATH3907	Semester 2
MATH3968 **Differential Geometry (Advanced)**	6	**A** At least 6 credit points of Advanced Mathematics units of study at Intermediate or Senior level. **P** 12 credit points of Intermediate Mathematics, including MATH2961 **N** MATH3903	Semester 2
MATH3969 **Measure Theory & Fourier Analysis (Adv)**	6	**A** At least 6 credit points of Advanced Mathematics units of study at Intermediate or Senior level **P** 12 credit points Intermediate Mathematics **N** MATH3909	Semester 2
MATH3975 **Financial Mathematics (Advanced)**	6	**P** 12 credit points of Intermediate Mathematics with at least Credit average **N** MATH3933, MATH3015, MATH3075	Semester 2
MATH3977 **Lagrangian & Hamiltonian Dynamics (Adv)**	6	**P** 12 credit points of Intermediate Mathematics with at least Credit average **N** MATH2904, MATH2004, MATH3917	Semester 2
MATH3978 **PDEs and Waves (Advanced)**	6	**A** MATH(2061/2961) and MATH(2065/2965) **P** 12 credit points of Intermediate Mathematics with at least Credit average **N** MATH3078, MATH3018, MATH3921	Semester 2
Medicinal Chemistry			
For a major in Medicinal chemistry, the minimum requirement is 24 credit points comprising:			
(i) PCOL3011/3911 and PCOL3012/3912;and			
(ii) 12 credit points from senior Chemistry units of study.			

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Note that there are intermediate prerquisites for the core senior units of study. Junior and intermediate units of study should be selected to permit progression to the required senior units of study.			
Microbiology			
The completion of MBLG(1000 or 2771 or 2001 or 2101) is highly recommended.			
MICR2021 **Introductory Microbiology**	6	**P** 6cp of Junior Biology and (6cp of MBLG1001 or MBLG2901 or PLNT2001 or PLNT2901) and 6cp of Junior Chemistry **N** MICR2921, MICR2024, MICR2001, MICR2901, MICR2003, MICR2007, MICR2011, MICR2909 *Students are very strongly recommended to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2022 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT (2001 or 2901).*	Semester 1
MICR2921 **Introductory Microbiology (Advanced)**	6	**P** (6credit points of Junior Biology) and (6credit points of MBLG1001 or MBLG2901 or PLNT2001 or PLNT2911) and 6 credit points of Junior Chemistry. Distinction grade required in at least one of Junior Biology or MBLG1001 or PLNT2001 or PLNT2911. **N** MICR2021, MICR2024, MICR2001, MICR2901, MICR2003, MICR2007, MICR2011, MICR2909 *Students are very strongly advised to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2022 or 2922 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT(2001 or 2901).*	Semester 1
MICR2022 **Microbes in Society**	6	**A** MICR (2021 or 2921 or 2024) **P** 6 credit points of Junior Biology and (6 credit points of MBLG1001 or PLNT2001 or PLNT2911) and 6 credit points of Junior Chemistry **N** MICR2922, MICR2002, MICR2902, MICR2004, MICR2008, MICR2012, MICR2909 *Students are very strongly advised to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2022 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT (2001 or 2901).*	Semester 2
MICR2922 **Microbes in Society (Advanced)**	6	**A** MICR (2021 or 2921 or 2024) **P** 6 credit points of Junior Biology and (6 credit points of MBLG1001 or PLNT2001 or PLNT2901) and 6 credit points of Junior Chemistry. Distinction grade required in at least one of Junior Biology or MBLG1001 or PLNT2001 or PLNT2911. **N** MICR2022, MICR2002, MICR2902, MICR2004, MICR2008, MICR2012, MICR2909 *Students are very strongly advised to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2922 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT (2001 or 2901).*	Semester 2
MICR2024 **Microbes in the Environment**	6	**P** 30 credit points of Junior Science or Faculty of Agriculture, Food and Natural Resource units including 6 credit points of Junior Biology. **N** MICR2021, MICR2921, MICR2001, MICR2901, MICR2003, MICR2007, MICR2011, MICR2909 *Students are very strongly recommended to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2922 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT (2001 or 2901).*	Semester 2
Senior units of study			
MICR3011 **Microbes in Infection**	6	**P** At least 6 credit points of MBLG units and MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2807 and 2808). For BScAgr students: PLNT (2001 or 2901) and MICR (2022 or 2922). **N** MICR3911, MICR3001, MICR3901	Semester 1
MICR3911 **Microbes in Infection (Advanced)**	6	**P** At least 6 credit points of MBLG units and Distinction in MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including in BMED (2807 or 2808) with a Distinction in one of these two. For BScAgr students: PLNT (2001 or 2901) and MICR (2022 or 2922) including one Distinction. **N** MICR3011, MICR3001, MICR3901	Semester 1
VIRO3001 **Virology**	6	**A** MICR (2021 or 2921 or 2022 or 2922) **P** At least 6 credit points of MBLG units and at least 6 credit points in Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI or PLNT units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED2802. For BScAgr students: PLNT (2001 or 2901) and MICR2024. **N** VIRO3901 *Students are very strongly advised to complete VIRO (3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Session 2.*	Semester 1
VIRO3901 **Virology (Advanced)**	6	**A** MICR (2021 or 2921 or 2022 or 2922) **P** At least 6 credit points of MBLG units and at least 6 credit points including one Distinction in Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI or PLNT units. For BMedSc students: 42 credit points of Intermediate BMED units including Distinction in BMED2802. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. **N** VIRO3001 *Students are very strongly advised to complete VIRO (3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Session 2.*	Semester 1
MICR3012 **Molecular Biology of Pathogens**	6	**P** At least 6 credit points of MBLG units and MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802, 2807 and 2808). For BScAgr students: PLNT (2001 or 2901) and MICR2024. **N** MICR3912, MICR3002, MICR3902, MICR3003, MICR3903, MICR3004, MICR3904	Semester 2
MICR3912 **Molecular Biology of Pathogens (Adv)**	6	**P** At least 6 credit points of MBLG units and Distinction in MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 or 2807 or 2808) with a Distinction in one of these three. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. **N** MICR3012, MICR3002, MICR3902, MICR3003, MICR3903, MICR3004, MICR3904	Semester 2
MICR3022 **Microbial Biotechnology**	6	**P** At least 6 credit points of MBLG units and 6 credit points of Intermediate MICR units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 and 2807). For BScAgr students: PLNT (2001 or 2901) and MICR2024. **N** MICR3922, MICR3002, MICR3902	Semester 2
MICR3922 **Microbial Biotechnology (Advanced)**	6	**P** At least 6 credit points of MBLG units and Distinction in 6 credit points of Intermediate MICR units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 and 2807) with a Distinction in at least one of these two. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. **N** MICR3022, MICR3002, MICR3902	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
VIRO3002 **Medical and Applied Virology**	6	**A** Intermediate microbiology, immunology, molecular biology and genetics. **P** 6 CP MBLG units and at least 6 CP from Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI units. For BMedSc Students: 42 credit points of Intermediate BMED units including BMED2807. *Students are very strongly recommended to complete VIRO(3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Semester 2.*	Semester 2
Molecular Biology and Genetics			
Molecular Biology and Genetics units of study are highly recommended to be studied in conjunction with all Life Sciece subject areas. they are particularly relevant to students intending to major in Biology, Biochemistry or Microbiology.			
Junior unit of study			
MBLG1001 **Molecular Biology and Genetics (Intro)**	6	**A** 6 credit points of Junior Biology and 6 cp of Junior Chemistry **N** AGCH2001, BCHM2001, BCHM2101, BCHM2901, MBLG2101, MBLG2901, MBLG2001, MBLG2111, MBLG2771, MBLG2871	Semester 2
Intermediate units of study			
MBLG2071 **Molecular Biology and Genetics A**	6	**P** MBLG1001 and 12 CP of Junior Chemistry. **N** MBLG2971, MBLG2771, MBLG2871, MBLG2001, MBLG2101, MBLG2901, MBLG2111, PLNT2001, AGCH2001, BCHM2001, BCHM2101, BCHM2901 *Students enrolled in the combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) must have completed all Junior units for this course prior to enrolling in this unit.*	Semester 1
MBLG2971 **Molecular Biology and Genetics A (Adv)**	6	**P** 12 credit points of Junior Chemistry and Distinction in MBLG1001 **N** MBLG2071, MBLG2771, MBLG2871, MBLG2001, MBLG2101, MBLG2901, MBLG2111, PLNT2001, AGCH2001, BCHM2001, BCHM2101, BCHM2901 *Students enrolled in the combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) must have completed all Junior units for this course prior to enrolling in this unit.*	Semester 1
MBLG2072 **Molecular Biology and Genetics B**	6	**A** One of MBLG2071, MBLG2771, MBLG2001, MBLG2871, MBLG2971, MBLG2901 **P** BIOL (1001 or 1101 or 1901) and MBLG1001 and 12 credit points of Junior Chemistry **N** MBLG2972, MBLG2102, MBLG2002, MBLG2902	Semester 2
MBLG2972 **Molecular Biology and Genetics B (Adv)**	6	**P** Distinction in one of MBLG2071, MBLG2771, MBLG2001, MBLG2871, MBLG2971, MBLG2901 **N** MBLG2072, MBLG2102, MBLG2002, MBLG2902	Semester 2
Nanoscience and Technology			
A major in Nanoscience and Technology requires 24 credit points of study at senior level taken from the following:-			
- Materials Chemistry (CHEM3112 or CHEM3912)			
- Membranes, Self-Assembly & Surfaces (CHEM3116 or 3916)			
- Senior physics units containing the Nanoscience lecture module (PHYS3054/3954, 3055/3955 or 3057/3957)			
- Quantum Mechanics, Condensed Matter and Physics Laboratory (PHYS3062/3962)			
- Mechanics of Solids 2 (MECH3361)			
- Materials (MECH3362)			
CHEM3112 **Materials Chemistry**	6	**A** CHEM2401 and CHEM2402 **P** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3912	Semester 1
CHEM3912 **Materials Chemistry (Adv)**	6	**A** CHEM2401 and CHEM2402. **P** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3112	Semester 1
CHEM3116 **Membranes, Self Assembly and Surfaces**	6	**A** CHEM2401 and CHEM2402. **P** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3916	Semester 2
CHEM3916 **Membranes, Self Assembly & Surfaces (Adv**	6	**A** CHEM2401 and CHEM2402. **P** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **N** CHEM3116	Semester 2
PHYS3052 **Nanoscience/Thermodynamics & Lab** *This unit of study is not available in 2007*	6	**P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **N** PHYS3952, PHYS3050, PHYS3051, PHYS3053, PHYS3056, PHYS3950, PHYS3951, PHYS3953, PHYS3956, PHYS3013, PHYS3021, PHYS3913, PHYS3921, PHYS3057, PHYS3957, PHYS3058, PHYS3958	
PHYS3952 **Nanoscience/Thermodynamics & Lab (Adv)** *This unit of study is not available in 2007*	6	**P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **N** PHYS3052, PHYS3050, PHYS3051, PHYS3053, PHYS3056, PHYS3950, PHYS3951, PHYS3953, PHYS3956, PHYS3013, PHYS3021, PHYS3913, PHYS3921, PHYS3057, PHYS3957, PHYS3058, PHYS3958	
PHYS3056 **Nanoscience/Optics/Thermodynamics** *This unit of study is not available in 2007*	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **N** PHYS3956, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3057, PHYS3058, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3957, PHYS3958, PHYS3012, PHYS3013, PHYS3021, PHYS3912, PHYS3913, PHYS3921	
PHYS3956 **Nanoscience/Optics/Thermodynamics (Adv)** *This unit of study is not available in 2007*	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **N** PHYS3056, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3057, PHYS3058, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3957, PHYS3958, PHYS3012, PHYS3013, PHYS3021, PHYS3912, PHYS3913, PHYS3921	

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
PHYS3057 **Nanoscience/Thermodynamic/Biol.Phys**	6	**P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **N** PHYS3957, PHYS3050, PHYS3950, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3059, PHYS3959	Semester 1
PHYS3957 **Nanoscience/Thermodynamic/Biol.Phys(Adv)**	6	**P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **N** PHYS3057, PHYS3050, PHYS3950, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3059, PHYS3959	Semester 1
PHYS3062 **Quantum/Cond Matter Physics & Lab**	6	**P** PHYS2012 or PHYS2912 **N** PHYS3060, PHYS3960, PHYS3961, PHYS3962, PHYS3068, PHYS3968, PHYS3070, PHYS3970, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981	Semester 2
PHYS3962 **Quantum/Cond Matter Physics & Lab (Adv)**	6	**P** PHYS2012 or PHYS2912 with result of credit or better **N** PHYS3060, PHYS3960, PHYS3961, PHYS3062, PHYS3068, PHYS3968, PHYS3070, PHYS3970, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981	Semester 2
MECH3361 **Mechanics of Solids 2**	6	**P** AMME2301 or AERO2300 or MECH2300; MATH2061 or MATH2067 or MATH2005	Semester 1
MECH3362 **Materials 2**	6	**P** (AMME2302 or MECH2300) and (AMME2301 or AERO2300)	Semester 2
Neuroscience			
For a major in Neuroscience, students are required to complete at least 24 credit points of the senior elective units of study listed below.			
Intermediate elective units of study			
Intermediate units should be chosen from the following units of study: ANAT2010 is strongly recommended. ANAT2010, MBLG2071/2971 or MBLG2072/2972, PCOL2011, PCOL2012, PHSI2005/2905, PHSI2006/2906, PSYC2012, PSYC2013.			
ANAT2010 **Concepts of Neuroanatomy**	6	**A** Background in basic mammalian biology. **P** BIOL (1001 or 1901) and one of: BIOL (1002 or 1902 or 1003 or 1903) or PSYC (1001 and 1002). **N** ANAT2003	Semester 2
MBLG2071 **Molecular Biology and Genetics A**	6	**P** MBLG1001 and 12 CP of Junior Chemistry. **N** MBLG2971, MBLG2771, MBLG2871, MBLG2001, MBLG2101, MBLG2901, MBLG2111, PLNT2001, AGCH2001, BCHM2001, BCHM2101, BCHM2901 *Students enrolled in the combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) must have completed all Junior units for this course prior to enrolling in this unit.*	Semester 1
MBLG2971 **Molecular Biology and Genetics A (Adv)**	6	**P** 12 credit points of Junior Chemistry and Distinction in MBLG1001 **N** MBLG2071, MBLG2771, MBLG2871, MBLG2001, MBLG2101, MBLG2901, MBLG2111, PLNT2001, AGCH2001, BCHM2001, BCHM2101, BCHM2901 *Students enrolled in the combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) must have completed all Junior units for this course prior to enrolling in this unit.*	Semester 1
MBLG2072 **Molecular Biology and Genetics B**	6	**A** One of MBLG2071, MBLG2771, MBLG2001, MBLG2871, MBLG2971, MBLG2901 **P** BIOL (1001 or 1101 or 1901) and MBLG1001 and 12 credit points of Junior Chemistry **N** MBLG2972, MBLG2102, MBLG2002, MBLG2902	Semester 2
MBLG2972 **Molecular Biology and Genetics B (Adv)**	6	**P** Distinction in one of MBLG2071, MBLG2771, MBLG2001, MBLG2871, MBLG2971, MBLG2901 **N** MBLG2072, MBLG2102, MBLG2002, MBLG2902	Semester 2
PCOL2011 **Pharmacology Fundamentals**	6	**P** 6 credit points of Junior Chemistry and 6 credit points of Junior Biology or MBLG1001. **N** PCOL2001	Semester 1
PCOL2012 **Pharmacology: Drugs and People**	6	**A** PCOL2011 **P** 6 credit points of Junior Chemistry and 6 credit points of Junior Biology or MBLG1001. **N** PCOL2002, PCOL2003	Semester 2
PHSI2005 **Integrated Physiology A**	6	**P** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study **N** PHSI2905, PHSI2001, PHSI2101, PHSI2901 *The completion of 6 credit points of MBLG units of study is highly recommended for progression to Senior Physiology. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites.*	Semester 1
PHSI2905 **Integrated Physiology A (Advanced)**	6	**P** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study **N** PHSI2005, PHSI2901, PHSI2001, PHSI2101 *Note: Department permission required for enrolment* *Permission from the coordinators is required for entry into this course. It is available only to selected students who have achieved a WAM of 65 (Credit average) or higher in their Junior units of study. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites. The completion of 6 credit points of MBLG units of study is highly recommended for progression to Senior Physiology*	Semester 1
Senior elective units of study			
For a major in Neuroscience, 24 credit points must be chosen from any of the following units: PCOL3022/3922, NEUR3001/3901, NEUR3002/3902, NEUR3003/3903, NEUR3004/3904, PSYC3011, PSYC3013, PSYC3014			
At least two subject areas must be chosen from NEUR, PSYC and PCOL.			
PCOL3022 **Neuropharmacology**	6	**P** PCOL2011, PCOL2012 or 36 credit points from Intermediate BMED units of study **N** PCOL3002, PCOL3902, PCOL3922	Semester 2
PCOL3922 **Neuropharmacology (Advanced)**	6	**P** Distinction average in PCOL2011 and PCOL2012 or in 36 credit points from Intermediate BMED units of study **N** PCOL3002, PCOL3902, PCOL3022	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
NEUR3001 **Neuroscience: Special Senses**	6	**A** It is strongly recommended that students also take unit NEUR3002. PHSI2005 and ANAT2010 are assumed knowledge. **P** For BMedSc students: BMED(2801 or 2503) and BMED(2806 or 2505) For other students: (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **N** PHSI3001, NEUR3901	Semester 1
NEUR3901 **Neuroscience: Special Senses (Advanced)**	6	**A** PHSI2005 and ANAT2010 **P** For BMedSc students: Credit average in BMED(2801 or 2503) and BMED(2806 or 2505) For other students: Credit average in (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **N** NEUR3001, PHSI3001, PHSI3901 *Permission from the coordinators is required for entry into this course. It is strongly recommended that students also take unit NEUR3002 or NEUR3902.*	Semester 1
NEUR3002 **Neuroscience: Motor Systems & Behaviour**	6	**A** It is strongly recommended that students also take unit NEUR3001. ANAT2010 and PHSI2005 is assumed knowledge. **P** For BMedSc students: BMED(2801 or 2503) and BMED(2806 or 2505) For other students: (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **N** PHSI3001, NEUR3902	Semester 1
NEUR3902 **Neuroscience: Motor Systems & Behav. Adv**	6	**A** ANAT2010 and PHSI2005 is assumed knowledge. **P** For BMedSc students: Credit average in BMED(2801 or 2503) and BMED(2806 or 2505) For other students: Credit average in (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **N** NEUR3002, PHSI3001 *Permission from the coordinators is required for entry into this course. It is strongly recommended that students also take unit NEUR3001 or NEUR3901.*	Semester 1
NEUR3003 **Cellular and Developmental Neuroscience**	6	**A** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **P** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics **N** NEUR3903, PHSI3002, PHSI3902 *Enrolment in NEUR3004/3904 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.*	Semester 2
NEUR3903 **Cellular & Developmental Neurosci. (Adv)**	6	**A** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **P** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. Plus, students must have a CREDIT (or better) in NEUR3001/3901 and NEUR3002/3902. **N** NEUR3003, PHSI3002, PHSI3902 *Note: Department permission required for enrolment* *Enrollment in NEUR3004/3904 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other. Students must receive permission from the coordinators for enrollment.*	Semester 2
NEUR3004 **Integrative Neuroscience**	6	**A** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **P** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. **N** NEUR3904, PHSI3002, PHSI3902 *Enrolment in NEUR3003/3903 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.*	Semester 2
NEUR3904 **Integrative Neuroscience (Advanced)**	6	**A** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **P** For BMedSCI: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. Plus, students must have a CREDIT (or better) in NEUR3001/3901 and NEUR3002/3902. **N** NEUR3004, PHSI3002, PHSI3902 *Note: Department permission required for enrolment* *Enrollment in NEUR3003/3903 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other. Students must receive permission from the coordinators for enrollment.*	Semester 2
PSYC3011 **Learning and Behaviour**	6	**A** PSYC (2012 or 2112) **P** PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114). **N** PSYC3209	Semester 1
PSYC3013 **Perceptual Systems**	6	**A** PSYC2012 **P** PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114) or ANAT2010 **N** PSYC3210	Semester 2
PSYC3014 **Behavioural and Cognitive Neuroscience**	6	**A** PSYC (2113 or 2013) **P** (PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114)) OR (ANAT2010 plus PCOL2011) **N** PSYC3204, PSYC3215	Semester 2
PSYC3018 **Abnormal Psychology**	6	**A** PSYC2012 **P** PSYC (2014 or 2114) and at least one other Intermediate Psychology unit of study from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2013 or 2113). **N** PSYC3203	Semester 2

Pharmacology

For a major in Pharmacology, the minimum requirement is 24 credit poitns from senior units of study listed in this subject area.

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Intermediate units of study			
The completion of MBLG(2001 or 2101 or 2901) is highly recommended.			
PCOL2011 **Pharmacology Fundamentals**	6	**P** 6 credit points of Junior Chemistry and 6 credit points of Junior Biology or MBLG1001. **N** PCOL2001	Semester 1
PCOL2012 **Pharmacology: Drugs and People**	6	**A** PCOL2011 **P** 6 credit points of Junior Chemistry and 6 credit points of Junior Biology or MBLG1001. **N** PCOL2002, PCOL2003	Semester 2
Senior units of study			
PCOL3011 **Toxicology**	6	**P** PCOL2001 or PCOL2011 and PCOL2012 or 36 credit points from Intermediate BMED units of study. **N** PCOL3001, PCOL3901, PCOL3911	Semester 1
PCOL3012 **Drug Design and Development**	6	**P** PCOL2001 or PCOL2011 and PCOL2012 or 36 credit points from Intermediate BMED units of study. **N** PCOL3001, PCOL3901, PCOL3912	Semester 1
PCOL3911 **Toxicology (Advanced)**	6	**P** Distinction average in PCOL2011 and PCOL2012 or Distinction average in 36 credit points from Intermediate BMED units of study. **N** PCOL3001, PCOL3901, PCOL3011	Semester 1
PCOL3912 **Drug Design and Development (Adv)**	6	**P** Distinction average in PCOL2011 and PCOL2012 or Distinction average in 36 credit points from Intermediate BMED units of study. **N** PCOL3001, PCOL3901, PCOL3012	Semester 1
PCOL3021 **Drug Therapy**	6	**P** PCOL2011 and PCOL2012 or 36 credit points from Intermediate BMED units of study **N** PCOL3002, PCOL3902, PCOL3921	Semester 2
PCOL3022 **Neuropharmacology**	6	**P** PCOL2011, PCOL2012 or 36 credit points from Intermediate BMED units of study **N** PCOL3002, PCOL3902, PCOL3922	Semester 2
PCOL3921 **Drug Therapy (Advanced)**	6	**P** Distinction average in PCOL2011 and PCOL2012 or in 36 credit points from Intermediate BMED units of study **N** PCOL3002, PCOL3902, PCOL3021	Semester 2
PCOL3922 **Neuropharmacology (Advanced)**	6	**P** Distinction average in PCOL2011 and PCOL2012 or in 36 credit points from Intermediate BMED units of study **N** PCOL3002, PCOL3902, PCOL3022	Semester 2
Physics			
For a major in Physics, the minimum requirement is 24 credit points from senior units of study listed in this subject area which must include:-			
(i) One semester 1 Core unit (PHYS3040, 3940 or 3941)			
(ii) One semester 2 Core unit (PHYS3060, 3960 or 3961)			
(iii) Two other non-over-lapping Options units (chosen from PHYS305x, 395x, 307x and 397x)			
Note that one Senior Computational Science unit (COSC3011/3911 or 3012/3912) may be included in a Physics major as one of the options.			
Junior units of study			
PHYS1001 **Physics 1 (Regular)**	6	**A** HSC Physics **C** Recommended concurrent Units of Study: MATH (1001/1901, 1002/1902) **N** PHYS1002 , PHYS1901	Semester 1
PHYS1002 **Physics 1 (Fundamentals)**	6	**A** No assumed knowledge of Physics **C** Recommended concurrent Units of Study: MATH (1001/1901, 1002/1902) **N** PHYS1001, PHYS1901	Semester 1
PHYS1901 **Physics 1A (Advanced)**	6	**P** UAI of at least 96, or HSC Physics result in Band 6, or PHYS1902, or Distinction or better in PHYS (1003 or 1004) or an equivalent unit. **C** Recommended concurrent Units of Study: MATH (1001/1901,1002/1902). **N** PHYS1001, PHYS1002	Semester 1
PHYS1003 **Physics 1 (Technological)**	6	**A** HSC Physics or PHYS (1001 or 1002 or 1901) or equivalent. **C** Recommended concurrent Units of Study: MATH (1003/1903), MATH (1005/1905). **N** PHYS1004, PHYS1902 *It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit*	Semester 2
PHYS1004 **Physics 1 (Environmental & Life Science)**	6	**A** HSC Physics or PHYS (1001 or 1002 or 1901) or equivalent. **C** Recommended concurrent Units of Study: MATH (1003/1903), MATH (1005/1905). **N** PHYS1003, PHYS1902 *It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit*	Semester 2
PHYS1902 **Physics 1B (Advanced)**	6	**P** UAI of at least 96, or HSC Physics result in Band 6, or PHYS1901, or Distinction or better in PHYS (1001 or 1002) or an equivalent unit. **C** Recommended concurrent unit of study: MATH (1003/1903), MATH (1005/1905). **N** PHYS1003, PHYS1004 *It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit*	Semester 2
PHYS1500 **Astronomy**	6	**A** No assumed knowledge of Physics.	Semester 2
Intermediate units of study			
PHYS2011 **Physics 2A**	6	**A** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH (1005/1905) would also be useful **P** 12 credit points of Junior Physics (excluding PHYS1500 and PHYS1600) **N** PHYS2001, PHYS2901, PHYS2911, PHYS2101, PHYS2103, PHYS2213, PHYS2203	Semester 1
PHYS2911 **Physics 2A (Advanced)**	6	**A** MATH (1901/1001 and 1902/1002 and 1903/1003). MATH (1905/1005) would also be useful **P** Credit or better in PHYS (1901 or 1001 or 1002) and Credit or better in PHYS (1902 or 1003 or 1004). **N** PHYS2901, PHYS2001, PHYS2011, PHYS2101, PHYS2103, PHYS2213, PHYS2203	Semester 1
PHYS2012 **Physics 2B**	6	**A** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH (1005/1905) would also be useful **P** PHYS (1003 or 1004 or 1902) and PHYS (1001 or 1002 or 1901 or 2001 or 2901 or 2011 or 2911) **N** PHYS2102, PHYS2104, PHYS2902, PHYS2002, PHYS2912, PHYS2213, PHYS2203	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
PHYS2013 **Astrophysics and Relativity**	6	**A** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH 1005/1905 would also be useful **P** PHYS (1003 or 1004 or 1902) and PHYS (1001 or 1002 or 1901 or 2011 or 2911) **C** PHYS (2012 or 2912) **N** PHYS2001, PHYS2901, PHYS2913, PHYS2101, PHYS2103	Semester 2
PHYS2912 **Physics 2B (Advanced)**	6	**A** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH 1005/1905 would also be useful **P** Credit or better in PHYS (1003 or 1004 or 1902) and Credit or better in PHYS (1001 or 1002 or 1901 or 2001 or 2901 or 2011 or 2911). **N** PHYS2102, PHYS2104, PHYS2902, PHYS2002, PHYS2012, PHYS2213, PHYS203	Semester 2
PHYS2913 **Astrophysics and Relativity (Advanced)**	6	**A** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH 1005/1905 would also be useful. **P** Credit or better in PHYS (1003 or 1004 or 1902) and Credit or better in PHYS (1001 or 1002 or 1901 or 2011 or 2911) **C** PHYS (2912 or 2012). **N** PHYS2001, PHYS2901, PHYS2013, PHYS2101, PHYS2103	Semester 2
Senior units of study			
PHYS3015 **Topics in Senior Physics A**	6	**A** 6 credit points of Intermediate Mathematics **P** 12 credit points of Intermediate Physics *Note: Department permission required for enrolment*	Semester 1
PHYS3025 **Topics in Senior Physics B**	6	**A** 6 credit points of Intermediate Mathematics **P** 12 credit points of Intermediate Physics *Note: Department permission required for enrolment*	Semester 2
PHYS3040 **Electromagnetism & Physics Lab**	6	**P** PHYS(2011 or 2911 or 2001 or 2901), PHYS(2012 or 2912 or 2002 or 2902), MATH(2061 or 2961 or 2067) **N** PHYS3940, PHYS3941, PHYS3011, PHYS3014, PHYS3016, PHYS3017, PHYS3911, PHYS3914, PHYS3916, PHYS3917	Semester 1
PHYS3051 **Thermodynamics/Biol. Physics & Lab**	6	**P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **N** PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3058, PHYS3958, PHYS3059, PHYS3959	Semester 1
PHYS3054 **Nanoscience/Plasma Physics & Physics Lab**	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **N** PHYS3954, PHYS3050, PHYS3950, PHYS3052, PHYS3952, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3059, PHYS3959, PHYS3070, PHYS3970, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978	Semester 1
PHYS3055 **Nanoscience/Plasma/Thermodynamics**	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **N** PHYS3955, PHYS3050, PHYS3950, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3058, PHYS3958, PHYS3059, PHYS3959, PHYS3070, PHYS3970, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978	Semester 1
PHYS3057 **Nanoscience/Thermodynamic/Biol.Phys**	6	**P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **N** PHYS3957, PHYS3050, PHYS3950, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3059, PHYS3959	Semester 1
PHYS3059 **Plasma/Thermodynamics/Biol. Physics**	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **N** PHYS3959, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3058, PHYS3958, PHYS3070, PHYS3970, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978	Semester 1
PHYS3060 **Quantum Mechanics & Physics Lab**	6	**P** PHYS 2011 or 2911 or 2001 or 2901; PHYS 2012 or 2912 or 2002 or 2902; MATH 2061 or 2961 or 2067 **N** PHYS3960, PHYS3961, PHYS3011, PHYS3024, PHYS3026, PHYS3027, PHYS3911, PHYS3924, PHYS3926, PHYS3927	Semester 2
PHYS3062 **Quantum/Cond Matter Physics & Lab**	6	**P** PHYS2012 or PHYS2912 **N** PHYS3060, PHYS3960, PHYS3961, PHYS3962, PHYS3068, PHYS3968, PHYS3070, PHYS3970, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981	Semester 2
PHYS3068 **Optics/Cond. Matter & Lab**	6	**A** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **N** PHYS3968, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3062, PHYS3962, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982	Semester 2
PHYS3069 **Optics/High Energy Physics & Lab**	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **N** PHYS3969, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3068, PHYS3968, PHYS3071, PHYS3971, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3076, PHYS3976, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982	Semester 2
PHYS3071 **High Energy/Astrophysics & Lab**	6	**P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **N** PHYS3971, PHYS3069, PHYS3969, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
PHYS3074 **High Energy/Cond. Matter Physics & Lab**	6	**A** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) **P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **N** PHYS3974, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3073, PHYS3973, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982	Semester 2
PHYS3079 **Cond. Matter/High Energy/Astrophysics**	6	**A** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) **P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **N** PHYS3979, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982	Semester 2
PHYS3080 **Optics/Cond.Matter/High Energy Physics**	6	**A** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **N** PHYS3980, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3081, PHYS3981, PHYS3082, PHYS3982	Semester 2
PHYS3081 **Optics/Cond. Matter/Astrophysics**	6	**A** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **N** PHYS3981, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3072, PHYS3972, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3082, PHYS3982	Semester 2
PHYS3082 **Optics/High Energy/Astrophysics**	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **N** PHYS3982, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3071, PHYS3971, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981	Semester 2
PHYS3915 **Topics in Senior Physics A (Advanced)**	6	**A** 6 credit points of Intermediate Mathematics **P** 12 credit points of Intermediate Physics. *Note: Department permission required for enrolment*	Semester 1
PHYS3925 **Topics in Senior Physics B (Advanced)**	6	**P** 12 credit points of Intermediate Physics with a Credit average and 6 credit points of Intermediate Mathematics. *Note: Department permission required for enrolment*	Semester 2
PHYS3940 **Electromagnetism & Physics Lab (Adv)**	6	**P** PHYS (2011 or 2911 or 2001 or 2901) with a grade of at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with a grade of at least Credit; MATH (2061 or 2961 or 2067) **N** PHYS3040, PHYS3941, PHYS3011, PHYS3014, PHYS3016, PHYS3017, PHYS3911, PHYS3914, PHYS3916, PHYS3917	Semester 1
PHYS3941 **Electromagnetism & Special Project (Adv)**	6	**P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; MATH (2061 or 2961 or 2067) **N** PHYS3040, PHYS3940, PHYS3961, PHYS3011, PHYS3911, PHYS3918, PHYS3928 *Note: Department permission required for enrolment* *Approval for this unit must be obtained from the School of Physics Senior Coordinator.*	Semester 1
PHYS3951 **Thermodynamics/Biol. Physics & Lab (Adv)**	6	**P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **N** PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3058, PHYS3958, PHYS3059, PHYS3959	Semester 1
PHYS3954 **Nanoscience/Plasma Physics & Lab (Adv)**	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **N** PHYS3054, PHYS3050, PHYS3950, PHYS3052, PHYS3952, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3059, PHYS3959, PHYS3070, PHYS3970, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978	Semester 1
PHYS3955 **Nanoscience/Plasma/Thermodynamics (Adv)**	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **N** PHYS3055, PHYS3050, PHYS3950, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3058, PHYS3958, PHYS3059, PHYS3959, PHYS3070, PHYS3970, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978	Semester 1
PHYS3957 **Nanoscience/Thermodynamic/BioLPhys(Adv)**	6	**P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **N** PHYS3057, PHYS3050, PHYS3950, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3059, PHYS3959	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
PHYS3959 **Plasma/Thermodynamics/Biol.Physics (Adv)**	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **N** PHYS3059, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3058, PHYS3958, PHYS3070, PHYS3970, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978	Semester 1
PHYS3960 **Quantum Mechanics & Physics Lab (Adv)**	6	**P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; MATH (2061 or 2961 or 2067) **N** PHYS3060, PHYS3961, PHYS3011, PHYS3024, PHYS3026, PHYS3027, PHYS3911, PHYS3924, PHYS3926, PHYS3927	Semester 2
PHYS3961 **Quantum Mechanics & Special Project(Adv)**	6	**P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; MATH (2061 or 2961 or 2067) **N** PHYS3060, PHYS3960, PHYS3941, PHYS3011, PHYS3911, PHYS3918, PHYS3928 *Note: Department permission required for enrolment* *Approval for this unit must be obtained from the School of Physics Senior Coordinator*	Semester 2
PHYS3962 **Quantum/Cond Matter Physics & Lab (Adv)**	6	**P** PHYS2012 or PHYS2912 with result of credit or better **N** PHYS3060, PHYS3960, PHYS3961, PHYS3062, PHYS3068, PHYS3968, PHYS3070, PHYS3970, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981	Semester 2
PHYS3968 **Optics/Cond. Matter & Lab (Adv)**	6	**A** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **N** PHYS3068, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3062, PHYS3962, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982	Semester 2
PHYS3969 **Optics/High Energy Physics & Lab (Adv)**	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **N** PHYS3069, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3068, PHYS3968, PHYS3071, PHYS3971, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3076, PHYS3976, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982	Semester 2
PHYS3971 **High Energy/Astrophysics & Lab (Adv)**	6	**P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **N** PHYS3071, PHYS3069, PHYS3969, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982	Semester 2
PHYS3974 **High Energy/Cond. Matter Phys.& Lab(Adv)**	6	**A** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) **P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit ; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **N** PHYS3074, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3073, PHYS3973, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982	Semester 2
PHYS3979 **Cond. Matter/High Energy/Astrophys (Adv)**	6	**A** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) **P** PHYS (2011 or 2911 or 2001 or 2901) with at least credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **N** PHYS3079, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982	Semester 2
PHYS3980 **Optics/Cond.Matter/High Energy Phys(Adv)**	6	**A** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **N** PHYS3080, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3081, PHYS3981, PHYS3082, PHYS3982	Semester 2
PHYS3981 **Optics/Cond. Matter/Astrophysics (Adv)**	6	**A** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **N** PHYS3081, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3072, PHYS3972, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3082, PHYS3982	Semester 2
PHYS3982 **Optics/High Energy/Astrophysics (Adv)**	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **N** PHYS3082, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3071, PHYS3971, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
COSC3011 **Scientific Computing**	6	**A** Programming experience in MATLAB **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. **N** COSC3911, COSC3001, COSC3901, PHYS3301, PHYS3901	Semester 1
COSC3911 **Scientific Computing (Advanced)**	6	**A** Programming experience in MATLAB **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. **N** COSC3011, COSC3001, COSC3901, PHYS3301, PHYS3901	Semester 1
COSC3012 **Parallel Computing & Visualisation**	6	**A** Programming experience in C and MATLAB or equivalent. **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. **N** COSC3912, COSC3002, COSC3902, COSC3601, PHYS3303, PHYS3933	Semester 2
COSC3912 **Parallel Computing & Visualisation (Adv)**	6	**A** Programming experience in C and MATLAB or equivalent. **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. **N** COSC3012, COSC3002, COSC3902, COSC3601, PHYS3303, PHYS3933	Semester 2
Physiology			
for a major in Physiology, the minimum requirement is 24 credit points from senior units of study listed in this subject area.			
Intermediate units of study			
PHSI2005 **Integrated Physiology A**	6	**P** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study **N** PHSI2905, PHSI2001, PHSI2101, PHSI2901 *The completion of 6 credit points of MBLG units of study is highly recommended for progression to Senior Physiology. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites.*	Semester 1
PHSI2905 **Integrated Physiology A (Advanced)**	6	**P** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study **N** PHSI2005, PHSI2901, PHSI2001, PHSI2101 *Note: Department permission required for enrolment* *Permission from the coordinators is required for entry into this course. It is available only to selected students who have achieved a WAM of 65 (Credit average) or higher in their Junior units of study. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites. The completion of 6 credit points of MBLG units of study is highly recommended for progression to Senior Physiology*	Semester 1
PHSI2006 **Integrated Physiology B**	6	**P** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study **N** PHSI2906, PHSI2002, PHSI2102, PHSI2902 *The completion of Molecular Biology and Genetics A is highly recommended for progression to Senior Physiology. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites.*	Semester 2
PHSI2906 **Integrated Physiology B (Advanced)**	6	**P** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study **N** PHSI2006, PHSI2902, PHSI2002, PHSI2102 *Note: Department permission required for enrolment* *Permission from the coordinators is required for entry into this course. It is available only to selected students who have achieved a WAM of 65 (Credit average) or higher in their Junior units of study. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisite. The completion of Molecular Biology and Genetics A is highly recommended for progression to Senior Physiology.*	Semester 2
Senior units of study			
PHSI3005 **Human Cellular Physiology: Theory**	6	**A** 6 credit points of MBLG **P** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) For BMedSc: BMED (2801 and 2802). **N** PHSI3905, PHSI3004, PHSI3904 *It is highly recommended that this unit of study be taken in conjunction with PHSI3006.*	Semester 1
PHSI3905 **Human Cellular Physiology (Adv): Theory**	6	**A** 6 credit points of MBLG **P** Credit average in PHSI(2005 or 2905) and PHS(2006 or 2906) or in BMED (2801 and 2802). Students enroling in this unit should have a SciWAM of at least 68. **N** PHSI3005, PHSI3004, PHSI3904 *Note: Department permission required for enrolment* *It is highly recommended that this unit of study be taken in combination with PHSI3906*	Semester 1
PHSI3006 **Human Cellular Physiology: Research**	6	**P** Except for BMedSc students: PHSI (2005 or 2905) and PHSI(2006 or 2906) For BMedSc: BMED (2801 and 2802). **C** PHSI3005 **N** PHSI3906, PHSI3004, PHSI3904	Semester 1
PHSI3906 **Human Cellular Physiology (Ad): Research**	6	**A** 6 credit points of MBLG **P** Credit average in PHSI (2005 or 2905) and PHSI(2006 or 2906) or in BMED (2801 and 2802). Students enroling in this unit should have a SciWAM of at least 68. **C** PSYC3905 **N** PHSI3006, PHSI3004, PHSI3904 *Note: Department permission required for enrolment*	Semester 1
NEUR3001 **Neuroscience: Special Senses**	6	**A** It is strongly recommended that students also take unit NEUR3002. PHSI2005 and ANAT2010 are assumed knowledge. **P** For BMedSc students: BMED(2801 or 2503) and BMED(2806 or 2505) For other students: (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **N** PHSI3001, NEUR3901	Semester 1
NEUR3901 **Neuroscience: Special Senses (Advanced)**	6	**A** PHSI2005 and ANAT2010 **P** For BMedSc students: Credit average in BMED(2801 or 2503) and BMED(2806 or 2505) For other students: Credit average in (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **N** NEUR3001, PHSI3001, PHSI3901 *Permission from the coordinators is required for entry into this course. It is strongly recommended that students also take unit NEUR3002 or NEUR3902.*	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
NEUR3002 **Neuroscience: Motor Systems & Behaviour**	6	**A** It is strongly recommended that students also take unit NEUR3001. ANAT2010 and PHSI2005 is assumed knowledge. **P** For BMedSc students: BMED(2801 or 2503) and BMED(2806 or 2505) For other students: (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **N** PHSI3001, NEUR3902	Semester 1
NEUR3902 **Neuroscience: Motor Systems & Behav. Adv**	6	**A** ANAT2010 and PHSI2005 is assumed knowledge. **P** For BMedSc students: Credit average in BMED(2801 or 2503) and BMED(2806 or 2505) For other students: Credit average in (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **N** NEUR3002, PHSI3001 *Permission from the coordinators is required for entry into this course. It is strongly recommended that students also take unit NEUR3001 or NEUR3901.*	Semester 1
PHSI3007 **Heart and Circulation: Normal Function**	6	**A** 6 credit points of MBLG **P** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of Study For BMedSc: BMED (2801 and 2803). **N** PHSI3907, PHSI3003, PHSI3903 *It is recommended that students take PHSI3007 ONLY in combination with PHSI3008.*	Semester 2
PHSI3907 **Heart & Circulation: Normal Function Adv**	6	**A** 6 credit points of MBLG **P** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of Study For BMedSc: BMED (2801 and 2803). **N** PHSI3007, PHSI3003, PHSI3903 *Note: Department permission required for enrolment* *Available to selected students who have achieved an average of at least 75 in their prerequisite units of study. It is highly recommended that this unit of study be taken in combination with PHSI3908.*	Semester 2
PHSI3008 **Heart and Circulation: Dysfunction**	6	**A** 6 credit points of MBLG **P** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of Study For BMedSc: BMED (2801 and 2803) **N** PHSI3908, PHSI3003, PHSI3903 *It is strongly recommended that students take PHSI3008 ONLY in combination with PHSI3007*	Semester 2
PHSI3908 **Heart & Circulation: Dysfunction Adv**	6	**A** 6 credit points of MBLG **P** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of Study For BMedSc: BMED (2801 and 2803). **N** PHSI3008, PHSI3003, PHSI3903 *Note: Department permission required for enrolment* *Available to selected students who have achieved an average of at least 75 in their prerequisite units of study. It is highly recommended that this unit of study be taken ONLY in combination with PHSI3907 or PHSI3007.*	Semester 2
NEUR3003 **Cellular and Developmental Neuroscience**	6	**A** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **P** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics **N** NEUR3903, PHSI3002, PHSI3902 *Enrolment in NEUR3004/3904 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.*	Semester 2
NEUR3903 **Cellular & Developmental Neurosci. (Adv)**	6	**A** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **P** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. Plus, students must have a CREDIT (or better) in NEUR3001/3901 and NEUR3002/3902. **N** NEUR3003, PHSI3002, PHSI3902 *Note: Department permission required for enrolment* *Enrollment in NEUR3004/3904 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other. Students must receive permission from the coordinators for enrollment.*	Semester 2
NEUR3004 **Integrative Neuroscience**	6	**A** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **P** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. **N** NEUR3904, PHSI3002, PHSI3902 *Enrolment in NEUR3003/3903 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.*	Semester 2
NEUR3904 **Integrative Neuroscience (Advanced)**	6	**A** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **P** For BMedSCI: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. Plus, students must have a CREDIT (or better) in NEUR3001/3901 and NEUR3002/3902. **N** NEUR3004, PHSI3002, PHSI3902 *Note: Department permission required for enrolment* *Enrollment in NEUR3003/3903 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other. Students must receive permission from the coordinators for enrollment.*	Semester 2
Plant Science			
for a major in Plant Science, the minimum requirement is 24 credit points from senior units of study listed in this subject area, including a minimum of 12 credit points of senior PLNT units.			
Intermediate units of study			
PLNT2001 **Plant Biochemistry and Molecular Biology**	6	**P** 12 credit points of Junior Chemistry and 12 credit points of Junior Biology (or with the Dean's permission BIOL1201 and BIOL1202) **N** PLNT2901, AGCH2001	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
PLNT2901 **Plant Biochem & Molecular Biology (Adv)**	6	**P** A Distinction average in 12 credit points of Junior Chemistry and 12 credit points of Junior Biology (or with the Dean's permission BIOL1201 and BIOL1202) **N** PLNT2001, AGCH2001	Semester 1
PLNT2002 **Aust Flora: Ecology and Conservation**	6	**A** The contents of BIOL (1002 or 1902) is assumed knowledge. Students wishing to enroll in Intermediate Biology (BIOL) and Plant Science (PLNT) units of study using BIOL (1003 or 1903) will need to do some preparatory reading. **P** 12 credit points from a combination of Junior BIOL or LWSC units of study including two of BIOL (1001, 1901, 1002, 1902, 1003, 1903) LWSC1002, MBLG1001 (or with the Dean's permission BIOL1201 and BIOL1202 may be substituted for the above). **N** PLNT2902, BIOL2004, BIOL2904	Semester 1
PLNT2902 **Aust Flora: Ecology & Conservation (Adv)**	6	**A** The contents of BIOL(1002 or 1902) is assumed knowledge. Students wishing to enroll in Intermediate Biology (BIOL) and Plant Science (PLNT) units of study using BIOL(1003 or 1903) will need to do some preparatory reading **P** Distinction average in 12 credit points from a combination of Junior BIOL or LWSC units of study including two of BIOL (1001, 1901, 1002, 1902, 1003, 1903) LWSC1002, MBLG1001 (or with the Dean's permission BIOL1201 and BIOL1202).These requirements may be varied and students with lower averages should consult the unit Executive Officer **N** PLNT2002, BIOL2004, BIOL2904	Semester 1
PLNT2003 **Plant Form and Function**	6	**A** The content of BIOL(1002 or 1902) is assumed knowledge and students entering from BIOL(1003 or 1903) will need to do some preparatory reading **P** 12 credit points of Junior Biology (or with the Dean's permission), BIOL1201 and BIOL1202 or BIOL1001 and ENVI1002 **N** PLNT2903, BIOL2003, BIOL2903, CROP2001	Semester 2
PLNT2903 **Plant Form and Function (Advanced)**	6	**A** The content of BIOL(1002 or 1902) is assumed knowledge and students entering from BIOL(1003 or 1903) will need to do some preparatory reading **P** Distinction average in 12 credit points of Junior Biology or BIOL1001 and ENVI1002 (or with the Dean's permission, BIOL1201 and BIOL1202) **N** PLNT2003, BIOL2003, BIOL2903, CROP2001	Semester 2
Senior units of study			
PLNT3001 **Plant, Cell and Environment**	6	**P** 12 credit points of Intermediate Biology, Plant Science, Molecular Biology and Genetics or equivalent **N** PLNT3901	Semester 2
PLNT3901 **Plant, Cell and Environment (Advanced)**	6	**P** 12 credit points of Intermediate Biology, Plant Science, Molecular Biology and Genetics or equivalent **N** PLNT3001 *Note: Department permission required for enrolment* *Entry is restricted and is based on a combination of a high WAM and student motivation*	Semester 2
PLNT3002 **Plant Growth and Development**	6	**P** 12 credit points of intermediate PLNT, BIOL, AGCH or CROP units of study including at least one of PLNT2001, PLNT2901, PLNT2003, PLNT2903, BIOL2016, BIOL2916, BIOL2003, BIOL2903, BIOL2006, BIOL2906, CROP2001, AGCH2002 or equivalent **N** PLNT3902, BIOL3021, BIOL3931	Semester 2
PLNT3902 **Plant Growth and Development (Advanced)**	6	**P** Distinction average in 12 credit points of intermediate PLNT, BIOL, AGCH or CROP units of study including at least one of PLNT2001, PLNT2901, PLNT2003, PLNT2903, BIOL2016, BIOL2916, BIOL2003, BIOL2903, BIOL2006, BIOL2906, CROP2001, AGCH2002 or equivalent. These requirements may be varied and students with lower averages should consult the unit coordinator **N** PLNT3002, BIOL3021, BIOL3931	Semester 2
PLNT3003 **Systematics and Evolution of Plants**	6	**A** BIOL(1001 or 1101 or 1901 or 1002 or 1902 or 1904) **P** PLNT (2002 or 2902) or equivalent **N** BIOL3015, BIOL3915, PLNT3903	Semester 1
PLNT3903 **Systematics and Evolution of Plants Adv**	6	**A** BIOL (1001 or 1101 or 1901 or 1002 or 1902 or 1904) **P** Distinction in PLNT2002 or PLNT2902 (or equivalent). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **N** BIOL3015, BIOL3915, PLNT3003	Semester 1
BIOL3009 **Terrestrial Field Ecology**	6	**A** Ecological Methods (BIOL3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly recommended. **P** 12 credit points of intermediate level Biology. **N** BIOL3909, BIOL3041, BIOL3941, BIOL3042, BIOL3942, BIOL3024, BIOL3924	S2 Intensive
BIOL3909 **Terrestrial Field Ecology (Advanced)**	6	**A** Ecological Methods (BIOL3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly recommended. **P** Distinction average in 12 credit points of intermediate level Biology. **N** BIOL3009, BIOL3041, BIOL3941, BIOL3042, BIOL3942, BIOL3024, BIOL3924 *Students taking this unit of study will complete an individual research project on a topic negotiated with a member of staff. it is expected that much of the data collection will be completed during the field trip but some extra time may be needed during semester 2.*	S2 Intensive
BIOL3017 **Fungi in the Environment**	6	**P** 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. **N** BIOL3917 *The completion of 6 credit points of MBLG units is highly recommended.*	S1 Intensive
BIOL3917 **Fungi in the Environment (Advanced)**	6	**P** Distinction average in 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. **N** BIOL3017 *The completion of 6 credit points of MBLG units is highly recommended.*	S1 Intensive
PPAT3003 **Plant Disease**	6	**P** Two of PLNT2001, PLNT2901, PLNT2002, PLNT2902, PLNT2003, PLNT2903, MICR2024, MICR2026 or MICR2101	Semester 1
HORT3004 **Postharvest Biology and Technology**	6	**A** HORT1001, HORT1002 and HORT2002. **P** Two of PLNT2001, PLNT2901, PLNT2002, PLNT2902, PLNT2003, PLNT2903.	Semester 2
HORT3005 **Production Horticulture**	6	**A** HORT1001, HORT1002 and HORT2002. **P** Two of PLNT2001, PLNT2901, PLNT2002, PLNT2902, PLNT2003, PLNT2903.	Semester 1
AGRO3002 **Agronomy 3**	6	**A** CROP1001 or HORT1001 or LWSC1001 **P** PLNT2003 or PLNT2903	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Psychology			
For a major in Psychology, the minimum requirement is 48 credit points across intermediate and senior psychology* units of study including PSYC (2111 or 2011), PSYC (2112 or 2012), PSYC (2113 or 2013) and PSYC (2114 or 2014). No other intermediate psychology units can be counted towards the major. You must complete at least 24 (30 fo BPsych) credit points of Senior Psychology for a major. The senior units must include at least one of PSYC3011, 3012, 3013 and 3014. Students who want to be eligible for entry to the Honours or GDS 4th year programs must also include PSYC3010.			
*Note: HPSC3023 Psychology & Psychiatry: History & Phil is available for senior Psychology students and will count towards a major in Psychology. Successful completion of this unit of study is essential for students intending to take the Theoretical Thesis option in Psychology Honours.			
Junior units of study			
PSYC1001 **Psychology 1001**	6		Semester 1 Summer Main
PSYC1002 **Psychology 1002**	6		Semester 2 Summer Main
Intermediate units of study			
PSYC2011 **Brain and Behaviour**	6	**P** PSYC (1001 and 1002). **N** PSYC2111	Semester 1
PSYC2012 **Statistics & Research Methods for Psych**	6	**A** Recommended: HSC Mathematics, any level **P** PSYC (1001 and 1002). **N** PSYC2112	Semester 1
PSYC2013 **Cognitive and Social Psychology**	6	**P** PSYC (1001 and 1002). **N** PSYC2113	Semester 2
PSYC2014 **Personality and Differential Psychology**	6	**P** PSYC (1001 and 1002) **N** PSYC2114	Semester 2
Senior units of study			
PSYC3011 **Learning and Behaviour**	6	**A** PSYC (2012 or 2112) **P** PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114). **N** PSYC3209	Semester 1
PSYC3012 **Cognition, Language and Thought**	6	**A** PSYC (2012 or 2112) **P** PSYC (2013 or 2113) and at least one other Intermediate Psychology unit from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2014 or 2114). **N** PSYC3205	Semester 1
PSYC3015 **Intelligence and Human Reasoning**	6	**A** PSYC(2012 or 2112). **P** PSYC(2014 or 2114) and PSYC(2013 or 2113).	Semester 1
PSYC3016 **Developmental Psychology**	6	**P** PSYC (2013 or 2113) and at least one other Intermediate Psychology unit from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2014 or 2114). **N** PSYC3206	Semester 1
PSYC3017 **Social Psychology**	6	**A** PSYC (2012 or 2112). **P** PSYC (2013 or 2113) and at least one other Intermediate Psychology Unit of Study from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2014 or 2114). **N** PSYC3212	Semester 1
HPSC3023 **Psychology & Psychiatry: History & Phil**	6	**A** Basic knowledge about the history of modern science as taught in HPSC2100 AND the principles of philosophy of science as taught in HPSC2101 AND knowledge of the various sub-disciplines within Psychology. **P** (at least 8 credit points of intermediate HPSC Units of study) OR (a CR or above in one HPSC intermediate Unit of Study) OR (12 intermediate credit points in psychology). **N** PSYC3202	Semester 1
PSYC3010 **Advanced Statistics for Psychology**	6	**P** PSYC (2012 or 2112) plus at least one other Intermediate Psychology Unit of Study from PSYC (2011 or 2111), PSYC (2013 or 2113), PSYC (2014 or 2114). **N** PSYC3201	Semester 2
PSYC3013 **Perceptual Systems**	6	**A** PSYC2012 **P** PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114) or ANAT2010 **N** PSYC3210	Semester 2
PSYC3014 **Behavioural and Cognitive Neuroscience**	6	**A** PSYC (2113 or 2013) **P** (PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114)) OR (ANAT2010 plus PCOL2011) **N** PSYC3204, PSYC3215	Semester 2
PSYC3018 **Abnormal Psychology**	6	**A** PSYC2012 **P** PSYC (2014 or 2114) and at least one other Intermediate Psychology unit of study from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2013 or 2113). **N** PSYC3203	Semester 2
PSYC3019 **Communication and Counselling**	6	**A** PSYC (2012 or 2112). **P** PSYC2013 and one other Intermediate Psychology unit of study from PSYC (2011 or 2111), PSYC (2012 or 2112) and PSYC (2014 or 2114). **N** PSYC3214	Semester 2
Soil Science			
For a major in soil science, the minimum requirement is 24 credit points from senior units of study listed in this subject area.			
Intermediate units of study			
SOIL2003 **Soil Properties and Processes**	6		Semester 1
SOIL2004 **The Soil Resource**	6	**P** GEOL1001 or GEOL1002/1902 or ENVI1002 or GEOG1001	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Senior units of study			
SOIL3005 **Field and Laboratory Soil Physics**	6	**P** SOIL2004 *Note: Department permission required for enrolment*	Semester 1
SOIL3006 **Field and Laboratory Pedology**	6	**P** SOIL2004 *Note: Department permission required for enrolment*	Semester 1
SOIL3007 **Environmental Soil Chemistry**	6	**P** SOIL2004 *Note: Department permission required for enrolment*	Semester 2
SOIL3008 **Rural Spatial Information Systems**	6		Semester 2
Statistics			
For a major in Statistics, the minimum requirement is 24 credit poitns from senior units of study listed in this subject area.			
Intermediate units of study			
STAT2011 **Statistical Models**	6	**P** MATH (1001 or 1901 or 1906 or 1011) and [MATH (1005 or 1905 or 1015) or STAT1021] **N** STAT2901, STAT2001, STAT2911	Semester 1
STAT2012 **Statistical Tests**	6	**A** STAT (2011 or 2002) **P** MATH (1005 or 1905 or 1015) **N** STAT2004, STAT2912	Semester 2
STAT2911 **Probability and Statistical Models (Adv)**	6	**P** MATH (1903 or 1907 or Credit in 1003) and MATH (1905 or Credit in 1005) **N** STAT2001, STAT2011, STAT2901	Semester 1
STAT2912 **Statistical Tests (Advanced)**	6	**A** STAT (2911 or 2901) **P** MATH1905 or Credit in MATH1005 **N** STAT2004, STAT2012	Semester 2
Senior units of study			
STAT3011 **Stochastic Processes and Time Series**	6	**P** STAT (2011 or 2911 or 2001 or 2901) and MATH (1003 or 1903 or 1907). **N** STAT3911, STAT3003, STAT3903, STAT3005, STAT3905	Semester 1
STAT3012 **Applied Linear Methods**	6	**P** STAT(2012 or 2912 or 2004) and MATH(1002 or 1902). **N** STAT3912, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
STAT3013 **Statistical Inference**	6	**P** STAT(2012 or 2912 or 2003 or 2903). **N** STAT3913, STAT3001, STAT3901	Semester 2
STAT3014 **Applied Statistics**	6	**A** STAT(3012 or 3912). **P** STAT(2012 or 2912 or 2004). **N** STAT3914, STAT3002, STAT3902, STAT3006	Semester 2
STAT3911 **Stochastic Processes and Time Series Adv**	6	**P** (STAT2911 or credit in STAT2011) and MATH(1003 or 1903 or 1907). **N** STAT3011, STAT3003, STAT3903, STAT3005, STAT3905	Semester 1
STAT3912 **Applied Linear Methods Advanced**	6	**P** (STAT2912 or Credit in STAT2004 or Credit in STAT2012) and MATH(2061 or 2961 or 1902). **N** STAT3012, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
STAT3913 **Statistical Inference Advanced**	6	**P** STAT(2912 or 2903). **N** STAT3013, STAT3001, STAT3901	Semester 2
STAT3914 **Applied Statistics Advanced**	6	**A** STAT3912 **P** STAT2912 or credit or better in (STAT2004 or STAT2012). **N** STAT3014, STAT3002, STAT3902, STAT3006, STAT3907	Semester 2
Study in other Faculties			
A total of 48 credit points of units of study from non-Science discipline areas may be counted towards the Bachelor of Science degree. Students should consult the Handbooks from other faculties to determine any prerequisites, corequisites or other requirements relating to enrolment in units of study offered by departments in these faculties. Students may not enrol in Concepts and Issues in Physical Science (PHYS1600) or General Statistical Methods 1 (STAT1021) or General Statistical Methods 2 (STAT1022) or Econometrics first year units, ot any other unit of study deemed mutually exclusive with units of study listed in this Table. Students enrolled in the combined BSc/BCom program may enrol in Econometrics 1A (ECMT1010). Students may not enrol in LAWS units of study, unless enrolled in the combined BSc/Llb degree.			

4. Bachelor of Science specialist degree programs

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

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

All students are expected to read the degree resolutions for their course before they commence their studies, and from time to time during their studies. Undergraduate degree resolutions appear in chapter 2. The tables of undergraduate units of study available for each degree and unit descriptions appear in this chapter, and Table 1 of the Bachelor of Science degree in chapter 3.

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

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

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

Code of Conduct for Students
The University has clear expectations of students in respect of academic matters and personal behaviour.

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

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

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

Enrolment day FAQs

What is a 'major'?

Some degrees in the Faculty of Science require you to complete a major. A major is a specialisation in the Senior year of your degree. Specialist Bachelor of Science degrees have been designed to develop your knowledge and skills in a particular area. Students enrolling in specialist degree programs do not have majors, but do have a specialisation.

How many credit points should I take per semester?

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

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

Do I need to be full-time?

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

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

International students are required to be full-time.

Can I take units of study from other faculties?

Students in specialist degrees may have room for some electives. In some instances, these electives may be taken from other Faculties. Consult your degree resolutions and sample degree table.

Can I receive credit for previous tertiary study?

Yes. The amount of credit you may receive depends on your individual circumstances, but in general the total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points from degrees that have been completed.

On the day that you enrol you must lodge an application for credit from previous study. Because of the large numbers of applications received at enrolment there can be a considerable delay in processing your application, but all credit offers will be sent to students well in advance of the last day to add a unit of study for the semester in which they enrol.
The Faculty must sight originals of your academic transcripts, as well as detailed descriptions of prior units of study completed, as at the time of completion of the units. Descriptions will normally be an extract from a Handbook or a unit of study syllabus/outline, and should include the credit point value, learning outcomes, assessment details, texts and references, and contact details for each unit of study. You must bring this information with on the day that you enrol.
On enrolment day you will have to make unit of study choices as if you have had no previous university of study. Alternatively, you may be able to obtain special permission to enrol in Intermediate or Senior units of study by taking a copy of your transcript and unit of study descriptions to Academic advisers for each individual unit of study. Unit of study Academic advisers are listed under unit of study descriptions in this Handbook.
Information on the current application process for credit, including the application form, is available from the Faculty of Science website.

Are there any bridging courses available?

There are bridging courses in Biology, Chemistry, Mathematics and Physics, designed to cover the assumed knowledge that students would normally cover in the HSC. They run in February each year

after enrolment and are recommended for students who either didn't take a subject at the HSC or feel they need some revision.

Who can enrol in Advanced units of study?

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

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

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

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

What is the Talented Student Program?

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

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

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

Am I eligible for the Talented Student Program?

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

Bachelor of Science (Bioinformatics)

Degree Code: LH019
Summary of requirements

Note that this degree is not available to new students in 2007. A new major in Bioinformatics is available to students enrolling in the BSc.

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

Enrolment guide
In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 6 credit points of Junior units of study in the Science subject area of Biology;
- 6 credit points of Junior units of study in the Science subject area of Molecular Biology and Genetics (ie. MBLG1001);
- 12 credit points of Junior units of study in the Science subject area of Chemistry; and
- 12 credit points of Junior units of study in the Science subject area of Computer Science (ie. SOFT1001/1901 and SOFT1002/1902).

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

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

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

Honours
There are Honours courses in Science subject areas suitable for Bioinformatics students. Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 12.

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

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

Transferring into the BSc (Bioinformatics)
Students are not permitted to transfer into this degree.

Degree resolutions
See chapter 2.

Sample Bachelor of Science (Bioinformatics)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH1XXX	MATH1XXX	BIOL1XXX	CHEM1XXX	SOFT1XXX		
		3	3	6	6	6		24
	2	MATH1XXX	MATH1XXX	MBLG1001	CHEM1XXX	SOFT1XXX		
		3	3	6	6	6		24
Year 2	1	INFO2X10	MBLG2XXX	Life Science elective	MATH/SOFT elective			
		6	6	6	6			24
	2	SOFT2X30	MBLG2XXX	Life Science elective	MATH/SOFT elective			
		6	6	6	6			24
Year 3	1	SOFT3XXX	Life Science elective	Life Science elective	SOFT/MATH/PHYS elective			
		6	6	6	6			24
	2	BINF3101	Life Science elective	Life Science elective	SOFT/MATH/PHYS elective			
		6	6	6	6			24
							Total credit points:	144
Require: 144cp total, and units of study as per Table IA.								

Table 1A: Bachelor of Science (Bioinformatics)

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
A. Junior units of study			
Candidates are required to enrol in and complete:			
(i) 12 credit points from Junior units of study in the Science Subject Area of Mathematics (MATH1011, 1013, 1014 and 1015 or equivalents);			
(ii) 6 credit points from Junior units of study in the Science Subject Areas of Biology (BIOL1001/1101/1901);			
(iii) 6 credit points from Junior units of study in the Science Subject Area of Molecular Biology and Genetics (MBLG1001);			
(iv) 12 credit points from Junior units of study in the Science Subject Area of Chemistry; and			
(v) 12 credit points from Junior units of study in the Science Subject Area of Computer Science (SOFT1001/1901 and SOFT1002/1902).			
B. Intermediate units of study			
Candidates are required to enrol in and complete:			
(i) INFO(2110 or 2810) and SOFT(2130 or 2830);			
(ii) MBLG(2071 or 2971) and MBLG(2072 or 2972);			
(iii) at least 12 credit points from other Intermediate units of study in the Science Subject Areas of Biochemistry, Biology, Microbiology or Pharmacology and/or Plant Science (may include further Junior units of study in Biology); and			
(iv) a further 12 credit points of additional units of study at the Intermediate level chosen from the Science Subject Areas of Computer Science, Information Systems, Computational Science, Statistics, or from the following Mathematics units of study: MATH(2061 or 2961), MATH(2063 or 2963), MATH(2069 or 2969), MATH(2070 or 2970).			
C. Senior units of study			
Candidates are required to enrol in and complete:			
(i) BINF3101 Bioinformatics Project and at least 6 credit points of Senior units of study in the Science Subject Area of Computer Science;			
(ii) 24 credit points of Senior units of study in the Science Subject Areas of Biology, Biochemistry, Microbiology, Pharmacology and/or Plant Science; and			
(iii) a further 12 credit points of additional units of study at the Senior level chosen from the Science Subject Areas of Computer Science, Information Systems, Computational Science, Statistics or from the following Mathematics and Physics units of study: MATH3067, MATH3076/3976, MATH3063/3963, COSC(3011 or 3911), COSC(3012 or 3912).			
BINF3101 **Bioinformatics Project**	6	**A** 12 credit points from Junior units of study in Software Development (SOFT) and/or Computational Science (COSC) **P** SOFT (2130 or 2830 or 2004 or 2904) and 12 credit points from Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and Genetics and/or Pharmacology **N** COMP3206, BINF3001	Semester 2

Bachelor of Science (Environmental)

Degree Code: LH017
Summary of requirements

Note that this degree is not available to new students in 2007. A new major in Environmental Studies is available to students enrolling in the Bachelor of Science degree.

The requirements for the degree are set out in Table IB: Bachelor of Science (Environmental) (see below) and the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree.

Enrolment guide
In your Junior year you should complete:

- ENVI1002 and GEOL 1002;
- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 12 credit points of Junior units of study in the Science subject area of Biology;
- 12 credit points of Junior units of study in the Science subject area of Chemistry; and
- The study of some Biology, Chemistry or Mathematics at the Advanced level is recommended but not compulsory.

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

- the Intermediate Environmental Science units of study, ENVI2111 and ENVI2112;
- the Senior Environmental Science units of study, ENVI3111, ENVI3112, ENVI3113 and ENVI3114.

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

Students can also check the Environmental Science website for further information.

Units of study
The Science units of study available for this degree are set out in Table IB: Bachelor of Science (Environmental) and in Table I: Bachelor of Science in chapter 10. Unit descriptions follow the tables.

Honours
There are Honours courses in Science subject areas suitable for Environmental Science students. Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 12.

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

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

Transferring into the BSc (Environmental)
This degree is not available for transfer in 2007.

Degree resolutions
See chapter 2.

Sample Bachelor of Science (Environmental)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH1XXX	MATH1XXX	ENVI1002	BIOL1X01	CHEM1X01		
		3	3	6	6	6		24
	2	MATH1XXX	MATH1XXX	GEOL1002	BIOL1X02	CHEM1X02		
		3	3	6	6	6		24
Year 2	1	ENVI2X11	SOIL/CHEM elective	Science elective	Science elective			
		6	6	6	6			24
	2	ENVI2112	GEOS elective	BIOL/MICR/PLNT elective	Science Elective			
		6	6	6	6			24
Year 3	1	ENVI3111	ENVI3113	Table 1B elective	Table 1B elective			
		6	6	6	6			24
	2	ENVI3112	ENVI3114	Table 1B elective	Table 1B elective			
		6	6	6	6			24
							Total credit points:	144
Require: 144cp total, and units of study as per Table IB.								

Table 1B: Bachelor of Science (Environmental)

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
A. Junior units of study			
Candidates are required to enrol in and complete:			
(i) ENVI1002 and GEOL1002;			
(ii) 12 credit points of Junior units of study from the Science Subject Area of Biology;			
(iii) 12 credit points of Junior units of study from the Science Subject Area of Chemistry; and			
(iv) 12 credit points of Junior units of study from the Science Subject Area of Mathematics.			
ENVI1002 **Geomorphic Environments** *This unit of study is not available in 2007*	6	*This unit of study is available to students in the Bachelor of Science (Environmental) and the Bachelor of Land & Water Science only.*	
Some study of BIOL, CHEM, MATHS at the Advanced level is recommended but not compulsory.			
B. Intermediate units of study			
Candidates are required to enrol in and complete:			
(i) ENVI2111/2911 and ENVI2112;			
(ii) at least 6 credit points from SOIL2003 or CHEM2404;			
(iii) at least 6 credit points from GEOG2321 or GEOS2121;			
(iv) at least 6 credit points from MICR2024, BIOL2017, PLNT(2003 or 2903), BIOL(2012 or 2912); and			
(v) up to 18 credit points of Junior or Intermediate units of study from the Science Subject Areas of Agricultural Chemistry, Biology, Chemistry, Geography, Geology and Geophysics, Marine Science, Microbiology, Physics and Soil Science. Units of study in History and Philosophy of Science may be taken on approval of the Chair of the Program Committee for Environmental Science.			
ENVI2111 **Conservation Biology and Applied Ecology**	6	**P** 24 credit points of Junior Science units, including 12 credit points of Junior Biology **N** ENVI2001, ENVI2911	Semester 1
ENVI2911 **Conservation Biology (Advanced)**	6	**P** Distinction average in BIOL(1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016. 12 credit points of Junior Chemistry (or for BSc (Marine Science) students 6 credit points of Junior Chemistry and 6 credit points of Junior Physics). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **N** ENVI2001, ENVI2111	Semester 1
ENVI2112 **Atmospheric Processes and Climate**	6	**P** 24 credit points of Junior Science units, including 12 credit points of Junior Chemistry or Physics **N** ENVI2002	Semester 2
C. Senior units of study			
Candidates are required to enrol in and complete:			
(i) ENVI3111 and ENVI3112 and ENVI3113 and ENVI3114; and			
(ii) at least 24 credit points of Intermediate or Senior units of study from the Science Subject Areas of Agricultural Chemistry, Biology, Chemistry, Geography, Geology and Geophysics, Marine Science, Microbiology, Physics and Soil Science. Units of study in History and Philosophy of Science may be taken on approval of the Director for Environmental Science.			
NB: enrolment in at least 6 credit points of the following units of study is highly recommended:- AGCH3030 Rural Environmental Chemistry A, AGCH3031 Rural Environmental Chemistry B, BIOL3006 Ecological Methods, GEOS3014 GIS in Coastal Management.			
ENVI3111 **Environmental Law and Ethics**	6	**A** Intermediate Environmental Science. **P** 12 credit points of Intermediate Science or Agriculture units. **N** ENVI3001, ENVI3003.	Semester 1
ENVI3112 **Environmental Assessment**	6	**A** Intermediate Environmental Science. **P** 12 credit points of Intermediate Science or Agriculture units. **N** ENVI3002, ENVI3004.	Semester 2
ENVI3113 **Environmental Economics and Planning**	6	**A** Intermediate Environmental Science **P** 12 credit points of Intermediate Science or Agriculture units **N** ENVI3001	Semester 1
ENVI3114 **Energy and the Environment**	6	**A** Junior Physics or Intermediate Environmental Science. **P** 12 credit points of Intermediate Science or Agriculture units. **N** ENVI3001, PHYS3600.	Semester 2

Bachelor of Science (Marine Science)

Degree Code: LH021
Summary of requirements

The requirements for the degree are set out in Table IC: Bachelor of Science (Marine Science) (see this chapter) and the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree.

Enrolment guide
In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 12 credit points of Junior units of study in the Science subject area of Biology;
- 12 credit points of Junior units of study in the Science subject areas of Geosciences;
- PHYS1001 or 1002 or 1901; and
- CHEM1001 or 1101 or 1901.
- Some study at the Advanced level is recommended but not compulsory.

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

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

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

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

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

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

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

Honours
There is an Honours course in Marine Science. Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 12.

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See chapter 2.

Sample Bachelor of Science (Marine Science)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH1XXX	MATH1XXX	PHYS1XXX	BIOL1XXX	GEOS1XXX		
		3	3	6	6	6		24
	2	MATH1XXX	MATH1XXX	CHEM1X01	BIOL 1XXX	GEOS1XXX		
		3	3	6	6	6		24
Year 2	1	MARS2X05	MARS2X07	BIOL2XXX	Science elective			
		6	6	6	6			24
	2	MARS2X06	Science elective	BIOL2XXX	Science elective			
		6	6	6	6			24
Year 3	1	Table 1C elective	Table 1C elective	Table 1C elective	Science elective			
		6	6	6	6			24
	2	Table 1C elective	Table 1C elective	Table 1C elective	Science elective			
		6	6	6	6			24
							Total credit points:	144
Require: 144cp total, and units of study as per Table IC.								

Table 1C: Bachelor of Science (Marine Science)

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
A. Junior units of study			
Candidates are required to enrol in and complete:			
(i) 12 credit points of Junior units of study from the Science Subject Area of Biology;			
(ii) 12 credit points of Junior units of study from the Science Subject Areas of Geography and/or Geology;			
(iii) 12 credit points of Junior units of study from the Science Subject Area of Mathematics;			
(iv) PHYS1001 or 1002; and			
(v) CHEM1001 or 1101.			
Some study of Biology, Chemistry, Mathematics or Physics at the Advanced level is recommended but not compulsory.			
B. Intermediate units of study			
Candidates are required to enrol in and complete:			
(i) MARS(2005 or 2905) and MARS(2006 or 2906) and MARS(2007 or 2907);			
(ii) 12 credit points of Intermediate units of study from the Science Subject Area of Biology (students in this course may take any Intermediate Biology unit of study which requires 12 credit points of Junior Chemistry as a prerequisite, provided they have passed at least 6 credit points of Junior Chemistry and at least 6 credit points of Junior Physics); and			
(iii) 18 credit points of Intermediate units of study from Science Subject Areas and/or Civil Engineering units of study CIVL3401 and CIVL3402.			
Students may enrol in up to 12 credit points from Tropical Marine Network Program (NTMP) units of study, providing there are places available and they have completed the prerequisites. Note that NTMP units of study are Senior units and count towards the Senior requirements of the degree.			
MARS2005 **Global Oceans (Introduction)**	6	**P** 24 credit points of Junior units of study from Science Discipline Areas. **N** MARS2001, MARS2905 *This is a qualifying unit for some Senior Marine Science units. Some Senior electives may have additional prerequisites.*	Semester 1
MARS2905 **Global Oceans (Introduction) (Advanced)**	6	**P** Credit average in 24 credit points of Junior Science units. **N** MARS2005, MARS2001 *This unit of study is available to advanced students only.*	Semester 1
MARS2006 **Marine Ecosystems and Geomorphology**	6	**A** MARS2005 **P** 24 credit points of Junior units of study from Science Discipline Areas. **N** MARS2002, MARS2906, GEOG2002 *This is a qualifying unit for Senior Marine Science units. Some Senior electives may have additional prerequisites.*	Semester 2
MARS2906 **Marine Ecosystems and Geomorphology Adv**	6	**P** Credit average in 24 credit points of Junior Science units **N** MARS2006, MARS2002, GEOG2002 *This unit of study is available to advanced students only.*	Semester 2
MARS2007 **Marine Science Field School**	6	**P** 24 credit points of Junior Science units **C** MARS (2005 or 2905). **N** MARS2003, MARS2907 *This unit of study is available to students in the Bachelor of Science (Marine Science) only.*	S1 Intensive
MARS2907 **Marine Science Field School (Advanced)**	6	**P** Credit average in 24 credit points of Junior Science units. **C** MARS2005 or MARS2905 **N** MARS2007, MARS2003 *This unit of study is available to advanced students only.*	S1 Intensive
C. Senior units of study			
Candidates are required to enrol in and complete:			
(i) at least 36 credit points of Senior units of study from GEOS, NTMP and/or BIOL units from this table, which must include at least one BIOL and one GEOS unit;			
(ii) at least 12 credit points of Intermediate or Senior units of study from the Science subject areas of Biology, Environmental Science, Geography, Geology, Geophysics, Marine Science or Tropical Marine Network Program (NTMP) units.			
NB: No more than 18 credit points of NTMP units may count toward the degree.			
BIOL3006 **Ecological Methods**	6	**A** BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). **P** 12 credit points of intermediate level Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3906, BIOL3023, BIOL3923, MARS3102	Semester 1
BIOL3906 **Ecological Methods (Advanced)**	6	**A** BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3006, BIOL3023, BIOL3923, MARS3102	Semester 1
BIOL3007 **Ecology**	6	**A** Although not prerequisites, knowledge obtained from Ecological Methods (BIOL3006), and Marine Field Ecology (BIOL3008) and/or Terrestrial Field Ecology (BIOL3009), or the associated advanced units (BIOL3906, BIOL3908 and/or BIOL3909), is strongly recommended. **P** 12 credit points of Intermediate Biology; or ENVI2111 or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3907, BIOL3024, BIOL3924, BIOL3040, BIOL3940, BIOL3041, BIOL3941, BIOL3042, BIOL3942, MARS3102	Semester 2
BIOL3907 **Ecology (Advanced)**	6	**A** Although not prerequisites, knowledge obtained from Ecological Methods (BIOL3006), and Marine Field Ecology (BIOL3008) and/or Terrestrial Field Ecology (BIOL3009), or the associated advanced units (BIOL3906, BIOL3908 and/or BIOL3909), is strongly recommended. Students entering this unit of study should have achieved distinction average. **P** Distinction average in 12 credit points of Intermediate Biology; or ENVI2111 or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3007, BIOL3024, BIOL3924, BIOL3040, BIOL3940, BIOL3041, BIOL3941, BIOL3042, BIOL3942, MARS3102	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
BIOL3008 **Marine Field Ecology**	6	**A** Ecological Methods (BIOL3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly advised. **P** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3908, BIOL3040, BIOL3940, BIOL3024, BIOL3924, MARS3102 *Dates: 2 July 2007 - 9 July 2007*	S2 Intensive
BIOL3908 **Marine Field Ecology (Advanced)**	6	**A** Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly advised **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3008, BIOL3040, BIOL3940, BIOL3024, BIOL3924, MARS3102 *Dates: 2 July 2007 - 9 July 2007*	S2 Intensive
BIOL3011 **Ecophysiology**	6	**A** BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903). **P** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3911 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
BIOL3911 **Ecophysiology (Advanced)**	6	**A** BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903) **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **N** BIOL3011 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
BIOL3013 **Marine Biology**	6	**A** MARS2006 **P** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3913 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
BIOL3913 **Marine Biology (Advanced)**	6	**A** MARS2006 **P** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **N** BIOL3013 *The completion of 6 credit points of MBLG units is highly recommended.*	Semester 1
GEOS3003 **Dynamics of Continents and Basins**	6	**P** (6 credit points of Intermediate Geoscience units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOL3101, GEOS3903	Semester 1
GEOS3903 **Dynamics of Continents & Basins (Adv)**	6	**P** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) **N** GEOL3101, GEOS3003 *A Distinction in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 1
GEOS3009 **Coastal Environments & Processes**	6	**P** (6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3909, MARS3003, MARS3105 ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 1
GEOS3909 **Coastal Environments and Processes (Adv)**	6	**P** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) **N** GEOS3009, MARS3003, MARS3105 *A distinction average in prior Geography or Geology units is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 1
GEOS3014 **GIS in Coastal Management**	6	**P** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **N** GEOS3914, MARS3104. ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 2
GEOS3914 **GIS in Coastal Management (Advanced)**	6	**P** Distinction average in 12 credit points of intermediate geography or geology units or 12 credit points of intermediate marine science units. **N** GEOS3014, MARS3104 *Note: Department permission required for enrolment* *A distinction average in prior Geography, Geology or Marine Science units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 2
GEOS3016 **Seafloor Processes & Imaging**	6	**P** 12 credit points of Intermediate Geoscience or ((one of MARS2005 and MARS2905) and (one of MARS2006 and MARS2906)) **N** GEOS3916, MARS3005, MARS3106 ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 2
GEOS3916 **Seafloor Processing and Imaging (Adv)**	6	**P** Distinction average in (12 credit points of Intermediate Geoscience or ((one of MARS2005 & MARS2905) and (one of MARS2006 & MARS2906))) **N** GEOS3016, MARS3005, MARS3106 *Note: Department permission required for enrolment*	Semester 2
GEOS3017 **Global Energy-Exploration & Exploitation**	6	**P** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **N** GEOS3917, MARS3008. ** Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.*	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
GEOS3917 **Global Energy Exploration (Advanced)**	6	**P** Distinction average in ((MARS(2005 or 2905) and MARS(2006 or 2906)), or 12 credit points of Intermediate Geoscience* units). **N** GEOS3017, MARS3008 ** Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.*	Semester 1
GEOS3018 **Rivers: Science, Policy and Management**	6	**P** (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3918	Semester 1
GEOS3918 **Rivers: Science and Management (Adv)**	6	**P** Distinction average in (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **N** GEOS3018	Semester 1
NTMP3001 **Coral Reef Ecosystems**	6	**A** General concepts in Biology **P** MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. **C** MARS(2006 or 2906) *Note: Department permission required for enrolment* *These units are only available to BSc (Marine Science) students.*	S2 Intensive
NTMP3003 **Fisheries Biology and Management**	6	**A** General concepts in Biology. **P** MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. **C** MARS(2006 or 2906) *Note: Department permission required for enrolment* *These units are only available to BSc (Marine Science) students.*	S2 Intensive
NTMP3004 **Aquaculture**	6	**A** General concepts in Biology. **P** MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. **C** MARS(2006 or 2906) *Note: Department permission required for enrolment* *These units are only available to BSc (Marine Science) students.*	S2 Intensive
NTMP3005 **Coastal Management**	6	**A** General concepts in Biology. **P** MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. **C** MARS(2006 or 2906) *Note: Department permission required for enrolment* *These units are only available to BSc (Marine Science) students.*	S2 Intensive

Bachelor of Science (Molecular Biology and Genetics)

Degree Code: LH018
Summary of requirements

The requirements for the degree are set out in Table ID: Bachelor of Science (Molecular Biology and Genetics) (see below) and the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree.

Enrolment guide
In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics (it is recommended that students take units that assume completion of HSC Mathematics Extension 1 or 2 and include some statistics);
- BIOL(1001 or 1101 or 1901) and (1002 or 1003 or 1902 or 1903) (BIOL1901 and BIOL1902/3 is the preferred option);
- 12 credit points of Junior units of study in the Science subject area of Chemistry (CHEM1108 and 1109 is the preferred option); and
- MBLG1001 and MBLG1999; and
- 6 credit points of elective Junior Science units of study: Physics or Computer Science are recommended.

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

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

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

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

Units of study
The Science units of study available for this degree are set out in Table ID: Bachelor of Science (Molecular Biology and Genetics) and in Table I: Bachelor of Science in chapter 10. Unit descriptions follow the tables.

Honours
There are Honours courses in Science subject areas suitable for Molecular Biology and Genetics students. Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 12.

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See chapter 2.

Sample Bachelor of Science (Molecular Biology and Genetics)

Sample Bachelor of Science (Molecular Biology and Genetics)								
	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH1XXX	MATH1XXX	BIOL1X01	CHEM1108	Science elective		
		3	3	6	6	6		24
	2	MATH1XXX	MATH1XXX	BIOL1XXX	CHEM1109	MBLG1001	MBLG1999	
		3	3	6	6	6	0	24
Year 2	1	MBLG2X71	BCHM2X71	MICR2X21	Science elective			
		6	6	6	6			24
	2	MBLG2X72	BCHM2X72	CHEM2XX3	Science elective			
		6	6	6	6			24
Year 3	1	BCHM3X71	BCHM3X81	BIOL3X18	BIOL3X27			
		6	6	6				24
	2	Table ID elective	Table ID elective	Table ID elective	Table 1D elective	MBLG3999		
		6	6	6	6	0		24
							Total credit points:	144
Require: 144cp total, and units of study as per Table ID.								

Table 1D: Bachelor of Science (Molecular Biology and Genetics)

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
A. Junior units of study			
Candidates are required to enrol in and complete:			
(i) BIOL(1001 or 1101 or 1901) and BIOL(1002 or 1003 or 1902 or 1903) (The combination of BIOL 1901 and BIOL 1902/1903 is the preferred option.); and			
(ii) CHEM(1101 or 1901 or 1903 or 1108) and CHEM(1102 or 1902 or 1904 or 1109) (The combination of CHEM 1108 and 1109 is the preferred option. The combination of CHEM 1001 and 1002 is available with special permission.);			
(iii) MBLG1001 and MBLG1999;			
(iv) 12 credit points of Junior units of study from the Science Subject Area of Mathematics (it is recommended that students take units requiring HSC Mathematics Extension 1 or 2 and include some statistics in their choice of Mathematics units of study); and			
(v) 6 credit points of other Junior units of study from BSc units of study (Table I). It is recommended that the extra 6 credit points be selected from Junior units of study in Physics or in Computer Science.			
MBLG1999 **Molecular Biology & Genetics** **Seminar A**		**C** MBLG1001 *Only available in the BSc(MBG)*	Semester 2
B. Intermediate units of study			
In order to proceed to the Intermediate year, candidates for the BSc (Molecular Biology and Genetics) must achieve a Credit average in Junior units of study. Candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Molecular Biology and Genetics) candidates. Candidates who fail to achieve the required average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.			
In the Intermediate year candidates are required to enrol in and complete:			
(i) MBLG(2071 or 2971) and(2072 or 2972);			
(ii) CHEM(2403 or 2913);			
(iii) BCHM(2071 or 2971) and BCHM(2072 or 2972);			
(iv) MICR(2021 or 2921); and			
(v) 12 Credit points of Intermediate Science units of study. (In 1st Semester, CHEM2401/2911/2915 or BIOL(2016/2916) and in 2nd Semester, MICR(2022 or 2922) and CHEM2402/2912/2916, are strongly recommended as the Science options.)			
Note: Students wishing to proceed to the Senior units of Chemistry or Microbiology must complete 12 credit points of Intermediate units in the appropriate discipline area.			
C. Senior units of study			
In order to proceed to the Senior year, candidates for the BSc (Molecular Biology and Genetics) must achieve a Credit average in Intermediate units of study. Candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Molecular Biology and Genetics) candidates. Candidates who fail to achieve the required average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.			
In the Senior year candidates are required to enrol in and complete:			
(i) MBLG3999; and			
(ii) BCHM(3071 or 3971) and BCHM(3081 or 3981); and			
(iii) BIOL(3018 or 3918) and (3027 or 3927); and			
(iv) Semester 2 elective units of study: Select 24 credit points from BCHM(3072 or 3972), BCHM(3082 or 3982), BCHM(3092 or 3992), BIOL(3025 or 3925), BIOL(3026 or 3926), CHEM(3114 or 3914), CHEM(3115 or 3915), CHEM(3116 or 3916), CHEM(3117 or 3917), MICR(3012 or 3912), MICR(3022 or 3922).			
NOTE: The July semester enrolment must include a unit of study which incorporates the seminar and discussion program.			
Other suitable options incorporating molecular biology and genetics would be considered by the Program Committee.			
MBLG3999 **Molecular Biology & Genetics** **Seminar B**		*Note: Department permission required for enrolment* *Only available in the BSc(MBG)*	Semester 2
Honours units of study			
Candidates for the Honours degree in Molecular Biology and Genetics shall complete an Honours program incorporating research in molecular biology and genetics in a Department or School in the Faculty of Science.			

Bachelor of Science (Molecular Biotechnology)

Degree Code: LH022
Summary of requirements

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

The requirements for the degree are set out in Table IE: Bachelor of Science (Molecular Biotechnology) (see this chapter) and the Senate and Faculty Resolutions (see chapter 12) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree.

Enrolment guide
In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 12 credit points of Junior units of study in the Science subject area of Biology;
- 12 credit points of Junior units of study in the Science subject area of Chemistry (preferred combination is CHEM1108 and CHEM1109);
- MBLG1001; and
- 6 credit points of elective units of study from Science, Agriculture, Arts, Economics, Engineering or other faculties.

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

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

Units of study
The Science units of study available for this degree are set out in Table IE: Bachelor of Science (Molecular Biotechnology) and in Table I: Bachelor of Science in chapter 10. Unit descriptions follow the tables.

Honours
Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 12. Candidates for the Honours degree in Molecular Biotechnology shall complete an Honours program incorporating research in molecular biotechnology and related areas through one of the Departments or Schools within the Faculty of Science. Under some circumstances co-supervision may be provided by suitably qualified staff based in relevant industrial settings.

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See chapter 2

Sample Bachelor of Science (Molecular Biotechnology)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH1XXX	MATH1XXX	BIOL1XXX	CHEM1XXX	Elective		
		3	3	6	6	6		24
	2	MATH1XXX	MATH1XXX	BIOL1XXX	CHEM1XXX	MBLG1001		
		3	3	6	6	6		24
Year 2	1	BCHM2X71	MBLG2X71	CHEM2XXX	Elective			
		6	6	6	6			24
	2	MOBT2102	MBLG2X72	CHEM2XXX	Elective			
		6	6	6	6			24
Year 3	1	MOBT3101	BIOL3X27	Table 1E Elective 3XXX	Table IE elective 3XXX			
		6	6	6	6			24
	2	MOBT3202	CHEM3XXX	BCHM/MICR 3XXX	Table IE elective 3XXX			
		6	6	6	6			24
							Total credit points:	144
Require: 144cp total, and units of study as per Table IE.								

Table 1E: Bachelor of Science (Molecular Biotechnology)

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
A. Junior units of study			
Candidates are required to enrol in and complete:			
(i) at least 12 credit points of Junior units of study from the Science Subject Area of Biology;			
(ii) CHEM1108 and CHEM1109 or at least 12 credit points of Junior units of study from the Science Subject Area of Chemistry (with special permission);			
(iii) at least 12 credit points of Junior units of study from the Science Subject Area of Mathematics;			
(iv) MBLG1001; and			
(v) at least 6 credit points of elective units of study.			
CHEM1108 **Chemistry 1A Life Sciences**	6	**A** HSC Chemistry and Mathematics **P** UAI of at least 93 and HSC Chemistry result in band 5 or 6, or Distinction or better in a University level Chemistry unit, or by invitation. **C** Recommended concurrent units of study: 6 credit points of Junior Mathematics **N** CHEM (1002 or 1102 or 1902 or 1904) *This unit of study is available to students enrolled in the Bachelor of Medical Science, the Bachelor of Science (Molecular Biology and Genetics), the Bachelor of Science (Nutrition) and the Bachelor of Science (Molecular Biotechnology) only.*	Semester 1
CHEM1109 **Chemistry 1B Life Sciences**	6	**P** CHEM1108 **C** Recommended concurrent units of study: 6 credit points of Junior Mathematics **N** CHEM (1001 or 1101 or 1901 or 1903) *This unit of study is available to students enrolled in the Bachelor of Medical Science, the Bachelor of Science (Molecular Biology and Genetics), the Bachelor of Science (Nutrition) and the Bachelor of Science (Molecular Biotechnology) only.*	Semester 2
B. Intermediate units of study			
Candidates are required to enrol in and complete 48 credit points of Intermediate units of study including:			
(i) MOBT2102;			
(ii) MBLG(2071 or 2971) and MBLG(2072 or 2972);			
(iii) CHEM(2401/2911/2915) and CHEM(2402/2912);			
(iv) BCHM(2071 or 2971); and			
(v) at least 12 credit points chosen from Intermediate units of study in the Subject Areas of Animal Science, Biochemistry, Biological Sciences, Chemical Engineering, Chemistry, Computational Science, Computer Science and Information Systems, Immunology, Mathematics and Statistics, Microbiology, Pharmacology and Plant Science.			
MOBT2102 **Molecular Biotechnology 2**	6	**P** 12 credit points of Junior Biology and 12 credit points of Junior Chemistry **N** MOBT2001 *This unit of study is only available to students in the BSc (Molecular Biotechnology).*	Semester 2
C. Senior units of study			
Candidates are required to enrol in and complete 48 credit points of Senior units of study including:			
(i)MOBT3101 and MOBT3202;			
(ii) BIOL3027/3927;			
(iii) 6 credit points of CHEM from CHEM3111/3911 or CHEM3110/3910 or CHEM3114/3914 or CHEM3115/3915 or CHEM3116/3916			
(iv) 6 credit points of BCHM or MICRO (Highly recommended: BCHM3092/3982 or MICR3022 /3922 or BCHM3081/3981)			
(v) at least 18 credit points from Senior units of study in the Subject Areas of: Agricultural Chemistry, Animal Science, Biochemistry, Biological Sciences, Chemical Engineering, Chemistry, Computational Science, Computer Science and Information Systems, Immunology, Mathematics and Statistics, Microbiology, Pharmacology and Plant Sciences.			
MOBT3101 **Molecular Biotechnology 3A**	6	**A** MBLG (2072 or 2972). **P** MOBT2102 **N** MOBT2002 *NB: This unit of study is only available to students in the BSc (Molecular Biotechnology).*	Semester 1
MOBT3202 **Molecular Biotechnology 3B Project**	6	**P** MOBT2002 or MOBT3101 **N** MOBT3002, MOBT3102 *This unit of study is only available to students in the BSc (Molecular Biotechnology).*	Semester 2

Bachelor of Science (Nutrition)

Degree Code: LH020

The requirements for the degree are set out in Table IF: Bachelor of Science (Nutrition) (see this chapter) and the Senate and Faculty Resolutions (see Chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree.

Enrolment guide
In your Junior year you should complete:

- 12 credit points in the Science subject areas of Mathematics and Statistics;
- 12 credit points in the Science subject area of Biology;
- 12 credit points in the Science subject area of Chemistry (CHEM1108 and CHEM1109 preferred option);
- 6 credit points in the Science subject areas of Computer Science, Physics or Psychology; and
- MBLG1001.

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

Plans of study
It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below. There is also a degree planner inside the back cover.

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

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

Honours
Please refer to "Honours in the Faculty of Science" in this chapter, and to Table VI: Honours units of study in chapter 12. Candidates for the Honours degree in Nutrition shall complete an Honours program in either (1) clinical strand or (2) by research. Students who enrol in the BSc (Nutrition) in order to achieve accreditation as a dietitian will need to complete the clinical strand.

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See chapter 2.

Sample Bachelor of Science (Nutrition)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH1XXX	MATH1XXX	BIOL 1001/1901	CHEM1XXX	SOFT/INFO/ PHYS/ PSYC elective		
		3	3	6	6	6		24
	2	MATH1XXX	MATH1XXX	BIOL1XXX	CHEM1XXX	MBLG1001		
		3	3	6	6	6		24
Year 2	1	NUTR2911	MBLG2X71	PHSI2005	MICR2021/CHEM/ PCOL elective			
		6	6	6	6			24
	2	NUTR2912	BCHM2X72	PHSI2006	MICR 2022/ CHEM/ PCOL elective			
		6	6	6	6			24
Year 3	1	NUTR3911	NUTR 3921	AGCH3025/Table 1F Senior elective	AGCH3026/Table 1F Senior elective			
		6	6	6	6			18
	2	NUTR3912	NUTR3922	BCHM3X72	BCHM3X82			
		6	6	6	6			30
Year 4 (Clinical*)	1	NUTR4001						
		24						24
	2	NUTR4002						
		24						24
Year 4 (Research*)	1	NUTR4101	NUTR4102					
		12	12					24
	2	NUTR4103	NUTR4014					
		12	12					24
							Total credit points:	192
Require: 192cp total, and units of study as per Table IF								

Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
**Students complete Honours in either Nutrition and Dietetics (Clinical) or in Nutrition (Research) strands.*							

Honours in Nutrition and Dietetics					
Year 5	1	NUTR4001			
		24			24
	2	NUTR4002			
		24			24
BAppSc (Ex & Sports Sc) & BSc (Nutr) Nutrition and Dietetics Honours				Total credit points:	240
Require: 240cp total, min. 138cp Science, min. 12cp Maths, min. 102cp Exercise and Sport Science, 48cp Honours units in Nutrition & Dietetics.					

Honours in Nutrition					
Year 5	1	NUTR4101	NUTR4102		
		12	12		24
	2	NUTR4103	NUTR4104		
		12	12		24
BAppSc (Ex & Sports Sc) & BSc (Nutr) Nutrition Honours				Total	240
Require: 240cp total, min. 138cp Science, min. 36cp Junior Science incl. 12cp Mathematics, min. 102cp Exercise and Sport Science, 48cp Honours units in Nutrition.					

Table 1F: Bachelor of Science (Nutrition)

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
The Bachelor of Science (Nutrition) is a 4 year Honours degree. To complete the degree, a candidate must gain Credit for at least 192 credit points including the Honours course in either Nutrition and Dietetics, or Nutrition.			
A. Junior units of study			
Candidates are required to enrol in and complete:			
(i) BIOL(1001 or 1101 or 1901) and BIOL(1002 or 1902 or 1003 or 1903);			
(ii) 12 credit points of Junior Chemistry;			
(iii) 12 credit points of Junior units of study from the Science Subject Area of Mathematics;			
(iv) 6 credit points of other Junior units of study from the Science Subject Areas of Computer Science, Physics or Psychology; and			
(v) MBLG1001.			
B. Intermediate units of study			
In order to proceed to the Intermediate year, candidates for the BSc (Nutrition) must achieve a WAM of 60 in their Junior year. Candidates who fail to maintain the required average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Nutrition) candidates. Candidates who fail to achieve the required average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.			
In the Intermediate year candidates are required to enrol in and complete:			
(i) NUTR2911 and NUTR2912;			
(ii) MBLG 2071 or 2971);			
(iii) BCHM(2072 or 2972);			
(iv) PHSI2005 and PHSI2006; and			
(v) MICR2021 and MICR2022 or at least 12 credit points of Intermediate units of study (6 credit points each semester) from the Science Subject Areas of Chemistry or Pharmacology.			
NUTR2911 **Food Science Introductory (Advanced)**	6	**P** MBLG1001 and CHEM (1001 or 1101 or 1901 or 1903 or 1909) and CHEM (1002 or 1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1003 or 1902 or 1903). For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree completion of all Junior units in the table of units for this course. **N** NUTR2901	Semester 1
NUTR2912 **Nutritional Science Introductory (Adv)**	6	**A** NUTR2911 **P** MBLG1001 and CHEM (1001 or 1101 or 1901 or 1903 or 1909) and CHEM (1002 or 1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1003 or 1902 or 1903). For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree completion of all Junior units in the table of units for this course. **N** NUTR2902	Semester 2
C. Senior units of study			
In order to proceed to the Senior year, candidates for the BSc (Nutrition) must achieve a WAM of 65 in their Intermediate year. Candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Nutrition) candidates.			
In the Senior year candidates are required to enrol in and complete:			
(i) NUTR3911, 3921, 3912 and 3922;			
(ii) BCHM(3082 or 3982) and BCHM(3072 or 3972); and			

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
(iii) AGCH(3025 and 3026) or 12 credit points from the following Senior units of study: BCHM(3071 or 3971), BCHM(3081 or 3981), MICR(3011 or 3911), VIRO(3001 or 3901), NEUR(3001 or 3901), NEUR(3002 or 3902).			
NUTR3911 **Nutritional Assessment Methods**	6	**P** NUTR2911 and NUTR2912 **N** NUTR3901	Semester 1
NUTR3921 **Methods in Nutrition Practice**	6	**P** NUTR2911 and NUTR2912 **N** NUTR3901	Semester 1
NUTR3912 **Community and Public Health Nutrition**	6	**P** NUTR2911 and NUTR2912 **N** NUTR3902	Semester 2
NUTR3922 **Nutrition and Chronic Disease**	6	**P** NUTR2911 and NUTR2912 **N** NUTR3902	Semester 2
D. Honours units of study			
In order to proceed to the Honours year, candidates must achieve a WAM of at least Credit (65), and results of at least Credit (65) in all of NUTR 3911, 3921, 3912 and 3922.			
Candidates who fail to achieve the required results across the Senior units of study will be transferred to candidature for the Bachelor of Science degree, and if they have otherwise completed the requirements for the BSc Pass degree, will be awarded the Bachelor of Science with a major in Nutrition.			
Candidates enrol in and complete either:			
(i) Bachelor of Science (Nutrition) Nutrition and Dietetics Honours: NUTR4001 and NUTR4002 and NUTR4999; OR			
(ii) Bachelor of Science (Nutrition) Nutrition Honours: NUTR4101, NUTR4102, NUTR4103 and NUTR4104.			
E. Combined degree program: Bachelor of Applied Science (Exercise and Sport Science)/Bachelor of Science (Nutrition)			
Candidates must complete over 10 semesters the following units of study. In order to proceed from Year 1 to Year 2 of the program candidates must achieve a year WAM of at least 60. In order to proceed to the following years of the program a candidate must achieve at least 65 in each of NUTR 2911, NUTR 2912, NUTR 3911, NUTR 3921, NUTR 3912 and NUTR 3922, and a year WAM of at least 65 in Years 2 - 4. Candidates who fail to maintain these results in any year will be transferred to either the BSc(LH000), the BAppSc(ExSpSc)(SH088) or the BAppSc(ExSpSc&Nutr)(SH115).			
For information on units from the BAppSc (ExSpSc), please refer to the Handbook of the Faculty of Health Sciences.			
Year 1			
Candidates are required to enrol in and complete in their first year:			
(i) 12 credit points of Junior Chemistry;			
(ii) BACH1161;			
(ii) BIOS1159, 1133 and 1160;			
(iii) EXSS1018 and 1033; and			
(v) MBLG1001.			
Year 2			
Candidates are required to enrol in and complete in their second year:			
(i) BCHM2072 andBIOS 2098;			
(ii) EXSS2019, 1029 and 2022;			
(iii) MATH1015 and MBLG2071; and			
(iv) NUTR2911 and NUTR2912.			
Year 3			
Candidates are required to enrol in and complete in their third year:			
(i) EXSS(2016, 2018, 3023, 3024, 2025, 2026 and 3027);			
(ii) MATH1011 and STAT2012.			
MATH1011 **Life Sciences Calculus**	3	**A** HSC Mathematics **N** MATH1111, MATH1001, MATH1901, MATH1906	Semester 1 Summer Main
STAT2012 **Statistical Tests**	6	**A** STAT (2011 or 2002) **P** MATH (1005 or 1905 or 1015) **N** STAT2004, STAT2912	Semester 2
Year 4			
Candidates are required to enrol in and complete in their fourth year:			
(i) NUTR3911, NUTR3921, NUTR3912 and NUTR3922;			
(ii) EXSS3037 and EXSS3042;			
(iii) BCHM3082 and BCHM3072.			
Students can exit here with BAppSc(Exercise, Sports Science and Nutrition).			
Year 5 (First offered in 2008)			
Honours units of study			
Candidates intending to graduate with Honours in Nutrition and Dietetics are required to enrol in and complete in their fifth year:			
(i)NUTR4001 and NUTR4002 and NUTR4999			
Candidates intending to graduate with Honours in Nutrition are required to enrol in and complete in their fifth year:			
(i) NUTR4101 and NUTR4102 and NUTR4103 and NUTR4104.			

5. Bachelor of Medical Science and BMedSc/MBBS

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

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

All students are expected to read the degree resolutions for their course before they commence their studies, and from time to time during their studies. Undergraduate degree resolutions appear in chapter 2. The tables of undergraduate units of study available for each degree appear towards the end of this chapter. Unit of study descriptions may be found in Chapter 10.
Students enrolled in units of study offered by the Faculty of Science are required to familiarise themselves with the following four key policies:

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

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

Code of Conduct for Students
The University has clear expectations of students in respect of academic matters and personal behaviour.

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

Details on Special Arrangements, Special Consideration, Code of Conduct for Students, and Student Plagiarism Policy are provided in Chapter 1 of this handbook.

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

Enrolment day FAQs

What is a 'major'?

Some degrees in the Faculty of Science require you to complete a major. A major is a specialisation in the Senior year of your degree.

A major is usually defined as 24 credit points of study at the Senior level in a single Science Area.

The Bachelor of Medical Science does not have majors.

How many credit points should I take per semester?

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

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

Do I need to be full-time?

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

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

International students are required to be full-time.

Can I take units of study from other faculties?

Yes – generally you can take any unit of study offered by the Faculty of Arts and the Faculty of Economics where you have space for non-Medical Science electives. Lists of available units of study will be available on enrolment day, or in each faculty's handbook. Each Faculty website has links to Departmental and unit of study information.

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

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

Can I receive credit for previous tertiary study?

I have been made an offer for the Bachelor of Medical Science (1st year entry) can I apply for credit for previous tertiary study?

Yes. However, students enrolling as new students into the Bachelor of Medical Science award course are advised that credit will not enable you to proceed directly into core Intermediate BMED units of study. Prerequisites for Intermediate BMED units of study are such that anything less than 42 credit points of Junior units of study specified in the resolutions for the degree will not enable students to undertake these units on entry to the award course. Only students admitted into Second-year Entry for the Bachelor of Medical Science (UAC code:512081/522081) will be able to proceed directly into second-year units of study.

No more than 48 credit points of credit can be offered towards the Bachelor of Medical Science. Credit will only be offered at junior level.

On the day that you enrol you must lodge an application for credit from previous study. Because of the large numbers of applications received at enrolment there can be a considerable delay in processing your application, but all credit offers will be sent to students well in advance of the last day to add a unit of study for the semester in which they enrol.

The Faculty must sight originals of your academic transcripts, as well as detailed descriptions of prior units of study completed, as at the time of completion of the units. Descriptions will normally be an extract from a Handbook or a unit of study syllabus/outline, and should include the credit point value, learning outcomes, assessment details, texts and references, and contact details for each unit of study. You must bring this information with on the day that you enrol.

On enrolment day you will have to make unit of study choices as if you have had no previous university of study. Alternatively, you may be able to obtain special permission to enrol in Intermediate or Senior units of study by taking a copy of your transcript and unit of study descriptions to Academic advisers for each individual unit of study. Unit of study Academic advisers are listed under unit of study descriptions in this Handbook.

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

I have an offer for Bachelor of Medical Science (2nd year entry) do I need to apply for credit?

NO, credit will be granted upon enrolment. You will enrol in second year units of study on the day of enrolment.

Are there any bridging courses available?

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

Who can enrol in Advanced units of study?

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

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

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

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

What is the Talented Student Program?

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

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

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

Am I eligible for the Talented Student Program?

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

Bachelor of Medical Science (BMedSc)

Degree Code: LH010

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Enrolment guide

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

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

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

You should also note the following:

- you cannot count any unit of study with the grade Pass (Concessional) toward the degree
- units of study completed at the University of Sydney Summer School which correspond to units of study in the table of undergraduate units of study may be credited towards the course requirements
- a standard full time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part time
- you may not enrol in more than 30 credit points in any one semester without permission
- in order to enrol in a unit of study, you have to meet any prerequisites and corequisites for that unit of study
- Advanced units of study are indicated by a 9 (or 8) as the second digit of the unit of study code. Entry to these units of study is limited (details can be obtained from departments)
- once the award course requirements of 144 credit points have been satisfied a student may not enrol in additional units of study without first obtaining permission from the Dean

- if a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.
- The combination MATH1003 and 1004 or 1903 and 1904 is not recommended in this degree. Students wishing to study Statistics/Calculus are advised to select from MATH1003, 1005, 1903, 1905, 1013, 1015.

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

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

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

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission to the course varies from year to year.

BMedSc degree resolutions
See chapter 2.

Sample Bachelor of Medical Science

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH1XXX	MATH1XXX	CHEM1XXX	PHYS1XXX	BIOL1XXX		
		3	3	6	6	6		24
	2	MATH1XXX	MATH1XXX	CHEM1XXX	PHYS1XXX	MBLG1001		
		3	3	6	6	6		24
Year 2	1	BMED2801	BMED2802	BMED2803	BMED2806			
		6	6	6	6			24
	2	BMED2804	BMED2805	BMED2807	BMED2808			
		6	6	6	6			24
Year 3	1	Senior core 3XXX	Senior core 3XXX	Senior core 3XXX	Senior core 3XXX or elective			
		6	6	6	6			24
	2	Senior core 3XXX	Senior core 3XXX	Senior core 3XXX	Senior core 3XXX or elective			
		6	6	6	6			24
							Total credit points:	144
Require: 144cp total, min 48cp Junior, min 48cp Intermediate core, min 36cp Senior core, no more than 12cp from units of study outside Table V.								

Combined BMedSc/MBBS degree

Degree Codes: LH033/LH034

Summary of requirements
The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates.

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

Enrolment guide
To qualify for the award of the degrees a student shall complete units of study to a total value of at least 336 credit points, and

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

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

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

Units of study
The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3 and Table IV: Bachelor of Medical Science in this chapter. Unit descriptions appear in chapter 10. The Medicine units of study available for this degree are set out in the Faculty of Medicine handbook.

Honours
Students who qualify to undertake Honours in the BSc (Adv) or BMedSc degree may elect to do so by either suspending their candidature from the MBBS degree for one year, or after completion of the combined course. Please refer to 'Honours in the Faculty of Science' in this chapter, and to Table VI: Honours units of study in chapter 12.

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

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See see chapter 2.

Honours in the BSc (Including all streams and combined degrees), BCST, BMedSc, BST
Admission
To qualify to enrol in an honours course, students shall:

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

You should also note the following:

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

Table IV – Bachelor of Medical Science

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
A. Junior units of study			
Candidates are required to enrol in and complete:			
(i) MBLG1001;			
(ii) 12 credit points of Junior units of study from the Science Subject Area of Chemistry;			
(iii) 12 credit points of Junior units of study from the Science Subject Area of Mathematics;			
(iv) 12 credit points of Junior units of study from the Science Subject Area of Physics (excluding PHYS1500) or Computational Science;and			
(v) 6 credit points of Junior units of study from the Science Subject Area of Biology.			
B. Intermediate units of study			
Candidates are required to complete 48 credit points of Intermediate core units of study.			
BMED2801 **Cell Structure and Function**	6	**P** 42 credit points of Junior Bachelor of Medical Science units of study **N** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 1
BMED2802 **Molecular Basis of Medical Sciences**	6	**P** 42 credit points of Junior Bachelor of Medical Science units of study **N** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 1
BMED2803 **Cardiac, Respiratory and Renal Function**	6	**P** 42 credit points of Junior Bachelor of Medical Science units of study **N** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 1
BMED2804 **Digestion, Absorption and Metabolism**	6	**P** 42 credit points of Junior Bachelor of Medical Science units of study **N** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 2
BMED2805 **Hormones, Reproduction and Development**	6	**P** 42 credit points of Junior Bachelor of Medical Science units of study **N** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 2
BMED2806 **Sensory and Motor Functions**	6	**P** 42 credit points of Junior Bachelor of Medical Science units of study **N** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 1
BMED2807 **Microbes and Body Defences**	6	**P** 42 credit points of Junior Bachelor of Medical Science units of study **N** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 2
BMED2808 **Disease in Society**	6	**P** 42 credit points of Junior Bachelor of Medical Science units of study **N** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 2
C. Senior units of study			
Students may complete their Senior year by taking 48 credit points of Senior core units from the subject areas of Anatomy and Histology, Biology (Genetics) (ie. BIOL3018/3918, 3025/3925, 3026/3926, 3027/3927), Biochemistry, Cell Pathology, Immunology, Infectious Diseases, Microbiology, Pharmacology and Physiology. The unit listed in the table below is available only to students enrolled in the Bachelor of Medical Science. Details of the other units available are listed in Table I. Candidates may elect to take 36 credit points of Senior core units and 12 credit points of elective units. The electives may be chosen from any units of study available in the university, and in which the candidate is permitted to enrol by the relevant Faculty or School.			
INFD3012 **Infectious Diseases**	6	**A** Intermediate microbiology, immunology, molecular biology and genetics. **P** 42 cedit points of intermediate BMED units including BMED2807. *The completion of MICR3011 is strongly recommended prior to undertaking this course.*	Semester 2
D. Honours units of study			
Where honours units of study are designated A, B, C, D the units should be taken in that order, whether a student enrols full-time, part-time or mid-year.			
Anatomy			
ANAT4011 **Anatomy Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
ANAT4012 **Anatomy Honours B**	12	**C** ANAT 4011	Semester 1 Semester 2
ANAT4013 **Anatomy Honours C**	12	**C** ANAT 4012	Semester 1 Semester 2
ANAT4014 **Anatomy Honours D**	12	**C** ANAT 4013	Semester 1 Semester 2
Biochemistry			
BCHM4011 **Biochemistry Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
BCHM4012 **Biochemistry Honours B**	12	**C** BCHM4011	Semester 1 Semester 2
BCHM4013 **Biochemistry Honours C**	12	**C** BCHM4012	Semester 1 Semester 2
BCHM4014 **Biochemistry Honours D**	12	**C** BCHM4013	Semester 1 Semester 2
Biology (Genetics)			
BIOL4009 **Communicating Research in Biology**	6	**C** BIOL4011 *Note: Department permission required for enrolment* *This unit is compulsory for students admitted to Honours (Biological Sciences). Other students may enrol by special permission.*	Semester 1 Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
BIOL4010 **Experiment Design & Analysis (Biology)**	6	**P** Students are to be undertaking an experimental research project. *Note: Department permission required for enrolment*	Semester 1 Semester 2
BIOL4011 **Biology Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
BIOL4012 **Biology Honours B**	12	**C** BIOL4011	Semester 1 Semester 2
BIOL4013 **Biology Honours C**	12	**C** BIOL4012	Semester 1 Semester 2
Cell Pathology			
CPAT4011 **Cell Pathology Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
CPAT4012 **Cell Pathology Honours B**	12	**C** CPAT 4011	Semester 1 Semester 2
CPAT4013 **Cell Pathology Honours C**	12	**C** CPAT 4012	Semester 1 Semester 2
CPAT4014 **Cell Pathology Honours D**	12	**C** CPAT 4013	Semester 1 Semester 2
Histology and Embryology			
Students should enrol in Anatomy Honours			
Immunology			
IMMU4011 **Immunology Honours A**	12	**N** BMED4011 *Note: Department permission required for enrolment*	Semester 1 Semester 2
IMMU4012 **Immunology Honours B**	12	**C** IMMU4011 **N** BMED4012	Semester 1 Semester 2
IMMU4013 **Immunology Honours C**	12	**C** IMMU4012 **N** BMED4013	Semester 1 Semester 2
IMMU4014 **Immunology Honours D**	12	**C** IMMU4013 **N** BMED4014	Semester 1 Semester 2
Infectious Diseases			
INFD4011 **Infectious Diseases Honours A**	12	**N** BMED4021 *Note: Department permission required for enrolment*	Semester 1
INFD4012 **Infectious Diseases Honours B**	12	**C** INFD4011 **N** BMED4022	Semester 1
INFD4013 **Infectious Diseases Honours C**	12	**C** INFD4012 **N** BMED4023	Semester 2
INFD4014 **Infectious Diseases Honours D**	12	**C** INFD4013 **N** BMED4024	Semester 2
Microbiology			
MICR4011 **Microbiology Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
MICR4012 **Microbiology Honours B**	12	**C** MICR4011	Semester 1 Semester 2
MICR4013 **Microbiology Honours C**	12	**C** MICR4012	Semester 1 Semester 2
MICR4014 **Microbiology Honours D**	12	**C** MICR4013	Semester 1 Semester 2
Pharmacology			
PCOL4011 **Pharmacology Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
PCOL4012 **Pharmacology Honours B**	12	**C** PCOL4011	Semester 1 Semester 2
PCOL4013 **Pharmacology Honours C**	12	**C** PCOL4012	Semester 1 Semester 2
PCOL4014 **Pharmacology Honours D**	12	**C** PCOL4013	Semester 1 Semester 2
Physiology			
PHSI4011 **Physiology Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
PHSI4012 **Physiology Honours B**	12	**C** PHSI4011	Semester 1 Semester 2
PHSI4013 **Physiology Honours C**	12	**C** PHSI4012	Semester 1 Semester 2
PHSI4014 **Physiology Honours D**	12	**C** PHSI4013	Semester 1 Semester 2

6. Bachelor of Psychology

This chapter is intended to give enrolment advice to undergraduate students in the Bachelor of Psychology. You will find answers to frequently asked questions covering all students. Following this is a specific summary of the requirements for the Bachelor of Psychology, including examples of how unit of study choices can be made over the duration of the degree. There is information on recommended combinations of units of study, especially in first year, to help guide you to your goals.

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

All students are expected to read the degree resolutions for their course before they commence their studies, and from time to time during their studies. Undergraduate degree resolutions appear in chapter 2. The undergraduate units of study available for the Bachelor of Psychology degree are listed in Table 1, in Chapter 3. They are the same as those offered in the Bachelor of Science degree.

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

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

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

Code of Conduct for Students
The University has clear expectations of students in respect of academic matters and personal behaviour.

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

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

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

Enrolment day FAQs

What is a 'major'?

Some degrees in the Faculty of Science require you to complete a major. A major is a specialisation in the Senior year of your degree. Students enrolled in the Bachelor of Psychology will complete a major in Psychology, and an Honours year in Psychology.

How many credit points should I take per semester?

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

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

Do I need to be full-time?

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

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

International students are required to be full-time.

Can I take units of study from other faculties?

Yes – generally you can take any unit of study offered by the Faculty of Arts and the Faculty of Economics, up to 48 credit points in accordance with your degree resolutions. Lists of available units of study will be available on enrolment day, or in each faculty's handbook. Each Faculty website has links to Departmental and unit of study information.

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

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

Can I receive credit for previous tertiary study?

Yes. The amount of credit you may receive depends on your individual circumstances, but in general the total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points from degrees that have been completed.

On the day that you enrol you must lodge an application for credit from previous study. Because of the large numbers of applications received at enrolment there can be a considerable delay in processing your application, but all credit offers will be sent to students well in advance of the last day to add a unit of study for the semester in which they enrol.

The Faculty must sight originals of your academic transcripts, as well as detailed descriptions of prior units of study completed, as at the time of completion of the units. Descriptions will normally be an extract from a Handbook or a unit of study syllabus/outline, and should include the credit point value, learning outcomes, assessment details, texts and references, and contact details for each unit of study. You must bring this information with on the day that you enrol.

On enrolment day you will have to make unit of study choices as if you have had no previous university of study. Alternatively, you may

be able to obtain special permission to enrol in Intermediate or Senior units of study by taking a copy of your transcript and unit of study descriptions to Academic advisers for each individual unit of study. Unit of study Academic advisers are listed under unit of study descriptions in this Handbook.

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

Are there any bridging courses available?

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

Who can enrol in Advanced units of study?

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

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

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

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

What is the Talented Student Program?

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

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

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

Am I eligible for the Talented Student Program?

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

Bachelor of Psychology (BPsych)

Degree Code: LH013

Summary of requirements

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

Enrolment guide

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

- PSYC1001 and PSYC1002 at an average of Credit or better
- at least 12 credit points of units of study in the Science Subject Areas of Mathematics and Statistics
- at least 12 credit points are Junior units of study from Science Subject Areas other than Psychology and Mathematics and Statistics
- PSYC2011, 2012, 2013 and 2014 at an average grade of Distinction of better.
- At least 30 credit points from Senior units of study in the Science subject area of Psychology* with an average grade of Distinction or better. The Senior units must include PSYC3010 and at least one of PSYC3011, 3012, 3013 and 3014.
- *HPSC3023 be included as a Senior unit within the 24 senior credit points and is required by students who wish to complete the theoretical thesis option in Psychology Honours.
- at least 96 credit points from Science Subject Areas
- 48 credit points of Honours Psychology units of study with a grade of Honours (H3 or better)

You should also note the following:

- a maximum of 48 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculty of Science.
- units of study completed at The University of Sydney Summer School which correspond to units of study in the table of undergraduate units of study may be credited towards the course requirements.
- a standard full time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part time.
- you may not enrol in more than 30 credit points in any one semester without permission.
- you may not enrol in more than 60 credit points of Junior units of study.
- before being admitted to enrol in a unit of study, you have to meet any prerequisites and corequisites for that unit of study
- once the award course requirements of 192 credit points have been satisfied a student may not enrol in additional units of study without first obtaining permission from the Dean.
- if a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Progression requirements

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

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

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

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

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

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

Honours
Students shall complete the requirements for the honours course full-time over two consecutive semesters. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half–time over four consecutive semesters. A student may not re-attempt the Psychology honours course. Please refer to 'Honours in the Faculty of Science' in this chapter, and Table VI: Honours units of study in chapter 12.

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

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

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

Universities Admission Index (UAI)
The minimum UAI for admission to the course varies from year to year.

Degree Resolutions
See chapter 2.

Sample Bachelor of Psychology

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	PSYC1001	MATH1XXX	MATH1XXX	Science elective 1XXX	Elective		
		6	3	3	6	6		24
	2	PSYC1002	MATH1XXX	MATH1XXX	Science elective 1XXX	Elective		
		6	3	3	6	6		24
Year 2	1	PSYC2011	PSYC2012	Science elective	Elective			
		6	6	6	6			24
	2	PSYC2013	PSYC2014	Science elective	Elective			
		6	6	6	6			24
Year 3	1	PSYC3XXX	PSYC3XXX	PSYC3XXX	PSYC3XXX or elective			
		6	6	6	6			24
	2	PSYC3010	PSYC3XXX	PSYC3XXX or elective	PSYC3XXX or elective			
		6	6	6	6			24
Year 4	1	PSYC4011	PSYC4012					
		12	12					24
	2	PSYC4013	PSYC4014					
		12	12					24
							Total credit points:	192
Require: 192cp total, min. 12 cp Junior Psychology, min. 24cp Intermediate Psychology, min. 30cp Senior Psychology (incl. PSYC3010 and at least one of PSYC 3011, 3012, 3013, 3014), min. 48cp Honours Psychology, min. 12cp Maths, max 60cp Junior.								

7. Bachelor of Science and Technology

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

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

All students are expected to read the degree resolutions for their course before they commence their studies, and from time to time during their studies. Undergraduate degree resolutions appear in chapter 2. The unit descriptions appear in chapter 10.

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

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

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

Code of Conduct for Students
The University has clear expectations of students in respect of academic matters and personal behaviour.

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

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

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

Enrolment day FAQs

What is a 'major'?

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

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

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

How many credit points should I take per semester?

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

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

Do I need to be full-time?

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

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

International students are required to be full-time.

Can I take units of study from other faculties?

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

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

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

Can I receive credit for previous tertiary study?

Yes. The amount of credit you may receive depends on your individual circumstances, but in general the total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points from degrees that have been completed.

On the day that you enrol you must lodge an application for credit from previous study. Because of the large numbers of applications received at enrolment there can be a considerable delay in processing your application, but all credit offers will be sent to students well in advance of the last day to add a unit of study for the semester in which they enrol.

The Faculty must sight originals of your academic transcripts, as well as detailed descriptions of prior units of study completed, as at the time of completion of the units. Descriptions will normally be an extract from a Handbook or a unit of study syllabus/outline, and should include the credit point value, learning outcomes, assessment details, texts and references, and contact details for each unit of study. You must bring this information with on the day that you enrol.

On enrolment day you will have to make unit of study choices as if you have had no previous university of study. Alternatively, you may be able to obtain special permission to enrol in Intermediate or Senior units of study by taking a copy of your transcript and unit of study descriptions to Academic advisers for each individual unit of study. Unit of study Academic advisers are listed under unit of study descriptions in this Handbook.

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

Are there any bridging courses available?

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

Who can enrol in Advanced units of study?

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

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

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

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

What is the Talented Student Program?

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

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

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

Am I eligible for the Talented Student Program?

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

Bachelor of Science and Technology (BST)

Degree Code: LH035

Summary of Requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see Chapter 2) which should be read by all intending candidates. It is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Enrolment Guide

In your Junior year, you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 12 credit points of Junior units of study from the subject areas of Experimental Science (from Table VIIb);
- 12 credit points of Junior units of study from Science/Technology associated with Humanities and Social Sciences units of study (from Table VIIc);
- 12 credit points of Junior units of study from Science, Engineering or Architecture (from Table VIId)

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

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

Plans of study

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

Units of study

The Science units of study available for this degree are set out in Table VII: Bachelor of Science and Technology, and in Table 1:

Bachelor of Science, in chapter 3. Unit of study descriptions can be found in chapter 10.

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

Students should note that Honours is not available in the following subject areas: Design Technology, Electronic Engineering, General Engineering, and
Information Technology. Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 12.

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See chapter 2.

Sample Bachelor of Science and Technology

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

*Students intending to major in a Science subject area should enrol in the appropriate junior level of units of study. For more information, refer to the Faculty of Science Handbook, Chapter 3: Enrolment Guide by Major for the Bachelor of Science degree.

Enrolment guide by major

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

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

Design Technology
12 credit points of Junior units of study in Mathematics + 12 credit points INFO1003 and SOFT1001 + 12 credit points of Experimental Science from Table I (except Mathematics and Statistics, Computer Science, Computational Science, History and Philosophy of Science and Information Systems) + 12 credit points Applied Technology electives of your choice from Table VIIc. Instead of 12 credit points INFO1003 and SOFT1001 + 12 credit points Applied Technology electives from Table VIIc, students may choose 24 credit points DECO1100 and DECO1200 from Table VIIc. Note: students who wish to undertake a sequence of units of study in 3D Animation should take DECO1007 and DECO1008 in place of INFO1003 and SOFT1001 in their first year of studies.

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

General Engineering
12 credit points of Junior units of study in Mathematics + 12 credit points of ENGG1800 and ENGG1803 + 12 credit points of Experimental Science from Table I (except Mathematics and Statistics, Computer Science, Computational Science, History and Philosophy of Science and Information Systems) + 12 credit points of Applied Technology electives of your choice from units of study offered by the Faculties of Science, Architecture, Engineering and Agriculture, Food and Natural Resources.

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

Table VII - Bachelor of Science and Technology

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
(a) Mathematics and Statistics			
Candidates are required to enrol in and complete a minimum of 12 credit points from the science subject areas of Mathematics and Statistics.			
(b) Experimental Science units of study			
Candidates are required to enrol in and complete at least 12 credit points from those units of study listed in Table I not including units in the following subject areas: Computational Science, Computer Science, History and Philosophy of Science, Information Systems, and Mathematics and Statistics.			
(c) Science/Technology associated with Humanities and Social Sciences units of study			
Candidates are required to enrol in and complete at least 12 credit points from the units of study listed below:			
NOTE: Any 6 credit points from the subject area of English may be taken instead of ENGL1000.			
ACCT1003 **Financial Accounting Concepts**	6	**N** ACCT1001, ACCT1002 *Terminating unit.*	Semester 1
ACCT1004 **Management Accounting Concepts**	6	**N** ACCT1001, ACCT1002 *Terminating unit.*	Semester 2
DECO1005 **Hist & Theory of Multimedia & Animation**	6	**N** DECO2605 *Enrolment limited by teaching resources. If your attempt to enrol online fails please enquire at the Architecture Student Administration Centre.*	Semester 2
DECO1006 **Understanding Design & Cognition**	6	**N** DECO1004	Semester 1
EDUF1018 **Education, Teachers and Teaching**	6	**N** EDUF1011	Semester 1
EDUF1019 **Human Development and Education**	6	**N** EDUF1012	Semester 2
ENGL1000 **Academic Writing**	6	**P** This unit is available to all enrolled students and will count for credit across all faculties. There are no specific pre-requisites, co-requisites or prohibitions, but students are expected to have native or near native competence in written English. Students not meeting this requirement should enrol in appropriate remedial English courses before undertaking ENGL1000. ENGL1000 cannot be counted towards the junior credit points required to enrol in senior units of English, though it can be counted as an elective in most degree programs.	Semester 1 Semester 2 Summer Main Winter Main
HPSC1000 **Bioethics**	6	**N** HPSC1900 *This Junior unit of study is highly recommended to Intermediate and Senior Life Sciences students.*	Semester 1
PHIL1010 **Society, Knowledge and Reason**	6	**N** PHIL1001, PHIL1002	Semester 2
SLSS1001 **Introduction to Socio-Legal Studies**	6	*Available to Bachelor of Arts and Sciences and Bachelor of Socio-Legal Studies only*	Semester 1
CIVL3010 **Engineering and Society**	6	**A** ENGG1803 Professional Engineering	Semester 1
ENGG3005 **Engineering & Industrial Management Fund**	6	**N** ELEC3702, MECH3661	Semester 2
HPSC3024 **Science and Ethics**	6	**P** At least 24 credit points of Intermediate or Senior units of study **N** HPSC3007 *This unit will not be offered every year.*	Semester 2
ENGG4061 **Innovation/Technology Commercialisation**	6		Semester 1
(d) Technology/Applied Science units of study			
Candidates are required to enrol in and complete at least 12 credit points from the units of study listed below:			
For a major in Design Technology:			
(i) INFO1003 and SOFT1001; or			
(ii) DECO1007 and DECO1008; or			
(iii) DECO1100 and DECO1200			
DECO1007 **Design Data Mgmt & Product Modelling**	6	**N** DECO2004, INFO2005	Semester 1
DECO1008 **3D Modelling**	6	**N** DECO2103 *This unit is for BDesComp and BST students only. Others may enrol in DECO2103.*	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
DECO1100 **Digital Design Studio**	12	**N** DECO1011 *Core unit for Bachelor of Design Computing and BST students only.*	Semester 1
DECO1200 **Interaction Design Studio**	12	**P** DECO (1100 or 2101) **N** DECO1021 *Available for BDesComp and BST students only.*	Semester 2
INFO1003 **Foundations of Information Technology**	6	**A** Basic computer operations **N** INFO1000, INFS1000, ISYS1003, INFO1903	Semester 1 Semester 2
SOFT1001 **Software Development 1**	6	**A** HSC Mathematics Extension 1 **N** SOFT1901, COMP1001, COMP1901, DECO2011	Semester 1 Semester 2
For a major in Electronic Engineering			
(iv) ELEC1103 and ELEC1601			
ELEC1103 **Professional Electronic Engineering**	6	**A** HSC Physics, HSC Mathematics extension 1. **N** ELEC1102 Foundations of Electronic Circuits.	Semester 2
ELEC1601 **Professional Computer Engineering**	6	**A** HSC Mathematics extension 1. **N** NETS2008 Computer System Organisation, NETS2908 Computer System Organisation (Adv), COMP2001 Computer Systems, COMP2901 Computer Systems (Adv).	Semester 1 Summer Main
For a major in General Engineering			
(v) ENGG1803 and ENGG1800			
ENGG1800 **Engineering Disciplines (Intro) Stream A**	6		Semester 1
ENGG1803 **Professional Engineering 1**	6		Semester 1 Semester 2
For a major in Information Technology			
(vi) SOFT1001 and SOFT1002			
SOFT1001 **Software Development 1**	6	**A** HSC Mathematics Extension 1 **N** SOFT1901, COMP1001, COMP1901, DECO2011	Semester 1 Semester 2
SOFT1002 **Software Development 2**	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 **N** SOFT1902, COMP1002, COMP1902 *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 1 Semester 2 Summer Main
Progression to Years 2 and 3			
In order to proceed to Year 2 and 3 of the degree, candidates for the Bachelor of Sciences and Technology must either have completed 12 credit points of Technology/Applied Science units of study in a single group designated in TableVII(d) or have completed Science units of study that are prerequisite for a chosen 2000 or 3000-level Science subject areas. Candidates who have completed the 12 credit points of Engineering units of study designated in Table VII(d)(iii) or Table VII(d)(iv) and who wish to complete a major in either General Engineering or Electronic Engineering are in addition required to complete 12 credit points of Junior Mathematics including MATH1003 before proceeding to Year 2.			
(e) Requirements for a Major			
Science major			
Candidates are required to complete a major in a Science subject area (Table I) or one of the following majors in Technology/Applied Science.			
(i) Design Technology Major			
For a major in Design Technology the minimum requirement is the completion of at least 36 credit points from units of study shown in the following Table, including:			
(i) a minimum of 12 credit points of DECO units at 3000-level from the Table.			
DECO2010 **Collaborative Virtual Environments**	6	**P** DECO (1100 and 1200) or (2101 and 2102) or INFO (1000 or 1003) **N** DECO2005 *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing students will receive preference.*	Semester 1
DECO2011 **Design Programming**	6	**N** SOFT1001	Semester 1
DECO2012 **Sound Design and Sonification**	6	**N** DECO2607 *Permission required unless enrolled in the Bachelor of Design Computing or the BST. Other students may apply directly to the Faculty of Architecture for a place. Enrolment limited by teaching resources.*	Semester 2
DECO2013 **Generative Design Systems**	6	**P** DECO2011 or SOFT1001 **N** DECO2601, DECO2602, DECO2603 *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing students will receive preference.*	Semester 2
DECO2101 **Digital Image Design & Representation**	6	**N** DECO1001, DECO1100 *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Architecture students will receive preference. Not available in the Bachelor of Design Computing.*	Semester 1
DECO2102 **Interactive Multimedia Design**	6	**P** DECO2101 **N** DECO1002, DECO2002, DECO1200 *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design in Architecture students will receive preference. Not available in the Bachelor of Design Computing.*	Semester 2
DECO2204 **Principles of AutoCAD**	6	**N** DESA1202, DESC9101, DESC9163 *Permission required unless enrolled as an undergraduate in the Faculty of Architecture or the BST. Other students must apply directly to the Faculty of Architecture.*	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
DECO2205 **Principles of ArchiCAD**	6	**N** DESA1201, DESC9100, DESC9162 *Permission required unless enrolled as an undergraduate in the Faculty of Architecture or the BST. Other students must apply directly to the Faculty of Architecture.*	Semester 1
DECO2606 **Real Time 3D Multimedia**	6	**P** DECO (1008 or 2103) and (SOFT1001 or DECO2011) *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing and BST students will receive preference.*	Semester 2
DECO3003 **Design Computing Research Opportunity**	6	**A** Computer programming. **P** 96 credit points and minimum WAM of 65. *Note: Department permission required for enrolment* *Non Architecture students may apply directly to the Faculty of Architecture.*	Semester 2
DECO3005 **Advanced Interactive Multimedia Design**	6	**P** DECO (1200 or 2102 or 2002) **N** DESC9142 *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing and BST students will receive preference.*	Semester 1
DECO3006 **Principles of 3D Animation**	6	**P** DECO (1003 or 1008 or 2103) **N** DESC9019, DESC9141 *Enrolment limited by teaching resources. If your atempt to enrol online is refused please apply directly to the Faculty of Architecture. First preference given to third year students in the Bachelor of Design Computing or the Bachelor of Science & Technology.*	Semester 1
DECO3007 **Designing Tangible Computing**	6	**P** DECO (1200 or 2102) and (DECO2011 or SOFT1001) *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing and BST students will receive preference.*	Semester 2
DECO3100 **Information Visualisation Design Studio**	12	**P** DECO (1100 and 1200) or DECO (2101 and 2102) or DECO (2012 and 2013) **N** DECO3001 *BDesComp and BST students only.*	Semester 1
DECO3200 **Human-Computer Experience Des Stdo**	12	**P** DECO3100 or DECO (2101 and 2102 and (DECO2011 or SOFT1001)) **N** DECO3002 *BDesComp and BST students only*	Semester 2
(ii) General Engineering Major			
For a major in General Engineering the minimum requirement is the completion of at least 36 credit points from units of study shown in the following Table, including:			
(i) MATH2061; and			
(ii) a minimum of 12 credit points at the 3000-level.			
MATH2061 **Linear Mathematics and Vector Calculus**	6	**P** MATH (1111 or 1001 or 1901 or 1906) and MATH (1014 or 1002 or 1902) and MATH (1003 or 1903 or 1907) **N** MATH2001, MATH2901, MATH2002, MATH2902, MATH2961, MATH2067	Semester 1 Summer Main
AMME2200 **Thermodynamics and Fluids**	6	**A** MATH1001; MATH1002; MATH1003.	Semester 2
AMME2301 **Mechanics of Solids**	6	**P** MATH1001 or 1901, MATH1002 or 1902, MATH1003 or 1903, ENGG1802 or PHYS1001 or PHYS1901	Semester 1
AMME2302 **Materials 1**	6		Semester 2
AMME2500 **Engineering Dynamics**	6	**P** MATH1001; MATH1002; ENGG1802 or PHYS1001	Semester 1
CHNG2801 **Conservation and Transport Processes**	6	**A** Calculus Computations (Matlab, Excel) Mass and Energy Balances **P** All core 1st year engineering units of study.	Semester 1
CHNG2802 **Applied Maths for Chemical Engineers**	6	**A** Enrolment in this unit of study assumes that all core science and engineering UoS in first-year have been successfully completed. **P** All core 1st year engineering units of study. **C** CHNG 2803 (Analysis Practice 1) CHNG 2801 (Conservation and Transport Processes) CHEM 2404 (Forensic and Environmental Chemistry)	Semester 1
CHNG2804 **Chemical & Biological Systems Behaviour**	6	**A** Ability to conduct mass and energy balances, and the integration of these concepts to solve real chemical engineering problems Ability to understand basic principles of physical chemistry, physics and mechanics Ability to use mathematics of calculus (including vector calculus) and linear algebra, and carry out computations with MATLAB and MS EXCEL. **P** All core 1st year engineering units of study. **C** CHNG 2805 (Industrial Systems and Sustainability) CHNG 2806 (Analysis Practice 2 - Treatment, Purification and Recovery Systems) CHEM 2403 (Chemistry of Biological Molecules)	Semester 2
CHNG2805 **Industrial Systems and Sustainability**	6	**A** Ability to conduct mass and energy balances, and the integration of these concepts to solve real chemical engineering problems Ability to understand basic principles of physical chemistry, physics and mechanics Ability to use mathematics of calculus (including vector calculus) and linear algebra, and carry out computations with MATLAB and MS EXCEL. Ability to read widely outside of the technical literature, and to synthesise arguments based on such literature Ability to write coherent reports and essays based on qualitative information **P** All core 1st year engineering units of study. **C** CHNG 2804 (Chemical and Biological Systems Behaviour) CHNG 2806 (Analysis Practice 2 - Treatment, Purification & Recovery Systems) CHEM 2403 (Chemistry of Biological Molecules)	Semester 2
CIVL2110 **Materials**	6	**A** CHEM1001 Fundamentals of Chemistry 1A, ENGG1802 Engineering Mechanics	Semester 1
CIVL2201 **Structural Mechanics**	6	**A** ENGG1802 Engineering Mechanics	Semester 1
CIVL2230 **Intro to Structural Concepts and Design**	6	**A** ENGG1802 Engineering Mechanics, CIVL2110 Materials CIVL2201 Structural Mechanics	Semester 2
CIVL2410 **Soil Mechanics**	6	**A** CIVL2201 Structural Mechanics	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
CIVL2611 **Fluid Mechanics**	6	**A** MATH1001, MATH1002, MATH1003, MATH1005	Semester 2
CIVL2810 **Engineering Construction and Surveying**	6	**A** MATH1001, MATH1002, MATH1003, MATH1005	Semester 1
MECH2400 **Mechanical Design 1**	6		Semester 2
AMME3500 **System Dynamics and Control**	6	**A** AMME2500, MATH2061 **P** AMME2500 or MECH2500; MATH2061 or MATH2961 or MATH2067 or (MATH2001 or MATH2901 and MATH2005 or MATH2905)	Semester 1
CHNG3801 **Process Design**	6	**A** Enrolment in this unit of study assumes that all (six) core chemical engineering UoS in second year have been successfully completed. **P** All 1st and 2nd year units of study in the Chemical Engineering degree program. **C** CHNG 3803 (Design Practice 1 - Chemical & Biological Processes) CHNG 3802 (Operation, Analysis and Improvement of Industrial Systems) *This UoS is part of an integrated third-year program in chemical engineering. Completion of this body of work is required before a student will be permitted to move into the final-year with its emphasis on detailed design work, thesis based research and advanced engineering options.*	Semester 1
CHNG3802 **Operating/Improving Industrial Systems**	6	**A** Enrolment in this unit of study assumes that all (six) core chemical engineering UoS in second year have been successfully completed. **P** All 1st and 2nd year units of study relating to the Chemical Engineering degree program. **C** CHNG 3801 (Process Design) CHNG 3803 (Design Practice 1 - Chemical & Biological Processes) *This UoS is part of an integrated third-year program in chemical engineering. Completion of this body of work is required before a student will be permitted to move into the final-year with its emphasis on detailed design work, thesis based research and advanced engineering options.*	Semester 1
CHNG3805 **Product Formulation and Design**	6	**A** Mass and Energy Balances Conservation and Transport Phenomena Applied Mathematics (for Chemical Engineering) Process Design Concepts Process Control and Optimisation Concepts **P** All 1st and 2nd year units of study relating to the Chemical Engineering degree program. **C** CHNG 3806 (Management of Industrial Systems) CHNG 3807 (Design Practice 2 - Products and Value Chains) *This UoS is part of an integrated third-year program in chemical engineering. Completion of this body of work is required before a student will be permitted to move into the final-year with its emphasis on detailed design work, thesis based research and advanced engineering options.*	Semester 2
CHNG3806 **Management of Industrial Systems**	6	**A** Ability to conduct mass and energy balances, and the integration of these concepts to solve real chemical engineering problems Ability to understand basic principles of physical chemistry, physics and mechanics Ability to use mathematics of calculus (including vector calculus) and linear algebra, and carry out computations with MATLAB and MS EXCEL. Ability to read widely outside of the technical literature, and to synthesise arguments based on such literature Ability to write coherent reports and essays based on qualitative information **P** All 1st and 2nd year units of study relating to the Chemical Engineering degree. **C** CHNG3805 (Product Formulation and Design) CHNG3807 (Design Practice 2 - Products and Value Chains) *This UoS is part of an integrated third-year program in chemical engineering. Completion of this body of work is required before a student will be permitted to move into the fourth year.*	Semester 2
CIVL3205 **Concrete Structures 1**	6	**A** CIVL2110 Materials, CIVL2201 Structural Mechanics, CIVL2230 Intro to Structural Concepts and Design	Semester 1
CIVL3411 **Foundation Engineering**	6	**A** CIVL2410 Soil Mechanics	Semester 2
CIVL3612 **Environmental and Fluids Engineering**	6	**A** CIVL2611 Fluid Mechanics	Semester 1
CIVL3812 **Project Appraisal**	6	**N** CIVL4803 Engineering Management	Semester 1
MECH3260 **Thermal Engineering**	6	**A** Fundamentals of thermodynamics are needed to begin this more advanced course. **P** AMME2200 or MECH2200 or MECH2201	Semester 2
MECH3261 **Fluid Mechanics**	6	**P** (AMME2200 or AERO2201 or MECH2202) and (MATH2061 or MATH2067 or (MATH2001 and MATH2005)	Semester 1
MECH3361 **Mechanics of Solids 2**	6	**P** AMME2301 or AERO2300 or MECH2300; MATH2061 or MATH2067 or MATH2005	Semester 1
MECH3460 **Mechanical Design 2**	6	**A** ENGG1802; AMME2301; AMME2500. **P** MECH2400	Semester 2
(iii) Electronic Engineering Major			
For a major in General Engineering the minimum requirement is the completion of at least 36 credit points from units of study shown in the following Table, including:			
(i) MATH2061; and			
(ii) a minimum of 12 credit points at the 3000-level.			
MATH2061 **Linear Mathematics and Vector Calculus**	6	**P** MATH (1111 or 1001 or 1901 or 1906) and MATH (1014 or 1002 or 1902) and MATH (1003 or 1903 or 1907) **N** MATH2001, MATH2901, MATH2002, MATH2902, MATH2961, MATH2067	Semester 1 Summer Main
ELEC2103 **Simulation & Numerical Solutions in Eng.**	6	**A** 36 credit points including ELEC1102 Foundations of Electronic Engineering or ELEC1103 Professional Electronic Engineering. **N** ELEC2102 Engineering Computing, COSC1001 Computational Science in Matlab, COSC1901 Computational Science in Matlab (Advanced).	Semester 1
ELEC2104 **Electronic Devices and Basic Circuits**	6	**A** ELEC1102 Foundations of Electronic Circuits or ELEC1103 Professional Electronic Engineering. **N** ELEC2401 Introductory Electronics.	Semester 1
ELEC2302 **Signals and Systems**	6	**A** MATH1001 Differential Calculus and MATH1002 Linear Algebra and MATH1003 Integral Calculus and Modelling. **N** ELEC2301 Signals & Systems, MATH3019 Signal Processing, MATH3919 Signal Processing (Adv).	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
ELEC2602 **Digital System Design**	6	**A** ELEC1101 Foundations of Computer Systems or ELEC1601 Professional Computer Engineering. **N** ELEC3601 Digital Systems Design, ELEC3608 Digital Systems Design.	Semester 2
ELEC3204 **Power Electronics and Drives**	6	**A** ELEC2401 Introductory Electronics or ELEC2104 Electronic devices and basic circuits or ELEC2001 Electrical and Electronic Engineering or ELEC2003 Electrical and Electronic Engineering A. **N** ELEC3202 Power Electronics and Drives.	Semester 2
ELEC3304 **Control**	6	**A** ELEC2301 Signals and Systems or ELEC2302 Signals and Systems. **N** ELEC3302 Fundamentals of Feedback Control, MECH3800 Systems Control, AMME3500 System Dynamics and Control, CHNG3302 Process Control.	Semester 2
ELEC3305 **Digital Signal Processing**	6	**A** ELEC2301 Signals & Systems or ELEC 2302 Signals & Systems. **N** ELEC3303	Semester 1
ELEC3404 **Electronic Circuit Design**	6	**N** ELEC3401	Semester 1
ELEC3405 **Comunications Electronics and Photonics**	6	**A** ELEC2401 Introductory Electronics or ELEC2104 Electronic Devices and Basic Circuits. **N** ELEC3402	Semester 2
ELEC3505 **Communications**	6	**N** ELEC3503	Semester 1
ELEC3607 **Embedded Computing**	6	**A** ELEC1101 Foundations of Computer Systems or ELEC2602 Digital System Design. **N** ELEC2601	Semester 2
ELEC3802 **Fundamentals of Biomedical Engineering**	6	**A** ELEC2401 Introductory Electronics or ELEC2001 Electrical and Electronic Engineering or ELEC2003 Electrical and Electronic Engineering A or ELEC2104 Electronic Devices and Basic Circuits. **N** ELEC3801	Semester 1
(iv) Information Technology Major			
For a major in Information Technology, the minimum requirement is the completion of at least 36 credit points at 2000-level and above from Table III (excluding any units which are not available in the BST degree), which must contain:			
(i) at least 12 credit points from TableIII(i) and/or (ii), and must also contain			
(ii) at least 12 credit points from Table III(iv) and/or (v).			

8. Bachelor of Computer Science and Technology and Bachelor of Information Technology

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

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

All students are expected to read the degree resolutions for their course before they commence their studies, and from time to time during their studies. Undergraduate degree resolutions appear in chapter 2. The tables of undergraduate units of study available for each degree and unit descriptions appear in this chapter.

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

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

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

Code of Conduct for Students
The University has clear expectations of students in respect of academic matters and personal behaviour.

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

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

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

Enrolment day FAQs

What is a 'major'?

Some degrees in the Faculty of Science require you to complete a major. A major is a specialisation in the Senior year of your degree. It is useful to have an idea of what major, or group of majors, interest you now, so that you can plan your Junior and Intermediate years properly.

A major is usually defined as 24 credit points of study at the Senior level in a single area.

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

How many credit points should I take per semester?

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

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

Do I need to be full-time?

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

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

International students are required to be full-time.

Can I take units of study from other faculties?

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

Also available are undergraduate units from any other faculty at the University. The onus is on you to get written permission from the relevant department and bring it to the Faculty of Science for units of study not listed in your degree table.

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

Can I receive credit for previous tertiary study?

Yes. The amount of credit you may receive depends on your individual circumstances, but in general the total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points from degrees that have been completed.

On the day that you enrol you must lodge an application for credit from previous study. Because of the large numbers of applications received at enrolment there can be a considerable delay in processing your application, but all credit offers will be sent to students well in advance of the last day to add a unit of study for the semester in which they enrol.

The Faculty must sight originals of your academic transcripts, as well as detailed descriptions of prior units of study completed, as at the time of completion of the units. Descriptions will normally be an extract from a Handbook or a unit of study syllabus/outline, and should include the credit point value, learning outcomes, assessment details, texts

and references, and contact details for each unit of study. You must bring this information with on the day that you enrol.

On enrolment day you will have to make unit of study choices as if you have had no previous university of study. Alternatively, you may be able to obtain special permission to enrol in Intermediate or Senior units of study by taking a copy of your transcript and unit of study descriptions to Academic advisers for each individual unit of study. Unit of study Academic advisers are listed under unit of study descriptions in this Handbook.

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

Are there any bridging courses available?

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

Who can enrol in Advanced units of study?

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

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

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

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

What is the Talented Student Program?

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

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

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

Am I eligible for the Talented Student Program?

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

Bachelor of Computer Science and Technology (BCST)

Degree Code LH012

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points. Students can also consult the School of Information Technologies Web site.

Enrolment guide

There have been major changes to the curriculum in 2005 and in 2006. Transitional arrangements will be made to enable current students to complete the requirements of the BCST under the rules listed below. These transitional arrangements will be explained in full on the School of Information Technologies web site.

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

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

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

You should also note the following:

- you can complete majors in Principles of Computer Science, Information Systems, Multimedia Technology, Networks and Systems, Software Development, Digital Design and Computational Science as defined in Table IIIA: Bachelor of Information Technology majors, but it is not necessary to complete a major in order to qualify for the degree
- units of study completed at The University of Sydney Summer School which correspond to units of study in the table of undergraduate units of study may be credited towards the course requirements
- a standard full-time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part-time
- you may not enrol in more than 30 credit points in any one semester without permission
- before being permitted to enrol in a unit of study, you have to meet any prerequisites and corequisites for that unit of study
- Advanced units of study are indicated by a 9, 8, 7 or 6 as the second digit of the unit of study code. Entry to these units of study is limited (details can be obtained from departments)
- once the award course requirements of 144 credit points have been satisfied a student may not enrol in additional units of study without first obtaining permission from the Dean
- if a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Plans of units of study

It is important when choosing units of study at any stage of your university career that you should consider your overall degree program.

The BCST is designed as a flexible degree program which enables students with a strong interest in computing to combine a core of fundamental computer science topics with a wide range of subjects in other computationally based disciplines. There is a sample degree program and there is also a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study
The units of study available for this degree are set out in Table III: Bachelor of Information Technology and in Table I: Bachelor of Science in chapter 3. Unit descriptions appear in chapter 10.

Honours
There will be honours in the subject areas of Computer Science and Information Systems. Please refer to 'Honours in the Faculty of Science' in this chapter, and Table VI: Honours units of study in chapter 12.

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission to the Faculty varies from year to year.

Degree resolutions
See chapter 2.

Sample Bachelor of Computer Science & Technology

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH1XXX	MATH1XXX	SOFT1X01	Elective	Elective		
		3	3	6	6	6		24
	2	MATH1XXX	MATH1XXX	SOFT1X02	Elective	Elective		
		3	3	6	6	6		24
Year 2	1	INFO2X10	Table III(ii) elective	MATH elective	Table III (ii/iii) IT-related elective			
		6	6	6	6			24
	2	SOFT2X30	Table III(ii) elective	Table III (ii/iii) IT-related elective	Table III (ii/iii) IT-related elective			
		6	6	6	6			24
Year 3	1	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective			
		6	6	6	6			24
	2	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(v) Project			
		6	6	6	6			24
							Total credit points:	144
Require: 144cp total, min. 90cp Table III, max. 72 Junior, min. 18cp Maths, min. 24cp Table III(i), min. 36cp Table III(iv/v), min. 6cp Table III(v), min 36cp from units other than COMP, INFO, ISYS, MULT, NETS, SOFT.								

Bachelor of Computer Science and Technology (Advanced)

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

Enrolment guide
There have been major changes to the curriculum in 2005 and 2006. Transitional arrangements will be made to enable current students to complete the requirements of the BCST (Adv) under the rules listed below. These transitional arrangements will be explained in full on the School of Information Technologies web site.

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

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission to the Faculty varies from year to year.

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

Degree resolutions
See chapter 2.

Bachelor of Information Technology (BIT)

Degree Code LH023

Summary of requirements
The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points. Students can also consult the School of Information Technologies web site.

Enrolment guide
There have been major changes to the curriculum in 2005 and 2006. Transitional arrangements have been made to enable current students to complete the requirements of the BIT under the rules listed below. These transitional arrangements will be explained in full on the School of Information Technologies web site.

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

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

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

You should also note the following:

- you can complete majors in: Principles of Computer Science, Information Systems, Multimedia Technology, Networks and Systems, Software Development, Digital Design, Language Technology and Computational Science as defined in Table IIIA: Bachelor of Information Technology majors, but it is not necessary to complete a major in order to qualify for the degree
- you cannot count any unit of study with the grade Pass (Concessional) toward the degree
- units of study completed at The University of Sydney Summer School which correspond to units of study in the table of undergraduate units of study may be credited towards the course requirements
- a standard full time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part time
- you may not enrol in more than 30 credit points in any one semester without permission
- in order to enrol in a unit of study, you have to meet any prerequisites and corequisites for that unit of study
- Advanced units of study are indicated by a 9, 8, 7 or 6 as the second digit of the unit of study code. Entry to these units of study is limited (details can be obtained from departments)
- once the award course requirements of 192 credit points have been satisfied a student may not enrol in additional units of study without first obtaining permission from the Dean
- if a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

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

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

Honours
The BIT may be awarded as an Honours degree. Students may enrol in the Honours course after completion of 144 credit point, if they meet the specified performance conditions. Please refer to ‘Honours in the Faculty of Science’ in this chapter, and Table VI: Honours units of study in chapter 12.

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission to the Faculty varies from year to year.

Degree resolutions
See chapter 2

Sample Bachelor of Information Technology

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH1XXX	MATH1XXX	SOFT1X01	Table III (iii/iv) IT related elective	Elective		
		3	3	6	6	6		24
	2	MATH1XXX	MATH1XXX	SOFT1X02	Table III (iii/iv) IT related elective	Elective		
		3	3	6	6	6		24
Year 2	1	INFO2X10	Table III(ii) elective	Table III (iii/iv) IT-related elective	MATH elective			
		6	6	6	6			24
	2	SOFT2X30	Table III(ii) elective	Table III (iii/iv) IT-related elective	Elective			
		6	6	6	6			24
Year 3	1	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective			
		6	6	6	6			24
	2	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective			
		6	6	6	6			24
Year 4	1	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective			
		6	6	6	6			24
	2	Table III(iv/v) elective	Table III(iv/v) elective	INFO 3600/ INFO 4992				
		6	6	12				24
							Total credit points:	192
Require: 192cp total, min. 144cp Table III, max. 72cp Junior, min. 84cp Senior/Honours, min. 18cp Maths, min. 24cp Table III(i), min. 72cp Table III(iv/v), either INFO3600 or INFO (4991 or 4992), min. 36cp from units other than COMP, INFO, ISYS, MULT, NETS, SOFT.								

Table III: Bachelor of Information Technology

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Table III(i) Core Units			
Junior units of study			
SOFT1001 **Software Development 1**	6	**A** HSC Mathematics Extension 1 **N** SOFT1901, COMP1001, COMP1901, DECO2011	Semester 1 Semester 2
SOFT1901 **Software Development 1 (Adv)**	6	**A** HSC Mathematics Extension 1 **N** SOFT1001, COMP1001, COMP1901 *Note: Department permission required for enrolment* *Entry requires departmental permission, except for students in BSc(Adv), BCST(Adv) or BIT degrees*	Semester 1 Semester 2
SOFT1002 **Software Development 2**	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 **N** SOFT1902, COMP1002, COMP1902 *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 1 Semester 2 Summer Main
SOFT1902 **Software Development 2 (Adv)**	6	**P** Distinction in one of SOFT (1001 or 1901) or COMP (1001 or 1901) **N** SOFT1002, COMP1002, COMP1902, DECO2011 *Note: Department permission required for enrolment in the following sessions: Semester 1* *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 1 Semester 2
Intermediate units of study			
INFO2110 **Systems Analysis and Modelling**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. **N** INFO (2000 or 2810 or 2900)	Semester 1
INFO2810 **Systems Analysis and Modelling (Adv)**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC units of study) or DECO2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. **N** INFO (2000 or 2110 or 2900)	Semester 1
SOFT2130 **Software Construction 1**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 2 Summer Main
SOFT2830 **Software Construction 1 (Adv)**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) and Distinction in one of these, or in any SOFT unit at 2000-level or above. **N** COMP (2004 or 2904) or SOFT (2004 or 2904 or 2130). *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Table III(ii) Foundation Electives			
Intermediate units of study			
COMP2160 **Data Structures**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP2111, COMP2811, COMP2002, COMP2902, COMP2860	Semester 1
COMP2860 **Data Structures (Advanced)**	6	**P** [SOFT (1002 or 1902) or COMP (1002 or 1902)] and Distinction in one COMP, SOFT or MATH unit. **N** COMP(2111 or 2811 or 2002 or 2902 or 2160)	Semester 1
INFO2120 **Database Systems 1**	6	**P** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC) or DECO2011 **N** INFO (2005 or 2820 or 2905).	Semester 2
INFO2820 **Database Systems 1 (Advanced)**	6	**P** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DEC2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. **N** INFO (2005 or 2120 or 2905)	Semester 2
ISYS2140 **Information Systems**	6	**P** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901). **N** ISYS (2006 or 2007)	Semester 1
NETS2150 **Fundamentals of Networking** *This unit of study is not available in 2007*	6	**A** Basic computer organization **P** SOFT(1002 or 1902) or COMP(1001 or 1901) or DECO2011 **N** NETS (2009 or 2909 or 2850), ELEC (3506 or 3504)	
NETS2850 **Fundamentals of Networking (Advanced)** *This unit of study is not available in 2007*	6	**A** Basic computer organization. **P** SOFT(1002 or 1902) or COMP(1001 or 1901) or DECO2011 and Distinction in one NETS or SOFT unit. **N** May not be counted with NETS (2009 or 2909 or 2150) or ELEC (3504 or 3506).	
Table III(iii) Junior and Intermediate IT-related Electives			
Junior units of study			
ACCT1003 **Financial Accounting Concepts**	6	**N** ACCT1001, ACCT1002 *Terminating unit.*	Semester 1
ACCT1004 **Management Accounting Concepts**	6	**N** ACCT1001, ACCT1002 *Terminating unit.*	Semester 2
ARIN1000 **Digital Communication and Culture**	6	*Available to students enrolled in the BA (Digital Technology and Culture) and BA.*	Semester 1
CLAW1001 **Commercial Transactions A**	6		Semester 1 Semester 2 Summer Main
CLAW1002 **Commercial Transactions B**	6	**P** CLAW1001	Semester 2
COSC1001 **Computational Science in Matlab**	3	**A** HSC Mathematics **N** COSC1901	Semester 2
COSC1901 **Computational Science in Matlab (Adv)**	3	**A** HSC Mathematics **P** UAI of at least 90, or COSC1902, or a distinction or better in COSC1002, SOFT (1001, 1002, 1901 or 1902). **N** COSC1001	Semester 2
COSC1002 **Computational Science in C**	3	**A** HSC Mathematics **N** COSC1902	Semester 2
COSC1902 **Computational Science in C (Adv)**	3	**A** HSC Mathematics **P** UAI of at least 90, or COSC1901, or a distinction or better in COSC1001, SOFT (1001, 1002, 1901 or 1902). **N** COSC1002	Semester 2
DECO1005 **Hist & Theory of Multimedia & Animation**	6	**N** DECO2605 *Enrolment limited by teaching resources. If your attempt to enrol online fails please enquire at the Architecture Student Administration Centre.*	Semester 2
DECO1006 **Understanding Design & Cognition**	6	**N** DECO1004	Semester 1
DECO1007 **Design Data Mgmt & Product Modelling**	6	**N** DECO2004, INFO2005	Semester 1
ELEC1601 **Professional Computer Engineering**	6	**A** HSC Mathematics extension 1. **N** NETS2008 Computer System Organisation, NETS2908 Computer System Organisation (Adv), COMP2001 Computer Systems, COMP2901 Computer Systems (Adv).	Semester 1 Summer Main
ELEC1103 **Professional Electronic Engineering**	6	**A** HSC Physics, HSC Mathematics extension 1. **N** ELEC1102 Foundations of Electronic Circuits.	Semester 2
INFO1003 **Foundations of Information Technology**	6	**A** Basic computer operations **N** INFO1000, INFS1000, ISYS1003, INFO1903	Semester 1 Semester 2
INFO1903 **Foundations of Information Tech (Adv)**	6	**A** Basic computer operations **P** UAI at least that for acceptance into BSc(Adv) degree program. **N** INFO1003, ISYS1003, INFO1000, INFS1000 *Note: Department permission required for enrolment*	Semester 1
INFS1000 **Business Information Systems Foundations**	6	**N** ISYS1003, INFO1000, INFO1003, INFO1903	Semester 1 Semester 2 Summer Main
MATH1001 **Differential Calculus**	3	**A** HSC Mathematics Extension 1 **N** MATH1011, MATH1901, MATH1906, MATH1111	Semester 1 Summer Main
MATH1002 **Linear Algebra**	3	**A** HSC Mathematics Extension 1 **N** MATH1902, MATH1012, MATH1014	Semester 1 Summer Main

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
MATH1003 **Integral Calculus and Modelling**	3	**A** HSC Mathematics Extension 2 or MATH1001 or MATH1111 **N** MATH1013, MATH1903, MATH1907	Semester 2 Summer Main
MATH1004 **Discrete Mathematics**	3	**A** HSC Mathematics Extension 1 **N** MATH1904, MATH2011	Semester 2 Summer Main
MATH1005 **Statistics**	3	**A** HSC Mathematics **N** MATH1905, MATH1015, ECMT Junior units of study, STAT1021, STAT1022	Semester 2 Summer Main
MATH1011 **Life Sciences Calculus**	3	**A** HSC Mathematics **N** MATH1111, MATH1001, MATH1901, MATH1906	Semester 1 Summer Main
MATH1013 **Differential and Difference Equations**	3	**A** HSC Mathematics or MATH1111 **N** MATH1003, MATH1903, MATH1907	Semester 2
MATH1014 **Introduction to Linear Algebra**	3	**A** HSC Mathematics or MATH1111 **N** MATH1012, MATH1002, MATH1902	Semester 2 Summer Main
MATH1015 **Life Science Statistics**	3	**A** HSC Mathematics **N** MATH1005, MATH1905, STAT1021, STAT1022, ECMT Junior units of study.	Semester 1
MATH1111 **Introduction to Calculus**	6	**A** At least Year 10 Mathematics **N** MATH1001, MATH1901, MATH1011, MATH1906 *Note: Department permission required for enrolment* *Students with HSC Mathematics/Extension 1/Extension 2 (or equivalent) are prohibited.*	Semester 1
MATH1901 **Differential Calculus (Advanced)**	3	**A** HSC Mathematics Extension 2 **N** MATH1111, MATH1011, MATH1001, MATH1906 *Note: Department permission required for enrolment*	Semester 1
MATH1902 **Linear Algebra (Advanced)**	3	**A** HSC Mathematics Extension 2 **N** MATH1002, MATH1012, MATH1014 *Note: Department permission required for enrolment*	Semester 1
MATH1903 **Integral Calculus and Modelling Advanced**	3	**A** HSC Mathematics Extension 2 or Credit or better in MATH1001 or MATH1901 **N** MATH1003, MATH1013, MATH1907 *Note: Department permission required for enrolment*	Semester 2
MATH1904 **Discrete Mathematics (Advanced)**	3	**A** HSC Mathematics Extension 2 **N** MATH1004, MATH2011 *Note: Department permission required for enrolment*	Semester 2
MATH1905 **Statistics (Advanced)**	3	**A** HSC Mathematics Extension 2 **N** MATH1005, MATH1015, ECMT Junior units of study, STAT1021, STAT1022 *Note: Department permission required for enrolment*	Semester 2
Intermediate units of study			
ARIN2610 **Web Production**	6	**P** 18 junior credit points **N** ARIN2100 *Available to students enrolled in the BA (Digital Technology and Culture) and BA.*	Semester 2
CLAW2206 **Legal Issues for e-Commerce**	6	**P** Any 8 full semester first year units of study **N** CLAW2006	Semester 1 Semester 2 Summer Main
DECO2010 **Collaborative Virtual Environments**	6	**P** DECO (1100 and 1200) or (2101 and 2102) or INFO (1000 or 1003) **N** DECO2005 *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing students will receive preference.*	Semester 1
DECO2013 **Generative Design Systems**	6	**P** DECO2011 or SOFT1001 **N** DECO2601, DECO2602, DECO2603 *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing students will receive preference.*	Semester 2
DECO2101 **Digital Image Design & Representation**	6	**N** DECO1001, DECO1100 *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Architecture students will receive preference. Not available in the Bachelor of Design Computing.*	Semester 1
DECO2102 **Interactive Multimedia Design**	6	**P** DECO2101 **N** DECO1002, DECO2002, DECO1200 *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design in Architecture students will receive preference. Not available in the Bachelor of Design Computing.*	Semester 2
DECO2103 **3D Modelling**	6	**N** DECO1008 *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Architecture students will receive preference. Not available in the Bachelor of Design Computing.*	Semester 2
DECO2606 **Real Time 3D Multimedia**	6	**P** DECO (1008 or 2103) and (SOFT1001 or DECO2011) *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing and BST students will receive preference.*	Semester 2
ELEC2103 **Simulation & Numerical Solutions in Eng.**	6	**A** 36 credit points including ELEC1102 Foundations of Electronic Engineering or ELEC1103 Professional Electronic Engineering. **N** ELEC2102 Engineering Computing, COSC1001 Computational Science in Matlab, COSC1901 Computational Science in Matlab (Advanced).	Semester 1
ELEC2104 **Electronic Devices and Basic Circuits**	6	**A** ELEC1102 Foundations of Electronic Circuits or ELEC1103 Professional Electronic Engineering. **N** ELEC2401 Introductory Electronics.	Semester 1
ELEC2302 **Signals and Systems**	6	**A** MATH1001 Differential Calculus and MATH1002 Linear Algebra and MATH1003 Integral Calculus and Modelling. **N** ELEC2301 Signals & Systems, MATH3019 Signal Processing, MATH3919 Signal Processing (Adv).	Semester 2
ELEC2602 **Digital System Design**	6	**A** ELEC1101 Foundations of Computer Systems or ELEC1601 Professional Computer Engineering. **N** ELEC3601 Digital Systems Design, ELEC3608 Digital Systems Design.	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
INFS2010 **Managing Information & Knowledge Assets**	6	**A** INFS2001 **P** INFS1000 or INFO1000 or INFO1003 or INFO1903 or ISYS1003 **N** INFS3015	Semester 1
INFS2020 **Business Process Integration & Modelling**	6	**A** INFS2001 **P** INFS1000 or INFO1000 or INFO1003 or INFO1903 or ISYS1003 **N** INFS2005	Semester 2
INFS2030 **e-Commerce Business Models**	6	**P** INFS1000 or INFO1000 or INFO1003 or INFO1903 or ISYS1003 **N** ACCT3006, INFS3020	Semester 2
MATH2916 **Working Seminar A (SSP)**	3	**P** By invitation, High Distinction average over 12 credit points of Advanced Junior Mathematics *Note: Department permission required for enrolment*	Semester 1
MATH2917 **Working Seminar B (SSP)**	3	**P** By invitation, High Distinction average over 12 credit points of Advanced Junior Mathematics *Note: Department permission required for enrolment*	Semester 2
MATH2061 **Linear Mathematics and Vector Calculus**	6	**P** MATH (1111 or 1001 or 1901 or 1906) and MATH (1014 or 1002 or 1902) and MATH (1003 or 1903 or 1907) **N** MATH2001, MATH2901, MATH2002, MATH2902, MATH2961, MATH2067	Semester 1 Summer Main
MATH2961 **Linear Mathematics & Vector Calculus Adv**	6	**P** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) **N** MATH2001, MATH2901, MATH2002, MATH2902, MATH2061, MATH2067	Semester 1
MATH2063 **Math Computing and Nonlinear Systems**	6	**P** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) **N** MATH2003, MATH903, MATH2006, MATH2906, MATH2963	Semester 1
MATH2963 **Math Computing & Nonlinear Systems (Adv)**	6	**P** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) **N** MATH2003, MATH2903, MATH2006, MATH2906, MATH2063	Semester 1
MATH2065 **Partial Differential Equations (Intro)**	6	**P** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) **N** MATH2005, MATH2905, MATH2965, MATH2067	Semester 2
MATH2965 **Partial Differential Equations Intro Adv**	6	**P** MATH (2961 or Credit in 2061) or {MATH (2901 or Credit in 2001) and MATH (2902 or Credit in 2002)} **N** MATH2005, MATH 2905, MATH2065, MATH2067	Semester 2
MATH2962 **Real and Complex Analysis (Advanced)**	6	**P** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) **N** MATH2007, MATH2907	Semester 1
MATH2068 **Number Theory and Cryptography**	6	**P** 9 credit points of Junior level Mathematics including MATH (1002 or 1902) **N** MATH3024, MATH3009	Semester 2
MATH2968 **Algebra (Advanced)**	6	**P** 9 credit points of Junior Mathematics (advanced level or Credit at normal level) including (MATH1902 or Credit in MATH1002) **N** MATH2908, MATH2918, MATH2008	Semester 2
MATH2069 **Discrete Mathematics and Graph Theory**	6	**P** 6 credit points of Junior level Mathematics **N** MATH2011, MATH2009, MATH2969	Semester 1
MATH2070 **Optimisation and Financial Mathematics**	6	**A** MATH (1003 or 1903 or 1907) **P** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) **N** MATH2010, MATH2033, MATH2933, MATH2970, ECMT3510 *Students may enrol in both MATH2070 and MATH3075 in the same semester*	Semester 2
MATH2970 **Optimisation & Financial Mathematics Adv**	6	**A** MATH (1903 or 1907) or Credit in MATH1003 **P** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) **N** MATH2010, MATH2033, MATH2933, MATH2070 *Students may enrol in both MATH2970 and MATH3975 in the same semester*	Semester 2
STAT2011 **Statistical Models**	6	**P** MATH (1001 or 1901 or 1906 or 1011) and [MATH (1005 or 1905 or 1015) or STAT1021] **N** STAT2901, STAT2001, STAT2911	Semester 1
STAT2911 **Probability and Statistical Models (Adv)**	6	**P** MATH (1903 or 1907 or Credit in 1003) and MATH (1905 or Credit in 1005) **N** STAT2001, STAT2011, STAT2901	Semester 1
STAT2012 **Statistical Tests**	6	**A** STAT (2011 or 2002) **P** MATH (1005 or 1905 or 1015) **N** STAT2004, STAT2912	Semester 2
STAT2912 **Statistical Tests (Advanced)**	6	**A** STAT (2911 or 2901) **P** MATH1905 or Credit in MATH1005 **N** STAT2004, STAT2012	Semester 2
Table III(iv) Senior and Honours IT-related Electives			
Senior units of study			
BIOL3027 **Bioinformatics and Genomics**	6	**P** 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **N** BIOL3927 *This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.*	Semester 1
COSC3011 **Scientific Computing**	6	**A** Programming experience in MATLAB **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. **N** COSC3911, COSC3001, COSC3901, PHYS3301, PHYS3901	Semester 1
COSC3911 **Scientific Computing (Advanced)**	6	**A** Programming experience in MATLAB **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. **N** COSC3011, COSC3001, COSC3901, PHYS3301, PHYS3901	Semester 1
COSC3012 **Parallel Computing & Visualisation**	6	**A** Programming experience in C and MATLAB or equivalent. **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. **N** COSC3912, COSC3002, COSC3902, COSC3601, PHYS3303, PHYS3933	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
COSC3912 **Parallel Computing & Visualisation (Adv)**	6	**A** Programming experience in C and MATLAB or equivalent. **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. **N** COSC3012, COSC3002, COSC3902, COSC3601, PHYS3303, PHYS3933	Semester 2
COMP3308 **Introduction to Artificial Intelligence**	6	**A** Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO1903 or SOFT1002 **P** 18 crpts of 2000-level units. **N** COMP(3002 or 3902 or 3608)	Semester 1
COMP3608 **Intro. to Artificial Intelligence (Adv)**	6	**A** Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO1903 or SOFT1002. **P** 18 crpts of 2000-level units, and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. **N** COMP(3002, 3902 or 3308)	Semester 1
COMP3309 **Algorithms**	6	**P** COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902). **N** COMP(3111 or 3811), COMP(3001 or 3901) or COMP3609	Semester 1
COMP3609 **Algorithms (Advanced)**	6	**P** COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902), and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. **N** COMP(3111 or 3811 or 3001 or 3901 or 3309)	Semester 1
COMP3310 **Theory of Computation**	6	**P** COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902). **N** COMP (2003 or 2903 or 3610)	Semester 2
COMP3610 **Theory of Computation (Advanced)**	6	**P** COMP (2160 or 2860 or 2111 or 2811 or 2002 or 2902), and Distinction in a COMP, SOFT, or MATH unit at 2000-level or above. **N** COMP (2003 or 2903 or 3310)	Semester 2
DECO3003 **Design Computing Research Opportunity**	6	**A** Computer programming. **P** 96 credit points and minimum WAM of 65. *Note: Department permission required for enrolment* *Non Architecture students may apply directly to the Faculty of Architecture.*	Semester 2
DECO3005 **Advanced Interactive Multimedia Design**	6	**P** DECO (1200 or 2102 or 2002) **N** DESC9142 *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing and BST students will receive preference.*	Semester 1
DECO3006 **Principles of 3D Animation**	6	**P** DECO (1003 or 1008 or 2103) **N** DESC9019, DESC9141 *Enrolment limited by teaching resources. If your atempt to enrol online is refused please apply directly to the Faculty of Architecture. First preference given to third year students in the Bachelor of Design Computing or the Bachelor of Science & Technology.*	Semester 1
DECO3007 **Designing Tangible Computing**	6	**P** DECO (1200 or 2102) and (DECO2011 or SOFT1001) *Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing and BST students will receive preference.*	Semester 2
EBUS3003 **e-Business System Design**	6	**A** SOFT1002 Software Development 2 and (ISYS 1003 Foundations of Information Technology or ELEC1601 Professional Computer Engineering or ELEC1101 Foundations of Computer Systems). **N** EBUS3001 Introduction to E-Commerce Systems.	Semester 1
EBUS3004 **e-Business Programming**	6	**A** EBUS3001 Introduction to E-Commerce Systems or EBUS3003 E-Business System Design. **N** EBUS3002 E-Commerce Website Programming.	Semester 2
ELEC3305 **Digital Signal Processing**	6	**A** ELEC2301 Signals & Systems or ELEC 2302 Signals & Systems. **N** ELEC3303	Semester 1
ELEC3404 **Electronic Circuit Design**	6	**N** ELEC3401	Semester 1
ELEC3405 **Comunications Electronics and Photonics**	6	**A** ELEC2401 Introductory Electronics or ELEC2104 Electronic Devices and Basic Circuits. **N** ELEC3402	Semester 2
ELEC3505 **Communications**	6	**N** ELEC3503	Semester 1
ELEC3506 **Data Comunications and the Internet**	6	**A** SOFT2004 Software Development Methods 1 or COMP2004 Programming Practice or SOFT2130 Software Construction. **N** NETS2150, NETS2009, NETS2909, NETS3007, NETS3907, ELEC3504, ELEC4501	Semester 2
ELEC3605 **Engineering Software Requirements**	6	**A** SOFT2004 Software Development Methods 1 or SOFT2130 Software Construction. **N** ELEC4604	Semester 1
ELEC3606 **Software Project Management**	6	**A** SOFT2004 Software Development Methods 1 or SOFT2130 Software Construction. **N** ELEC4704	Semester 2
ELEC3607 **Embedded Computing**	6	**A** ELEC1101 Foundations of Computer Systems or ELEC2602 Digital System Design. **N** ELEC2601	Semester 2
ELEC3702 **Management for Engineers**	6	**N** ELEC3701, ENGG3005, MECH3661	Semester 1
INFO3402 **Management of IT Projects and Systems**	6	**P** INFO (2000 or 2110 or 2810 or 2900). **N** ISYS (3000 or 3012)	Semester 1
INFO3404 **Database Systems 2**	6	**P** INFO(2120 or 2820 or 2005 or 2905). **N** INFO (3005 or 3504 or 3905) or COMP (3005 or 3905)	Semester 2
INFO3504 **Database Systems 2 (Adv)**	6	**P** INFO (2005 or 2120 or 2820 or 2905),and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above. **N** INFO (3005 or 3404 or 3905) or COMP (3005 or 3905)	Semester 2
INFS3030 **BIS Assurance and Control**	6	**A** INFS2001, INFS2010, INFS2020 **P** INFS1000 or INFO1000 or INFO1003 or INFO1903 or ISYS1003 **N** INFS3010	Semester 2
INFS3040 **Enterprise Systems**	6	**A** INFS2001 and INFS2020 **P** INFS1000 or INFO1000 or INFO1003 or INFO1903 or ISYS1003 **N** INFS3005	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
INFS3050 **Supporting Business Intelligence**	6	**A** INFS2010 or equivalent **P** INFS1000 or INFO1000 or INFO1003 or INFO1903 or ISYS1003	Semester 2
INFS3060 **Managing BIS Projects**	6	**P** 12 credit points in INFS units of study **N** INFS3000	Semester 1 Semester 2
ISYS3400 **Information Systems Project**	6	**P** (INFO3402 or ISYS3012) and (ISYS (3401 or 3015) or ARIN2000). **N** ISYS3207	Semester 2
ISYS3401 **Analytical Methods & Information Systems**	6	**P** ISYS (2140 or 2006) and INFO (2000 or 2110 or 2810 or 2900) and (MATH(1005 or 1015 or 1905) or STAT1021) and (ARIN1000 or ENGL1050 or ENGL1005 or LNGS1001 or LNGS1002 or LNGS1005 or any HPSC unit) **N** ISYS3015	Semester 1
ISYS3403 **IT Systems in Arts and Humanities**	6	**P** INFO (2000 or 2110 or 2810 or 2900) and INFO (2005 or 2120 or 2820 or 2905). **N** ISYS3113 or EBUS(3002 or 3004).	Semester 1
GEOS3014 **GIS in Coastal Management**	6	**P** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **N** GEOS3914, MARS3104. ** Geoscience is the disciplines of Geography, Geology and Geophysics.*	Semester 2
GEOS3914 **GIS in Coastal Management (Advanced)**	6	**P** Distinction average in 12 credit points of intermediate geography or geology units or 12 credit points of intermediate marine science units. **N** GEOS3014, MARS3104 *Note: Department permission required for enrolment* *A distinction average in prior Geography, Geology or Marine Science units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.*	Semester 2
MATH3065 **Logic and Foundations**	6	**P** 6 credit points of Intermediate Mathematics **N** MATH3005	Semester 1
MATH3067 **Information and Coding Theory**	6	**P** 12 credit points of Intermediate Mathematics **N** MATH3007, MATH3010	Semester 2
MATH3076 **Mathematical Computing**	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1001 or 1003 or 1901 or 1903 or 1906 or 1907) **N** MATH3976, MATH3016, MATH3916	Semester 1
MATH3976 **Mathematical Computing (Advanced)**	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1903 or 1907) or Credit in MATH1003 **N** MATH3076, MATH3016, MATH3916	Semester 1
MATH3062 **Algebra and Number Theory**	6	**P** 12 credit points of Intermediate Mathematics **N** MATH3962, MATH3902, MATH3002, MATH3009 *Students are advised to take MATH(2068 or 2968) before attempting this unit.*	Semester 2
MATH3962 **Rings, Fields and Galois Theory (Adv)**	6	**A** MATH2961 **P** 12 credit points of Intermediate Mathematics **N** MATH3062, MATH3902, MATH3002 *Students are advised to take MATH2968 before attempting this unit.*	Semester 1
MULT3306 **Multimedia Computing and Processing**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** MULT3019, MULT3919, MULT3004, MULT3904, MULT3606, COMP3004, COMP3904	Semester 1
MULT3606 **Multimedia Computing & Processing (Adv)**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a COMP or MULT or SOFT unit at 2000-level or above. **N** MULT3019, MULT3919, MULT3004, MULT3904, MULT3306, COMP3004, COMP3904	Semester 1
MULT3307 **Interactive Multimedia Systems**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2
MULT3607 **Interactive Multimedia Systems (Adv)**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a MULT or SOFT or INFO or COMP unit at 2000-level or above. **N** SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3307.	Semester 2
NETS3303 **Network Protocols & Programming**	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)). **N** NETS(3007 or 3907), COMP(3007 or3907) or NETS3603.	Semester 1
NETS3603 **Network Protocols & Programming (Adv)**	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. **N** NETS(3007 or 3907), COMP(3007 or3907) or NETS3303.	Semester 1
NETS3305 **Computer and Network Security**	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** NETS(3016 or 3916), NETS3605 or ELEC(5610 or 5616)	Semester 1
NETS3605 **Computer and Network Security (Advanced)**	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. **N** NETS(3016 or 3916), NETS3305 or ELEC(5610 or 5616)	Semester 1
NETS3304 **Operating System Internals**	6	**P** (ELEC1601 or NETS(2008 or 2908) or COMP(2001 or 2901) or ELEC2601) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** NETS(3009 or 3909 or 3604), COMP(3009 or 3909). *Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enrol in this unit.*	Semester 2
NETS3604 **Operating Systems Internals (Advanced)**	6	**P** (ELEC1601 or NETS(2008 or 2908) or COMP(2001 or 2901) or ELEC2601) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. **N** NETS(3009 or 3909 or 3304), COMP(3009 or 3909) *Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enroll in this unit.*	Semester 2
SOFT3300 **Software Development Project**	6	**P** INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations). **N** SOFT3600, SOFT3200, SOFT3700	Semester 1 Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
SOFT3600 **Software Development Project (Advanced)**	6	**P** (INFO2110 or INFO2810 or INFO2000 or INFO2900) and (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2904 or COMP2004 or COMP2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations), and Distinction in any 2000-level or above IT-related unit. **N** SOFT3300, SOFT3200, SOFT3700	Semester 1 Semester 2
SOFT3301 **Software Construction 2**	6	**P** SOFT(2130 or 2830 or 2004 or 2904) or COMP2004 or COMP2904 **N** SOFT3601, SOFT3104, SOFT3804, COMP3008, COMP3908	Semester 1
SOFT3601 **Software Construction 2 (Advanced)**	6	**P** (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2004 or COMP2004 or COMP2904), and Distinction in any 2000-level or above SOFT or INFO unit. **N** SOFT3301, SOFT3104, SOFT3804, COMP3008, COMP3908	Semester 1
SOFT3302 **Software Quality Assurance**	6	**P** (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))). **N** SOFT(3602 or 3103 or 3803)	Semester 2
SOFT3602 **Software Quality Assurance (Adv)**	6	**P** (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))), and Distinction in any 2000-level or above SOFT or INFO unit. **N** SOFT(3302 or 3103 or 3803) or, COMP(3008 or COMP3908)	Semester 2
STAT3011 **Stochastic Processes and Time Series**	6	**P** STAT (2011 or 2911 or 2001 or 2901) and MATH (1003 or 1903 or 1907). **N** STAT3911, STAT3003, STAT3903, STAT3005, STAT3905	Semester 1
STAT3911 **Stochastic Processes and Time Series Adv**	6	**P** (STAT2911 or credit in STAT2011) and MATH(1003 or 1903 or 1907). **N** STAT3011, STAT3003, STAT3903, STAT3005, STAT3905	Semester 1
STAT3012 **Applied Linear Methods**	6	**P** STAT(2012 or 2912 or 2004) and MATH(1002 or 1902). **N** STAT3912, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
STAT3912 **Applied Linear Methods Advanced**	6	**P** (STAT2912 or Credit in STAT2004 or Credit in STAT2012) and MATH(2061 or 2961 or 1902). **N** STAT3012, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
STAT3013 **Statistical Inference**	6	**P** STAT(2012 or 2912 or 2003 or 2903). **N** STAT3913, STAT3001, STAT3901	Semester 2
STAT3913 **Statistical Inference Advanced**	6	**P** STAT(2912 or 2903). **N** STAT3013, STAT3001, STAT3901	Semester 2
STAT3014 **Applied Statistics**	6	**A** STAT(3012 or 3912). **P** STAT(2012 or 2912 or 2004). **N** STAT3914, STAT3002, STAT3902, STAT3006	Semester 2
STAT3914 **Applied Statistics Advanced**	6	**A** STAT3912 **P** STAT2912 or credit or better in (STAT2004 or STAT2012). **N** STAT3014, STAT3002, STAT3902, STAT3006, STAT3907	Semester 2
Honours units of study			
COMP4045 **Computational Geometry**	6	**A** Data structures, analysis of algorithms	Semester 1
COMP4046 **Statistical Natural Language Processing**	6	**A** Concepts of linguistics, elementary statistics, AI techniques	Semester 1
COMP4048 **Information Visualisation**	6	**A** Discrete mathematics	Semester 2
COMP5318 **Knowledge, Discovery and Data Mining**	6	**A** COMP5138 Relational Database Management Systems.	Semester 1 Semester 2
COMP5338 **Advanced Data Models**	6	**A** COMP5138 Relational Database Management Systems **N** COMP5306	Semester 1 Semester 2
COMP5347 **e-Commerce Technology**	6	**A** COMP5028 Object Oriented Analysis and Design	Semester 1
COMP5348 **Enterprise Scale Software Development**	6	**A** COMP5028 Object Oriented Analysis and Design	Semester 1
COMP5416 **Advanced Network Technologies**	6	**A** COMP5116 Internet Protocols and COMP5126 Distributed Systems Programming	Semester 2
COMP5424 **Information Technology in Biomedicine**	6		Semester 1
COMP5425 **Multimedia Storage, Retrieval & Delivery**	6	**A** COMP 5122 Multimedia Human Computer Interaction	Semester 1
COMP5426 **Network Based High Performance Computing**	6	**A** COMP5126 Distributed Systems Programming	Semester 1
EBUS4001 **e-Business Engineering**	6	**N** EBUS5001 E-Commerce Application Programming.	Semester 1
EBUS5003 **e-Commerce Systems**	6	**A** EBUS4001 E-Business Engineering or EBUS5001 E-Commerce Application Programming. **N** EBUS5002 E-Commerce Systems.	Semester 2
ELEC4505 **Digital Communication Systems**	6	**A** ELEC3505 Communications or ELEC3503 Introduction to Digital Communications. **N** ELEC4502	Semester 1
ELEC4605 **Computer Engineering**	6	**A** (ELEC2601 Microprocessor Systems or ELEC3607 Embedded Computing) and (ELEC2602 Digital System Design or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design). **N** ELEC4601	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
ELEC4706 **Project Management**	6	**N** ELEC4701	Semester 1
ELEC5303 **Computer Control System Design**	6	**N** ELEC4301 *Note: Department permission required for enrolment*	Semester 1
ELEC5402 **Digital Integrated Circuit Design**	6	**A** (ELEC3401 Electronic Devices and Circuits or ELEC3404 Electronic Circuit Design), and (ELEC2601 Microcomputer Systems or ELEC3607 Embedded Computing). **N** ELEC4402	Semester 1
ELEC5403 **Radio Frequency Engineering**	6	**A** ELEC3401 Electronic Devices and Circuits or ELEC3404 Electronic Circuit Design. **N** ELEC5521	Semester 1
ELEC5507 **Error Control Coding**	6	**N** ELEC4503	Semester 1
ELEC5508 **Wireless Engineering**	6	**A** (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3504 Data Communications and the Internet or ELEC3506 Data Communications and the Internet or NETS2150 Fundamentals of Networking). **N** ELEC5504, ELEC4504	Semester 2
ELEC5509 **Advanced Communication Networks**	6	**A** ELEC3504 Data Communications and the Internet or ELEC3506 Data Communications and the Internet or NETS3007 Network Protocols. **N** ELEC5501	Semester 1
ELEC5510 **Satellite Communication Systems**	6	**A** ELEC3505 Communications (or ELEC3503 Introduction to Digital Communications) and ELEC4505 Digital Communication Systems (or ELEC4502 Digital Communication Systems) **N** ELEC5502	Semester 2
ELEC5511 **Optical Communication Systems**	6	**A** (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3402 Communications Electronics or ELEC3405 Communications Electronics and Photonics) **N** ELEC5503	Semester 1
ELEC5512 **Optical Networks**	6	**A** ELEC3503 Introduction to Digital Communications or ELEC3505 Communications. **N** ELEC5506	Semester 2
ELEC5513 **Network Management and Queuing Theory**	6	**A** ELEC3506 Data Communications and the Internet (or ELEC3504 Data Communications and the Internet) and ELEC3505 Communications (or ELEC3503 Introduction to Digital Communications). **N** Nil	Semester 2
ELEC5613 **Image Processing and Computer Vision**	6	**A** SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) or ELEC2602 Digital System Design (or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design) or ELEC3603 Introduction to Computing Systems. **N** ELEC4302	Semester 1
ELEC5614 **Real Time Computing**	6	**A** SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) and ELEC3607 Embedded Computing (or ELEC2601 Microprocessor Systems). **N** ELEC4602	Semester 2
ELEC5615 **Advanced Computer Engineering**	6	**A** ELEC4605 Computer Engineering or ELEC4601 Computer Design. **N** ELEC5611 *Note: Department permission required for enrolment*	Semester 2
ELEC5616 **Computer and Network Security**	6	**A** ELEC3607 Embedded Computing (or ELEC2601 Microprocesor Systems) or ELEC3506 Data Communications and the Internet (or ELEC3504 Data Communications and the Internet) or EBUS3004 E-Business Programming (or EBUS3002 E-Commerce Website Programming). **N** ELEC5611, NETS3016, NETS3916	Semester 1
INFO4010 **IT Advanced Topic A**	6	**P** Permission of Head of School *Note: Department permission required for enrolment*	Semester 1
INFO4011 **IT Advanced Topic B**	6	**P** Permission of Head of School *Note: Department permission required for enrolment*	Semester 2
INFO4990 **IT Research Methods**	6	**A** Elementary statistics *Note: Department permission required for enrolment*	Semester 1 Semester 2
ISYS4050 **Knowledge Management Systems**	6	**A** Information systems concepts, database concepts	Semester 1
NETS4047 **Pervasive Computing**	6	**A** Networking concepts, operating system concepts, programming expertise	Semester 2
Table III(v) Senior and Honours Projects			
The unit of study INFO3600 may not be taken concurrently with SOFT(3200 or 3300 or 3600 or 3700) or ISYS(3207 or 3400).			
INFO3600 **Major Development Project**	12	**C** 36 crpts from Table III(iv) and/or Table III(v) of the BIT regulations **N** SOFT3200, SOFT3300, SOFT3600, SOFT3700, ISYS3207, ISYS3400 *Only available to students in BIT*	Semester 1 Semester 2
INFO4991 **IT Research Thesis A**	6	**C** INFO4990 and INFO4992	Semester 1 Semester 2
INFO4992 **IT Research Thesis B**	12	**C** INFO4990 and INFO4991	Semester 1 Semester 2
INFO4999 **Computer Science Honours Result**		**P** Permission of the Head of Department *Note: Department permission required for enrolment*	Semester 1 Semester 2
INFS3080 **Business Information Systems Project**	6	**P** Department permission and at least 48 credit points *Note: Department permission required for enrolment*	Semester 1 Semester 2
ISYS3400 **Information Systems Project**	6	**P** (INFO3402 or ISYS3012) and (ISYS (3401 or 3015) or ARIN2000). **N** ISYS3207	Semester 2
SOFT3300 **Software Development Project**	6	**P** INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations). **N** SOFT3600, SOFT3200, SOFT3700	Semester 1 Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
SOFT3600 **Software Development Project (Advanced)**	6	**P** (INFO2110 or INFO2810 or INFO2000 or INFO2900) and (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2904 or COMP2004 or COMP2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations), and Distinction in any 2000-level or above IT-related unit. **N** SOFT3300, SOFT3200, SOFT3700	Semester 1 Semester 2

Table IIIA: Bachelor of Information Technology Majors

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
The unit of study INFO3600 (offered prior to 2006) may be substituted for SOFT3200 and/or ISYS3207 in all majors for BIT students only.			
(i) Major in Principles of Computer Science			
Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents			
Core Junior units of study			
MATH1005 **Statistics**	3	**A** HSC Mathematics **N** MATH1905, MATH1015, ECMT Junior units of study, STAT1021, STAT1022	Semester 2 Summer Main
SOFT1001 **Software Development 1**	6	**A** HSC Mathematics Extension 1 **N** SOFT1901, COMP1001, COMP1901, DECO2011	Semester 1 Semester 2
SOFT1002 **Software Development 2**	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 **N** SOFT1902, COMP1002, COMP1902 *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 1 Semester 2 Summer Main
Core Intermediate units of study			
COMP2160 **Data Structures**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP2111, COMP2811, COMP2002, COMP2902, COMP2860	Semester 1
INFO2110 **Systems Analysis and Modelling**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. **N** INFO (2000 or 2810 or 2900)	Semester 1
MATH2069 **Discrete Mathematics and Graph Theory**	6	**P** 6 credit points of Junior level Mathematics **N** MATH2011, MATH2009, MATH2969	Semester 1
SOFT2130 **Software Construction 1**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 2 Summer Main
Core Senior units of study			
COMP3308 **Introduction to Artificial Intelligence**	6	**A** Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO1903 or SOFT1002 **P** 18 crpts of 2000-level units. **N** COMP(3002 or 3902 or 3608)	Semester 1
COMP3309 **Algorithms**	6	**P** COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902). **N** COMP(3111 or 3811), COMP(3001 or 3901) or COMP3609	Semester 1
COMP3310 **Theory of Computation**	6	**P** COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902). **N** COMP (2003 or 2903 or 3610)	Semester 2
Elective Senior units of study			
Students are required to complete 12 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.			
INFO3404 **Database Systems 2**	6	**P** INFO(2120 or 2820 or 2005 or 2905). **N** INFO (3005 or 3504 or 3905) or COMP (3005 or 3905)	Semester 2
MATH3065 **Logic and Foundations**	6	**P** 6 credit points of Intermediate Mathematics **N** MATH3005	Semester 1
MATH3067 **Information and Coding Theory**	6	**P** 12 credit points of Intermediate Mathematics **N** MATH3007, MATH3010	Semester 2
MULT3306 **Multimedia Computing and Processing**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** MULT3019, MULT3919, MULT3004, MULT3904, MULT3606, COMP3004, COMP3904	Semester 1
MULT3307 **Interactive Multimedia Systems**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2
SOFT3300 **Software Development Project**	6	**P** INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations). **N** SOFT3600, SOFT3200, SOFT3700	Semester 1 Semester 2
Elective Honours units of study			
COMP5318 **Knowledge, Discovery and Data Mining**	6	**A** COMP5138 Relational Database Management Systems.	Semester 1 Semester 2
COMP4045 **Computational Geometry**	6	**A** Data structures, analysis of algorithms	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
COMP4046 **Statistical Natural Language Processing**	6	**A** Concepts of linguistics, elementary statistics, AI techniques	Semester 1
COMP4048 **Information Visualisation**	6	**A** Discrete mathematics	Semester 2
(ii) Major in Information Systems			
Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents.			
Core Junior units of study			
ARIN1000 **Digital Communication and Culture**	6	*Available to students enrolled in the BA (Digital Technology and Culture) and BA.*	Semester 1
INFO1003 **Foundations of Information Technology**	6	**A** Basic computer operations **N** INFO1000, INFS1000, ISYS1003, INFO1903	Semester 1 Semester 2
MATH1005 **Statistics**	3	**A** HSC Mathematics **N** MATH1905, MATH1015, ECMT Junior units of study, STAT1021, STAT1022	Semester 2 Summer Main
Core Intermediate units of study			
INFO2110 **Systems Analysis and Modelling**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. **N** INFO (2000 or 2810 or 2900)	Semester 1
INFO2120 **Database Systems 1**	6	**P** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC) or DECO2011 **N** INFO (2005 or 2820 or 2905).	Semester 2
ISYS2140 **Information Systems**	6	**P** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901). **N** ISYS (2006 or 2007)	Semester 1
Core Senior units of study			
INFO3402 **Management of IT Projects and Systems**	6	**P** INFO (2000 or 2110 or 2810 or 2900). **N** ISYS (3000 or 3012)	Semester 1
ISYS3401 **Analytical Methods & Information Systems**	6	**P** ISYS (2140 or 2006) and INFO (2000 or 2110 or 2810 or 2900) and (MATH(1005 or 1015 or 1905) or STAT1021) and (ARIN1000 or ENGL1050 or ENGL1005 or LNGS1001 or LNGS1002 or LNGS1005 or any HPSC unit) **N** ISYS3015	Semester 1
ISYS3400 **Information Systems Project**	6	**P** (INFO3402 or ISYS3012) and (ISYS (3401 or 3015) or ARIN2000). **N** ISYS3207	Semester 2
Elective Senior units of study			
Students are required to complete 6 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.			
INFO3404 **Database Systems 2**	6	**P** INFO(2120 or 2820 or 2005 or 2905). **N** INFO (3005 or 3504 or 3905) or COMP (3005 or 3905)	Semester 2
ISYS3403 **IT Systems in Arts and Humanities**	6	**P** INFO (2000 or 2110 or 2810 or 2900) and INFO (2005 or 2120 or 2820 or 2905). **N** ISYS3113 or EBUS(3002 or 3004).	Semester 1
Elective Honours units of study			
ISYS4050 **Knowledge Management Systems**	6	**A** Information systems concepts, database concepts	Semester 1
COMP5338 **Advanced Data Models**	6	**A** COMP5138 Relational Database Management Systems **N** COMP5306	Semester 1 Semester 2
(iii) Major in Multimedia Technology			
Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents.			
Core Junior units of study			
MATH1001 **Differential Calculus**	3	**A** HSC Mathematics Extension 1 **N** MATH1011, MATH1901, MATH1906, MATH1111	Semester 1 Summer Main
MATH1002 **Linear Algebra**	3	**A** HSC Mathematics Extension 1 **N** MATH1902, MATH1012, MATH1014	Semester 1 Summer Main
MATH1003 **Integral Calculus and Modelling**	3	**A** HSC Mathematics Extension 2 or MATH1001 or MATH1111 **N** MATH1013, MATH1903, MATH1907	Semester 2 Summer Main
SOFT1001 **Software Development 1**	6	**A** HSC Mathematics Extension 1 **N** SOFT1901, COMP1001, COMP1901, DECO2011	Semester 1 Semester 2
SOFT1002 **Software Development 2**	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 **N** SOFT1902, COMP1002, COMP1902 *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 1 Semester 2 Summer Main
Core Intermediate units of study			
COMP2160 **Data Structures**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP2111, COMP2811, COMP2002, COMP2902, COMP2860	Semester 1
INFO2110 **Systems Analysis and Modelling**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. **N** INFO (2000 or 2810 or 2900)	Semester 1
SOFT2130 **Software Construction 1**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 2 Summer Main

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Core Senior units of study			
MULT3306 **Multimedia Computing and Processing**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** MULT3019, MULT3919, MULT3004, MULT3904, MULT3606, COMP3004, COMP3904	Semester 1
MULT3307 **Interactive Multimedia Systems**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2
Elective Senior units of study			
Students are required to complete 12 credit points from the elective units or other mutually exclusive units such as their Advanced equivalents.			
COMP3309 **Algorithms**	6	**P** COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902). **N** COMP(3111 or 3811), COMP(3001 or 3901) or COMP3609	Semester 1
MATH3067 **Information and Coding Theory**	6	**P** 12 credit points of Intermediate Mathematics **N** MATH3007, MATH3010	Semester 2
SOFT3300 **Software Development Project**	6	**P** INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations). **N** SOFT3600, SOFT3200, SOFT3700	Semester 1 Semester 2
Elective Honours units of study			
COMP4048 **Information Visualisation**	6	**A** Discrete mathematics	Semester 2
ELEC5613 **Image Processing and Computer Vision**	6	**A** SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) or ELEC2602 Digital System Design (or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design) or ELEC3603 Introduction to Computing Systems. **N** ELEC4302	Semester 1
MULT4043 **Multimedia Storage, Retrieval & Delivery** *This unit of study is not available in 2007*	6	**A** Multimedia data formats, networking concepts, database concepts **P** Credit average in 24 credit points of 3000-level study	
(iv) Major in Networks & Systems			
Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents.			
Core Junior units of study			
ELEC1601 **Professional Computer Engineering**	6	**A** HSC Mathematics extension 1. **N** NETS2008 Computer System Organisation, NETS2908 Computer System Organisation (Adv), COMP2001 Computer Systems, COMP2901 Computer Systems (Adv).	Semester 1 Summer Main
SOFT1001 **Software Development 1**	6	**A** HSC Mathematics Extension 1 **N** SOFT1901, COMP1001, COMP1901, DECO2011	Semester 1 Semester 2
SOFT1002 **Software Development 2**	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 **N** SOFT1902, COMP1002, COMP1902 *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 1 Semester 2 Summer Main
Core Intermediate units of study			
INFO2110 **Systems Analysis and Modelling**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. **N** INFO (2000 or 2810 or 2900)	Semester 1
NETS2150 **Fundamentals of Networking** *This unit of study is not available in 2007*	6	**A** Basic computer organization **P** SOFT(1002 or 1902) or COMP(1001 or 1901) or DECO2011 **N** NETS (2009 or 2909 or 2850), ELEC (3506 or 3504)	
SOFT2130 **Software Construction 1**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 2 Summer Main
Core Senior units of study			
NETS3303 **Network Protocols & Programming**	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)). **N** NETS(3007 or 3907), COMP(3007 or3907) or NETS3603.	Semester 1
NETS3304 **Operating System Internals**	6	**P** (ELEC1601 or NETS(2008 or 2908) or COMP(2001 or 2901) or ELEC2601) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** NETS(3009 or 3909 or 3604), COMP(3009 or 3909). *Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enrol in this unit.*	Semester 2
NETS3305 **Computer and Network Security**	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** NETS(3016 or 3916), NETS3605 or ELEC(5610 or 5616)	Semester 1
Elective Senior units of study			
Students are required to complete 6 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.			
SOFT3300 **Software Development Project**	6	**P** INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations). **N** SOFT3600, SOFT3200, SOFT3700	Semester 1 Semester 2
ELEC3505 **Communications**	6	**N** ELEC3503	Semester 1
ELEC3607 **Embedded Computing**	6	**A** ELEC1101 Foundations of Computer Systems or ELEC2602 Digital System Design. **N** ELEC2601	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Elective Honours units of study			
ELEC4505 **Digital Communication Systems**	6	**A** ELEC3505 Communications or ELEC3503 Introduction to Digital Communications. **N** ELEC4502	Semester 1
ELEC4605 **Computer Engineering**	6	**A** (ELEC2601 Microprocessor Systems or ELEC3607 Embedded Computing) and (ELEC2602 Digital System Design or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design). **N** ELEC4601	Semester 1
ELEC5507 **Error Control Coding**	6	**N** ELEC4503	Semester 1
ELEC5508 **Wireless Engineering**	6	**A** (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3504 Data Communications and the Internet or ELEC3506 Data Communications and the Internet or NETS2150 Fundamentals of Networking). **N** ELEC5504, ELEC4504	Semester 2
ELEC5509 **Advanced Communication Networks**	6	**A** ELEC3504 Data Communications and the Internet or ELEC3506 Data Communications and the Internet or NETS3007 Network Protocols. **N** ELEC5501	Semester 1
ELEC5510 **Satellite Communication Systems**	6	**A** ELEC3505 Communications (or ELEC3503 Introduction to Digital Communications) and ELEC4505 Digital Communication Systems (or ELEC4502 Digital Communication Systems) **N** ELEC5502	Semester 2
ELEC5511 **Optical Communication Systems**	6	**A** (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3402 Communications Electronics or ELEC3405 Communications Electronics and Photonics) **N** ELEC5503	Semester 1
ELEC5512 **Optical Networks**	6	**A** ELEC3503 Introduction to Digital Communications or ELEC3505 Communications. **N** ELEC5506	Semester 2
NETS4040 **Advanced Networking Technologies** *This unit of study is not available in 2007*	6	**A** Understanding of link layer technologies, the TCP/IP protocol stack **P** Credit average in 24 credit points of 3000-level study **N** ELEC (4504 and 5501)	
NETS4041 **Network-Based High Performance Computing** *This unit of study is not available in 2007*	6	**A** Understanding of operating systems **P** Credit average in 24 credit points of 3000-level study	
NETS4047 **Pervasive Computing**	6	**A** Networking concepts, operating system concepts, programming expertise	Semester 2
(v) Major in Software Development			
Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents.			
Core Junior units of study			
SOFT1001 **Software Development 1**	6	**A** HSC Mathematics Extension 1 **N** SOFT1901, COMP1001, COMP1901, DECO2011	Semester 1 Semester 2
SOFT1002 **Software Development 2**	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 **N** SOFT1902, COMP1002, COMP1902 *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 1 Semester 2 Summer Main
MATH1005 **Statistics**	3	**A** HSC Mathematics **N** MATH1905, MATH1015, ECMT Junior units of study, STAT1021, STAT1022	Semester 2 Summer Main
Core Intermediate units of study			
COMP2160 **Data Structures**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP2111, COMP2811, COMP2002, COMP2902, COMP2860	Semester 1
INFO2110 **Systems Analysis and Modelling**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. **N** INFO (2000 or 2810 or 2900)	Semester 1
INFO2120 **Database Systems 1**	6	**P** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC) or DECO2011 **N** INFO (2005 or 2820 or 2905).	Semester 2
SOFT2130 **Software Construction 1**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 2 Summer Main
Core Senior units of study			
SOFT3301 **Software Construction 2**	6	**P** SOFT(2130 or 2830 or 2004 or 2904) or COMP2004 or COMP2904 **N** SOFT3601, SOFT3104, SOFT3804, COMP3008, COMP3908	Semester 1
SOFT3302 **Software Quality Assurance**	6	**P** (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))). **N** SOFT(3602 or 3103 or 3803)	Semester 2
SOFT3300 **Software Development Project**	6	**P** INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations). **N** SOFT3600, SOFT3200, SOFT3700	Semester 1 Semester 2
Elective Senior units of study			
Students are required to complete 6 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.			
EBUS3004 **e-Business Programming**	6	**A** EBUS3001 Introduction to E-Commerce Systems or EBUS3003 E-Business System Design. **N** EBUS3002 E-Commerce Website Programming.	Semester 2
ELEC3605 **Engineering Software Requirements**	6	**A** SOFT2004 Software Development Methods 1 or SOFT2130 Software Construction. **N** ELEC4604	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
ELEC3606 **Software Project Management**	6	**A** SOFT2004 Software Development Methods 1 or SOFT2130 Software Construction. **N** ELEC4704	Semester 2
INFO3402 **Management of IT Projects and Systems**	6	**P** INFO (2000 or 2110 or 2810 or 2900). **N** ISYS (3000 or 3012)	Semester 1
MULT3307 **Interactive Multimedia Systems**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2
NETS3305 **Computer and Network Security**	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** NETS(3016 or 3916), NETS3605 or ELEC(5610 or 5616)	Semester 1
Elective Honours units of study			
EBUS4001 **e-Business Engineering**	6	**N** EBUS5001 E-Commerce Application Programming.	Semester 1
ELEC5614 **Real Time Computing**	6	**A** SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) and ELEC3607 Embedded Computing (or ELEC2601 Microprocessor Systems). **N** ELEC4602	Semester 2
SOFT4042 **Enterprise-Scale Software** *This unit of study is not available in 2007*	6	**A** Relational database technology, object-oriented design, C++ **P** Credit average in 24 credit points of 3000-level study	
(vi) Major in Digital Design			
Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents.			
Core Junior units of study			
ELEC1601 **Professional Computer Engineering**	6	**A** HSC Mathematics extension 1. **N** NETS2008 Computer System Organisation, NETS2908 Computer System Organisation (Adv), COMP2001 Computer Systems, COMP2901 Computer Systems (Adv).	Semester 1 Summer Main
SOFT1001 **Software Development 1**	6	**A** HSC Mathematics Extension 1 **N** SOFT1901, COMP1001, COMP1901, DECO2011	Semester 1 Semester 2
SOFT1002 **Software Development 2**	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 **N** SOFT1902, COMP1002, COMP1902 *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 1 Semester 2 Summer Main
Core Intermediate units of study			
ELEC2602 **Digital System Design**	6	**A** ELEC1101 Foundations of Computer Systems or ELEC1601 Professional Computer Engineering. **N** ELEC3601 Digital Systems Design, ELEC3608 Digital Systems Design.	Semester 2
INFO2110 **Systems Analysis and Modelling**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. **N** INFO (2000 or 2810 or 2900)	Semester 1
SOFT2130 **Software Construction 1**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 2 Summer Main
Core Senior units of study			
ELEC3607 **Embedded Computing**	6	**A** ELEC1101 Foundations of Computer Systems or ELEC2602 Digital System Design. **N** ELEC2601	Semester 2
Core Honours units of study			
ELEC4605 **Computer Engineering**	6	**A** (ELEC2601 Microprocessor Systems or ELEC3607 Embedded Computing) and (ELEC2602 Digital System Design or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design). **N** ELEC4601	Semester 1
Elective Senior units of study			
Students are required to complete 12 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.			
ELEC3305 **Digital Signal Processing**	6	**A** ELEC2301 Signals & Systems or ELEC 2302 Signals & Systems. **N** ELEC3303	Semester 1
ELEC3404 **Electronic Circuit Design**	6	**N** ELEC3401	Semester 1
ELEC3605 **Engineering Software Requirements**	6	**A** SOFT2004 Software Development Methods 1 or SOFT2130 Software Construction. **N** ELEC4604	Semester 1
NETS3304 **Operating System Internals**	6	**P** (ELEC1601 or NETS(2008 or 2908) or COMP(2001 or 2901) or ELEC2601) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** NETS(3009 or 3909 or 3604), COMP(3009 or 3909). *Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enrol in this unit.*	Semester 2
Elective Honours units of study			
ELEC5402 **Digital Integrated Circuit Design**	6	**A** (ELEC3401 Electronic Devices and Circuits or ELEC3404 Electronic Circuit Design), and (ELEC2601 Microcomputer Systems or ELEC3607 Embedded Computing). **N** ELEC4402	Semester 1
ELEC5614 **Real Time Computing**	6	**A** SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) and ELEC3607 Embedded Computing (or ELEC2601 Microprocessor Systems). **N** ELEC4602	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
ELEC5613 **Image Processing and Computer Vision**	6	**A** SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) or ELEC2602 Digital System Design (or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design) or ELEC3603 Introduction to Computing Systems. **N** ELEC4302	Semester 1
ELEC5615 **Advanced Computer Engineering**	6	**A** ELEC4605 Computer Engineering or ELEC4601 Computer Design. **N** ELEC5611 *Note: Department permission required for enrolment*	Semester 2
ELEC5616 **Computer and Network Security**	6	**A** ELEC3607 Embedded Computing (or ELEC2601 Microprocesor Systems) or ELEC3506 Data Communications and the Internet (or ELEC3504 Data Communications and the Internet) or EBUS3004 E-Business Programming (or EBUS3002 E-Commerce Website Programming). **N** ELEC5611, NETS3016, NETS3916	Semester 1
(vii) Major in Computational Science			
Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents.			
Core Senior units of study			
MATH3076 **Mathematical Computing**	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1001 or 1003 or 1901 or 1903 or 1906 or 1907) **N** MATH3976, MATH3016, MATH3916	Semester 1
COSC3011 **Scientific Computing**	6	**A** Programming experience in MATLAB **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. **N** COSC3911, COSC3001, COSC3901, PHYS3301, PHYS3901	Semester 1
COSC3012 **Parallel Computing & Visualisation**	6	**A** Programming experience in C and MATLAB or equivalent. **P** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. **N** COSC3912, COSC3002, COSC3902, COSC3601, PHYS3303, PHYS3933	Semester 2
Elective Senior units of study			
Students are required to complete 6 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.			
BIOL3027 **Bioinformatics and Genomics**	6	**P** 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **N** BIOL3927 *This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.*	Semester 1
BINF3101 **Bioinformatics Project**	6	**A** 12 credit points from Junior units of study in Software Development (SOFT) and/or Computational Science (COSC) **P** SOFT (2130 or 2830 or 2004 or 2904) and 12 credit points from Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and Genetics and/or Pharmacology **N** COMP3206, BINF3001	Semester 2
MATH3063 **Differential Equations & Biomaths**	6	**A** MATH2061 **P** 12 credit points of Intermediate Mathematics **N** MATH3020, MATH3920, MATH3003, MATH3923, MATH3963	Semester 1
MATH3078 **PDEs and Waves**	6	**A** MATH(2061/2961) and MATH(2065/2965) **P** 12 credit points of Intermediate Mathematics **N** MATH3978, MATH3018, MATH3921	Semester 2
MULT3307 **Interactive Multimedia Systems**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2
STAT3011 **Stochastic Processes and Time Series**	6	**P** STAT (2011 or 2911 or 2001 or 2901) and MATH (1003 or 1903 or 1907). **N** STAT3911, STAT3003, STAT3903, STAT3005, STAT3905	Semester 1
STAT3012 **Applied Linear Methods**	6	**P** STAT(2012 or 2912 or 2004) and MATH(1002 or 1902). **N** STAT3912, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
(viii) Major in Language Technology*			
Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents. * Only available to BIT students.			
Core Junior units of study			
LNGS1001 **Structure of Language**	6	**N** LNGS1004, LNGS1005	Semester 1
SOFT1001 **Software Development 1**	6	**A** HSC Mathematics Extension 1 **N** SOFT1901, COMP1001, COMP1901, DECO2011	Semester 1 Semester 2
SOFT1002 **Software Development 2**	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 **N** SOFT1902, COMP1002, COMP1902 *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 1 Semester 2 Summer Main
MATH1004 **Discrete Mathematics**	3	**A** HSC Mathematics Extension 1 **N** MATH1904, MATH2011	Semester 2 Summer Main
MATH1005 **Statistics**	3	**A** HSC Mathematics **N** MATH1905, MATH1015, ECMT Junior units of study, STAT1021, STAT1022	Semester 2 Summer Main
Core Intermediate units of study			
Students are advised that some Senior electives require additional Intermediate units as prerequisites.			
COMP2160 **Data Structures**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP2111, COMP2811, COMP2002, COMP2902, COMP2860	Semester 1
INFO2110 **Systems Analysis and Modelling**	6	**P** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. **N** INFO (2000 or 2810 or 2900)	Semester 1

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
LNGS2601 **Phonetics and Phonology**	6	**P** LNGS1001 or LNGS1005 or LNGS1004 **N** KRNS2317, KRNS2318, LNGS2001 *This unit is available as a designated 'Advanced' unit for students who are already enrolled in the BA (Advanced) degree program.*	Semester 2
LNGS2602 **Syntax**	6	**P** LNGS1001 or LNGS1005 or LNGS1004 **N** LNGS2002 *This unit is available as a designated 'Advanced' unit for students who are already enrolled in the BA (Advanced) degree program.*	Semester 1
SOFT2130 **Software Construction 1**	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) **N** COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). *Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.*	Semester 2 Summer Main
STAT2011 **Statistical Models**	6	**P** MATH (1001 or 1901 or 1906 or 1011) and [MATH (1005 or 1905 or 1015) or STAT1021] **N** STAT2901, STAT2001, STAT2911	Semester 1
Core Senior units of study			
COMP3308 **Introduction to Artificial Intelligence**	6	**A** Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO1903 or SOFT1002 **P** 18 crpts of 2000-level units. **N** COMP(3002 or 3902 or 3608)	Semester 1
LNGS3601 **Semantics and Pragmatics**	6	**P** One of LNGS2602, LNGS2603 [or LNGS2002, LNGS2003] **N** LNGS3026, LNGS3006 *Compulsory for Honours students; other students may select as an option. This unit is available as a designated 'Advanced' unit for students who are already enrolled in the BA (Advanced) degree program.*	Semester 1
SOFT3301 **Software Construction 2**	6	**P** SOFT(2130 or 2830 or 2004 or 2904) or COMP2004 or COMP2904 **N** SOFT3601, SOFT3104, SOFT3804, COMP3008, COMP3908	Semester 1
Elective units of study			
Students are required to complete 6 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.			
COMP3309 **Algorithms**	6	**P** COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902). **N** COMP(3111 or 3811), COMP(3001 or 3901) or COMP3609	Semester 1
COMP4046 **Statistical Natural Language Processing**	6	**A** Concepts of linguistics, elementary statistics, AI techniques	Semester 1
INFO3404 **Database Systems 2**	6	**P** INFO(2120 or 2820 or 2005 or 2905). **N** INFO (3005 or 3504 or 3905) or COMP (3005 or 3905)	Semester 2
LNGS2603 **Functional Grammar**	6	**P** One of ENGL1000, ENGL1005, ENGL2619, ENGL2647, LNGS1001, LNGS1002, LNGS1003, LNGS1004, LNGS1005, LNGS2601, LNGS2602, LNGS2604, MECO1001, MECO1003 **N** LNGS2003	Semester 1
LNGS2604 **Discourse Analysis**	6	**P** One of ENGL1000, ENGL1005, ENGL2619, ENGL2647, LNGS1001, LNGS1002, LNGS1003, LNGS1004, LNGS1005, LNGS2601, LNGS2602, LNGS2603, MECO1001, MECO1003 **N** LNGS2004	Semester 2
MULT3306 **Multimedia Computing and Processing**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** MULT3019, MULT3919, MULT3004, MULT3904, MULT3606, COMP3004, COMP3904	Semester 1
MULT3307 **Interactive Multimedia Systems**	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **N** SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2
SOFT3302 **Software Quality Assurance**	6	**P** (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))). **N** SOFT(3602 or 3103 or 3803)	Semester 2
STAT3011 **Stochastic Processes and Time Series**	6	**P** STAT (2011 or 2911 or 2001 or 2901) and MATH (1003 or 1903 or 1907). **N** STAT3911, STAT3003, STAT3903, STAT3005, STAT3905	Semester 1

9. Combined degrees

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

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

All students are expected to read the degree resolutions for their course before they commence their studies, and from time to time during their studies. Undergraduate degree resolutions appear in chapter 2. The tables of undergraduate units of study available for each degree and unit descriptions appear in chapter 10.

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

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

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

Code of Conduct for Students
The University has clear expectations of students in respect of academic matters and personal behaviour.

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

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

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

Enrolment day FAQs

What is a 'major'?

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

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

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

How many credit points should I take per semester?

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

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

Do I need to be full-time?

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

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

International students are required to be full-time.

Can I take units of study from other faculties?

It is possible in some combined degrees. There are limits, and exclusions. You should refer to the degree summary sections of this chapter for specific information about your particular degree.

Can I receive credit for previous tertiary study?

Yes. The amount of credit you may receive depends on your individual circumstances, but in general the total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points from degrees that have been completed.

On the day that you enrol you must lodge an application for credit from previous study. Because of the large numbers of applications received at enrolment there can be a considerable delay in processing your application, but all credit offers will be sent to students well in advance of the last day to add a unit of study for the semester in which they enrol.

The Faculty must sight originals of your academic transcripts, as well as detailed descriptions of prior units of study completed, as at the time of completion of the units. Descriptions will normally be an extract from a Handbook or a unit of study syllabus/outline, and should include the credit point value, learning outcomes, assessment details, texts

and references, and contact details for each unit of study. You must bring this information with on the day that you enrol.

On enrolment day you will have to make unit of study choices as if you have had no previous university of study. Alternatively, you may be able to obtain special permission to enrol in Intermediate or Senior units of study by taking a copy of your transcript and unit of study descriptions to Academic advisers for each individual unit of study. Unit of study Academic advisers are listed under unit of study descriptions in this Handbook.

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

Are there any bridging courses available?

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

Who can enrol in Advanced units of study?

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

Consult a departmental adviser about your eligibility to enrol in Advanced level subjects in the first year of study. You must obtain special permission to enrol in any Advanced unit of study except Software. For Software Advanced units of study, you must meet the criteria listed on the permission form for Advanced units of study. The departmental advisers have copies of the permission form for Advanced units of study. Students should also consult the unit of study Tables for assumed and prerequisite marks in the HSC required to enrol in Advanced units of study.

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

What is the Talented Student Program?

The Talented Student Program (TSP) is tailored to meet students' individual needs and is restricted to the very top students.

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

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

Am I eligible for the Talented Student Program?

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

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

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

Degree Code SH115

Summary of requirements
The requirements for the degrees are set out in the Senate and Faculty Resolutions (see Faculty of Health Sciences 2007 handbook) which should be read by all intending candidates. A student may proceed concurrently to the degrees of Bachelor of Applied Science (Exercise and Sport Science) and Bachelor of Science (Nutrition).

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

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

Units of study
Units of study are listed in Table IF; unit prerequisites are listed in Table I and Table IF, and in Table 9.2 of Faculty Resolutions for the degree of BAppSc (Exercise and Sport Science), Faculty of Health Sciences. Unit descriptions are found in chapter 10.

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

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

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

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

Universities Admission Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See chapter 2.

Sample Bachelor of Applied Science (Exercise and Sports Science)/ Bachelor of Science (Nutrition)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	CHEM1101/1108	BACH1161	BIOS1159	EXSS1018			
		6	6	6	6			24
	2	CHEM1102/1109	MBLG1001	BIOS1133	BIOS1160	EXSS1033		
		6	6	3	6	3		24
Year 2	1	MBLG2071	NUTR2911	BIOS2098	EXSS2019	MATH1015		
		6	6	3	6	3		24
	2	BCHM2072	NUTR2912	EXSS1029	EXSS2022			
		6	6	6	6			24
Year 3	1	MATH1011	EXSS2016	EXSS2018	EXSS3023	EXSS3024		
		3	3	6	6	6		24
	2	STAT2012	EXSS2025	EXSS2026	EXSS3027			
		6	6	6	6			24
Year 4	1	NUTR3911	NUTR3921	EXSS3037	EXSS3042			
		6	6	6	6			24
	2	NUTR3912	NUTR3922	BCHM3072	BCHM3082			
		6	6	6	6			24
Require: 192cp total, min. 90cp Science, min. 102cp Exercise and Sport Science								

Table 1F: Bachelor of Science (Nutrition)

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
The Bachelor of Science (Nutrition) is a 4 year Honours degree. To complete the degree, a candidate must gain Credit for at least 192 credit points including the Honours course in either Nutrition and Dietetics, or Nutrition.			
A. Junior units of study			
Candidates are required to enrol in and complete:			
(i) BIOL(1001 or 1101 or 1901) and BIOL(1002 or 1902 or 1003 or 1903);			
(ii) 12 credit points of Junior Chemistry;			
(iii) 12 credit points of Junior units of study from the Science Subject Area of Mathematics;			
(iv) 6 credit points of other Junior units of study from the Science Subject Areas of Computer Science, Physics or Psychology; and			
(v) MBLG1001.			
B. Intermediate units of study			
In order to proceed to the Intermediate year, candidates for the BSc (Nutrition) must achieve a WAM of 60 in their Junior year. Candidates who fail to maintain the required average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Nutrition) candidates. Candidates who fail to achieve the required average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.			
In the Intermediate year candidates are required to enrol in and complete:			
(i) NUTR2911 and NUTR2912;			
(ii) MBLG 2071 or 2971);			
(iii) BCHM(2072 or 2972);			
(iv) PHSI2005 and PHSI2006; and			
(v) MICR2021 and MICR2022 or at least 12 credit points of Intermediate units of study (6 credit points each semester) from the Science Subject Areas of Chemistry or Pharmacology.			
NUTR2911 **Food Science Introductory (Advanced)**	6	**P** MBLG1001 and CHEM (1001 or 1101 or 1901 or 1903 or 1909) and CHEM (1002 or 1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1003 or 1902 or 1903). For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree completion of all Junior units in the table of units for this course. **N** NUTR2901	Semester 1
NUTR2912 **Nutritional Science Introductory (Adv)**	6	**A** NUTR2911 **P** MBLG1001 and CHEM (1001 or 1101 or 1901 or 1903 or 1909) and CHEM (1002 or 1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1003 or 1902 or 1903). For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree completion of all Junior units in the table of units for this course. **N** NUTR2902	Semester 2
C. Senior units of study			
In order to proceed to the Senior year, candidates for the BSc (Nutrition) must achieve a WAM of 65 in their Intermediate year. Candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Nutrition) candidates.			
In the Senior year candidates are required to enrol in and complete:			
(i) NUTR3911, 3921, 3912 and 3922;			
(ii) BCHM(3082 or 3982) and BCHM(3072 or 3972); and			
(iii) AGCH(3025 and 3026) or 12 credit points from the following Senior units of study: BCHM(3071 or 3971), BCHM(3081 or 3981), MICR(3001 or 3901), VIRO(3001 or 3901), NEUR(3001 or 3901), NEUR(3002 or 3902).			

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
NUTR3911 **Nutritional Assessment Methods**	6	**P** NUTR2911 and NUTR2912 **N** NUTR3901	Semester 1
NUTR3921 **Methods in Nutrition Practice**	6	**P** NUTR2911 and NUTR2912 **N** NUTR3901	Semester 1
NUTR3912 **Community and Public Health Nutrition**	6	**P** NUTR2911 and NUTR2912 **N** NUTR3902	Semester 2
NUTR3922 **Nutrition and Chronic Disease**	6	**P** NUTR2911 and NUTR2912 **N** NUTR3902	Semester 2

D. Honours units of study

In order to proceed to the Honours year, candidates must achieve a WAM of at least Credit (65), and results of at least Credit (65) in all of NUTR 3911, 3921, 3912 and 3922.

Candidates who fail to achieve the required results across the Senior units of study will be transferred to candidature for the Bachelor of Science degree, and if they have otherwise completed the requirements for the BSc Pass degree, will be awarded the Bachelor of Science with a major in Nutrition.

Candidates enrol in and complete either:

(i) Bachelor of Science (Nutrition) Nutrition and Dietetics Honours: NUTR4001 and NUTR4002 and NUTR4999; OR

(ii) Bachelor of Science (Nutrition) Nutrition Honours: NUTR4101, NUTR4102, NUTR4103 and NUTR4104.

E. Combined degree program: Bachelor of Applied Science (Exercise and Sport Science)/Bachelor of Science (Nutrition)

Candidates must complete over 10 semesters the following units of study. In order to proceed from Year 1 to Year 2 of the program candidates must achieve a year WAM of at least 60. In order to proceed to the following years of the program a candidate must achieve at least 65 in each of NUTR 2911, NUTR 2912, NUTR 3911, NUTR 3921, NUTR 3912 and NUTR 3922, and a year WAM of at least 65 in Years 2 - 4. Candidates who fail to maintain these results in any year will be transferred to either the BSc(LH000), the BAppSc(ExSpSc)(SH088) or the BAppSc(ExSpSc&Nutr)(SH115).

For information on units from the BAppSc (ExSpSc), please refer to the Handbook of the Faculty of Health Sciences.

Year 1

Candidates are required to enrol in and complete in their first year:

(i) 12 credit points of Junior Chemistry;

(ii) BACH1161;

(ii) BIOS1159, 1133 and 1160;

(iii) EXSS1018 and 1033; and

(v) MBLG1001.

Year 2

Candidates are required to enrol in and complete in their second year:

(i) BCHM2072 andBIOS 2098;

(ii) EXSS2019, 1029 and 2022;

(iii) MATH1015 and MBLG2071; and

(iv) NUTR2911 and NUTR2912.

Year 3

Candidates are required to enrol in and complete in their third year:

(i) EXSS(2016, 2018, 3023, 3024, 2025, 2026 and 3027);

(ii) MATH1011 and STAT2012.

MATH1011 **Life Sciences Calculus**	3	**A** HSC Mathematics **N** MATH1111, MATH1001, MATH1901, MATH1906	Semester 1 Summer Main
STAT2012 **Statistical Tests**	6	**A** STAT (2011 or 2002) **P** MATH (1005 or 1905 or 1015) **N** STAT2004, STAT2912	Semester 2

Year 4

Candidates are required to enrol in and complete in their fourth year:

(i) NUTR3911, NUTR3921, NUTR3912 and NUTR3922;

(ii) EXSS3037 and EXSS3042;

(iii) BCHM3082 and BCHM3072.

Students can exit here with BAppSc(Exercise, Sports Science and Nutrition).

Year 5 (First offered in 2008)

Honours units of study

Candidates intending to graduate with Honours in Nutrition and Dietetics are required to enrol in and complete in their fifth year:

(i)NUTR4001 and NUTR4002 and NUTR4999

Candidates intending to graduate with Honours in Nutrition are required to enrol in and complete in their fifth year:

(i) NUTR4101 and NUTR4102 and NUTR4103 and NUTR4104.

Combined Science/Law degrees (BSc/LLB)

Degree Code: LH006

Summary of requirements
The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

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

Enrolment guide
In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics;
- LAWS1006, LAWS1010 and LAWS1008.

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

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

The order in which Law units of study are taken is specified in the Resolutions of the Senate and Faculty for the Bachelor of Laws.

For commencing **2007** students, Law units of study are taken in the following sequence:

- in the first year of attendance the student will take LAWS1006, LAWS1013 and LAWS1012;
- in the second year of attendance the student will take LAWS1014, LAWS1015 and LAWS1016 and
- in the third year of attendance the student will take LAWSXXXX Torts and Contracts II and LAWSXXXX International Law and LAWSXXXX the Legal Profession (unit of study codes yet to be determined).

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

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

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

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

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

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH1XXX	MATH1XXX	Science elective A 1XXX	Science elective B 1XXX	LAWS1006		
		3	3	6	6	6		24
	2	MATH1XXX	MATH1XXX	Science elective A 1XXX	Science elective B 1XXX	LAWS1010	LAWS1008	
		3	3	6	6	6	0	24
Year 2	1	Major Intermediate 2XXX	Intermediate Science elective 2XXX	LAWS2008	Science elective			
		6	6	6	6			24
	2	Major Intermediate 2XXX	Intermediate Science elective 2XXX	LAWS2009	Science elective			
		6	6	6	6			24
Year 3	1	Major 3XXX	Major 3XXX	LAWS3000	Science elective			
		6	6	XX	6			XX
	2	Major 3XXX	Major 3XXX	LAWS3002				
		6	6	XX				XX
							Total credit points:	144
Require: 144cp total, min. 96cp Science, min 36cp Junior Science incl. 12cp Maths, min. 60cp Intermediate & Senior Science, one major. Law units as per Table II.								

Plans of study
When choosing units of study at any stage of your University career, please consider your overall degree program. See the sample degree program below and the Bachelor of Science entry for information about each major and recommended first year combinations of units of study. A degree planner is inside the back cover.

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

Honours
For students interested in graduating with honours:
1. Students in the combined Law course who wish to take an honours program in Science may elect to spend an additional year in Science after the 3rd year of the Combined course. The Faculty of Law generally permits only 1 year of suspension of candidature from the Bachelor of Laws degree (including the combined degree (including the combined Law degree). It may be possible for students to defer an honours year in Science until after the completion of the entire combined course.
2. There is no separate Honours year for the degree of Bachelor of Laws. Graduation with honours in Law is based on weighted average marks (including failures) and requires a high standard of performance in all units of study for the LLB degree, including units of study taken during the 1st three years of the combined course while the student is completing the Science segment of the course.

Discontinuation
To discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation are on page two of this handbook.

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

Universities Admissions Index (UAI)
The minimum UAI for course admission varies from year to year.

Degree resolutions: See chapter 2

Table II: Law units of study

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
LAWS1006 **Foundations of Law**	6	**N** LAWS1000 *Available to Combined Law candidates only.*	Semester 1
LAWS1010 **Torts**	6	**P** LAWS1006 **N** LAWS3001, LAWS1012, LAWS1005 *Note: Department permission required for enrolment* *Available to Combined Law candidates who commenced prior to 2006 and are progressing under the old LLB resolutions.*	Semester 2
LAWS1012 **Torts**	6	**P** LAWS1006 **N** LAWS1005, LAWS1010, LAWS3001 *Available to Combined Law candidates who commence in 2007.*	Semester 2
LAWS1013 **Legal Research I**		**C** LAWS1006 **N** LAWS1008 *Available to Combined Law candidates only in 2007.*	Semester 1
LAWS1014 **Processes of Justice**	6	**P** LAWS1006 **C** LAWS1006 (for transfer students only) **N** LAWS1007, LAWS3002, LAWS3004, LAWS1001 *Available to Combined Law candidates who commenced in 2006 or 2007 and are progressing under the new LLB resolutions.*	Semester 1
LAWS1015 **Contracts**	6	**P** LAWS1006 **N** LAWS1002, LAWS2000, LAWS2008 *Available to Combined Law candidates who commenced in 2006 or 2007 and are progressing under the new LLB resolutions.*	Semester 1
LAWS1016 **Criminal Law**	6	**N** LAWS1003, LAWS2001, LAWS2009 *Available to Combined Law candidates who commenced in 2006 or 2007 and are progressing under the new LLB resolutions.*	Semester 2
LAWS2008 **Contracts**	6	**P** LAWS1006 **N** LAWS1002, LAWS1015 *Note: Department permission required for enrolment in the following sessions: Semester 1* *Available to Combined Law candidates who commenced prior to 2006 and are progressing under the old LLB resolutions.*	Semester 1 Summer Dec
LAWS2009 **Criminal Law**	6	**P** LAWS1006 **N** LAWS1003, LAWS1016 *Note: Department permission required for enrolment* *Available only to Combined Law candidates who commenced prior to 2006 and are progressing under the old LLB resolutions.*	Semester 2
LAWS3000 **Federal Constitutional Law**	10	**P** LAWS1006 **N** LAWS3003 *Note: Department permission required for enrolment* *Available to Combined Law candidates only.*	Semester 1
LAWS3002 **Law, Lawyers and Justice**	10	**P** LAWS1006 **N** LAWS3004, LAWS1007, LAWS1001 *Note: Department permission required for enrolment* *Available to Combined Law candidates proceeding under the old resolutions.*	Semester 2
Note: The Faculty of Law is undertaking a curriculum review, anticipated to be completed in 2007. Combined law students are expected to complete 48 credit points of Law units in the first 3 years of the combined degree. Third year combined law students who are not able to accumulate 48 cps of Law units using the unit of study codes in this table must contact the Faculty of Law for alternative unit of study codes for Federal Constitutional Law and Law, Lawyers and Justice.			

Combined Science/Arts degree

See also Summary of Requirements of the BSc.

Degree code LH011 Science/Arts

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

Students who enrolled in DH018 Bachelor of Arts/Science should be aware that the degree is now administered by the Faculty of Science.

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

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

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

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

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

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

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

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

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

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

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

Honours
Students who are qualified to do so may undertake honours courses in either or both degrees or a joint honours course at the completion of the combined degrees. Please refer to "Honours in the Faculty of Science" in this chapter, and to Table VI: Honours units of study in chapter 12.

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

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See chapter 2.

Sample Bachelor of Science/Bachelor of Arts

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH1XXX	MATH1XXX	Science elective A 1XXX	Science elective B 1XXX	Arts elective 1XXX		
		3	3	6	6	6		24
	2	MATH1XXX	MATH1XXX	Science elective A 1XXX	Science elective B 1XXX	Arts elective 1XXX		
		3	3	6	6	6		24
Year 2	1	Science major Intermediate 2XXX	Intermediate Science elective 2XXX	Intermediate Science elective 2XXX	Arts elective 1XXX			
		6	6	6	6			24
	2	Science major Intermediate 2XXX	Intermediate Science elective 2XXX	Intermediate Science elective 2XXX	Arts elective 1XXX			
		6	6	6	6			24
Year 3	1	Science major 3XXX	Science major 3XXX	Elective	Arts elective 1XXX			
		6	6	6	6			24
	2	Science major 3XXX	Science major 3XXX	Elective	Arts elective 1XXX			
		6	6	6	6			24
Year 4	1	Elective	Arts Senior elective	Arts Senior elective	Arts major Senior elective			
		6	6	6	6			24
	2	Int/Senior elective	Arts Senior elective	Arts Senior elective	Arts major Senior elective			
		6	6	6	6			24
Year 5	1	Arts Senior elective	Arts Senior elective	Arts major Senior elective	Arts major Senior elective			
		6	6	6	6			24
	2	Elective	Arts Senior elective	Arts major Senior elective	Arts major Senior elective			
		6	6	6	6			24
							Total credit points:	240
Require: 240cp total, max 96cp Junior, min. 96cp Science, min 36cp Junior Science incl. 12cp Maths, one Science major, min 72cp Senior Arts including one Arts major.								

Combined Engineering/Science degrees

See also Summary of Requirements of the BSc.

Degree Code HH015

Summary of requirements
The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

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

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

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

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

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

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

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

Units of study
The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions appear in chapter 10. The Engineering units of study available for this degree are set out in tables in the Faculty of Engineering handbook.

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

refer to "Honours in the Faculty of Science" in this chapter, and to Table VI: Honours units of study in chapter 3.

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

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See chapter 2.

Double degree in Science/Engineering

Degree Code LH000

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

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

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

Enrolment guide

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

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

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

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

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

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

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

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

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

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

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

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

Degree resolutions
See chapter 2.

Combined Science/Commerce degrees

See also Summary of Requirements of the BSc.

Degree Code: LH014

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

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

Enrolment guide
In your Junior year you should complete:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See chapter 2.

Sample Bachelor of Science/Bachelor of Commerce

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	Commerce Junior core 1XXX		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	Commerce Junior core 1XXX		
		3	3	6	6	6		24
Year 2	1	Science major Intermediate 2XXX	Intermediate Science elective 2XXX	Intermediate Science elective 2XXX	Commerce Junior core 1XXX			
		6	6	6	6			24
	2	Science major Intermediate 2XXX	Intermediate Science elective 2XXX	Intermediate Science elective 2XXX	Commerce Junior core 1XXX			
		6	6	6	6			24
Year 3	1	Science major 3XXX	Science major 3XXX	Commerce/ Science elective	Commerce Junior core 1XXX			
		6	6	6	6			24
	2	Science major 3XXX	Science major 3XXX	Commerce/ Science elective	Commerce Junior core 1XXX			
		6	6	6	6			24
Year 4	1	Elective	Commerce Senior elective	Commerce Senior elective	Commerce major Senior elective			
		6	6	6	6			24
	2	Elective	Commerce Senior elective	Commerce Senior elective	Commerce major Senior elective			
		6	6	6	6			24
Year 5	1	Int/Senior elective	Commerce Senior elective	Commerce major Senior elective	Commerce major Senior elective			
		6	6	6	6			24
	2	Int/Senior elective	Commerce Senior elective	Commerce major Senior elective	Commerce major Senior elective			
		6	6	6	6			24
							Total credit points:	240
Require: 240cp total, max. 100cp Junior, min. 96cp Science, min. 36cp Junior Science incl. 12cp Maths, one Science major, min. 96cp Commerce, max. 48cp Junior Commerce units, either a Commerce major (32cp) or a Commerce double major (48cp).								

Combined Nursing/Science degrees

See also Summary of Requirements of the BSc.

Degree code GN010

Summary of requirements
The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

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

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

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

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

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

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

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

You should note that you must maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or

greater in each year of enrolment, or be transferred to the Bachelor of Science.

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

Units of study
The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 10. Unit descriptions follow the tables. The Nursing units of study available for this degree are set out in the Faculty of Nursing handbook.

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

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

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See the 2006 Faculty of Science Handbook.

Combined Education/Science degrees

See also Summary of Requirements of the BSc.

Summary of requirements
The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Please note that there is no new intake in the BEd/BSc(Psychology) degree in 2006.

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

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

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

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

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

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

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

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

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

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

BEd (Secondary)/BSc (Psychology)
There is no new intake for this degree in 2007

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

Year I

- Junior units of study in Education, as specified in the table of units of study, total of 12 credit points; and
- Specified Junior units of study in Psychology, 12 credit points; and

- Junior units of study in Science, 24 credit points, of which 12 credit points must be in Mathematics and 12 in Chemistry

Year II

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

Year III

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

Year IV

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

Year V

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

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

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

Units of study
The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions appear in chapter 10. The Education units of study available for this degree are set out in the Faculty of Education handbook.

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

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

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See chapter 2.

Bachelor of Liberal Studies (BLibStud)

Degree Code: AH010

Note that this degree is administered by the Faculty of Arts

Summary of requirements
In the Bachelor of Liberal Studies students will undertake a broad liberal education which emphasises communication and problem-solving skills. The degree is available in two streams - the Bachelor of Liberal Studies and the Bachelor of Liberal Studies (International).

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

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

- at least 120 Intermediate or Senior credit points;
- at least one Arts major and one Science major;
- at least 30 credit points, including 18 Intermediate or Senior credit points, from units of study in one language subject area other than English from Part A of the Tables of units of study for the degree of Bachelor of Arts;
- a 6 credit point unit of study in communication and analytical skills or in other academic skills as may be prescribed from time to time (currently ENGL1000, ENGL1007 and LNGS1001); and
- a minimum of 6 credit points from units of study in Mathematics and Statistics.

B Liberal Studies (International)
Degree Code: AH030
The requirements for this stream of the degree are the same as those for the BLibStud except that a minimum of 24 credit points (one semester equivalent) of study must be completed at an overseas university while enrolled as an exchange student as part of The University of Sydney Exchange Program. The Exchange Program is usually undertaken in the second or third year of enrolment, and students will comply with the rules of, and be under the administration of, the Exchange Program during the period of exchange. To qualify for participation in the Exchange Program a student must have completed at least 48 credit points towards the BLibStud and have an average mark of 75 or greater over all units of study completed.

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

Under the Exchange program a student's academic fees are covered by normal HECs arrangements based on their enrolment at The University of Sydney. However, students are responsible for their own travel and living expenses during the Exchange Program. The Faculties of Arts and Science will provide a number of travel grants each year on a competitive basis, which assist towards students' travel costs, and students are also eligible to apply for the scholarships and bursaries provided by the University as part of the Exchange Program. Candidates who fail to maintain the required credit average will be transferred to candidature for the Bachelor of Liberal Studies degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Liberal Studies (Advanced) candidates. Candidates who fail to achieve a credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Liberal Studies.

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

Units of study
The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions are contained in chapter 10. The Arts units of study available for this degree are set out in Part A of the table of undergraduate units of study in the Faculty of Arts handbook. You may also wish to refer to the handbooks of other faculties as the degree resolutions allow.

Honours
There will be honours courses in most Arts and Science subject areas. To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in Part A of the Table of undergraduate units of study for the Bachelor of Arts or in Table VI: Honours units of study. You may also wish to refer to 'Honours in the Faculty of Science' in this chapter, and Table VI: Honours units of study in chapter 12.

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

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

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

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

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

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

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

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission to the course varies from year to year.

Degree Resolutions
See chapter 2.

Sample degree table appears next page

Sample Bachelor of Liberal Studies

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	Science Junior elective A	Arts/Science Junior elective B	Language Junior elective	Maths or ENGL1000/1007 or LNGS1001			
		6	6	6	6			24
	2	Science Junior elective A	Arts/Science Junior elective B	Language Junior elective	Maths or ENGL1000/1007 or LNGS1001			
		6	6	6	6			24
Year 2	1	Science major Intermediate elective	Arts/Science Junior elective	Language Intermediate elective	Intermediate/Senior elective			
		6	6	6	6			24
	2	Science major Intermediate elective	Arts/Science Junior elective	Language Intermediate elective	Language Intermediate/Senior elective			
		6	6	6	6			24
Year 3	1	Science major Senior elective	Science major Senior elective	Arts major Senior elective	Intermediate/Senior elective			
		6	6	6	6			24
	2	Science major Senior elective	Science major Senior elective	Arts major Senior elective	Intermediate/Senior elective			
		6	6	6	6			24
Year 4	1	Arts/Science Intermediate/Senior elective	Intermediate/Senior elective	Arts major Senior elective	Arts major Senior elective			
		6	6	6	6			24
	2	Arts/Science Intermediate/Senior elective	Intermediate/Senior elective	Arts major Senior elective	Arts major Senior elective			
		6	6	6	6			24
							Total credit points:	192
Require: 192cp total, min. 120cp Intermediate and/or Senior, one Arts major and one Science major, min. 30cp non-English language incl. min. 18cp Intermediate and/or Senior, min. 6cp Mathematics and Statistics, 6cp communication skills.								

Combined Engineering/Medical Science degrees

Degree Code HH021

Summary of requirements
The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 2) which should be read by all intending candidates.

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

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

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

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

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

Units of study
The Science units of study available for this degree are set out in Table IV: Bachelor of Medical Science in chapter 3. Unit descriptions follow the tables. The Engineering units of study available for this degree are set out in the Faculty of Engineering handbook.
by the Faculty of Science from 2004.

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

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

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

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

Universities Admissions Index (UAI)
The minimum UAI for admission into the course varies from year to year.

Degree resolutions
See chapter 2.

10. Undergraduate units of study

Unit of study descriptions

This chapter provides information on each of the undergraduate units of study offered by the Faculty of Science, as well as additional information on each of the teaching Schools and Departments and interdiciplinary subject areas.

Organisation of unit of study information

The units of study are generally organised alphabetically by School of Departments. EMHU and HSTO units can be found under the entry for anatomy and Histology. NEUR can be found in the Anatomy or Physiology entries, depending on the principle teaching department for the individual unit. COMP, INFO, ISYS, NETS, MULT AND SOFT can be found under the Information Technologies entry.NTMP can be found under the Marine Science entry.STAT can be found under the Matehematics and Statistics entry. VIRO can be found under the Microbiology entry.

Aerospace, Mechanical and Mechatronic Engineering

The School of Aerospace, Mechanical and Mechatronic Engineering is part of the Faculty of Engineering. In addition to providing professional training in aerospace, mechanical, biomedical and mechatronic engineering, units of study in the School are available to students in the Faculty of Science who meet any prerequisite requirements for a particular unit.

Registration

Timetable information on alternative lecture/tutorial/laboratory/practical classes is available in the General Office of the School.

Tutorials and laboratories

All students are required to undertake the tutorial and laboratory work associated with the chosen units of study, details of which are provided in the timetables. The experimental and tutorial work, an integral part of the unit of study, complements the lecture material.

Double degree

Science graduates may obtain up to two years advanced standing towards a Bachelor of Engineering degree in Aerospace, Mechanical, Mechatronic or Biomedical Engineering. Students wishing to undertake this option must apply through UAC and compete on the basis of academic merit. Information about application procedures is available from the Engineering Faculty Office in the Engineering Faculty Building.

Agricultural Chemistry and Soil Science

Study in the discipline of Agricultural Chemistry is offered by the Faculty of Agriculture, Food and Natural Resources. Units of study in Agricultural Chemistry for Science students cover aspects of chemistry and biochemistry which are relevant in basic and applied biological sciences including agriculture, the environment and food science. The unit of study, Introductory Rural Environmental Chemistry (AGCH2003) introduces students to basic analytical and environmental chemistry. Senior units of study include Chemistry and Biochemistry of Foods A and B (AGCH3025 & AGCH3026), and Rural Environmental Chemistry A and B (AGCH3030 & AGCH3031). These Senior units of study introduce students to the applied aspects of food chemistry science or to applied environmental chemistry. Emphasis is placed on the chemistry of both naturally occurring molecules of biological, agricultural and environmental significance (eg. in foods and natural fibres), and chemically synthesised (eg. insecticides and herbicides).

Agricultural Chemistry Honours is available to students who wish to further their studies in food chemistry or environmental chemistry.

AGCH2003
Rural Environmental Chemistry (Intro)

Credit points: 6 **Teacher/Coordinator:** Dr Robert Caldwell **Session:** Semester 1 **Classes:** 3 lec/week and 33 hours of lab/semester **Prerequisites:** 12 credit points of Junior Chemistry **Prohibitions:** AGCH2001, AGCH2002, CHEM2404 **Assessment:** One 2 hr exam, prac & quizzes **Practical field work:** 38 hr prac in semester

This introductory unit of study consists of aspects of chemistry relevant in studies of basic and applied biological sciences including agriculture, food and the rural environment. Lecture topics include an introduction to quantitative aspects of biophysical, environmental and aquatic chemistry with particular reference to protocols for specimen sampling and maintenance of specimen quality; the principles of basic analytical methods such as spectroscopy, chromatography and electrochemistry; environmental aspects of water such as thermal properties and its behaviour as a solvent of hydrophobic solutes, surfactants, neutral hydrophilic solutes, salts and other electrolytes, and gases. The lectures will also include environmental nutrient cycling (C, N, S, O, P, micronutrients) with reference to pesticides, herbicides, organic and inorganic pollutants affecting agricultural produce and the environment, and gases of environmental concern. Eleven laboratory sessions will demonstrate aspects of analytical chemistry including: elemental analysis of foods and natural waters, spectrophotometry, chromatographic techniques, preparation of buffers, fundamentals of pH and conductance measurement, water as a solvent including the effect of surfactants and electrolytes. Students will analyse natural water samples using the skills acquired in earlier laboratory and write an environmental assessment from their findings. The introductory laboratory session for the unit will include a tutorial on safety procedures in a chemistry laboratory.

AGCH3024
Chemistry and Biochemistry of Foods

Credit points: 6 **Teacher/Coordinator:** Dr Robert Caldwell **Session:** Semester 1 **Classes:** 3 lec/wk and 8 x 3 hr pracs **Prerequisites:** 12 credit points of Intermediate units from Molecular Biology and Genetics, Biochemistry or Chemistry **Prohibitions:** AGCH3016, AGCH3017, AGCH3025 **Assessment:** One 2hr exam (50%), assignments (20%), laboratory (30%)

Note: Department permission required for enrolment .

This unit of study aims to give students an understanding of the constituents of foods and fibres. The lecture topics cover: the chemistry, biochemistry and processing behaviour of major food constituents - oligosaccharides, polysaccharides, lipids and proteins; the relationship between molecular structure of constituents and their functionality in foods; natural fibres and gel-forming biopolymers - uses in foods, importance in dietary fibre and commercial products; enzymes in foods and food processing; wheat flour dough and protein chemistry during baking and cooking; flavour chemistry and the chemistry and biochemistry of anti-nutritional and toxic constituents of plants and foods. The practical exercises in this unit of study will focus on the characterisation of food hydrocolloids in terms of particle size distribution, molecular weight distribution, and molecular structure. Students should emerge with a good understanding of the fundamental basis of hydrocolloid characterisation, some familiarity with a broad range of commonly used techniques, and good skills in assessment and processing of experimental data.

AGCH3025
Chemistry and Biochemistry of Foods A

Credit points: 6 **Teacher/Coordinator:** Dr Robert Caldwell **Session:** Semester 1 **Classes:** 3 lec/wk, 8 x 3 hr prac per semester **Prerequisites:** 6 credit points of Intermediate units in Agricultural Chemistry, Chemistry or Biochemistry **Prohibitions:** AGCH3017, AGCH3024 **Assessment:** One 2 hr theory exam, one 1 hr theory of prac exam, assignment and prac reports

This unit of study aims to give students an understanding of the constituents of foods and fibres. The lecture topics cover the chemistry, biochemistry and processing behaviour of major food constituents - oligosaccharides, polysaccharides, lipids and proteins; the relationship between molecular structure of constituents and their functionality in foods; natural fibres and gel-forming biopolymers - uses in foods, importance in dietary fibre and commercial products; enzymes in foods and food processing; wheat flour dough and protein chemistry during baking and cooking; anti-nutritional and toxic constituents of plants and foods; and flavour chemistry. The laboratory exercises aim to give students an understanding of the methods used in the analysis of foods and other biological materials, and will include analysis of carbohydrates including starch and dietary fibre; spectroscopic, enzymic, and chromatographic methods.

AGCH3026
Chemistry and Biochemistry of Foods B

Credit points: 6 **Teacher/Coordinator:** Dr Robert Caldwell **Session:** Semester 1 **Classes:** 2 hr lec/seminar/workshop/wk; 24 hrs of prac/semester; site visits **Prerequisites:** 6 credit points of Intermediate Chemistry, Biochemistry or Agricultural Chemistry **Corequisites:** AGCH3025 **Prohibitions:** AGCH3003, AGCH3005, AGCH4006 **Assessment:** Five written assignments, one 1 hr theory of prac exam, prac reports and poster presentation

This unit of study aims to give students an understanding of global food systems and global food security. In the lecture/seminar/workshop component, topics covered will include the sustainable production of major food crops; the role of genetically modified crops in food sustainability and quality; principles and methods in food quality control and assessment; chemical and biochemical aspects of food quality in relation to food processing and nutritional values. The laboratory exercises aim to give students an understanding of the methods used in the analysis of foods and other biological materials, and will include analysis and examination of protein functionality in foods; spectroscopic, enzymic, and chromatographic methods.

AGCH3030
Rural Environmental Chemistry A

Credit points: 6 **Teacher/Coordinator:** Prof Ivan Kennedy (Coordinator) **Session:** Semester 1 **Classes:** 6 day field trip in orientation week, 21 hr lec & 25 hr prac **Prerequisites:** 6 credit points of either Intermediate Agricultural Chemistry, Chemistry, Biochemistry, Plant Science or Environmental Science **Prohibitions:** AGCH3020, AGCH3021, AGCH3022 **Assessment:** One 2 hr exam, field trip and laboratory reports

This unit commences with a field trip to the Namoi and the Macquarie Valleys, where agriculture largely based on irrigation has been developed. Environmental impacts on vegetation, soil and water of agricultural enterprises such as cotton farming and human settlement will be assessed in a professional field trip report. Field observations on pH, nutrient and salt content, pesticide, and microbial content will be made on water, sediment, soils and in constructed wetlands, with samples returned for more detailed laboratory analysis at the University. Lectures will complement the field trip, including environmental chemistry of heavy metals, their effects on organisms; mechanisms of tolerance and phytoremediation; risk assessment of pesticides including herbicides, their mode of action and environmental fate; analysis and monitoring of pesticide residues by GC, GC-MS and immunoassay (ELISA); maximum residue limits (MRLS) and residue surveys; remediation of pesticides in ecosystems; design of new pesticides and means of pest control. Laboratory sessions will be related to these lecture topics, including 6-7 sessions on atomic absorption analysis for nutrients and heavy metals, mercury analysis, pesticide analysis by GLC, HPLC, MS and ELISA.

AGCH3031
Rural Environmental Chemistry B

Credit points: 6 **Teacher/Coordinator:** Prof Ivan Kennedy (Coordinator) **Session:** Semester 2 **Classes:** 5-day field trip in AVCC common break; 21 hr lec and 30 hr prac and project/semester **Prerequisites:** 6 credit points of either Intermediate Agricultural Chemistry, Chemistry, Biochemistry, Plant Science or Environmental Science **Prohibitions:** AGCH3020, AGCH3021, AGCH3022 **Assessment:** One 2 hr exam, field-trip report and laboratory reports

This field-oriented course will (i) provide understanding of chemical and biochemical processes in rural ecosystems and their sustainability, with particular reference to global warming, (ii) include a field trip and professional report to illustrate relevant case studies at several centres in eastern Australia (Canberra, Snowy Mountains, Murray and Murrumbidgee catchments) specialising in research related to global warming, acidification and water quality including salinisation (iii) conduct laboratory sessions and group research project to study a problem in a professional setting. Practical solutions will be sought by students, based on a field theory of action in ecosystems. Lectures will cover the environmental carbon, nitrogen and sulphur cycles, including bioenergetics of autotrophic and heterotrophic action; photosynthesis; nitrification and denitrification; biological nitrogen fixation; sulphur metabolism; production of greenhouse gases; pH balancing and efficient nutrient uptake; acidification of ecosystems and effects on plants and animals; remediation and control of greenhouse emissions; bioremediation of acidification and salinisation. The laboratory sessions and the group project will illustrate these environmental processes, including greenhouse gas production, methane and NOx, photosynthesis and nitrogen fixation, and monitoring of endocrine-disrupting compounds including pesticides using GLC, HPLC and ELISA.

Agricultural Chemistry Honours

Honours in Agricultural Chemistry aims to: provide students with problem-solving and communication skills required by professional chemists in enterprises concerned with agricultural production and processing, foods and beverages, and environmental science; enable students to learn to work independently in a laboratory environment; familiarise students with the research literature and methodology of biological chemistry; and provide a basis for students who wish to proceed to postgraduate research.Candidates should consult the Department as soon as possible after results in Senior units of study are obtained. The unit of study consists of a research project and four 6 credit point units of study. The research project component includes oral as well as written forms of assessment. Projects are usually available in one of the following areas of current research interest in the Department: carbohydrate and nitrogen metabolism in plants, biological nitrogen fixation and biofertilisers, greenhouse gas production, the biochemistry and environmental chemistry of pesticides and herbicides, environmental risk assessment, acidification of ecosystems, residue analysis in foods, aspects of food science including oil seed and cereal chemistry and biochemistry

Soil Science

The Soil Science units of study aim primarily at giving students an introduction to the three major branches of soil science, namely soil physics, soil chemistry, and pedology, and at providing the basis for a professional career in each of these divisions for students wishing to specialise.The introductory unit of study is particularly relevant for students interested in the environmental and geological sciences and in land-use management.

SOIL2003
Soil Properties and Processes

Credit points: 6 **Teacher/Coordinator:** Dr Cattle, Prof McBratney, Dr Singh **Session:** Semester 1 **Classes:** (3 lec & 3hr prac)/wk **Assessment:** One 2hr theory exam, one 2hr prac exam, quizzes and prac book

This unit of study is concerned with the fundamental properties of soil, the factors of soil formation, and the processes that operate in the soil system. The components of the unit of study are: pedology; soil physics and soil chemistry. These components are synthesised by reference to common soil profiles. The study of soil in the field starts

with field description and assessment of essential characteristics. The physics of water and gas movement, temperature, density, swelling and strength are considered. Soil chemistry includes properties of organic matter, cation exchange capacity, nitrogen, phosphorus, potassium and acidity. Common soil types of N.S.W. are studied in relation to their formation, properties and classification.

Textbooks

Reference books
N.C. Brady The Nature and Properties of Soils 10th edn (Macmillan, 1990)
K.O. Campbell and J.W. Bowyer (eds) The Scientific Basis of Modern Agriculture (Sydney U.P., 1988)
D.L. Rowell, Soil Science: Methods and Applications (Longman, 1994)
R.E. White Introduction to the Principles and Practice of Soil Science 3rd edn (Blackwells Scientific, 1997)
A. Wild (ed.) Russell's Soil Conditions and Plant Growth 11th edn (Wiley, 1988)

SOIL2004
The Soil Resource

Credit points: 6 **Teacher/Coordinator:** A/Prof Balwant Singh (Coordinator), Prof Alex McBratney, Dr Stephen Cattle **Session:** Semester 2 **Classes:** (2 lec, 2 hr prac)/wk **Prerequisites:** GEOL1001 or GEOL1002/1902 or ENVI1002 or GEOG1001 **Assessment:** Fieldtrip participation (5%), soil mapping report (25%), laboratory report (15%), examination (55%)

The unit of study is designed to provide a detailed knowledge of the important features and problems of Australian soils. By the end of this unit of study, students will develop skills in describing and interpreting soil profile features in the field. They will become familiar with quantitative soil data handling procedures and be able do quantitative soil mapping; and measure common soil properties in the laboratory. They will also learn to work in a team environment and write a report on soil mapping and laboratory analysis. The lecture topics include- Features, geography and management of Australian soils; Digital soil mapping - concepts and spatial prediction of soil classes; Soil quality, soil health and soil function - physical, biological and chemical indicators of soil sustainability; Soil structure: The elements of soil structure and methods of their assessment; The degradation and amelioration of soil structure and its effect on agriculture; Soil water erosion - detachment, entrainment, runoff and deposition; Soil acidification: effects of soil acidity in soils, forms of soil acidity, sources of soil acidity, buffering mechanisms in soils, soil pH and Al availability, extent of soil acidity in Australia and remediation of soil acidity; Soil salinity: causes, sources of salts, nature of soil salinity, salinity parameters in soil and water, effects of salinity on plant growth, management of soil salinity; Soil contamination: concepts/definitions, sources of contaminants, effects of contaminants, major contaminants in soil, remediation of contaminated soils; soil carbon accounting.

Textbooks

A laboratory manual will made be available to the students.
Brady NC & Weil RR, The Nature and Properties of Soils. 13th ed. (or any later edition) Prentice Hall, New Jersey, 2002
Isbell RF McDonald WS & Ashton LJ, Concepts and Rationale of the Australian Soil Classification. Australian Collaborative Land Evaluation Program, CSIRO Publishing, Canberra, 1997
White RE, Principles and Practice of Soil Science: the Soil as a Natural Resource. 3rd ed., Blackwell Science, Oxford, 1997
McKenzie N, Jacquier D, Isbell, R & Brown K, Australian Soils and Landscapes: An Illustrated Compendium. CSIRO publishing, Melbourne, 2004
A more comprehensive reading list will be provided in the laboratory manual.

SOIL3005
Field and Laboratory Soil Physics

Credit points: 6 **Teacher/Coordinator:** Professor Alex McBratney **Session:** Semester 1 **Classes:** (2lec/2hr prac)/wk, 5 days in the field (prior to beginning of February semester). **Prerequisites:** SOIL2004 **Assessment:** One 2hr exam, field report in form of webpage, lab report, presentation.

Note: Department permission required for enrolment .

The soil science specialisation trains people for careers in professional soil science and extension. It provides an excellent background for entry into all aspects of soil science research ranging from physics through mineralogy and chemistry to pedology. Increasing emphasis is being given to aspects of soil sustainability and environmental soil science in order that graduates can meet the growing national demands in this area. The emphasis is to examine the quantitative aspects of soil physics particularly in relation to the transfer of energy, gas, water, solids and solutes in soil. Lecture and lab topics include heat flow, gas movement, soil water energetics, saturated and unsaturated flow of soil water, infiltration, solute movement, water and wind erosion as well as the electrical properties of soil and fundamentals of numerical computer modelling of soil physical processes. Five days' field-work, in the week prior to the beginning of February Semester, involves field measurement of soil physical properties such as shear and compressive strength, electrical conductivity, temperature, evaporation, hydraulic conductivity and infiltration rates and moisture content.

Textbooks

Reference books:
Hillel D. Environmental Soil Physics: Fundamentals, Applications, and Environmental Considerations. Academic Press, 1998
Jury WA & Horton R. Soil Physics. John Wiley, 2004
Warrick AW. Soil Water Dynamics. Oxford, 2003

SOIL3006
Field and Laboratory Pedology

Credit points: 6 **Teacher/Coordinator:** Dr Stephen Cattle **Session:** Semester 1 **Classes:** (2 lec/2hr prac)/wk, 5 days in the field (prior to beginning of February semester). **Prerequisites:** SOIL2004 **Assessment:** One 3hr exam, field report, lab report, presentation.

Note: Department permission required for enrolment .

The soil science specialisation trains people for careers in professional soil science and extension. It provides an excellent background for entry into all aspects of soil science research ranging from physics through mineralogy and chemistry to pedology. Increasing emphasis is being given to aspects of soil sustainability and environmental soil science in order that graduates can meet the growing national demands in this area. The main part of this unit of study is the pedological characterization of a number of contrasting soil profiles sampled during the pre-semester field trip. This 5 day field-trip begins 10 days before the beginning of the February semester and involves the study and sampling of soil through central and northern NSW. Students become acquainted with soil types in a variety of landscape, geologic, climatic and landuse settings and develop an understanding of the importance of different soil parent materials. Linkages are made between soil formation processes and resultant soil properties, and the role of soil in various environmental and agricultural ecosystems. Field skills acquired during this trip include a proficiency in soil profile description and an ability to classify soil type according to the Australian Soil Classification scheme. Laboratory analyses of soil samples collected during the field trip include particle-size analysis and extraction of fine-sand fraction for optical identification and quantification of the mineral species present. X-Ray diffraction is used to identify the clay minerals and elucidate mineralogical transformations in these samples. Scanning electron microscopy is also used to examine surface features and mineral composition. Thin sections of some typical NSW soil types are examined and the main features are identified and quantified. The data from these micromorphological investigations are used to provide an understanding of the pedogenesis of soil profiles in specific locations. The lecture series for this unit of study focuses on the main soil-forming (pedogenetic) processes operating both in Australia and abroad. Rock and soil mineral transformations and mechanisms for soil horizon development are addressed. Case studies and recent pedological research publications are used to highlight these topics. A detailed study, including exercises, is also made of two main international soil classification schemes, Soil Taxonomy and the World Reference Base for Soil Resources (WRB), and the Australian Soil Classification system.

Textbooks

Reference books:
Buol S, Walker M, Southard R. Soil Genesis and Classification. Iowa State University. 2003
Isbell R. The Australian Soil Classification. CSIRO, 1996
Jenny H. Factors of Soil Formation: A System of Quantitative Pedology. Dover. 1994
McKenzie N, Jacquier D, Isbell R & Brown K. Australian Soils and Landscapes. CSIRO, 2004
Van Breeman, N & Buurman, P. Soil Formation. 2nd Edition. Kluwer Academic, 2002

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

SOIL3007
Environmental Soil Chemistry

Credit points: 6 **Teacher/Coordinator:** Dr Balwant Singh **Session:** Semester 2 **Classes:** (2 lec, 3hr prac)/wk (wks1-13). **Prerequisites:** SOIL2004 **Assessment:** One 3hr exam, 4 lab reports and one oral presentation on a given topic.

Note: Department permission required for enrolment .

The main objective of the unit is to develop an understanding of the common chemical properties and processes in soil environment. By the end of this unit of study, students will become familiar with soil chemical composition and develop skills in describing chemical processes in soil environment. They will be able to measure various chemical properties of soil and soil solution in the laboratory; and perform chemical speciation of ions in soil solution. Students will also learn to work in a team environment and develop communication and writing skills. Syllabus summary: The lecture topics include- the structure and chemistry of inorganic components in soil, surface charge of soil minerals, chemistry and general properties of soil organic matter, important functional groups of soil organic matter, role of organic matter in soil, cation exchange in soil, selectivity of cations on soil colloids, cation exchange reactions and selectivity coefficients, adsorption reactions of environmentally important ions, surface functional groups, adsorption isotherms, equilibrium based adsorption models, point of zero charge, diffuse double layer-theory and models, surface complexation models, soil solution-importance, methods of obtaining soil solutions, models to determine activity coefficients, speciation, dissolution and solubility processes in soil environment, soil chemical equilibria, geochemical speciation models and redox chemistry of soil.

Textbooks

Evangelou VP, Environmental Soil and Water Chemistry: John Wiley & Sons, New York, 1998
Lindsay WL, Chemical Equilibria in Soils. John Wiley & Sons, New York, 1979
McBride MB, Environmental Chemistry of Soils. Oxford University Press, New York, 1994.
Sparks DL, Environmental Soil Chemistry. Second Edition, Academic Press, San Diego, 2003
Sposito G, The Chemistry of Soils. Oxford University Press, New York, 1989

SOIL3008
Rural Spatial Information Systems

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

The lecture material will present several themes: i) Principles of Geographical Information Science (GISc): brief history of GISc, ontology and epistemology of spatial phenomena, basic Geographical Information Systems (GIS) structure, coordinate systems and map projections and datums; ii) Fundamentals of remote sensing and geo-image analysis; iii) Geospatial data sources and acquisition methods, including existing maps and their digitisation, remote sensing images, digital elevation models (DEM) and global positioning systems (GPSs); iv) Processing of geospatial data: spatial data in the computer, building and accessing an entity in the database and continuous fields, data analysis using entities and continuous fields for decision support, etc.; v) Spatial statistics: quality of spatial data, spatial analysis of geospatial data, geostatistics, introduction to spatial-temporal modelling. Software packages for geographical information systems will be reviewed. Practical exercises will focus on applications to land-cover assessment, subcatchment and regional hydrology, and soil quality assessment for decisions regarding sustainable rural land use planning and management. Two of the 4 days of the mid-Semester field excursion will be spent in Canberra visiting various government agencies which research and maintain GIS coverages of major rural environments. The remaining fieldwork will be at University farms at Camden or Arthursleigh, and will involve training in the field use of low and high- resolution GPS for geo-rectification, for ground truthing satellite-derived land cover maps and for the creation of digital elevation models and landform attributes.

Textbooks

Burrough PA, McDonnell RA. Principles of Geographic Information Systems. Oxford University Press, 2000
Clarke KC. Getting started with geographic information systems. Prentice Hall, 2003.
Lillesand T, Kiefer RW. Remote Sensing and Image Interpretation. John Wiley & Sons Inc. 1999.

Soil Science Honours

The honours program consists of several parts:(i) supplementary lectures and seminars;(ii) topics of study selected from Agricultural Chemistry, Biometry, Botany, Geology, Physical Chemistry, Mathematics, Soil Mechanics, Soil Microbiology, etc;(iii) a small amount of field work performed under direction; and(iv) a project in one branch of soil science.

Anatomy and Histology

The Department of Anatomy and Histology teaches topographical and neuroanatomy, histology and cell biology, developmental biology and physical anthropology to students in the Faculties of Science, Medicine and Dentistry.

Location

The Department is in the Anderson Stuart Building. The Department Office is on the first floor, Room S463.

Noticeboards

The noticeboards are situated near Rooms W225, S431 and S463. Students are advised to consult the noticeboard regularly. Timetables for lectures and practical classes will be posted, where possible, in the week before the beginning of each semester.

Advice on units of study and enrolment

Students wishing to enrol in units of study in Anatomy and Histology must consult the Departmental advisers in the Enrolment Centre during re-enrolment week prior to enrolling in the units of study. Information will be available at this time on the units of study offered by the Department and on the advisability of various combinations of subjects.

Registration

All students should register with the Department. Please consult the Departmental noticeboards for details.

Vaccinations

All students studying gross anatomy or neurosciences who may also be exposed to human tissues or fluids should contact the University Health Service regarding vaccinations.

Protective Clothing

All students studying gross anatomy or neurosciences must wear a laboratory coat or gown in tutorial rooms and a gown in dissection rooms and must wear gloves when handling cadaveric material.

Web-site

The Department's website is located at http://www.anatomy.usyd.edu.au/.

ANAT2008
Principles of Histology

Credit points: 6 **Teacher/Coordinator:** Associate Professor Maria Byrne **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour practical per week; on-line and museum exercises (6 hours per week total) **Prerequisites:** 12 credit points of Junior Biology or Junior Psychology **Prohibitions:** ANAT2001 **Assumed knowledge:** General concepts in human biology **Assessment:** One 1 hour theory exam, one 1 hour practical exam, four quizzes

This unit of study covers the principles of cell biology and study of the structure of cells, tissues and organ systems at the light and electron microscopic levels. The focus is on human systems. Extension exercises introduce students to the connection between histology and

anatomy. Modern practical applications of histological techniques and analysis for research are also presented.

Textbooks

Ross, MH and Paulina W. 2005 Histology-A Text and Atlas. 5th Edition, Lippincott Williams and Wilkins, New York

ANAT2009
Comparative Primate Anatomy

Credit points: 6 **Teacher/Coordinator:** Dr Denise Donlon **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour practical per week; museum project. **Prerequisites:** 12 credit points of Junior Biology or Junior Psychology or Junior Archaeology. **Prohibitions:** ANAT2002 **Assumed knowledge:** Knowledge of basic vertebrate biology **Assessment:** One 1 hour theory exam, one 30 min prac exam, two quizzes, one 2000 word essay

This unit of student covers the musculo-skeletal anatomy of the human body with particular emphasis on human evolution and comparisons with apes and fossil hominids. The topics covered include the versatility of the human hand, in manipulation and locomotion, bipedalism, climbing and brachiation in apes, and the change in pelvic anatomy associated with bipedalism and obstetric consequences.

Textbooks

Kapit, W. and Elson, L.M. The Anatomy Coloring Book. Addison-Wesley. 2001
Reference books:
Aiello, L and Dean, C. An Introduction to Human Evolutionary Anatomy. Academic Press 1990.
Zilman, A.L. The Human Evolution Coloring Book. Barnes and Noble, Sydney. 1982

ANAT2010
Concepts of Neuroanatomy

Credit points: 6 **Teacher/Coordinator:** Dr Karen Cullen **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour practical per week. **Prerequisites:** BIOL (1001 or 1901) and one of: BIOL (1002 or 1902 or 1003 or 1903) or PSYC (1001 and 1002). **Prohibitions:** ANAT2003 **Assumed knowledge:** Background in basic mammalian biology. **Assessment:** One 1.5 hour theory exam, one 1 hour practical exam, 2000 word essay, practical reports

Students are introduced to the structure and organisation of the central and peripheral nervous system. The course begins with an exploration into the make-up of the individual cells, followed by an examination of the different regions of the nervous system. A final theme of the course touches on the organisation of various systems (sensory and motor), together with aspects of higher-order function (memory). In essence, the course covers general concepts of organisation, structure and function of the brain and its different areas. The practicals offer students the unique opportunity to examine specimens in the Anatomy labs and museum. This course will be of considerable interest to students studying science and related disciplines, as well as those wishing to pursue further study in Neuroscience at senior levels.

Textbooks

Bear, M.F., B.W. Connors, M.A. Paradiso. Neuroscience: Exploring the Brain (second edition), Williams and Wilkins (2001).

ANAT3004
Cranial and Cervical Anatomy

Credit points: 6 **Teacher/Coordinator:** Dr Robin Arnold **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 3-4 hour tutorial per week. **Prerequisites:** ANAT2002 or ANAT2009 or BMED2803 or BMED2804 or BMED2805 or BMED2806 **Prohibitions:** ANAT3005 **Assumed knowledge:** General knowledge of biology. **Assessment:** One 1.5 hour theory exam, one 1 hour prac exam, one 2500 word essay, continuous assessment (10%)

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

This unit of study covers skull, muscles of facial expression, muscles of jaw and neck, ear, eye, nose, oral cavity and larynx and pharynx as well as peripheral distribution of cranial nerves in the head and neck. The functional components of the cranial nerves and their relationship to the special senses and special motor functions such as facial gesture and speech are also studied. Tutorials are designed to encourage students to develop their own approach to the understanding and organisation of subject material. Communication of key concepts and presentation of subject material in an academic context are encouraged and assessed in a major assignment.

Textbooks

Mackinnon and Morris. Oxford Textbook of Functional Anatomy, Vol 3: Head & Neck. Oxford University Press. 1990
An anatomy atlas such as Rohan, Yokochi and Lutjen-drecoll, Color Atlas of Human Anatomy.

ANAT3006
Forensic Osteology

Credit points: 6 **Teacher/Coordinator:** Dr Denise Donlon **Session:** Semester 1 **Classes:** Two 1 hour lectures, one 2 hour tutorial and one 1 hour practical per week. **Prerequisites:** Credit in ANAT2009 or Credit in ANAT2002 (for students who completed Intermediate study before 2005) **Assumed knowledge:** An understanding of basic human musculoskeletal anatomy. **Assessment:** One 1 hour theory exam, one 30 min. prac exam, continuous assessment, case study

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

This unit of study aims to introduce students to the area of forensic osteology, which is the study of human skeletal remains within the legal context. Thus the unit of study aims to help students learn about human morphology and variation through the investigation and identification of human bones. It will also help students gain skills in observation and rigorous record taking and in analysis and interpretation. Production of case reports and practice in acting as 'expert witness' will improve students written and oral skills. An additional objective will be to assist students in learning to deal with legal and ethical issues.

Textbooks

White, T. & Folkens, P. 2005 Human Bone Manual, Elsevier.

ANAT3007
Visceral Anatomy

Credit points: 6 **Teacher/Coordinator:** Dr Robin Arnold **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 3-4 hour practical per week. **Prerequisites:** ANAT2009 or ANAT2010 **Assumed knowledge:** General knowledge of biology. **Assessment:** One 1.5 hour theory exam, one 1 hour prac exam, one 1200 word essay

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

Textbooks

Rohan, Yokochi and Lutjen-drecoll. Color Atlas of Human Anatomy.

ANAT3008
Musculoskeletal Anatomy

Credit points: 6 **Teacher/Coordinator:** Dr Rachel Ward **Session:** Semester 2 **Classes:** Two 1 hour lectures, two 2 hour tutorial/practical per week. **Prerequisites:** ANAT2009 or ANAT2002 (for students who completed Intermediate study before 2005) or BMED2803 or BMED2804 or BMED2805 or BMED2806 **Prohibitions:** ANAT3005 **Assumed knowledge:** Some knowledge of basic mammalian biology **Assessment:** One assignment, one 1 hour prac exam, one 1.5 hour theory exam.

The unit provides an opportunity for students to study the topographical and systems anatomy of the upper limb, lower limb and the back regions. Emphasis is placed upon the identification and description of structures and the correlation of structure with function. This includes for the upper limb, its role in manipulation, for the lower limb standing and walking and for the back flexible support and protection. Emphasis is also given to the innervation of the limbs. The unit also aims to develop the general skills of observation, description, drawing, writing and discussion as applying to biological structure.

EMHU3001
Electron Microscopy and Imaging/Theory

Credit points: 6 **Teacher/Coordinator:** Dr Anne Swan and Dr Alan Jones **Session:** Semester 2 **Classes:** Four 1 hour lectures and one 1 hour tutorial

per week. **Prerequisites:** At least 12 cp of Intermediate Science units from any of the following: Anatomy & Histology, Biochemistry, Biology, Chemistry, Mathematics, Microbiology, Molecular Biology & Genetics, Pharmacology, Physics, Physiology or Statistics. For BMedSc students: either 36 cp of Intermediate units including BMed (2501, 2503 & 2505) or 42 cp of BMed Intermediate units including (2801, 2802, 2803 & 2806) **Assumed knowledge:** General concepts in Biology, and in Biochemistry or in Chemistry. **Assessment:** Two 1 hour exams, theoretical research assignment as a PowerPoint (TM) submission and presentation (10 min).

The course is run conjointly by the Department of Anatomy and Histology and the Electron Microscope Unit. The course will focus on the theoretical aspects of transmission and scanning electron microscopy, the preparation of biological samples for electron microscopy, digital imaging, and freeze-fracture. Immunological and other techniques required in modern research and hospital electron microscope laboratories will also be covered. Students will also receive theoretical training in laser scanning confocal microscopy including the use of fluorescent probes to visualize cellular organelles and cellular processes. Students will undertake a theoretical research project of their choice which is of relevance to the course.

Textbooks

Bozzola JJ and Russell LD. Electron Microscopy. 2nd Edn. Jones and Bartlett, Publishers. 1999.

Reference book: John C. Russ. The Image Processing Handbook. 3rd Edn, CRC Press, 1998.

EMHU3002
Electron Microscopy and Imaging/Prac

Credit points: 6 **Teacher/Coordinator:** Dr Anne Swan and Dr Alan Jones **Session:** Semester 2 **Classes:** Two 2 hour practicals and one 1 hour tutorial per week. **Prerequisites:** 12 cp as follows: 6 cp from ANAT2008 OR 4 cp from ANAT2001 plus at least 6 cp OR 8 cp respectively of Intermediate Science units of study. For BMedSci: Either 36 credit points of intermediate units including BMed (2501, 2503 & 2505) or 42 credit points of BMed Intermediate units including BMed (2801, 2802, 2803 & 2806) **Corequisites:** EMHU3001 **Assumed knowledge:** General concepts in Biology, Histology and in Biochemistry or in Chemistry. **Assessment:** Two 1 hour exams, practical reports, practical project assignment by PowerPoint (TM) submission and presentation (10 min).

The course is run conjointly by the Department of Anatomy & Histology and the Electron Microscope Unit. The course will provide hands-on training in the operation of transmission and scanning electron microscopes, processing biological samples for electron microscopy, ultrathin sectioning, cryo-ultramicrotomy, freeze-fracture, electron diffraction, digital imaging, immunological and other techniques required in modern research and hospital electron microscope laboratories. Students will also learn the operation of laser scanning confocal microscopes, including the use of fluorescent probes to visualize cellular organelles and cellular processes. Students will apply their knowledge to complete a project of their choice on electron microscopy of a biological sample, from fixation of the sample to interpretation of the resulting electron micrographs.

Textbooks

Bozzola JJ and Russell LD. Electron Microscopy. 2nd Edn. Jones and Bartlett, Publishers. 1999.

HSTO3001
Microscopy & Histochemistry Theory

Credit points: 6 **Teacher/Coordinator:** Robin Arnold, Prof. Chris Murphy **Session:** Semester 1 **Classes:** Usually four 1 hour lectures per week plus some tutorials **Prerequisites:** (ANAT2008 or ANAT2001) or (BMED 2803 or 2804 or 2805 or 2806) **Corequisites:** HSTO3002 **Assumed knowledge:** Basic understanding of biology. **Assessment:** One 2 hour theory exam, 1 essay.

The aims of this unit of study are to provide a theoretical understanding of why biological tissues need to be specifically prepared for microscopic examination, how differing methods yield different types of morphological information; to allow students to study the theory of different types & modalities of microscopes, how they function & the differing information they provide; to develop an understanding of the theory of why biological material needs to be stained for microscopic examination; to allow students to understand how biological material becomes stained; to develop an understanding of the chemical information provided by biological staining - dyes, enzymes & antibodies.

Textbooks

Keirnan, J.A. Histological & Histochemical Methods 3rd Edition, 1999, Butterworth-Heinmann.

HSTO3002
Microscopy & Histochemistry Practical

Credit points: 6 **Teacher/Coordinator:** Robin Arnold, Prof. Chris Murphy **Session:** Semester 1 **Classes:** Usually 5.5 hours practical per week **Prerequisites:** (ANAT2008 or ANAT2001) or (BMED 2803 or 2804 or 2805 or 2806) **Corequisites:** HSTO3001 **Assumed knowledge:** Basic understanding of biology. **Assessment:** One 1.5 hour practical exam, 1 practical report.

The aims of this unit of study are to provide an practical understanding of why biological tissues need to be specifically prepared for microscopic examination, to apply different methods to gain different types of morphological information; to allow students to learn to use the different types & modalities of microscopes: to gain first hand experience of how they function & see for themselves the differing information they provide; to learn to stain biological material for microscopic examination; applying their theoretical knowledge & to allow students to develop practical skills in diverse histochemical staining procedures - dyes, enzymes & antibodies.

Textbooks

Keirnan, J.A. Histological & Histochemical Methods 3rd Edition, 1999, Butterworth-Heinmann.

HSTO3003
Cells and Development: Theory

Credit points: 6 **Teacher/Coordinator:** Dr Frank Lovicu **Session:** Semester 2 **Classes:** Four 1 hour theory lectures and one 1 hour tutorial per week. **Prerequisites:** For BSc students: ANAT2008 or ANAT2001 For BMedSc students: 42 credit points of Intermediate BMED units, including: BMED2801, 2802, 2805. **Prohibitions:** ANAT3002 **Assumed knowledge:** (i) An understanding of the basic structure of vertebrates; (ii) An understanding of elementary biochemistry and genetics. **Assessment:** One 2 hour exam, tutorial research papers.

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

The main emphasis of this unit of study concerns the mechanisms that control animal development. Fertilization, cleavage, gastrulation and the formation of the primary germ layers are described in a range of animals, mainly vertebrates. Much of the emphasis will be placed on the parts played by inductive cell and tissue interactions in cell and tissue differentiation, morphogenesis and pattern formation. This will be studied at both cellular and molecular levels.

Textbooks

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

HSTO3004
Cells and Development: Practical (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Frank Lovicu **Session:** Semester 2 **Classes:** One 1 hour tutorial and two 2 hour practicals per week. **Prerequisites:** Note: This advanced unit of study is only available to select students who have achieved a mark of 65 or above in the following prerequisite units of study. For BSc students: ANAT2008 or ANAT2001 and any one of the following intermediate MBLG units (2071, 2971, 2771, 2871, 2001, 2101, 2901). For BMedSc students: 42 credit points of Intermediate BMED units, including: BMED2801, 2802, 2805. **Corequisites:** HSTO3003 **Prohibitions:** ANAT3002 **Assessment:** One 1 hour exam, Practical class reports.

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

This advanced unit of study complements HSTO3003 (Cells and Development:Theory) and is catered to provide students with laboratory research experience leading to Honours and higher degrees. It will primarily cover the design and application of experimental procedures involved in cell and developmental biology, using appropriate molecular and cellular techniques to answer developmental questions raised in HSTO3003. This unit of study will promote hands on experience with different animal models, allowing students to observe and examine developing and differentiating tissues at the macroscopic and microscopic level. The main emphasis of this unit of study will concentrate on practical approaches to understanding the mechanisms that control animal development. Fertilization,

cleavage, gastrulation and the formation of the primary germ layers are covered. The parts played by inductive cell and tissue interactions in differentiation, morphogenesis and pattern formation are examined at cellular and molecular levels. Note that for some weeks of the course, specialised practical classes will be carried out at the Westmead campus.

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

NEUR3002
Neuroscience: Motor Systems & Behaviour

Credit points: 6 **Teacher/Coordinator:** Dr Vladimir Balcar **Session:** Semester 1 **Classes:** Two 1 hour lectures per week, one 3 hour practical per fortnight and one 3 hour tutorial per fortnight. **Prerequisites:** For BMedSc students: BMED(2801 or 2503) and BMED(2806 or 2505) For other students: (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **Prohibitions:** PHSI3001, NEUR3902 **Assumed knowledge:** It is strongly recommended that students also take unit NEUR3001. ANAT2010 and PHSI2005 is assumed knowledge. **Assessment:** Two 1 hour exams, one prac report, tutorial papers, 2000 word essay.

The aim of this course is to provide students with an introduction to the structure and function of the nervous system. Our current knowledge of how the brain works is based on the analysis of the normal structure of the nervous system and its pathways, the functional effects of lesions and neurological diseases in different parts of the nervous system, and the way that nerve cells work at the molecular, cellular and integrative level. This course focuses on to the neural circuits and the mechanisms that control somatic and autonomic motor systems, motivated behaviours, emotions, and other higher order functions. The lecture series addresses the different topics, each of which offers special insight into the function of the nervous system in health and disease.

Textbooks
Principles of Neural Science. Kandel, Schwartz, Jessel. 4th Ed, Elsevier, NY, 2000 or Neuroscience: Exploring the brain. Bear, Connors, Paradiso. Baltimore: Williams & Wilkins, 2001
The Human Brain. Nolte. 4th Ed, C.V. Mosby Co., St Louis, Washington D.C., Toronto, 1999

NEUR3902
Neuroscience: Motor Systems & Behav. Adv

Credit points: 6 **Teacher/Coordinator:** Dr Vladimir Balcar **Session:** Semester 1 **Classes:** Two 1 hour lectures per week, one 3 hour practical per fortnight and one 3 hour tutorial per fortnight. Advanced students may be exempt from attending some of these classes to permit meetings with supervisor. **Prerequisites:** For BMedSc students: Credit average in BMED(2801 or 2503) and BMED(2806 or 2505) For other students: Credit average in (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **Prohibitions:** NEUR3002, PHSI3001 **Assumed knowledge:** ANAT2010 and PHSI2005 is assumed knowledge. **Assessment:** Two 1 hour exams, one prac report, tutorial papers, one research or library essay (research essay will replace some other assessment items from regular course).

Note: Permission from the coordinators is required for entry into this course. It is strongly recommended that students also take unit NEUR3001 or NEUR3901.

This unit of study is an extension of NEUR3002 for talented students with an interest in Neuroscience and research in this field. The lecture/practical component of the course is run in conjunction with NEUR3002. The aim of this course is to provide students with an introduction to the structure and function of the nervous system. Our current knowledge of how the brain works is based on the analysis of the normal structure of the nervous system and its pathways, the functional effects of lesions and neurological diseases in different parts of the nervous system, and the way that nerve cells work at the molecular, cellular and integrative level. This course focuses on to the neural circuits and the mechanisms that control somatic and autonomic motor systems, motivated behaviours, emotions, and other higher order functions. The lecture series addresses the different topics, each of which offers special insight into the function of the nervous system in health and disease.

Textbooks
Principles of Neural Science. Kandel, Schwartz, Jessel. 4th Ed, Elsevier, NY, 2000 or Neuroscience: Exploring the brain. Bear, Connors, Paradiso. Baltimore: Williams & Wilkins, 2001
The Human Brain. Nolte. 4th Ed, C.V. Mosby Co., St Louis, Washington D.C., Toronto, 1999

NEUR3004
Integrative Neuroscience

Credit points: 6 **Teacher/Coordinator:** Dr Kevin Keay and Dr Catherine Leamey **Session:** Semester 2 **Classes:** One 0-1 hour lecture, one 2 hour tutorial plus 1-2 small meeting/laboratory per week. **Prerequisites:** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. **Prohibitions:** NEUR3904, PHSI3002, PHSI3902 **Assumed knowledge:** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **Assessment:** One 1 hour exam. Major essay/report. Tutorial participation.

Note: Enrolment in NEUR3003/3903 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.

This second semester unit is designed to introduce students to "cutting edge" issues in the neurosciences and to be taken in conjunction with NEUR3003/3903. This course is a combination of small group lectures on current issues in neuroscience, seminar groups and a research-based laboratory or library project. Seminars will be held on topics including imaging pain, emotions, cortical development & plasticity, colour vision, stroke and hypertension, long-term regulation of blood pressure, auditory hallucinations and the "cocktail party effect".

Textbooks
Kandell, Schwartz and Jessell "Principles of Neural Science" 4th edition.

NEUR3904
Integrative Neuroscience (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Kevin Keay and Dr Catherine Leamey **Session:** Semester 2 **Classes:** One 1 hour lecture, one 2 hour tutorial and 1-2 hour small meeting/laboratory per week. **Prerequisites:** For BMedSCI: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. Plus, students must have a CREDIT (or better) in NEUR3001/3901 and NEUR3002/3902. **Prohibitions:** NEUR3004, PHSI3002, PHSI3902 **Assumed knowledge:** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **Assessment:** One 1 hour exam. Major essay/report. Tutorial participation. Mini-Lecture.

Note: Department permission required for enrolment .
Note: Enrollment in NEUR3003/3903 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other. Students must receive permission from the coordinators for enrollment.

This unit encompasses the material taught in NEUR3004. Advanced students prepare and present a mini-lecture on a current topic in neuroscience research.

Textbooks
Kandell, Schwartz and Jessell "Principles of Neural Science" 4th edition.

For other NEUR units of study, see the entry under the School of Physiology.

Anatomy and histology Honours and Graduate Diploma

Taking an Honours or Graduate Diploma provides the opportunity for students to do research on a project supervised by a member of staff. Assessment is based on a thesis summarising the results of the year's research, along with additional studies. To qualify for admission to Honours or the Graduate Diploma the student must obtain an appropriate standard in Senior Anatomy or Histology or Neuroscience.

Anatomy and Histology Higher Degrees

The award courses of Master of Science and Doctor of Philosophy by research are offered in the Faculty of Science by the Department of Anatomy and Histology. The department also contributes to the teaching of the Graduate degrees in Applied Science (Neuroscience).

Biochemistry

The discipline teaches Biochemistry and Molecular Biology to Science and Medical Science students at the Junior, Intermediate and Senior levels. This discipline area includes the fundamental principles governing the structure, function and interactions of biological

molecules, the nature of genetic material and control of its expression and leads to an understanding of the molecular nature of living systems.

Junior program

The Junior program has the introductory faculty Unit of Study Molecular Biology & Genetics Intro (MBLG1001).

Intermediate program

The comprehensive Intermediate program in Biochemistry and Molecular Biology includes Protein Biochemistry (BCHM2071/2971), Human Biochemistry (BCHM2072/2972) and the faculty Unit of Study Molecular Biology & Genetics A (MBLG2071/2971). Students wishing to progress to the Senior units of study in Biochemistry and Molecular Biology need to have completed MBLG1001 and 12 CP of Intermediate BCHM/MBLG Units of Study.

Senior program

The Senior program consists of Molecular Biology & Biochemistry - Genes (BCHM3071/3971), Molecular Biology & Biochemistry - Protein (BCHM3081/3981), Human Molecular Cell Biology (BCHM3072/3972), Medical and Metabolic Biochemistry, (BCHM3082/3982), Proteomics and Functional Genomics (BCHM3092/3992). Any four of these units of study constitute a major in Biochemistry. Students seeking further information should consult the relevant Tables in earlier Undergraduate Enrolment Advice chapters.

BCHM2071
Protein Biochemistry

Credit points: 6 **Teacher/Coordinator:** Dr Charles Collyer **Session:** Semester 1 **Classes:** Two 2 hour lectures per week, one 1 hour tutorial and one 4 hour practical per fortnight. **Prerequisites:** 12 credit points of Junior Chemistry plus MBLG1001 **Corequisites:** Recommended concurrent units of study: intermediate MBLG for progression to Senior Biochemistry, and/or Intermediate Chemistry. **Prohibitions:** BCHM2011, BCHM2971 **Assumed knowledge:** CHEM (1101 and 1102) **Assessment:** One 2 hour theory and theory of practical exam, two prac reports.

This unit of study introduces biochemistry by describing the physical and chemical activities of proteins and their functions in cells. The details of protein interactions with other cellular components are presented and the relationship of protein structure and function is discussed. Techniques in protein chemistry and analysis, including proteomics are introduced together with key experiments which reveal the physical basis of the functioning of proteins. This course builds on the protein science presented in MBLG1001 and is ideally suited to students studying intermediate Chemistry together with Biochemistry. The practical course will nurture technical skills in biochemistry and will include protein preparation, the analysis of protein structure and enzymatic assays.

Textbooks
C.W. Pratt & K. Cornely, Essential Biochemistry (John Wiley & Sons, 2004) and the
Resource Manual for Biochemistry 2 Practical Sessions, Sem 1

BCHM2971
Protein Biochemistry (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Charles Collyer **Session:** Semester 1 **Classes:** Two 1 hour lectures per week, one 1 hour tutorial and one 4 hour practical per fortnight. **Prerequisites:** 12 credit points of Junior Chemistry and Distinction in MBLG1001 **Prohibitions:** BCHM2011, BCHM2071 **Assessment:** One 2 hour theory and theory of practical exam, two prac reports.

This advanced unit of study introduces biochemistry by describing the physical and chemical activities of proteins and their functions in cells. The details of protein interactions with other cellular components are presented and the relationship of protein structure and function is discussed. Techniques in protein chemistry and analysis, including proteomics are discussed together with key experiments which reveal the physical basis of the functioning of proteins. This course builds on the protein science presented in MBLG1001 and is ideally suited to students studying Intermediate Chemistry together with Biochemistry. The advanced practical course will nurture technical skills in protein biochemistry and will include protein preparation, the interpretation of protein structure, enzymatic assays and biochemical analysis.

Textbooks
C.W. Pratt & K. Cornely, Essential Biochemistry (John Wiley & Sons, 2004) and the
Resource Manual for Biochemistry 2 Practical Sessions, Sem 1

BCHM2072
Human Biochemistry

Credit points: 6 **Teacher/Coordinator:** A/Prof Gareth Denyer **Session:** Semester 2 **Classes:** 2 lec/wk, 1 tut/fortnight, 4hr prac/fortnight **Prerequisites:** Either MBLG1001 and 12 credit points of Junior Chemistry or either MBLG2071 or MBLG2971 **Prohibitions:** BCHM2972, BCHM2002, BCHM2102, BCHM2902, BCHM2112 **Assessment:** One 3 hour exam, practical reports

This unit of study aims to describe how cells work at the molecular level, with special emphasis on human biochemistry. The chemical reactions which occur inside cells are described in the first series of lectures, Cellular Metabolism. Aspects of the molecular architecture of cells which enable them to transduce messages and communicate are described in the second half of the unit of study. At every stage, there is emphasis on the 'whole body' consequences of reactions, pathways and processes at the cellular level. Cellular Metabolism describes how cells extract energy from fuel molecules like fatty acids and carbohydrates, how the body controls the rate of fuel utilization and how the mix of fuels is regulated (especially under different physiological circumstances such as starvation and exercise). The metabolic inter-relationships of the muscle, brain, adipose tissue and liver and the role of hormones in coordinating tissue metabolic relationships is discussed. The unit also discusses how the body lays down and stores vital fuel reserves such as fat and glycogen, how hormones modulate fuel partitioning between tissues and the strategies involved in digestion and absorption and transport of nutrients. Signal Transduction covers how communication across membranes occurs (i.e. via surface receptors and signaling cascades). This allows detailed molecular discussion of the mechanism of hormone action and intracellular process targeting. The practical component complements the lectures by exposing students to experiments which investigate the measurement of glucose utilization using radioactive tracers and the design of biochemical assay systems. During the unit of study, generic skills will be nurtured by frequent use of computers and problem solving activities. However, student exposure to generic skills will be extended by the introduction of exercises designed to teach oral communication, instruction writing and feedback articulation skills.

BCHM2972
Human Biochemistry (Advanced)

Credit points: 6 **Teacher/Coordinator:** A/Prof Gareth Denyer **Session:** Semester 2 **Classes:** 2 lec/wk, 1 tut/fortnight, 4hr prac/fortnight **Prerequisites:** Distinction in one of (BCHM (2071 or 2971) or MBLG(2071 or 2971)) or (Distinction in MBLG1001 and Distinction average in all other Junior Science Units of Study undertaken). **Prohibitions:** BCHM2072, BCHM2002, BCHM2102, BCHM2902, BCHM2112 **Assessment:** One 3 hour exam, practical reports

This advanced unit aims to describe how cells work at the molecular level, with special emphasis on human biochemistry. The chemical reactions which occur inside cells are described in the first series of lectures, Cellular Metabolism. Aspects of the molecular architecture of cells which enable them to transduce messages and communicate are described in the second half of the unit of study. At every stage, there is emphasis on the 'whole body' consequences of reactions, pathways and processes at the cellular level. Cellular Metabolism describes how cells extract energy from fuel molecules like fatty acids and carbohydrates, how the body controls the rate of fuel utilization and how the mix of fuels is regulated (especially under different physiological circumstances such as starvation and exercise). The metabolic inter-relationships of the muscle, brain, adipose tissue and liver and the role of hormones in coordinating tissue metabolic relationships is discussed. The unit also discusses how the body lays down and stores vital fuel reserves such as fat and glycogen, how hormones modulate fuel partitioning between tissues and the strategies involved in digestion and absorption and transport of nutrients. Signal Transduction covers how communication across membranes occurs (i.e., via surface receptors and signaling cascades). This allows

detailed molecular discussion of the mechanism of hormone action and intracellular process targeting. The practical component complements the lectures by exposing students to experiments which investigate the measurement of glucose utilization using radioactive tracers and the design of biochemical assay systems. During the unit of study, generic skills will be nurtured by frequent use of computers and problem solving activities. However, student exposure to generic skills will be extended by the introduction of exercise designed to teach oral communication, instruction writing and feedback articulation skills.

BCHM3071
Molecular Biology & Biochemistry- Genes

Credit points: 6 **Teacher/Coordinator:** Mrs Jill Johnston, Prof Merlin Crossley. **Session:** Semester 1 **Classes:** Two 1 hour lectures per week and one 6 hour practical perfortnight. **Prerequisites:** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **Prohibitions:** BCHM3971, BCHM3001, BCHM3901 **Assessment:** One 2.5 hour exam, prac work.

This unit of study is designed to provide a comprehensive coverage of the activity of genes in living organisms, with a focus on eukaryotic and particularly human systems. The lecture component covers the arrangement and structure of genes, how genes are expressed, promoter activity and enhancer action. This leads into discussions on the biochemical basis of differentiation of eukaryotic cells, the molecular basis of imprinting, epigenetics, and the role of RNA in gene expression. Additionally, the course discusses the effects of damage to the genome and mechanisms of DNA repair. The modern techniques for manipulating and analysing macromolecules such as DNA and proteins and their relevance to medical and biotechnological applications are discussed. Techniques such as the generation of gene knockout and transgenic mice are discussed as well as genomic methods of analysing gene expression patterns. Particular emphasis is placed on how modern molecular biology and biochemical methods have led to our current understanding of the structure and functions of genes within the human genome. The practical course is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in molecular biology laboratories.

Textbooks
Lewin B Essential Genes (Prentice-Hall, 2006).

BCHM3971
Molecular Biology & Biochem- Genes (Adv)

Credit points: 6 **Teacher/Coordinator:** Mrs Jill Johnston, Prof Merlin Crossley **Session:** Semester 1 **Classes:** Two 1 hour lectures per week and one 6 hour practicals per fortnight. **Prerequisites:** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **Prohibitions:** BCHM3071, BCHM3001, BCHM3901 **Assessment:** One 2.5 hour exam, prac work.

This unit of study is designed to provide a comprehensive coverage of the activity of genes in living organisms, with a focus on eukaryotic and particularly human systems. The lecture component covers the arrangement and structure of genes, how genes are expressed, promoter activity and enhancer action. This leads into discussions on the biochemical basis of differentiation of eukaryotic cells, the molecular basis of imprinting, epigenetics, and the role of RNA in gene expression. Additionally, the course discusses the effects of damage to the genome and mechanisms of DNA repair. The modern techniques for manipulating and analysing macromolecules such as DNA and proteins and their relevance to medical and biotechnological applications are discussed. Techniques such as the generation of gene knockout and transgenic mice are discussed as well as genomic methods of analysing gene expression patterns. Particular emphasis is placed on how modern molecular biology and biochemical methods have led to our current understanding of the structure and functions of genes within the human genome. The practical course is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in molecular biology laboratories. The lecture component of this unit of study is the same as BCHM3071. Qualified students will attend seminars/practical classes in which more sophisticated topics in gene expression and manipulation will be covered.

Textbooks
Lewin B Essential Genes (Prentice-Hall, 2006).

BCHM3081
Mol Biology & Biochemistry- Proteins

Credit points: 6 **Teacher/Coordinator:** Mrs Jill Johnston, Dr Simon Easterbrook-Smith **Session:** Semester 1 **Classes:** Two 2 hour lectures week and one 6 hour practical per fortnight. **Prerequisites:** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **Prohibitions:** BCHM3981, BCHM3001, BCHM3901 **Assessment:** One 2.5 hour exam, prac work.

This unit of study is designed to provide a comprehensive coverage of the functions of proteins in living organisms, with a focus on eukaryotic and particularly human systems. Its lecture component deals with how proteins adopt their biologically active forms, including discussions of protein structure, protein folding and how recombinant DNA technology can be used to design novel proteins with potential medical or biotechnology applications. Particular emphasis is placed on how modern molecular biology and biochemical methods have led to our current understanding of the structure and functions of proteins. It also covers physiologically and medically important aspects of proteins in living systems, including the roles of chaperones in protein folding inside cells, the pathological consequences of misfolding of proteins, how proteins are sorted to different cellular compartments and how the biological activities of proteins can be controlled by regulated protein degradation. The practical course is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in molecular biology and protein biochemistry laboratories.

Textbooks
Lesk, A Introduction to Protein Science (Oxford University Press, 2004)

BCHM3981
Mol Biology & Biochemistry- Proteins Adv

Credit points: 6 **Teacher/Coordinator:** Mrs Jill Johnston, Dr Simon Easterbrook-Smith **Session:** Semester 1 **Classes:** Two 1 hour lectures per week and one 6 hour practical per fortnight. **Prerequisites:** MBLG1001 and Distinction in12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **Prohibitions:** BCHM3081, BCHM3001, BCHM3901 **Assessment:** One 2.5 hour exam, prac work.

This unit of study is designed to provide a comprehensive coverage of the functions of proteins in living organisms, with a focus on eukaryotic and particularly human systems. Its lecture component deals with how proteins adopt their biologically active forms, including discussions of protein structure, protein folding and how recombinant DNA technology can be used to design novel proteins with potential medical or biotechnology applications. Particular emphasis is placed on how modern molecular biology and biochemical methods have led to our current understanding of the structure and functions of proteins. It also covers physiologically and medically important aspects of proteins in living systems, including the roles of chaperones in protein folding inside cells, the pathological consequences of misfolding of proteins, how proteins are sorted to different cellular compartments and how the biological activities of proteins can be controlled by regulated protein degradation. The practical course is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in molecular biology and protein biochemistry laboratories. The lecture component of this unit of study is the same as BCHM3081. Qualified students will attend seminars/practical classes in which more sophisticated topics in gene expression and manipulation will be covered.

Textbooks
Lesk, A Introduction to Protein Science (Oxford University Press, 2004)

BCHM3072
Human Molecular Cell Biology

Credit points: 6 **Teacher/Coordinator:** Mrs Jill Johnston, Prof Iain Campbell **Session:** Semester 2 **Classes:** One 2 hour lecture per week and one 6 hour practical per fortnight. **Prerequisites:** (MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/MBLG2971or BCHM2071/2971 or BCHM2072/2972)) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804) **Prohibitions:** BCHM3972, BCHM3002, BCHM3902, BCHM3004, BCHM3904 **Assessment:** One 2.5 hour exam, prac work.

This unit of study will explore the responses of cells to changes in their environment in both health and disease. The lecture course consists of three integrated modules. The first will provide an overview of the role of signalling mechanisms in the control of human cell biology and then focus on cell surface receptors and the downstream signal transduction events that they initiate. The second will examine how cells detect and respond to pathogenic molecular patterns displayed by infectious agents and injured cells by discussing the roles of relevant cell surface receptors, cytokines and signal transduction pathways. The third will consider life, death and differentiation of human cells in response to intra-cellular and extra-cellular signals by discussing the eukaryotic cell cycle under normal and pathological circumstances and programmed cell death in response to abnormal extra-cellular and intra-cellular signals. In all modules emphasis will be placed on the molecular processes involved in human cell biology, how modern molecular and cell biology methods have led to our current understanding of them and the implications of them for pathologies such as cancer. The practical component is designed to complement the lecture course, providing students with experience in a wide range of techniques used in modern molecular cell biology.

Textbooks
Alberts B et al Molecular biology of the cell (4th edition, Garland Science, 2002)

BCHM3972
Human Molecular Cell Biology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Mrs Jill Johnston, Prof Iain Campbell **Session:** Semester 2 **Classes:** Two 1 hour lectures per week and one 6 hour practical per fortnight. **Prerequisites:** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/MBLG2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **Prohibitions:** BCHM3072, BCHM3002, BCHM3004, BCHM3902, BCHM3904 **Assessment:** One 2.5 hour exam, prac work.

This unit of study will explore the responses of cells to changes in their environment in both health and disease. The lecture course consists of three integrated modules. The first will provide an overview of the role of signalling mechanisms in the control of human cell biology and then focus on cell surface receptors and the downstream signal transduction events that they initiate. The second will examine how cells detect and respond to pathogenic molecular patterns displayed by infectious agents and injured cells by discussing the roles of relevant cell surface receptors, cytokines and signal transduction pathways. The third will consider life, death and differentiation of human cells in response to intra-cellular and extra-cellular signals by discussing the eukaryotic cell cycle under normal and pathological circumstances and programmed cell death in response to abnormal extra-cellular and intra-cellular signals. In all modules emphasis will be placed on the molecular processes involved in human cell biology, how modern molecular and cell biology methods have led to our current understanding of them and the implications of them for pathologies such as cancer. The practical component is designed to complement the lecture course, providing students with experience in a wide range of techniques used in modern molecular cell biology. The lecture component of this unit of study is the same as BCHM3072. Qualified students will attend seminars/practical classes in which more sophisticated topics in gene expression and manipulation will be covered.

Textbooks
Alberts B et al Molecular biology of the cell (4th edition, Garland Science, 2002)

BCHM3082
Medical and Metabolic Biochemistry

Credit points: 6 **Teacher/Coordinator:** Mrs Jill Johnston, Prof Philip Kuchel **Session:** Semester 2 **Classes:** Two 1 hour lectures per week and one 6 hour practical per fortnight. **Prerequisites:** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **Prohibitions:** BCHM3982, BCHM3002, BCHM3004, BCHM3902, BCHM3904 **Assessment:** One 2.5 hour exam, prac work.

This unit of study will explore the biochemical processes involved in the operation of cells and how they are integrated in tissues and in the whole human body in normal and diseased states. These concepts will be illustrated by considering whole-body aspects of energy utilization, fat and glycogen storage and their regulation under normal conditions compared to obesity and diabetes. Key concepts that will be discussed include energy balance, regulation of metabolic rate, control of food intake, tissue interactions in fuel selection, the role of adipose tissue and transport of fuel molecules from storage organs and into cells. Particular emphasis will be placed on how the modern concepts of metabolomics, coupled with new methods, including magnetic resonance techniques, molecular biology methods and microarray technologies, as well as studies of the structure and function of enzymes, have led to our current understanding of how metabolic processes are normally integrated and how they become deranged in disease states. The practical component is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in modern medical and metabolic biochemistry.

BCHM3982
Medical and Metabolic Biochemistry (Adv)

Credit points: 6 **Teacher/Coordinator:** Mrs Jill Johnston, Prof Philip Kuchel **Session:** Semester 2 **Classes:** Two 1 hour lectures per week and one 6 hour practical per fortnight. **Prerequisites:** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **Prohibitions:** BCHM3082, BCHM3002, BCHM3004, BCHM3902, BCHM3904 **Assessment:** One 2.5 hour exam, prac work.

This unit of study will explore the biochemical processes involved in the operation of cells and how they are integrated in tissues and in the whole human body in normal and diseased states. These concepts will be illustrated by considering whole-body aspects of energy utilization, fat and glycogen storage and their regulation under normal conditions compared to obesity and diabetes. Key concepts that will be discussed include energy balance, regulation of metabolic rate, control of food intake, tissue interactions in fuel selection, the role of adipose tissue and transport of fuel molecules from storage organs and into cells. Particular emphasis will be placed on how the modern concepts of metabolomics, coupled with new methods, including magnetic resonance techniques, molecular biology methods and microarray technologies, as well as studies of the structure and function of enzymes, have led to our current understanding of how metabolic processes are normally integrated and how they become deranged in disease states. The practical component is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in modern medical and metabolic biochemistry. The lecture component of this unit of study is the same as BCHM3082. Qualified students will attend seminars/practical classes in which more sophisticated topics in gene expression and manipulation will be covered.

BCHM3092
Proteomics and Functional Genomics

Credit points: 6 **Teacher/Coordinator:** Dr Stuart Cordwell, Mrs Jill Johnston **Session:** Semester 2 **Classes:** Two 1 hour lectures per week and one 3 hour practical per week. **Prerequisites:** MBLG1001 and 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804. **Prohibitions:** BCHM3992, BCHM3098 **Assessment:** One 2.5 hour exam, prac work.

This unit of study will focus on the high throughput methods for the analysis of gene structure and function (genomics) and the analysis

of proteins (proteomics), which are at the forefront of discovery in the biomedical sciences. The course will concentrate on the hierarchy of gene-protein-structure-function through an examination of modern technologies built on the concepts of genomics versus molecular biology, and proteomics versus biochemistry. Technologies to be examined include DNA sequencing, nucleic acid and protein microarrays, two-dimensional gel electrophoresis of proteins, uses of mass spectrometry for high throughput protein identification, isotope tagging for quantitative proteomics, high-performance liquid chromatography, high-throughput functional assays, affinity chromatography and modern methods for database analysis. Particular emphasis will be placed on how these technologies can provide insight into the molecular basis of changes in cellular function under both physiological and pathological conditions as well as how they can be applied to biotechnology for the discovery of biomarkers, diagnostics, and therapeutics. The practical component is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in proteomics and genomics.

Textbooks

Liebler, Daniel C. Introduction to proteomics : tools for the new biology (Humana Press, 2002)

BCHM3992

Proteomics and Functional Genomics (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Stuart Cordwell, Mrs Jill Johnston **Session:** Semester 2 **Classes:** Two 1 hour lectures per week and one 3 hour practical per fortnight. **Prerequisites:** MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units (taken from MBLG2071/2971 or BCHM2071/2971 or BCHM2072/2972) or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804. **Prohibitions:** BCHM3092, BCHM3098 **Assessment:** One 2.5 hour exam, prac work.

This unit of study will focus on the high throughput methods for the analysis of gene structure and function (genomics) and the analysis of proteins (proteomics) which are at the forefront of discovery in the biomedical sciences. The course will concentrate on the hierarchy of gene-protein-structure-function through an examination of modern technologies built on the concepts of genomics versus molecular biology, and proteomics versus biochemistry. Technologies to be examined include DNA sequencing, nucleic acid and protein microarrays, two-dimensional gel electrophoresis of proteins, uses of mass spectrometry for high throughput protein identification, isotope tagging for quantitative proteomics, high-performance liquid chromatography, high-throughput functional assays, affinity chromatography and modern methods for database analysis. Particular emphasis will be placed on how these technologies can provide insight into the molecular basis of changes in cellular function under both physiological and pathological conditions as well as how they can be applied to biotechnology for the discovery of biomarkers, diagnostics, and therapeutics. The practical component is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in proteomics and genomics. The lecture component of this unit of study is the same as BCHM3092. Qualified students will attend seminars/practical classes in which more sophisticated topics in gene expression and manipulation will be covered.

Textbooks

Liebler, Daniel C. Introduction to proteomics : tools for the new biology (Humana Press, 2002)

Biochemistry Honours

An Honours program of study designed for those wishing to enter research or to undertake work leading to a higher degree is conducted in the fourth year. The program runs from early February until mid-November (mid year entry is not normally available). It provides the opportunity for research on a project supervised by a particular staff member, as well as the study of advanced and developing aspects of Biochemistry. During the year each student is required to write one essay, for which there is a choice of topics. Assessment of the year's work is based largely on the student's performance on the research project, and a written report on the project. During the second semester of the Senior Biochemistry units of study students are invited to apply for permission to enrol in the Honours units of study and are provided with a list of possible research projects.

Honours Research Areas

Potential research topics currently offered to students include:Anticancer drugs: synthesis and mechanism of action; Biochemistry of cellular signal transduction; The causes of diabetes and/or obesity; Chaperones and amyloid formation; X-ray crystallography of proteins and drug DNA complexes; NMR studies of the solution structure of DNA binding proteins; NMR studies of membrane transport and metabolism in cells; Eukaryotic transcription factors; Proteomics; Bioinformatics; Protein structure modeling; Mass Spectroscopy; Genomics; Molecular biology of humans and yeasts; Gene expression in transgenic mice; Glycaemic index of foods; oligosaccharides in human milk.

Applying for admission to Honours

Students must arrange to speak with potential supervisors. An application form is attached to the list of possible research projects provided to students or is available from the Honours coordinator and they are asked to provide the names of at least four supervisors in order of preference. A decision on the Honours intake is made before Christmas. An attempt is made to assign students to the supervisor of their choice but this will not always be possible. In difficult cases there is further discussion with the student.The usual requirement for acceptance into the Honours program is a pass at the Credit level in 12 credit points of Senior Biochemistry. Additionally, strong students with relevant training (ie. Chemistry, Biology or Medical Sciences) may be admitted by permission of the Head of School. It should be noted that the number of students accepted into the Honours program may be limited because of resource restrictions (eg, availability of a supervisor and/or laboratory space) and that, in the event of there being more applicants than resources will allow, offers will be made on the basis of academic merit. The Honours unit of study codes are listed in the Honours chapter of this Handbook - chapter 12.The Honours year co-ordinator is Dr Easterbrook-Smith

Bioinformatics

Bioinformatics is an interdisciplinary area of science, involving Computer Science, Computational Science, Mathematics, Statistics, and the Life Sciences (ie. biology, medicine, etc). It is responsible for the development and use of computer systems, databases, software, networks, and hardware to solve scientific problems in a wide variety of areas ranging from biology to medicine.Due to its interdisciplinary nature, the BSc (Bioinformatics) degree is composed of units of study that are offered also to students enrolled in other degrees, the general aim being to equip the students enrolled in the BSc (Bioinformatics) degree with knowledge in key areas of relevance to Bioinformatics.

First Year

In the first year of their study, students devote time to units of study offered by the School of Biological Sciences, School of Chemistry, School of Information Technologies, School of Mathematics and Statistics, and School of Molecular and Microbial Biosciences (see Table 1A in chapter 4).

Second Year

In the second and third year of their study, students divide time equally between the Life Sciences and the mathematical, statistical, and computational sciences, choosing units of study from those offered by the School of Biological Sciences, School of Information Technologies, School of Mathematics and Statistics, School of Molecular and Microbial Biosciences, School of Physics, and the Department of Pharmacology (see Table 1A).

Third Year

In the third year of their study, the students are highly recommended to enrol in BIOL3027/3927 (Bioinformatics and Genomics) and BCHM3092/3992 (Proteomics and Functional Genomics). Furthermore, the students complete a unit of study - BINF3101 (Bioinformatics Project) - that is designed specifically to give them an opportunity to do real research, supervised by scientists from the bio-medical

disciplines. For further information regarding third year requirements see Table 1A.

BINF3101
Bioinformatics Project

Credit points: 6 **Teacher/Coordinator:** Dr LS Jermiin, Dr MA Charleston **Session:** Semester 2 **Classes:** 1 hour meeting with supervisor and 7hours project work per week; 3-4 introductory lectures given by supervisor **Prerequisites:** SOFT (2130 or 2830 or 2004 or 2904) and 12 credit points from Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and Genetics and/or Pharmacology **Prohibitions:** COMP3206, BINF3001 **Assumed knowledge:** 12 credit points from Junior units of study in Software Development (SOFT) and/or Computational Science (COSC) **Assessment:** Quality of proposal (10%), seminar (30%), and report (60%, which includes assessment of the application). The assessment is done at a group level (groups comprise ~4 students) for quality of proposal and seminar, and at the individual level for the report.

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

Biological Sciences

Advice on units of study

Members of the Biology staff are normally present among Faculty Advisers during enrolment week. Any student needing advice before enrolling should make an appointment to see a Departmental adviser from the School of Biological Sciences.

Assistance during semester

The offices of Junior year Biology staff are on the 5th floor of Carslaw. The School maintains an excellent website that provides access to resources for students:-http://www.bio.usyd.edu.au/

Summer School: January-February

The School of Biological Sciences offers some units of study in The Sydney Summer School. Consult The Sydney Summer School website for more information: www.summer.usyd.edu.au

Junior units of study

BIOL1001
Concepts in Biology

Credit points: 6 **Session:** Semester 1, Summer Main **Classes:** Three 1 hour lectures and one 3 hour practical per week. **Prohibitions:** BIOL1101, BIOL1901 **Assumed knowledge:** No previous knowledge required. Students who have not taken HSC biology are recommended to take the Biology Bridging Course (in February). Students who have completed HSC Biology are advised to enrol in BIOL1101 Ecosystems to Genes rather than BIOL1001. **Assessment:** One 2.5 hour exam, assignments, quizzes

Note: It is recommended that BIOL (1001 or 1101 or 1901) be taken before all Semester 2 Junior units of study in Biology.

Concepts in Biology is an introduction to the major themes of modern biology. Starting with interactions between organisms in biological communities, we move on to introductory cell biology, which particularly emphasises how cells obtain and use energy, followed by the diversity and biology of microorganisms. This leads into an introduction to molecular biology through the role of DNA in protein synthesis and development. The genetics of organisms is then discussed, leading to consideration of theories of evolution and the origins of the diversity of modern organisms.

Textbooks
Knox R B et al. 2005. Biology, 3rd ed. McGraw-Hill

BIOL1101
Biology - Ecosystems to Genes

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 3 hours practical per week. **Prerequisites:** HSC 2-unit Biology or equivalent. **Prohibitions:** BIOL1001, BIOL901 **Assessment:** One 2.5 hour exam, assignments, quizzes.

Note: It is recommended that BIOL (1001 or 1101 or 1901) be taken before all Semester 2 Junior units of study in Biology.

Biology - Ecosystems to Genes builds on a satisfactory prior knowledge of the HSC 2-unit biology course. A brief revision of the basic concepts of the high school course is given. Biology - Ecosystems to Genes builds on the main themes introduced in HSC biology to provide a background to the breadth of biology, including genetics of organisms, theories of evolution and the origins of diversity of modern organisms; diversity of microorganisms, cell biology with emphasis on how cells obtain and use energy, modern molecular biology and interactions between organisms in biological communities.

Textbooks
Knox R B et al (2005) Biology., 3rd ed., McGraw-Hill

BIOL1901
Biology - Ecosystems to Genes (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 3 hour practical per week. **Prerequisites:** UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. **Prohibitions:** BIOL1001, BIOL1101 **Assessment:** One 2.5 hour exam, assignments, quizzes

Note: Department permission required for enrolment .
Note: It is recommended that BIOL (1001 or 1101 or 1901) be taken before all Semester 2 Junior units of study in Biology.

This unit of study shares lectures and practical classes with BIOL1101 but also includes more demanding alternative components of Biology - Ecosystems to Genes.

Textbooks
As for BIOL1101.

BIOL1002
Living Systems

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 2 hour practical per week. **Prohibitions:** BIOL1902 **Assumed knowledge:** HSC 2-unit Biology. Students who have not undertaken an HSC biology course are strongly advised to complete a Biology Bridging Course (in February). **Assessment:** One 2.5 hour exam, assignments, quizzes.

Living Systems deals with the biology of organisms, from bacteria to large plants and animals, and emphasises the ways in which they can live in a range of habitats. The importance of energy in living systems, and how elements are used and recycled in biological communities, are described. The unit of study includes lectures and laboratory classes on the physiology of nutrition and growth, basic physiological processes of animals and plants, the ways in which organisms control and integrate their activities, and their reproduction. Finally applications of knowledge of genetics and ecology to practical problems in agriculture and conservation are introduced. It is recommended that BIOL (1001 or 1101 or 1901) be taken before this unit of study. This unit of study, together with BIOL (1001 or 1101 or 1901) provides entry to all Intermediate units of study in biology in the School of Biological Sciences.

Textbooks
Knox R B et al. 2005. Biology. 3rd ed. McGraw-Hill.

BIOL1902
Living Systems (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 2 hour practical per week. **Prerequisites:** UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. **Prohibitions:** BIOL1002, BIOL1904, BIOL1905 **Assessment:** One 2.5 hour exam, assignments, quizzes, independent project

Note: Department permission required for enrolment .

This unit of study shares lectures and practical classes with BIOL1002 but also includes more demanding alternative components of Living Systems

Textbooks
As for BIOL1002.

BIOL1003
Human Biology

Credit points: 6 **Session:** Semester 2, Summer Main **Classes:** Two 1 hour lectures per week (3 lectures in weeks 1 and 11) plus 1 hour per lecture of independent study. One 3 hour practical most weeks, plus 6-9 hours HBOnline work every three weeks covering online practical activities, prework and homework. **Prohibitions:** BIOL1903, EDUH1016 **Assumed knowledge:** HSC 2-unit Biology. Students who have not taken HSC biology are recommended to take the Biology Bridging Course in February. **Assessment:** One 2.5 hour exam, assignment, poster and quizzes.

This Unit of Study has three main components: lectures, practicals and HBOnline activities. The unit of study provides an introduction to human evolution and ecology, cell biology, physiology and anatomy, through both lectures and practical work. It begins with human evolution, human population dynamics and the impact of people on the environment. The unit of study includes human nutrition, distribution of essential requirements to and from cells, control of body functions and defence mechanisms. After discussion of reproduction and development, it concludes with modern studies and research prospects in biotechnology and human genetics. It is recommended that BIOL (1001 or 1101 or 1901) be taken before this unit of study. Enrolment may be restricted by the availability of places. This unit of study, together with BIOL (1001 or 1101 or 1901), provides entry to Intermediate units of study in Biology, but the content of BIOL (1002 or 1902) is assumed knowledge for BIOL (2011 or 2012) and PLNT (2002 or 2003) and students entering from BIOL (1003 or 1903) will need to do some preparatory reading.

Textbooks
Seeley, RR et al. 2005. Essentials of Anatomy and Physiology. 5th ed., McGraw Hill.
Benjamin, CL et al. 2000. Human Biology. McGraw Hill, (Chapters 19,20,21,22).

BIOL1903
Human Biology (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures per week (3 lectures in weeks 1 and 11) plus 1 hour per lecture of independent study. One 3 hour laboratory session most weeks, plus 6-9 hours HBOnline work every three weeks covering online practical activities, prework and homework. **Prerequisites:** UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. **Prohibitions:** BIOL1003, BIOL1904, BIOL1905, EDUH1016 **Assessment:** One 2.5 hour exam, assignment, poster and quizzes

Note: Department permission required for enrolment .

This unit of study is the same as BIOL1003 except for the addition of 3 special seminars from guest speakers, a three hour ethics and bioscience component and three student peer group case study presentations.

Textbooks
As for BIOL1003

Intermediate units of study

Students who wish to take Intermediate Biology units of study should obtain Information for Students Considering Intermediate Biology Units of Study from the School Office (Science Rd Cottage, A10). Students should discuss their preferences, together with the other units of study they propose to study, with a Biology staff member before enrolling.If you are considering going on to study Senior Biology you must satisfy the Intermediate qualifying and prerequisite units of study for the Senior units of study you intend taking.MBLG (2071 or 2971) and MBLG (2072 or 2972) are highly recommended to be taken by Science students in combination with all 6 credit point Intermediate Biology units of study, and are qualifying units for BIOL (3018, 3025, 3026, 3027). Note that MBLG (2071 or 2971) is a prerequisite for students wishing to enrol in MBLG (2072 or 2972). See entry for MBLG 2071, 2971, 2072 and 2972 under the heading Molecular Biology and Genetics.The following eight Intermediate units of study are offered:

Semester 1 units of study

BIOL2011 Invertebrate Zoology, BIOL 2911 Invertebrate Zoology (Advanced), BIOL2016 Cell Biology, BIOL 2916 Cell Biology (Advanced), PLNT2001 Applied Plant Biochemistry, PLNT2901 Applied Plant Biochemistry (Advanced), PLNT2002 Aust Flora: Ecology and Conservation, PLNT2902 Aust Flora: Ecology & Conservation (Adv), ENVI2111 Conservation Biology and Applied Ecology, ENVI2911 Conservation Biology and Applied Ecology (Adv)

Semester 2 units of study

BIOL2012 Vertebrates and their Origins, BIOL2912 Vertebrates and their Origins (Advanced), BIOL2017 Entomology, BIOL2917 Entomology (Advanced), PLNT2003 Plant Form and Function, PLNT2903 Plant Form and Function (Advanced), MBLG2072 Molecular Biology and Genetics B, MBLG2972 Molecular Biology and Genetics B (Advanced)

Note:

Only one component of each of the above listed Intermediate units of study may be credited towards the degree. Qualifying units of study for certain Senior Biology units of study are defined as combinations of 6 credit points of Intermediate Biology units of study (see the Senior unit of study descriptions or Information for Students booklets). For details of PLNT units please refer to the Plant Science entry in this chapter.

BIOL2011
Invertebrate Zoology

Credit points: 6 **Teacher/Coordinator:** Dr E L May **Session:** Semester 1 **Classes:** Two 1 hour lectures, one 1 hour tutorial and one 2 hour practical per week, or three 1 hour lectures and one 2 hour practicals per week. **Prerequisites:** BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For students in BSc (Marine Science) 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. **Prohibitions:** BIOL2911, BIOL2001, BIOL2101, BIOL2901 **Assumed knowledge:** The content of BIOL (1002 or 1902) is assumed knowledge and students entering without BIOL (1002 or 1902) will need to do some preparatory reading. **Assessment:** Mid-semester test, one 2 hour theory exam, one 1.5 hour prac exam, one essay, tutorial work

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

This unit of study provides a thorough grounding in the diversity of animals by lectures and detailed laboratory classes, which include dissections and demonstrations of the functional anatomy of invertebrates. The material is presented within the conceptual framework of evolution and the principles and use of phylogeny and classification. Tutorials further explore concepts of phylogeny, animal structure and function, and provide opportunity to develop oral and written communication skills. The unit of study is designed to be taken in conjunction with BIOL2012 Vertebrates and their Origins; the two units of study together provide complete coverage of the diversity of animals at the level of phylum. This unit of study may be taken alone, but when taken with BIOL2012 provides entry into certain Senior Biology units of study.

BIOL2911
Invertebrate Zoology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr E May **Session:** Semester 1 **Classes:** See BIOL2011 **Prerequisites:** Distinction average in BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For students in BSc (Marine Science) 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibitions:** BIOL2011, BIOL2001, BIOL2101, BIOL2901 **Assumed knowledge:** The content of BIOL (1002 or 1902) is assumed knowledge and students entering without BIOL (1002 or 1902) will need to do some preparatory reading. **Assessment:** See BIOL2011

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

Qualified students will participate in alternative components of BIOL 2011 Invertebrate Zoology. The content and nature of these components may vary from year to year.

BIOL2012
Vertebrates and their Origins

Credit points: 6 **Teacher/Coordinator:** Dr E L May **Session:** Semester 2 **Classes:** Two 1 hour lectures, one 1 hour tutorial and one 2 hour practical per week, or three 1 hour lectures and one 2 hour practical per week; one field trip. **Prerequisites:** BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or MBLG1001 or EDUH1016 and 12 credit points of

Junior Chemistry. For students in BSc (Marine Science) 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. **Prohibitions:** BIOL2912, BIOL2002, BIOL2102, BIOL2902 **Assumed knowledge:** The content of BIOL (1002 or 1902) is assumed knowledge and students entering without BIOL (1002 or 1902) will need to do some preparatory reading. **Assessment:** Mid-semester test, one 2 hour theory exam, one 1.5 hour prac exam, one assignment, one essay, tutorial work

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

This unit of study completes the grounding in the diversity of animals at the level of phylum introduced in BIOL2011 Invertebrate Zoology, by lectures and detailed laboratory classes, which include dissections and demonstrations of the functional anatomy of vertebrates and invertebrate phyla not covered in BIOL2011. Tutorials further explore concepts of phylogeny, animal structure and function, and provide opportunity to develop oral and written communication skills. Students may choose to attend an intensive 3.5 day field trip.

BIOL2912
Vertebrates and their Origins (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr E May **Session:** Semester 2 **Classes:** See BIOL2012 **Prerequisites:** Distinction average in BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For students in BSc (Marine Science) 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibitions:** BIOL2012, BIOL2002, BIOL2102, BIOL2902 **Assumed knowledge:** The content of BIOL (1002 or 1902) is assumed knowledge and students entering without BIOL (1002 or 1902) will need to do some preparatory reading. **Assessment:** See BIOL2012

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

Qualified students will participate in alternative components of BIOL2012 Vertebrates and their Origins. The content and nature of these components may vary from year to year.

BIOL2016
Cell Biology

Credit points: 6 **Teacher/Coordinator:** Dr Murray Thomson, Dr Jan Marc, A/Prof Robyn Overall, Dr Osu Lilje **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 3 hour practical per week, (wks 1-9). **Prerequisites:** 12 credit points of Junior Biology, or equivalent, e.g. BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1902 or 1003 or 1903 or 1904 or 1905) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For students in the BSc (Marine Science) 6 credit points of Junior Chemistry and either an additonal 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. **Prohibitions:** BIOL2916, BIOL2006, BIOL2106, BIOL2906 **Assessment:** One 3 hour theory exam, one project assignment, one prac report

Note: The completion of MBLG1001 is highly recommended.

This unit of study focuses on contemporary principles in cell biology and development in plant and animals, with emphasis on cellular functions and favouring the molecular perspective. Topics include the structure, function, and evolution of cells and organelles, cellular development and differentiation, and embryonic development. Material covered in lectures is integrated with laboratory classes. The unit of study is designed to complement intermediate Molecular Biology and Genetics units. It leads ideally to various senior units of study in biology, including Plant Growth & Development, Applications of Recombinant DNA Tech, Evolutionary Genetics & Animal Behaviour, Fungal Biology, Animal Physiology, Bioinformatics and Genomics, as well as senior units of study in biochemistry.

Textbooks
Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P. 2002. Molecular Biology of the Cell. 4th Edition. Garland Science
Study Guide BIOL2016/2916 Cell Biology (available from Copy Centre)

BIOL2916
Cell Biology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Murray Thomson, Dr Jan Marc, A/Prof Robyn Overall, Dr Osu Lilje **Session:** Semester 1 **Classes:** Three 1 hour lectures per week and one 3 hour practical per week (weeks 1-9). **Prerequisites:** Distinction average in BIOL (1001 or 1101 or 1901) and one of BIOL (1002 or 1902 or 1003 or 1903 or 1904 or 1905) or MBLG1001 and 12 credit points of Junior Chemistry. For students in the BSc (Marine Science) 6 credit points of Junior Chemistry and either an additonal 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibitions:** BIOL2016, BIOL2006, BIOL2106, BIOL2906 **Assessment:** One 3 hour exam, one practical report and one project assignment

Note: The completion of MBLG1001 is highly recommended. This is a core intermediate unit in the BSc (Molecular Biology and Genetics) award course.

Qualified students will participate in alternative components of BIOL2016 Cell Biology.

Textbooks
As for BIOL2016

BIOL2017
Entomology

Credit points: 6 **Teacher/Coordinator:** Dr Dieter Hochuli **Session:** Semester 2 **Classes:** One 2.5 hour lecture and one 2.5 hour practical per week. **Prerequisites:** 12 credit points of Junior Biology, or equivalent, e.g. BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For BSc (Marine Science) students 6 credit points of Junior Chemistry and either an additonal 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. **Prohibitions:** BIOL2917, BIOL2007 **Assumed knowledge:** BIOL (2011 or 2911 or 2001 or 2901) **Assessment:** Two hour theory exam, two practical reports, a presentation, review and an insect collection.

A general but comprehensive introduction to Insect Biology, this unit of study develops understanding of the scientific approach to insect structural diversity, identification, life histories, development, physiology, ecology, biogeography, principles of control, toxicology of insecticides and biology of major economic pests in NSW. Practicals give a working knowledge of major orders of insects, economically important species, principles of collection, preservation and identification. Entomological data bases are introduced, and students do a library assignment and make and present a small collection of insects. Project work considers the use of insects in forensic investigations, insect-plant interactions and insects as tools for environmental assessment.

BIOL2917
Entomology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Dieter Hochuli **Session:** Semester 2 **Classes:** One 2.5 hour lecture and one 2.5 hour practical per week. **Prerequisites:** Distinction average in 12 credit points of Junior Biology, or equivalent, e.g. BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1902 or 1003 or 1903) or MBLG1001 or EDUH1016 and 12 credit points of Junior Chemistry. For BSc (Marine Science) students: 6 credit points of Junior Chemistry and either an additonal 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibitions:** BIOL2007, BIOL2017 **Assumed knowledge:** BIOL (2011 or 2911 or 2001 or 2901) **Assessment:** Two hour theory exam, two practical reports, a presentation, review and an insect collection

Qualified students will participate in alternative components of BIOL2017, Entomology. The content and nature of these components may vary from year to year.

Senior units of study

Students proceeding from Intermediate to Senior Biology

Students who intend to proceed from Intermediate to Senior Biology must:(a) obtain Information for Students Considering Senior Biology Units of Study from the School Office (The Cottage, A10 Science Road). This booklet gives detailed synopses of all Senior Biology units of study.(b) discuss their choice with a Biology Staff member before enrolling.

Senior units of study offered: pre-semester 1

BIOL3010 Tropical Wildlife Biology & Management. Pre-Semester 1 intensive, BIOL3017 Fungi in the Environment - Summer Break and Semester 1.

Senior units of study offered: semester 1

BIOL3006 Ecological Methods (MS), BIOL3011 Ecophysiology (MS), BIOL3012 Animal Physiology, BIOL3013 Marine Biology (MS), BIOL3018 Applications of Recombinant DNA Technology, BIOL3027 Bioinformatics and Genomics, PLNT 3003 Systematics & Evolution

of Plants. (Plus Advanced versions of the above - BIOL 39xx, PLNT 39xx)

Senior units of study offered: pre-semester 2 intensive

BIOL3008 Marine Field Ecology. Pre-Semester 2 intensive. (MS)BIOL3009 Terrestrial Field Ecology. Pre-Semester 2 intensive.(Plus Advanced versions of the above - BIOL 39xx, PLNT 39xx)

Senior units of study offered: semester 2

BIOL3007 Ecology (MS), BIOL3025 Evolutionary Genetics and Animal Behaviour, BIOL3026 Developmental Genetics,PLNT3002 Plant Growth & Development. (Plus Advanced versions of the above - BIOL 39xx, PLNT 39xx)

Further information

Details of lectures and practical classes are given in the booklet: Information for Students Considering Senior Biology Units of Study.Any combination of units may be chosen subject to timetable and prerequisite constraints.Units of Study are offered subject to student numbers, availability of staff and resources. Quotas exist on Marine Field Ecology, BIOL 3008/3908, and Terrestrial Field Ecology, BIOL 3009/3909. When necessary, selection is based on academic merit.Students majoring in Marine Science must enrol in 24 credit points of Senior Marine Science, including at least 6 credit points of Senior Biology (from those marked MS) and 6 credit points from GEOS units. If these credit points are taken as part of Marine Science they may not be counted towards a Biology major.

Selecting Units of Study

Select your unit of study after checking (a) that you have passed the qualifying units of study stated for each unit of study, and (b) checking your timetable. You are strongly advised to check the most up-to-date information (including details of quotas in Marine modules) in the booklet: Information for Students Considering Senior Biology Units of Study, available from the School Office (The Cottage, A10, Science Road).

Textbooks

A list of textbooks and reference books is provided in the booklet: Information for Students Considering Senior Biology Units of Study.

BIOL3006
Ecological Methods

Credit points: 6 **Teacher/Coordinator:** Dr Clare McArthur (UEO), Dr Dieter Hochuli, A/Prof Ross Coleman. **Session:** Semester 1 **Classes:** Two 1 hour lecture and one 3 hour laboratory per week **Prerequisites:** 12 credit points of intermediate level Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3906, BIOL3023, BIOL3923, MARS3102 **Assumed knowledge:** BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). **Assessment:** One 2 hour exam (40% of assessment), practical assignments (60%; including calculations, reports and reviews)

This unit will consider ecology as a quantitative, experimental and theoretical science. It is concerned with the practical skills and philosophical background required to explore questions and test hypotheses in the real world. Application of ecological methods and theory to practical problems will be integrated throughout the unit of study. Lectures will be on sound philosophical and experimental principles, drawing on real examples for demonstration of concepts, and will be useful as one basis for informed conservation, use and general management of natural populations and habitats. Practical classes will deal with practical methods of determining patterns of distribution and abundance, problems of sampling, estimation of ecological variables, and methods of statistical analysis of field data. Computer simulations and analyses will be used where appropriate.

Textbooks

Dytham, C. 2003. Choosing and using statistics. A biologist's guide, 2nd edition. Blackwell Science, Melbourne; Field, A. 2005. Discovering statistics using SPSS, 2nd edition. SAGE Publications, London. Underwood, A. J. 1997. Experiments in Ecology: their logical design and interpretation using analysis of variance, 1st edition. Cambridge University Press, Cambridge.
Quinn, G. P., and M. J. Keough. 2002. Experimental Design and Data Analysis for Biologists, 1st edition. Cambridge University Press, Cambridge.

BIOL3906
Ecological Methods (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Clare McArthur (UEO), Dr Dieter Hochuli, A/Prof Ross Coleman. **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 3 hour laboratory per week **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3006, BIOL3023, BIOL3923, MARS3102 **Assumed knowledge:** BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). **Assessment:** One 2 hour exam (40% of assessment), practical assignments (60%; including calculations, reports and reviews)

This unit has the same objectives as BIOL3006 Ecological Methods, and is suitable for students who wish to pursue certain aspects in greater depth. Entry is restricted, and selection is made from the applicants on the basis of their previous performance. Students taking this unit of study will participate in alternatives to some elements of the standard course and will be required to pursue the objectives by more independent means. Specific details of this unit of study and assessment will be announced in meetings with students in week 1 of semester 1. This unit of study may be taken as part of the BSc (Advanced) program.

BIOL3007
Ecology

Credit points: 6 **Teacher/Coordinator:** Prof Christopher Dickman (UEO), Dr Dieter Hochuli, Dr Clare McArthur, Dr Glenda Wardle **Session:** Semester 2 **Classes:** Two 1 hour lecture and one 3 hour laboratory per week **Prerequisites:** 12 credit points of Intermediate Biology; or ENVI2111 or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3907, BIOL3024, BIOL3924, BIOL3040, BIOL3940, BIOL3041, BIOL3941, BIOL3042, BIOL3942, MARS3102 **Assumed knowledge:** Although not prerequisites, knowledge obtained from Ecological Methods (BIOL3006), and Marine Field Ecology (BIOL3008) and/or Terrestrial Field Ecology (BIOL3009), or the associated advanced units (BIOL3906, BIOL3908 and/or BIOL3909), is strongly recommended. **Assessment:** One 2hr exam (40% of assessment), two 1000 word essays (20%), one practical report (25%), and one summary (5%), and one presentation (10%)

This unit explores the dynamics of ecological systems, and considers the interactions between individual organisms and populations, organisms and the environment, and ecological processes. Lectures are grouped around four dominant themes: Interactions, Evolutionary Ecology, The Nature of Communities, and Conservation and Management. Emphasis is placed throughout on the importance of quantitative methods in ecology, including sound planning and experimental designs, and on the role of ecological science in the conservation, management, exploitation and control of populations. Relevant case studies and examples of ecological processes are drawn from marine, freshwater and terrestrial systems, with plants, animals, fungi and other life forms considered as required. Students will have some opportunity to undertake short term ecological projects, and to take part in discussions of important and emerging ideas in the ecological literature.

Textbooks

Ecology: an Australian Perspective (2003) Edited by P. Attiwill and B. Wilson. Oxford University Press.

BIOL3907
Ecology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Prof Christopher Dickman (UEO), Dr Dieter Hochuli, Dr Clare McArthur, Dr Glenda Wardle **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 3 hour laboratory per week. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology; or ENVI2111 or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3007, BIOL3024, BIOL3924, BIOL3040, BIOL3940, BIOL3041, BIOL3941, BIOL3042, BIOL3942, MARS3102 **Assumed knowledge:** Although not prerequisites, knowledge obtained from Ecological Methods (BIOL3006), and Marine Field Ecology (BIOL3008) and/or Terrestrial Field Ecology (BIOL3009), or the associated advanced units (BIOL3906, BIOL3908 and/or BIOL3909), is strongly recommended. Students entering this unit of study should have achieved distinction average. **Assessment:** One 2hr exam (40% of assessment), two 1000 word essays (20%), one practical report (25%) and one summary (5%), one presentation (10%).

This unit has the same objectives as BIOL3007 Ecology, and is suitable for students who wish to pursue certain aspects in greater

depth. Entry is restricted, and selection is made from the applicants on the basis of their previous performance. Students taking this unit of study will participate in alternatives to some elements of the standard course and will be required to pursue the objectives by more independent means. Specific details of this unit of study and assessment will be announced in meetings with students in week 1 of semester 2. This unit of study may be taken as part of the BSc (Advanced) program.

Textbooks

Ecology: an Australian Perspective (2003) Edited by P. Attiwill and B. Wilson. Oxford University Press.

BIOL3008

Marine Field Ecology

Credit points: 6 **Teacher/Coordinator:** A/Prof Ross Coleman (UEO), Prof Tony Underwood, Dr Gee Chapman **Session:** S2 Intensive **Classes:** One 8 day field course. **Prerequisites:** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3908, BIOL3040, BIOL3940, BIOL3024, BIOL3924, MARS3102 **Assumed knowledge:** Ecological Methods (BIOL3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly advised. **Assessment:** Discussion groups (10%), research project proposal (10%), biodiversity survey report (20%), data analysis and checking (10%), research project report (50%).

Note: Dates: 2 July 2007 - 9 July 2007

This field course provides a practical introduction to the experimental analysis of marine populations and assemblages. Students gain experience using a range of intertidal sampling techniques and develop a detailed understanding of the logical requirements necessary for manipulative ecological field experiments. No particular mathematical or statistical skills are required for this subject. Group experimental research projects in the field are the focus of the unit during the day, with lectures and discussion groups about the analysis of experimental data and current issues in experimental marine ecology occurring in the evening. Note: Successful completion of BIOL 3008/3908 and BIOL3007/3907 is a prerequisite for students wishing to proceed to Honours in Marine Ecology.

Textbooks

No textbook is prescribed but Coastal Marine Ecology of Temperate Australia. eds. Underwood, A.J. & Chapman, M.G. University of New South Wales Press, 1995, provides useful background reading.

BIOL3908

Marine Field Ecology (Advanced)

Credit points: 6 **Teacher/Coordinator:** A/Prof Ross Coleman (UEO), Prof Tony Underwood, Dr Gee Chapman **Session:** S2 Intensive **Classes:** One 8 day field course, four 1 hour tutorials. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3008, BIOL3040, BIOL3940, BIOL3024, BIOL3924, MARS3102 **Assumed knowledge:** Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly advised **Assessment:** Discussion groups (10%), research project proposal (10%), biodiversity report (20%), data analysis and checking (10%), research project report (50%).

Note: Dates: 2 July 2007 - 9 July 2007

This unit has the same objectives as Marine Field Ecology BIOL3008, and is suitable for students wishing to pursue certain aspects of marine field ecology in a greater depth. Entry is restricted and selection is made from the applicants on the basis of their past performance. Students taking this unit of study will be expected to take part in a number of additional tutorials after the field course on advanced aspects of experimental design and analysis and will be expected to incorporate these advanced skills into their analyses and project reports. This unit may be taken as part of the BSc(Advanced). Note: Successful completion of BIOL 3008/3908 and BIOL3007/3907 is a prerequisite for students wishing to proceed to Honours in Marine Ecology.

Textbooks

No textbook is prescribed but Coastal Marine Ecology of Temperate Australia. eds. Underwood, A.J. & Chapman, M.G. University of New South Wales Press, 1995, provides useful background reading.

BIOL3009

Terrestrial Field Ecology

Credit points: 6 **Teacher/Coordinator:** Dr Glenda Wardle (UEO), Prof Christopher Dickman, Dr Dieter Hochuli, Dr Clare McArthur **Session:** S2 Intensive **Classes:** One 6 day field trip held in the pre-semester break (Sunday, July 15 - Friday, July 20) and 4 practical classes during weeks 1-4 in semester 2. **Prerequisites:** 12 credit points of intermediate level Biology. **Prohibitions:** BIOL3909, BIOL3041, BIOL3941, BIOL3042, BIOL3942, BIOL3024, BIOL3924 **Assumed knowledge:** Ecological Methods (BIOL3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly recommended. **Assessment:** Discussions and quiz (10%), research project proposal and brief presentation (10%), sampling project report (20%), specimen collection (10%), research project report (50%).

This field course provides practical experience in the experimental analysis of terrestrial populations and assemblages. Students learn a broad range of ecological sampling techniques and develop a detailed understanding of the logical requirements necessary for manipulative ecological field experiments. The field work incorporates survey techniques for plants, small mammals and invertebrates and thus provides a good background for ecological consulting work. Students attend a week-long field course and participate in a large-scale research project as well as conducting their own research project. Invited experts contribute to the lectures and discussions on issues relating to the ecology, conservation and management of Australia's terrestrial flora and fauna.

BIOL3909

Terrestrial Field Ecology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Glenda Wardle (UEO), Prof Christopher Dickman, Dr Dieter Hochuli, Dr Clare McArthur **Session:** S2 Intensive **Classes:** 6 day field trip held in the pre-semester break (Sunday, July 15 - Friday, July 20) and 4 practical classes during weeks 1-4 in semester 2. **Prerequisites:** Distinction average in 12 credit points of intermediate level Biology. **Prohibitions:** BIOL3009, BIOL3041, BIOL3941, BIOL3042, BIOL3942, BIOL3024, BIOL3924 **Assumed knowledge:** Ecological Methods (BIOL3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly recommended. **Assessment:** Discussions and quiz (10%), research project proposal and brief presentation (10%), sampling project report (20%), specimen collection (10%), research project report (50%).

Note: Students taking this unit of study will complete an individual research project on a topic negotiated with a member of staff. it is expected that much of the data collection will be completed during the field trip but some extra time may be needed during semester 2.

This unit has the same objectives as BIOL3009 Terrestrial Field Ecology, and is suitable for students who wish to pursue certain aspects in greater depth. Entry is restricted, and selection is made from the applicants on the basis of their previous performance. Students taking this unit of study will participate in alternatives to some elements of the standard course and will be required to pursue the objectives by more independent means. Specific details of this unit of study and assessment will be announced in meetings with students at the beginning of the unit. This unit of study may be taken as part of the BSc (Advanced) program.

BIOL3010

Tropical Wildlife Biology and Management

Credit points: 6 **Session:** S1 Intensive **Classes:** 5 day Field School, followed by 5 days of classes at Sydney University. **Prerequisites:** 12 credit points of intermediate level Biology. **Prohibitions:** BIOL3910 **Assumed knowledge:** None, although Vertebrates and their Origins would be useful. **Assessment:** One 2 hour exam, one major practical report (2000wd), one 15 min oral presentation, one 1 hour practical exam.

Note: Department permission required for enrolment .
Note: Dates: 11 February - 16 February 2007 Northern Territory followed by tutorials and practical classes at the University of Sydney 19 February - 23 February 2007.

Due to its isolation from the rest of the world and unique evolutionary history, the Australian terrestrial vertebrate fauna (amphibians, reptiles, birds and mammals) is highly unusual, and hence has a lot to offer in the study of evolutionary processes. The rarity of some species and Australia's unusual climate and landforms present special challenges for the management of our native wildlife. This unit of study addresses the evolution, ecology and management of Australia's terrestrial fauna. The subject comprises of a five day field course in the Northern Territory, near Darwin, where students will learn field-based techniques

in wildlife management, combined with lectures given by experts in the evolution, ecology and management of wildlife.

BIOL3910
Tropical Wildlife Biol & Management Adv

Credit points: 6 **Session:** S1 Intensive **Classes:** 5 day Field School followed by 5 days of classes at Sydney University. **Prerequisites:** Distinction average in 12 credit points of intermediate level Biology. **Prohibitions:** BIOL3010 **Assumed knowledge:** None, although Vertebrates and their Origins would be useful. **Assessment:** One 2 hour exam, one major practical report (2000wd), one 15 min oral presentation, one 1 hour practical exam.

Note: Department permission required for enrolment .
Note: Dates: 11 February - 16 February 2007 Northern Territory followed by tutorials and practicals at the University of Sydney 19 February - 23 February 2007.

This unit has the same objectives as BIOL3010 Tropical Wildlife Biology and Management, and is suitable for students who wish to pursue certain aspects in greater depth. Entry is restricted, and selection is made from the applicants on the basis of their previous performance. Students taking this unit of study will participate in alternatives to some elements of the standard course and will be required to pursue the objectives by more independent means. Specific details of this unit of study and assessment will be announced in meetings with students at the beginning of the unit. This unit of study may be taken as part of the BSc(Advanced) program.

BIOL3011
Ecophysiology

Credit points: 6 **Teacher/Coordinator:** Dr Seebacher **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 4 hour laboratory per week. **Prerequisites:** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3911 **Assumed knowledge:** BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903). **Assessment:** One 1.5 hour exam, field trip seminar, laboratory report.

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

Ecophysiology is a conceptually based unit of study that covers physiological interactions between organisms and their environments. The importance of environmental parameters, such as temperature, water, salt and pH, for biological functions, are investigated. Physiological interactions among animals, plants and fungi are discussed. Examples will have an emphasis on vertebrates and marine organisms. As part of the practical component, students design their own research project to be conducted during the week-end long field trip, and during self-directed laboratory sessions.

BIOL3911
Ecophysiology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Seebacher **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 4 hour laboratory per week. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibitions:** BIOL3011 **Assumed knowledge:** BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903) **Assessment:** One 1.5 hour exam, field trip seminar, independent project report.

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

Ecophysiology (Advanced) shares the same lectures as BIOL 3011 Ecophysiology, but it includes an independent project in place of the laboratory report (equivalent of 30% of Ecophysiology). The content and nature of the independent project vary and students are encouraged to design their own project.

BIOL3012
Animal Physiology

Credit points: 6 **Teacher/Coordinator:** Dr M Thomson **Session:** Semester 1 **Classes:** Two 1 hour lectures, one 4 hour laboratory per week. **Prerequisites:** 12 credit points of Intermediate Biology including BIOL (2012 or 2002 or 2003 or 2016 or 2006 or 2912 or 2902 or 2903 or 2916 or 2906) or PLNT (2003 or 2903). **Prohibitions:** BIOL3912 **Assessment:** One 1.5 hour exam, laboratory/library reports.

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

In this unit of study students explores how animals physiology is influenced by environmental factors. There is a strong emphasis on how modern research is expanding the field of physiology throughout a diverse array of vertebrates and invertebrate. The unit is designed to complement Ecophysiology. Particular emphasis will be placed on nutrition, animal behaviour, energy metabolism, respiration, endocrinology and neurobiology.

BIOL3912
Animal Physiology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr M Thomson **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 4 hour laboratory per week. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology including BIOL (2012 or 2002 or 2003 or 2006 or 2016 or 2912 or 2902 or 2903 or 2916 or 2906) or PLNT (2003 or 2903). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibitions:** BIOL3012 **Assessment:** One 1.5 hour exam, laboratory reports, independent project report.

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

Animal Physiology (Advanced) shares the same lectures as Animal Physiology, but it includes an independent project in place of one or more components of the laboratory classes to the equivalent of 30% of Animal Physiology. The content and nature of the independent project may vary from year to year.

BIOL3013
Marine Biology

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lecture and one 4 hour laboratory per week. **Prerequisites:** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3913 **Assumed knowledge:** MARS2006 **Assessment:** Practical reports, paper criticisms and other assignments

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

We will examine in detail processes which are important for the establishment and maintenance of marine communities. Lectures will expose students to the key ideas, researchers and methodologies within selected fields of marine biology. Laboratory sessions will complement the lectures by providing students with hands-on experience with the organisms and the processes that affect them. Students will develop critical analysis skills while examining the current literature.

BIOL3913
Marine Biology (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 4 hour laboratory per week. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3013 **Assumed knowledge:** MARS2006 **Assessment:** Practical reports, paper criticisms and other assignments.

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

Qualified students will participate in alternative components of the BIOL3103 Marine Biology unit. The content and nature of these components may vary from year to year.

BIOL3017
Fungi in the Environment

Credit points: 6 **Teacher/Coordinator:** Dr P McGee **Session:** S1 Intensive **Classes:** 40 hours of practicals in a two week intensive program immediately prior to semester one (labs run from 12 February to 23 February 2007), plus the equivalent of 30 hours self-guided study during the semester. **Prerequisites:** 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. **Prohibitions:** BIOL3917 **Assessment:** One 2 hour take home exam, laboratory and written assignments.

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

The unit emphasises use of research techniques in the laboratory to enable deeper understanding of issues in fungal ecology, environmental and rehabilitation biology, biological control and soil microbiology. Benefits provided by fungi in symbiotic interactions with plants, including mycorrhizal fungi and shoot-borne endophytes. Students will be encouraged to develop a deeper understanding of

one area of Fungal Biology through independent study. Part of the learning material will be available on the internet.

BIOL3917
Fungi in the Environment (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr P McGee **Session:** S1 Intensive **Classes:** 40 hours of practical work in a two week intensive program immediately prior to semester one (labs run from 12 February to 23 February 2007), plus the equivalent of 30hrs self-guided study during the semester. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. **Prohibitions:** BIOL3017 **Assessment:** One 2 hour take home exam, laboratory and written assignments.

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

Qualified students will be encouraged to develop a research project under supervision. The content and nature of the research will be agreed on with the executive officer.

BIOL3018
Applications of Recombinant DNA Tech

Credit points: 6 **Teacher/Coordinator:** Dr B Lyon, Prof R Skurray **Session:** Semester 1 **Classes:** Two 1 hour lectures per week; up to 4 hours laboratory per week. **Prerequisites:** 12 credit points from MBLG (2001/2901//2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **Prohibitions:** BIOL3918 **Assessment:** One 2 hour exam, practical report, assignment

A unit of study with lectures, practicals and tutorials on the application of recombinant DNA technology and the genetic manipulation of prokaryotic and eukaryotic organisms. Lectures cover the applications of molecular genetics in biotechnology and consider the impact and implications of genetic engineering. Topics include the cloning and expression of foreign genes in bacteria, yeast, animal and plant cells, novel human and animal therapeutics and vaccines including human gene therapy, new diagnostic techniques for human and veterinary disease, the transformation of animal and plant cells, the genetic engineering of animals and plants, and the environmental release of genetically-modified (transgenic) organisms. Practical work may include nucleic acid isolation and manipulation, gene cloning and PCR amplification, DNA sequencing and computer analysis of gene sequences, immunological detection of proteins, and the genetic transformation and assay of plants.

BIOL3918
Applications of Recombinant DNA Tech Adv

Credit points: 6 **Teacher/Coordinator:** Dr B Lyon **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 4 hour laboratory per week. **Prerequisites:** Distinction average in12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **Prohibitions:** BIOL3018 **Assessment:** One 2 hour exam, assignment, seminar

Qualified students will participate in alternative components of BIOL3018 Applications of Recombinant DNA Technology. The content and nature of these components may vary from year to year.

BIOL3025
Evolutionary Genetics & Animal Behaviour

Credit points: 6 **Teacher/Coordinator:** A/Prof Oldroyd, Dr Beekman. **Session:** Semester 2 **Classes:** Two 1 hour lectures and up to 4 hours laboratory per week. **Prerequisites:** 12 credit points from MBLG (2001/2901/2771/2871/2071/2971), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **Prohibitions:** BIOL3925, BIOL3928 **Assessment:** One 1.5 hour exam, assignments, seminar

The unit of study covers the main themes of modern evolutionary theory including population genetics. In the practicals, students use molecular methods to quantify genetic variation in natural populations. Using these skills we will search for population subdivision and discuss how this can lead to speciation. Lectures will cover how the evolution of traits can be tracked using the comparative method. We will consider how studies of sex ratios, sexual selection, kin selection, game theory and quantitative genetics can illuminate the mechanisms by which animals have evolved, and explain why they behave as they do. We will then consider if these themes have any relevance to human sociobiology. The unit also covers the role of genetics in conservation. There will be a field trip to collect organisms for population genetic analysis. There will be plenty of opportunity in the student seminars to examine the more controversial aspects of modern evolutionary thought.

BIOL3925
Evolutionary Gen. & Animal Behaviour Adv

Credit points: 6 **Teacher/Coordinator:** A/Prof Oldroyd, Dr Beekman. **Session:** Semester 2 **Classes:** Two 1 hour lectures and up to 4 hours of laboratory per week. **Prerequisites:** Distinction average in12 credit points from MBLG (2001/2901/2771/2871/2071/2971), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **Prohibitions:** BIOL3025, BIOL3928 **Assessment:** One 1.5 hour exam, assignments, seminar.

Qualified students will participate in alternative components of BIOL3025 Evolutionary Genetics and Animal Behaviour. The content and nature of these components may vary from year to year. Some assessment will be in an alternative format.

BIOL3026
Developmental Genetics

Credit points: 6 **Teacher/Coordinator:** Dr Saleeba, Dr Raphael. **Session:** Semester 2 **Classes:** Two 1 hour lectures and up to 4 hours laboratory per week. **Prerequisites:** 12 credit points from MBLG (2001/2901/2071/2971/2771/2871) and MBLG (2002/2902/2072/2972). For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **Prohibitions:** BIOL3926 **Assessment:** One 2 hour exam, assignments.

This unit discusses current understanding of developmental genetics with emphasis on molecular genetics. The developmental genetics of model plants and animals will be investigated. In particular, the molecular genetics of vertebrate development, pattern formation and gene expression, the study of mutants in development, plant specific processes such as root formation and flowering, will be covered making reference to modern techniques such as transgenics, recombinant DNA technology, and tissue specific expression analysis. Various methods of genetic mapping will be covered. Practical work complements the theoretical aspects and develops important genetical skills.

BIOL3926
Developmental Genetics (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Saleeba, Dr Raphael. **Session:** Semester 2 **Classes:** Two 1 hour lectures and up to 4 hours of laboratory per week. **Prerequisites:** Distinction average in 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), and MBLG (2002/2902/2072/2972). For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **Prohibitions:** BIOL3026 **Assessment:** One 2 hour exam, assignments.

Qualified students will participate in alternative components to BIOL3026 Developmental Genetics. The content and nature of these components may vary from year to year. Some assessment will be in an alternative format.

BIOL3027
Bioinformatics and Genomics

Credit points: 6 **Teacher/Coordinator:** Dr Firth, Dr Jermiin **Session:** Semester 1 **Classes:** Two 1 hour lectures and up to 4 hours laboratory per week. **Prerequisites:** 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **Prohibitions:** BIOL3927 **Assessment:** One 2 hour exam, assignments

Note: This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.

A unit of study comprising lectures, practical assignments and tutorials on the application of bioinformatics to the storage, retrieval and analysis of biological information, principally in the form of nucleotide and amino acid sequences. Although the main emphasis is on sequence data, other forms of biological information are considered.

The unit begins with the assembly and management of nucleotide sequence data and an introduction to the databases that are normally used for the storage and retrieval of biological data, and continues with signal detection and analysis of deduced products, sequence alignment, and database search methods. Phylogenetic reconstruction based on distance-based methods, parsimony methods and maximum-likelihood methods is described and students are introduced to the idea of tree-space, phylogenetic uncertainty, and taught to evaluate phylogenetic trees and identify factors that will confound phylogenetic inference. Finally, whole genome analysis and comparative genomics are considered. The unit gives students an appreciation of the significance of bioinformatics in contemporary biological science by equipping them with skills in the use of a core set of programs and databases for "in silico" biology, and an awareness of the breadth of bioinformatics resources and applications.

BIOL3927
Bioinformatics and Genomics (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Firth, Dr Jermiin **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 4 hour laboratory per week. **Prerequisites:** Distinction average in 12 credit points from MBLG (2001/2901/2071/2971/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **Prohibitions:** BIOL3027 **Assessment:** One 2 hour exam, assignments

Qualified students will participate in alternative components of BIOL3027 Bioinformatics and Genomics. The content and nature of these components may vary from year to year. Some assessment will be in alternative format.

Biology Honours

A single Honours program in Biology accommodates students who have completed 24 credit points of Senior Biology Life Sciences units and have a minimum WAM of 65. Information about qualifications for entry into Honours is available from the School Office (Science Road Cottage, A10), or on the School of Biological Sciences web-site.During the Honours year the principles established in the first three years of the undergraduate award course are further developed, and students are introduced to a wider field of biology and biological techniques. Students may elect to specialise in any of the aspects of biology that are studied in the School. Projects jointly supervised by staff in other Schools or Departments within hte University may also be considered.Students who have signified their intention of entering Honours will be notified of acceptance after the publication of the second semester Senior examination results. Honours students start their academic year at the beginning of February or in July.

The Honours year comprises:-

1. A project in which the student investigates a problem and presents oral and written accounts of his or her research.2. coursework units - BIOL4009 Communication Research in Biology, BIOL4010 Experiment Design & Analysis Biology.3. instruction in experimental design, and other technical instruction.[[i||The degree will be awarded on the basis of:]](a) written assignments and essays from coursework units.(b) marks awarded for a thesis on the subject of the project.

Graduate Diploma in Science (Biology)

The Graduate Diploma program in Biology is available as a one year full-time or two year part-time course. Information about qualifications for entry into the Graduate Diploma is available from the School Office (Science Road Cottage, A10).The course is intended for students wishing to progress beyond a pass degree but not via the Honours degree, or who are ineligible for admission to Honours. Students enrolled in the one year course will follow the same program as Biology Honours students and be assessed using similar criteria. Students may therefore elect to specialise in any area within the research interests of the School. Projects jointly supervised by staff in other Schools or Departments within the University may also be considered. Students undertaking the two year course (part-time) will follow the same curriculum but will satisfactorily complete the instructed elements of the course before progressing to the project element at the end of the first year.Students who have signified their intention to enter the Graduate Diploma course will be notified of acceptance after the publication of the second semester Senior examination results. Graduate Diploma students are expected to start their academic year at the beginning of February or in July.The composition of the Graduate Diploma course is identical to that for Honours (see Biology Honours)

Postgraduate study in Biology

MSc and PhD degrees by research are available in the School.On completion of an Honours degree (at first or second class level), MSc Preliminary course or Graduate Diploma in Science, students may pursue candidature for MSc degrees by research. The range of research fields offered and the fields of each member of academic staff are listed on the School's web site at www.bio.usyd.edu.au/

Cell Pathology

Cell Pathology is taught by the Department of Pathology.The Department of Pathology is located on Level 5 of the Blackburn Building (phone 9351 2414). The Department maintains a website to assist students access information and resources:-http://www.pathology.usyd.edu.au/

CPAT3201
Pathogenesis of Human Disease 1

Credit points: 6 **Teacher/Coordinator:** Dr Bob Bao **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** At least 6cp intermediate of one of the following: ANAT or BCHM or MBLG or BIOL or HPSC or MICR or PCOL or PHSI, or as the head of department determines. **Assessment:** One 2 hour exam (60%), one major research essay (1500w) generation of detractors for MCQ stems with referenced support blurbs for these (40%).

The Pathological Basis of Human Disease 1 unit of study modules will provide a theoretical background to the scientific basis of the pathogenesis of disease. Areas covered in theoretical modules include: tissue responses to exogenous factors, adaptive responses to foreign agents, cardiovascular/pulmonary/gut responses to disease, forensic science, neuropathology and cancer. The aim of the course is - To give students an overall understanding of the fundamental biological mechanisms governing disease pathogenesis in human beings. - To introduce to students basic concepts of the pathogenesis, natural history and complications of common human diseases. - To demonstrate and exemplify differences between normality and disease. - To explain cellular aspects of certain pathological processes. Together with CPAT3202, the unit of study would be appropriate for those who intend to proceed to Honours research, to professional degrees or to careers in biomedical areas such as hospital science. Together with CPAT3202, it fulfils the Pathology requirements for the Centre for Chiropractic at Macquarie University.

Textbooks
Robbins Basic Pathology, Kumar, Cotran & Robbins 7th Edition, 2003, Publ Saunders, Philadelphia, Pennsylvania, USA.

CPAT3202
Pathogenesis of Human Disease 2

Credit points: 6 **Teacher/Coordinator:** Dr Bob Bao **Session:** Semester 2 **Classes:** One 2 hour practical per week, one 1 hour museum practical and one 1 hour tutorial per week. **Prerequisites:** At least 6cp intermediate of one of the following: ANAT or BCHM or MBLG or BIOL or HPSC or MICR or PCOL or PHSI, or as the head of department determines. **Corequisites:** CPAT3201 **Assessment:** One 2 hour exam (70%), Museum Practical Reports (30%).
Note: Department permission required for enrolment .

The Pathological Basis of Human Disease 2 unit of study modules will provide a practical background to the scientific basis of the pathogenesis of disease. Areas covered in practical modules include disease specimen evaluation on a macroscopic and microscopic basis. The aim of the course is - To enable students to gain an understanding of how different organ systems react to injury and to apply basic concepts of disease processes. - To equip students with skills appropriate for careers in the biomedical sciences and for further training in research or professional degrees. At the end of the course students will: - Have acquired practical skills in the use of a light microscope. - Have an understanding of basic investigative techniques

for disease detection in pathology. - Be able to evaluate diseased tissue at the macroscopic and microscopic level. - Have the ability to describe, synthesise and present information on disease pathogenesis. - Transfer problem-solving skills to novel situations related to disease pathogenesis. The unit of study would be appropriate for those who intend to proceed to Honours research, to professional degrees or to careers in biomedical areas such as hospital science. Together with CPAT3201, it fulfils the Pathology requirements for the Centre for Chiropractic at Macquarie University.

Textbooks

Robbins Basic Pathology, Kumar, Cotran & Robbins 7th Edition, 2003, Publ Saunders, Philadelphia, Pennsylvania, USA.

Chemical Engineering

The School of Chemical and Biomolecular Engineering is part of the Faculty of Engineering. In addition to providing professional training in this branch of engineering it offers CHNG1103 Introduction to Material and Energy Transformations to students enrolled in the Faculty of Science.Details regarding this unit of study can be obtained from the Faculty of Engineering Handbook. This unit of study is intended to give a science student some insight into the principles which control the design and performance of large scale industrial processing plants. Faculty of Science students are invited to enrol in any other chemical engineering unit of study, provided they have the appropriate prerequisites and have consulted with the Head of School.

Advanced standing for Science students transferring to BEng(Chemical Engineering)

Science graduates may obtain up to two years advanced standing towards a Bachelor of Engineering degree in Chemical Engineering. Students wishing to undertake this option must seek academic advice from the School of Chemical and Bio-molecular Engineering. Further details regarding admission to the BE in Chemical Engineering may be obtained from the Engineering Faculty Office.

Chemistry

Junior units of study

The School of Chemistry offers a number of 6 credit point units of study to cater for the differing needs of students. These units of study are:CHEM1001 Fundamentals of Chemistry 1A, CHEM1002 Fundamentals of Chemistry 1B, CHEM1101 Chemistry 1A, CHEM1102 Chemistry 1B, CHEM1108 Chemistry 1 Life Sciences A, CHEM1109 Chemistry 1 Life Sciences B, CHEM1901 Chemistry 1A (Advanced), CHEM1902 Chemistry 1B (Advanced), CHEM1903 Chemistry 1A (Special Studies Program), CHEM 1904 Chemistry 1B (Special Studies Program)

Obtaining detailed information about units

Detailed information about all units of study is contained in a booklet, Information for Students, distributed at the time of enrolment, and also available from the First Year Office.Exercises are issued and tutorials are held at regular intervals for all units of study.The School maintains a website to assist current and prospective students:-http://www.chem.usyd.edu.au

CHEM1001
Fundamentals of Chemistry 1A

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week; one 3 hour practical per week for 10 weeks. **Prohibitions:** CHEM1101, CHEM1901, CHEM1109, CHEM1903, CHEM1909 **Assumed knowledge:** There is no assumed knowledge of chemistry for this unit of study, but students who have not undertaken an HSC chemistry course are strongly advised to complete a chemistry bridging course before lectures commence. **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%) **Practical field work:** A series of 10 three-hour laboratory sessions, one per week for 10 weeks of the semester.

The aim of the unit of study is to provide those students whose chemical background is weak (or non-existent) with a good grounding in fundamental chemical principles together with an overview of the relevance of chemistry. There is no prerequisite or assumed knowledge for entry to this unit of study. Lectures: A series of 39 lectures, three per week throughout the semester.

Textbooks

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

CHEM1002
Fundamentals of Chemistry 1B

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week; one 3 hour practical per week for 10 weeks. **Prerequisites:** CHEM (1001 or 1101) or equivalent **Prohibitions:** CHEM1102, CHEM1108, CHEM1902, CHEM1904, CHEM1908 **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%) **Practical field work:** A series of 10 three-hour laboratory sessions, one per week for 10 weeks of the semester.

CHEM1002 builds on CHEM1001 to provide a sound coverage of inorganic and organic chemistry. Lectures: A series of 39 lectures, three per week throughout the semester.

Textbooks

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

CHEM1101
Chemistry 1A

Credit points: 6 **Session:** Semester 1, Semester 2, Summer Main **Classes:** Three 1 hour lectures and one 1 hour tutorial per week; one 3 hour practical per week for 10 weeks. **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics **Prohibitions:** CHEM1001, CHEM1109, CHEM1901, CHEM1903, CHEM1909 **Assumed knowledge:** HSC Chemistry and Mathematics **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%) **Practical field work:** A series of 10 three-hour laboratory sessions, one per week for 10 weeks of the semester.

Chemistry 1A is built on a satisfactory prior knowledge of the HSC Chemistry course. A brief revision of basic concepts of the high school course is given. Chemistry 1A covers chemical theory and physical chemistry. Lectures: A series of 39 lectures, three per week throughout the semester.

Textbooks

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

CHEM1102
Chemistry 1B

Credit points: 6 **Session:** Semester 1, Semester 2, Summer Main **Classes:** One 3 hour lecture and 1 hour tutorial per week; one 3 hour practical per week for 10 weeks. **Prerequisites:** CHEM (1101 or 1901) or a Distinction in CHEM1001 or equivalent **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics **Prohibitions:** CHEM1002, CHEM1108, CHEM1902, CHEM1904, CHEM1908 **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%) **Practical field work:** A series of 10 three-hour laboratory sessions, one per week for 10 weeks of the semester.

Chemistry 1B is built on a satisfactory prior knowledge of Chemistry 1A and covers inorganic and organic chemistry. Chemistry 1B is an acceptable prerequisite for entry into Intermediate Chemistry units of study. Lectures: A series of 39 lectures, three per week throughout the semester.

Textbooks

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

CHEM1108
Chemistry 1A Life Sciences

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week; one 3 hour practical per week for 10 weeks. **Prerequisites:** UAI of at least 93 and HSC Chemistry result in band 5 or 6, or Distinction or better in a University level Chemistry unit, or by invitation. **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics **Prohibitions:** CHEM (1002 or 1102 or 1902 or 1904) **Assumed knowledge:** HSC Chemistry and Mathematics **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%). **Practical field work:** Practicals (30hr) These will be designed to develop practical skills based on the theory presented in the lectures

Note: This unit of study is available to students enrolled in the Bachelor of Medical Science, the Bachelor of Science (Molecular Biology and Genetics),

the Bachelor of Science (Nutrition) and the Bachelor of Science (Molecular Biotechnology) only.

Lectures (39 hrs): A strong background in junior chemistry is essential for understanding molecular structures and processes. This unit of study provides the basis for understanding fundamental chemical processes and structures at an advanced level, with particular emphasis on how these apply to the life sciences. Topics to be covered include: atomic structure, chemical bonding and organic chemistry of functional groups with applications in life sciences. Tutorials (12 hrs): These will provide aspects of problem solving relevant to the theory.

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

CHEM1109
Chemistry 1B Life Sciences

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week; one 3 hour practical per week for 10 weeks. **Prerequisites:** CHEM1108 **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics **Prohibitions:** CHEM (1001 or 1101 or 1901 or 1903) **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%) **Practical field work:** Practicals (30hrs) These will be designed to develop practical skills based on the theory presented in the lectures

Note: This unit of study is available to students enrolled in the Bachelor of Medical Science, the Bachelor of Science (Molecular Biology and Genetics), the Bachelor of Science (Nutrition) and the Bachelor of Science (Molecular Biotechnology) only.

Lectures (39 hrs): A strong background in junior chemistry is essential for understanding molecular structures and processes. This unit of study provides the basis for understanding fundamental chemical processes and structures at an advanced level, with particular emphasis on how these apply to the life sciences. Topics to be covered include: chemical equilibria, solutions, acids and bases, ions in solution, redox reactions, colloids and surface chemistry, the biological periodic table, chemical kinetics and radiochemistry with applications to life sciences. Tutorials (12 hrs): These will provide aspects of problem solving relevant to the unit of study.

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

CHEM1901
Chemistry 1A (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lecture and one 1 hour tutorial per week; one 3 hour practical per week for 10 weeks. **Prerequisites:** UAI of at least 96.4 and HSC Chemistry result in band 5 or 6, or Distinction or better in a University level Chemistry unit, or by invitation **Corequisites:** Recommended concurrent unit of study: 6 credit points of Junior Mathematics **Prohibitions:** CHEM1001, CHEM1101, CHEM1109, CHEM1903, CHEM1909 **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%) **Practical field work:** A series of 10 three-hour laboratory sessions, one per week for 10 weeks of the semester.

Note: Department permission required for enrolment .

Chemistry 1A (Advanced) is available to students with a very good HSC performance as well as a very good school record in chemistry or science. Students in this category are expected to do Chemistry 1A (Advanced) rather than Chemistry 1A. The theory and practical work syllabuses for Chemistry 1A and Chemistry 1A (Advanced) are similar, though the level of treatment in the latter unit of study is more advanced, presupposing a very good grounding in the subject at secondary level. Chemistry 1A (Advanced) covers chemical theory and physical chemistry. Lectures: A series of about 39 lectures, three per week throughout the semester.

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

CHEM1902
Chemistry 1B (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week; one 3 hour practical per week for 10 weeks. **Prerequisites:** CHEM (1901 or 1903) or Distinction in CHEM1101 or equivalent **Corequisites:** Recommended concurrent unit of study: 6 credit points of Junior Mathematics **Prohibitions:** CHEM1002, CHEM1102, CHEM1108, CHEM1904, CHEM1908 **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%) **Practical field work:** A series of 10 three-hour laboratory sessions, one per week for 10 weeks of the semester.

Note: Department permission required for enrolment .

Chemistry 1B (Advanced) is built on a satisfactory prior knowledge of Chemistry 1A (Advanced) and covers inorganic and organic chemistry. Chemistry 1B (Advanced) is an acceptable prerequisite for entry into Intermediate Chemistry units of study. Lectures: A series of about 39 lectures, three per week throughout the semester.

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

CHEM1903
Chemistry 1A (Special Studies Program)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lecture, one 1 hour tutorial per week and one 3 hour practical per week. **Prerequisites:** UAI of at least 98.7 and HSC Chemistry result in Band 6 **Corequisites:** Recommended concurrent unit of study: 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (1001 or 1101 or 1109 or 1901 or 1909) **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%)

Note: Department permission required for enrolment .
Note: Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.

Entry to Chemistry 1A (Special Studies Program) is restricted to students with an excellent school record in Chemistry. The practical work syllabus for Chemistry 1A (Special Studies Program) is very different from that for Chemistry 1A and Chemistry 1A (Advanced) and consists of special project-based laboratory exercises. All other unit of study details are the same as those for Chemistry 1A (Advanced). A Distinction in Chemistry 1A (Special Studies Program) is an acceptable prerequisite for entry into Chemistry 1B (Special Studies Program).

CHEM1904
Chemistry 1B (Special Studies Program)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lecture, one 1 hour tutorial per week and one 3 hour practical per week. **Prerequisites:** Distinction in CHEM1903 **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics. **Prohibitions:** CHEM1002, CHEM1102, CHEM1108, CHEM1902, CHEM1908 **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%)

Note: Department permission required for enrolment .
Note: Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.

Entry to Chemistry 1B (Special Studies Program) is restricted to students who have gained a Distinction in Chemistry 1A (Special Studies Program). The practical work syllabus for Chemistry 1B (Special Studies Program) is very different from that for Chemistry 1B and Chemistry 1B (Advanced) and consists of special project-based laboratory exercises. All other unit of study details are the same as those for Chemistry 1B (Advanced) . Chemistry 1B (Special Studies Program) is an acceptable prerequisite for entry into Intermediate Chemistry units of study.

Intermediate units of study

The School of Chemistry offers a number of units of study to cater for the differing needs of students. The following 6 credit point units of study are offered:CHEM 2401 Molecular Reactivity and Spectroscopy,CHEM 2402 Chemical Structure and Stability,CHEM 2403 Chemistry of Biological Molecules,CHEM 2404 Forensic and Environmental Chemistry,CHEM 2911 Molecular Reactivity and Spectroscopy (Adv),CHEM 2912 Chemical Structure and Stability (Adv),CHEM 2913 Chemistry of Biological Molecules (Adv),CHEM 2915 Molecular Reactivity and Spectroscopy SSP,CHEM 2916 Chemical Structure and Stability SSP

CHEM2401
Molecular Reactivity and Spectroscopy

Credit points: 6 **Teacher/Coordinator:** Dr R J Clarke **Session:** Semester 1 **Classes:** Three 1 hour lectures per week, seven 1 hour tutorials per semester, eight 4 hour practicals per semester. **Prerequisites:** CHEM (1102 or 1902 or 1904 or 1909 or 1612); 6 credit points of Junior Mathematics **Prohibitions:** CHEM2001, CHEM2101, CHEM2301, CHEM2311, CHEM2502, CHEM2901, CHEM2903, CHEM2911, CHEM2915 **Assessment:** One 3 hour examination, quizzes, lab reports

This is one of two core units of study for students interested in majoring in chemistry. The unit covers fundamental consideration of molecular electronic structure and its role in molecular reactivity and spectroscopy and includes applications of spectroscopy in environmental studies. It also covers the organic chemistry of aromatic systems, aldehydes and ketones, organometallic reagents, carbohydrates and DNA.

CHEM2402
Chemical Structure and Stability

Credit points: 6 **Teacher/Coordinator:** Dr R J Clarke **Session:** Semester 2 **Classes:** Three 1 hour lectures per week, seven 1 hour tutorials per semester, eight 4 hour practicals per semester. **Prerequisites:** CHEM (1102 or 1902 or 1904 or 1909 or 1612); 6 credit points of Junior Mathematics **Prohibitions:** CHEM2202, CHEM2302, CHEM2902, CHEM2912, CHEM2916 **Assessment:** One 3 hour examination, quizzes, lab reports

Note: This is the main chemistry unit of study for students expecting to major in chemistry

The structure, bonding and properties of inorganic compounds and complexes; statistical thermodynamics and thermodynamics; amine chemistry, electrophilic substitution and the chemistry of aromatics, the chemistry of carbonyls, nucleophilic organometallic reagents and organic synthesis and synthetic methods.

CHEM2403
Chemistry of Biological Molecules

Credit points: 6 **Teacher/Coordinator:** Dr R J Clarke **Session:** Semester 2 **Classes:** Three 1 hour lectures per week, six 1 hour tutorials per semester, five 4 hour practical sessions per semester. **Prerequisites:** 12 credit points of Junior Chemistry; 6 credit points of Junior Mathematics **Prohibitions:** CHEM2001, CHEM2901, CHEM2311, CHEM2903, CHEM2913 **Assessment:** One 3 hour examination, quizzes, lab reports

Note: To enrol in Senior Chemistry in 2008 it will be a requirement that students complete CHEM (2401 or 2911 or 2915) and CHEM (2402 or 2912 or 2916). Students are advised that combinations of CHEM2 units that do not meet this requirement will generally not allow progression to Senior Chemistry.

This unit of study aims to give students an understanding of the chemistry underlying biological systems. Lectures will cover the mechanisms of organic chemical reactions and their application to biological systems, the molecular basis of spectroscopic techniques used in biological chemistry, analytical chemistry of biological systems, biopolymers and biocolloids and topics from inorganic chemistry of relevance to biological systems (metalloproteins, biomineralisation, etc). The practical work will cover experimental investigations of chemical kinetics, organic and inorganic chemical analysis, biopolymer characterisation, and preparation and characterisation of a metal-based anti-inflammatory drug.

CHEM2404
Forensic and Environmental Chemistry

Credit points: 6 **Teacher/Coordinator:** Dr R J Clarke **Session:** Semester 1 **Classes:** Three 1 hour lectures per week, six 1 hour tutorials and five 4 hour practical sessions per semester. **Prerequisites:** 12 credit points of Junior Chemistry; 6 credit points of Junior Mathematics **Prohibitions:** CHEM3107, CHEM3197 **Assessment:** One 3 hour exam plus quizzes, lab reports.

Note: To enrol in Senior Chemistry in 2008 it will be a requirement that students complete CHEM (2401 or 2911 or 2915) and CHEM (2402 or 2912 or 2916). Students are advised that combinations of CHEM2 units that do not meet this requirement will generally not allow progression to Senior Chemistry.

Chemical analysis is a fundamental task of a professional chemist. The identification of chemical species and the quantitative determination of how much of each species is present are the essential first steps in solving all chemical puzzles. In this course students learn analytical techniques and chemical problem solving in the context of forensic and environmental chemistry. The lectures on Environmental Chemistry will cover two main topics: (i) atmospheric chemistry, covering topics such as air pollution, global warming and ozone depletion, and (ii) water and soil chemistry, including topics such as bio-geochemical cycling, chemical speciation, pH-pE diagrams, catalysis and Green Chemistry. The Forensic component of the course examines the gathering and analysis of evidence, using a wide variety of chemical techniques, as well as the development of specialized forensic techniques in the analysis of trace evidence. Students will also study forensic analyses of inorganic, organic and biological materials, dust, soil, inks, paints, documents, etc. in police, customs and insurance investigations and learn how techniques such as IR, UV, MS, GC, GC-MS, XRD, XRF, SEM, EDAX ICP, HPLC, trace metals analysis, separation science, DNA analysis, etc., singly and in combination are used to examine forensic evidence.

CHEM2911
Molecular Reactivity & Spectroscopy Adv

Credit points: 6 **Teacher/Coordinator:** Dr R J Clarke **Session:** Semester 1 **Classes:** Three 1 hour lectures per week, seven 1 hour tutorials per semester and eight 4 hour practicals per semester. **Prerequisites:** Credit average or better in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. **Prohibitions:** CHEM2001, CHEM2101, CHEM2301, CHEM2311, CHEM2401, CHEM2502, CHEM2901, CHEM2903, CHEM2915 **Assessment:** One 3 hour exam plus quizzes, lab reports.

The syllabus for this unit is that of CHEM2401 together with special Advanced material presented in the theory and/or practical programs. The lectures cover fundamental consideration of molecular electronic structure and its role in molecular reactivity and spectroscopy and includes applications of spectroscopy in environmental studies. It also covers the organic chemistry of aromatic systems, aldehydes and ketones, organometallic reagents, carbohydrates and DNA.

CHEM2912
Chemical Structure and Stability (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr R J Clarke **Session:** Semester 2 **Classes:** Three 1 hour lectures per week, seven 1 hour tutorials per semester, eight 4 hour practicals per semester. **Prerequisites:** Credit average or better in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. **Prohibitions:** CHEM2202, CHEM2302, CHEM2402, CHEM2902, CHEM2916 **Assessment:** One 3 hour exam plus quizzes, lab reports.

The syllabus for this unit is that of CHEM2402 together with special Advanced material presented in the theory and/or practical programs. The lectures include the structure, bonding and properties of inorganic compounds and complexes; statistical thermodynamics and thermodynamics; amine chemistry, electrophilic substitution and the chemistry of aromatics, the chemistry of carbonyls, nucleophilic organometallic reagents and organic synthesis and synthetic methods.

CHEM2913
Chemistry of Biological Molecules (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr R J Clarke **Session:** Semester 2 **Classes:** Three 1 hour lectures per week, one 1 hour tutorial per semester and five 4 hour practical sessions per semester. **Prerequisites:** CHEM (1902 or 1904 or 1909). 12 credit points of Junior Mathematics. Candidates for the BSc (Molecular Biology & Genetics) must achieve a Credit average in Junior units of study. Candidates for the BSc (Molecular Biotechnology) must achieve a Credit average in Junior units of study and a Distinction average in Junior Chemistry units of study. **Prohibitions:** CHEM2001, CHEM2101, CHEM2301, CHEM2311, CHEM2403, CHEM2502, CHEM2901, CHEM2903 **Assessment:** One 3 hour exam plus quizzes, lab reports.

Note: This unit of study is available to students in the Bachelor of Science (Molecular Biology and Genetics) and the Bachelor of Science (Molecular Biotechnology) degree programs only.

This unit of study aims to give students an understanding of the chemistry underlying biological systems. Lectures will cover the mechanisms of organic chemical reactions and their application to biological systems, the molecular basis of spectroscopic techniques used in biological chemistry, analytical chemistry of biological systems, biopolymers and biocolloids and topics from inorganic chemistry of relevance to biological systems (metalloproteins, biomineralisation, etc). There will also be 8 hours of compulsory tutorial workshops. Students must ensure that one complete afternoon from 1.00 pm to

5.00 pm, free from other commitments, is available for the practical work.

CHEM2915
Molecular Reactivity & Spectroscopy SSP

Credit points: 6 **Teacher/Coordinator:** Dr R J Clarke **Session:** Semester 1 **Classes:** Three 1 hour lectures per week, eleven 1 hour SSP seminars per semester, eight 4 hour practicals per semester. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics **Prohibitions:** CHEM2001, CHEM2101, CHEM2301, CHEM2311, CHEM2401, CHEM2502, CHEM2901, CHEM2903, CHEM2911 **Assessment:** One 3 hour exam plus quizzes, assignments, lab reports.

Note: Department permission required for enrolment .
Note: The number of places in this unit of study is strictly limited and entry is by invitation only. Enrolment is conditional upon available places.

The lectures for this unit comprise the lectures for CHEM2401 and the Advanced practical program together with special SSP seminars. Two streams of SSP seminars are offered: Series One comprises three seminar topics on state of the art topics in chemistry (in 2006, these covered Metal-DNA Chemistry, Obtaining information concerning chemical reactivity and motion from absorption and emission spectra, and Composite materials). Series Two is devoted solely to Advanced Theoretical Chemistry.

CHEM2916
Chemical Structure and Stability (SSP)

Credit points: 6 **Teacher/Coordinator:** Dr R J Clarke **Session:** Semester 2 **Classes:** Three 1 hour lectures per week, eleven 1 hour SSP seminars per semester, eight 4 hour practicals per semester. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. **Prohibitions:** CHEM2202, CHEM2302, CHEM2402, CHEM2902, CHEM2912 **Assessment:** One 3 hour exam plus quizzes, assignments, lab reports.

Note: Department permission required for enrolment .
Note: The number of places in this unit of study is strictly limited and entry is by invitation only. Enrolment is conditional upon available places.

The lectures for this unit comprise the lectures for CHEM2402 and the Advanced practical program together with special SSP seminars. Two streams of SSP seminars are offered: Series One comprises three seminar topics on state of the art topics in chemistry (in 2006, these included Carbon-rich chemistry and Phase equilibria). Series Two is devoted to Advanced Theoretical Chemistry.

Senior units of study

The School of Chemistry offers a choice of 6 credit point units of study to cater for the differing needs and interests of students. Each unit involves two lectures and 4 hours of lab each week.

CHEM3110
Biomolecules: Properties and Reactions

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 4 hour practicals per week. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3910 **Assessment:** One 2 hour exam, prac reports

DNA, proteins and carbohydrates represent three classes of essential biomolecules present in all biological systems. This unit will cover the structure, reactivity and properties of biomolecules and the building blocks from which these molecules are assembled, their interactions with metal ions and small molecules, and highlight the chemical tools for studying the behaviour of biomolecules. The final section of the unit illustrates how chemists apply the same principles used by Nature in these systems to produce molecular sensors and switches for applications in medicine and industry.

CHEM3111
Organic Structure and Reactivity

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 4 hour practical per week. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3911 **Assessment:** One 2 hour exam, prac reports

The structure and shape of organic molecules determines their physical properties, their reaction chemistry as well as their biological/medicinal activity. The determination of this structure and understanding its chemical consequences is of fundamental importance in chemistry, biochemistry, medicinal and materials chemistry. This course examines the methods and techniques used to establish the structure of organic molecules as well as the chemistry which dictates the shapes that they adopt. The first part of the course examines the use of modern spectroscopic methods (nuclear magnetic resonance spectroscopy, infrared spectroscopy and mass spectroscopy) which are used routinely to identify organic compounds. The second part of the course examines the chemical consequences of molecular shapes in more depth and looks at how different molecular shapes arise as a consequence of the mechanism of chemical reactions used to synthesize them.

CHEM3112
Materials Chemistry

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 4 hour practical per week. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3912 **Assumed knowledge:** CHEM2401 and CHEM2402 **Assessment:** One 2 hour exam, prac reports

This course concerns the inorganic chemistry of solid-state materials: compounds that possess 'infinite' bonding networks. The extended structure of solid materials gives rise to a wide range of important chemical, mechanical, electrical, magnetic and optical properties. Consequently, such materials are of enormous technological significance as well as fundamental curiosity. In this course you will learn how chemistry can be used to design and synthesize novel materials with desirable properties. The course will start with familiar molecules such as C60 and examine their solid states to understand how the nature of chemical bonding changes in the solid state, leading to new properties such as electronic conduction. This will be the basis for a broader examination of how chemistry is related to structure, and how structure is related to properties such as catalytic activity, mechanical strength, magnetism, and superconductivity. The symmetry of solids will be used explain how their structures are classified; how they can transform between related structures when external conditions such as temperature, pressure and electric field are changed; and how this can be exploited in technological applications such as sensors and switches. Key techniques used to characterise solid-state materials will be covered, particularly X-ray diffraction, microscopy, and physical property measurements.

CHEM3113
Catalysis and Sustainable Processes

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 4 hour practical per week. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3913 **Assumed knowledge:** CHEM2401 and CHEM2402. **Assessment:** One 2 hour exam, prac reports

Almost 90% of manufactured chemicals (from fuels through polymers to drugs) involve at least one catalytic step in their production. Catalysis by enzymes is fundamental to all chemical pathways in living things. This course provides the foundation for a molecular-scale understanding of even the most complex catalysts. It begins by showing how organometallic fundamentals can be used to understand and design transition-metal catalysts. Making use of these concepts, the chemistry involved in surface catalysts will be examined. The course will address two main applications of catalysis. Synthetic polymers (plastics, woven materials, films, coatings, etc.) are the most ubiquitous and diverse of modern materials. These are synthesized by a range of catalytic processes, whose chemistry will be described. It will be shown how the mechanisms of these reactions in turn control the molecular weights of the resulting polymers, as well as other aspects of molecular architecture such as degree of branching. The other major application is the use of porous solids (zeotypes) as acid/base and redox catalysts. Confinement-induced selectivity

changes are discussed and related to similar phenomena in enzymatic catalysis. In both applications students will also examine the overall process and look at the reasons behind choice of product, catalyst and reaction design with a specific focus on economy and environmental sustainability.

CHEM3114
Metal Complexes: Medicine and Materials

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 4 hour practical per week. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3914 **Assumed knowledge:** CHEM2401 and CHEM2402. **Assessment:** One 2 hour exam, prac reports

Coordination compounds, with bonds between a central metal atom and surrounding ligands, play critical roles in biology, biochemistry and medicine, controlling the structure and function of many enzymes and their metabolism. They play similarly vital roles in many industrial processes and in the development of new materials with specifically designed properties. Building on the foundation of crystal field theory, this course offers a comprehensive treatment of the structures and properties of coordination compounds, with a qualitative molecular orbital description of metal-ligand bonds, and their spectroscopic, magnetic and dynamic effects. The exploitation of these properties in medicine and materials will be emphasized.

CHEM3115
Synthetic Medicinal Chemistry

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 4 hour practical per week. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3915 **Assessment:** One 2 hour exam, prac reports

The development of new pharmaceuticals fundamentally relies on the ability to design and synthesize new compounds. Synthesis is an enabling discipline for medicinal chemistry - without it, the development of new drugs cannot progress from design to implementation, and ultimately to a cure. This unit will tackle important factors in drug design, and will highlight the current arsenal of methods used in the discovery of new drugs, including rational drug design, high throughput screening and combinatorial chemistry. We will develop a logical approach to planning a synthesis of a particular target structure. The synthesis and chemistry of heterocycles, which comprise some 40% of all known organic compounds and are particularly common in pharmaceuticals, will be outlined. Examples will include important ring systems present in biological systems, such as pyrimidines and purines (DNA and RNA), imidazole and thiazole (amino acids and vitamins) and porphyrins (natural colouring substances and oxygen carrying component of blood). Throughout the course, the utility of synthesis in medicinal chemistry will be illustrated with cases studies such as anti-influenza (Relenza), anaesthetic (benzocaine), anti-inflammatory (Vioxx), antihypertensive (pinacidil) and cholesterol-lowering (Lovastatin) drugs.

CHEM3116
Membranes, Self Assembly and Surfaces

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lecture and one 4 hour practical per week. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3916 **Assumed knowledge:** CHEM2401 and CHEM2402. **Assessment:** One 2 hour exam, prac reports

Away from the covalent and ionic interactions that hold molecules and solids together, is the world of fragile objects - folded polymers, membranes, surface adsorption and stable molecular aggregates - held together by weak forces such as van der Waals and the hydrophobic effect. The use of molecules rather than atoms as the building blocks means that there are an enormous number of possibilities for stable aggregates with interesting chemical, physical and biological properties, many which still wait to be explored. In this course we examine the molecular interactions that drive self assembly and the consequences of these interactions in supramolecular assembly, lipid membrane formations and properties, microemulsions, polymer conformation and dynamics and range of fundamental surface properties including adhesion, wetting and colloidal stability.

CHEM3117
Molecular Spectroscopy & Quantum Theory

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 4 hour practical per week. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3917 **Assumed knowledge:** CHEM2401 and CHEM2402. **Assessment:** One 2 hour exam, prac reports

This course will cover the fundamentals of molecular spectroscopy as a modern research tool and as a theoretical basis with which to understand everyday phenomena. This course is aimed at the student wishing a rigorous understanding of the interaction between light and matter. The course teaches the quantum theory needed to understand spectroscopic phenomena (such as the absorption of light) without the need for difficult mathematics. This low level theory is used as a tool with which to understand models of everyday phenomena. The course teaches application and theory, with descriptions of applied spectroscopic techniques. Alongside the coverage of modern spectroscopy, the course provides an accessible treatment of the science behind vision, flames, solar cells and photochemical smog.

CHEM3910
Biomolecules: Properties & Reactions Adv

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 4 hour practical per week. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)) **Prohibitions:** CHEM3110 **Assessment:** One 2 hour exam, prac reports

DNA, proteins and carbohydrates represent three classes of essential biomolecules present in all biological systems. This unit will cover the structure, reactivity and properties of biomolecules and the building blocks from which these molecules are assembled, their interactions with metal ions and small molecules, and highlight the chemical tools for studying the behaviour of biomolecules. The final section of the unit illustrates how chemists apply the same principles used by Nature in these systems to produce molecular sensors and switches for applications in medicine and industry. Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM3911
Organic Structure and Reactivity (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 4 hour practicals per week. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3111 **Assessment:** One 2 hour exam, prac reports

The structure and shape of organic molecules determines their physical properties, their reaction chemistry as well as their biological/medicinal activity. The determination of this structure and understanding its chemical consequences is of fundamental importance in chemistry, biochemistry, medicinal and materials chemistry. This course examines the methods and techniques used to establish the structure of organic molecules as well as the chemistry which dictates the shapes that they adopt. The first part of the course examines the use of modern spectroscopic methods (nuclear magnetic resonance spectroscopy, infrared spectroscopy and mass spectroscopy) which are used routinely to identify organic compounds. The second part of the course examines the chemical consequences of molecular shapes in more depth and looks at how different molecular shapes arise as a consequence of the mechanism of chemical reactions used to synthesize them. Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM3912
Materials Chemistry (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 4 hour practicals per week. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3112 **Assumed knowledge:** CHEM2401 and CHEM2402. **Assessment:** One 2 hour exam, prac reports

This course concerns the inorganic chemistry of solid-state materials: compounds that possess 'infinite' bonding networks. The extended structure of solid materials gives rise to a wide range of important chemical, mechanical, electrical, magnetic and optical properties. Consequently, such materials are of enormous technological significance as well as fundamental curiosity. In this course you will learn how chemistry can be used to design and synthesize novel materials with desirable properties. The course will start with familiar molecules such as C60 and examine their solid states to understand how the nature of chemical bonding changes in the solid state, leading to new properties such as electronic conduction. This will be the basis for a broader examination of how chemistry is related to structure, and how structure is related to properties such as catalytic activity, mechanical strength, magnetism, and superconductivity. The symmetry of solids will be used explain how their structures are classified; how they can transform between related structures when external conditions such as temperature, pressure and electric field are changed; and how this can be exploited in technological applications such as sensors and switches. Key techniques used to characterise solid-state materials will be covered, particularly X-ray diffraction, microscopy, and physical property measurements. Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM3913
Catalysis and Sustainable Process (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lecture and one 4 hour practical per week. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3113 **Assumed knowledge:** CHEM2401 and CHEM2402. **Assessment:** One 2 hour exam, prac reports

Almost 90% of manufactured chemicals (from fuels through polymers to drugs) involve at least one catalytic step in their production. Catalysis by enzymes is fundamental to all chemical pathways in living things. This course provides the foundation for a molecular-scale understanding of even the most complex catalysts. It begins by showing how organometallic fundamentals can be used to understand and design transition-metal catalysts. Making use of these concepts, the chemistry involved in surface catalysts will be examined. The course will address two main applications of catalysis. Synthetic polymers (plastics, woven materials, films, coatings, etc.) are the most ubiquitous and diverse of modern materials. There are synthesized by a range of catalytic processes, whose chemistry will be described. It will be shown how the mechanisms of these reactions in turn control the molecular weights of the resulting polymers, as well as other aspects of molecular architecture such as degree of branching. The other major application is the use of porous solids (zeotypes) as acid/base and redox catalysts. Confinement-induced selectivity changes are discussed and related to similar phenomena in enzymatic catalysis. In both applications students will also examine the overall process and look at the reasons behind choice of product, catalyst and reaction design with a specific focus on economy and environmental sustainability. Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM3914
Metal Complexes: Medic. & Mater. (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 4 hour practical per week. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3114 **Assumed knowledge:** CHEM2401 and CHEM2402. **Assessment:** One 2 hour exam, prac reports

Coordination compounds, with bonds between a central metal atom and surrounding ligands, play critical roles in biology, biochemistry and medicine, controlling the structure and function of many enzymes and their metabolism. They play similarly vital roles in many industrial processes and in the development of new materials with specifically designed properties. Building on the foundation of crystal field theory, this course offers a comprehensive treatment of the structures and properties of coordination compounds, with a qualitative molecular orbital description of metal-ligand bonds, and their spectroscopic, magnetic and dynamic effects. The exploitation of these properties in medicine and materials will be emphasized. Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM3915
Synthetic Medicinal Chemistry (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 4 hour practical per week. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3115 **Assessment:** One 2 hour exam, prac reports

The development of new pharmaceuticals fundamentally relies on the ability to design and synthesize new compounds. Synthesis is an enabling discipline for medicinal chemistry - without it, the development of new drugs cannot progress from design to implementation, and ultimately to a cure. This unit will tackle important factors in drug design, and will highlight the current arsenal of methods used in the discovery of new drugs, including rational drug design, high throughput screening and combinatorial chemistry. We will develop a logical approach to planning a synthesis of a particular target structure. The synthesis and chemistry of heterocycles, which comprise some 40% of all known organic compounds and are particularly common in pharmaceuticals, will be outlined. Examples will include important ring systems present in biological systems, such as pyrimidines and purines (DNA and RNA), imidazole and thiazole (amino acids and vitamins) and porphyrins (natural colouring substances and oxygen carrying component of blood). Throughout the course, the utility of synthesis in medicinal chemistry will be illustrated with cases studies such as anti-influenza (Relenza), anaesthetic (benzocaine), anti-inflammatory (Vioxx), antihypertensive (pinacidil) and cholesterol-lowering (Lovastatin) drugs. Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM3916
Membranes, Self Assembly & Surfaces (Adv

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 4 hour practical per week. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3116 **Assumed knowledge:** CHEM2401 and CHEM2402. **Assessment:** One 2 hour exam, prac reports

Away from the covalent and ionic interactions that hold molecules and solids together, is the world of fragile objects - folded polymers, membranes, surface adsorption and stable molecular aggregates - held together by weak forces such as van der Waals and the hydrophobic effect. The use of molecules rather than atoms as the building blocks means that there are an enormous number of possibilities for stable aggregates with interesting chemical, physical and biological properties, many which still wait to be explored. In this course we examine the molecular interactions that drive self assembly and the consequences of these interactions in supramolecular assembly, lipid membrane formations and properties, microemulsions, polymer conformation and dynamics and range of fundamental surface

properties including adhesion, wetting and colloidal stability. Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM3917
Mol. Spectroscopy & Quantum Theory (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 4 hour practical per week. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Prohibitions:** CHEM3117 **Assumed knowledge:** CHEM2401 and CHEM2402. **Assessment:** One 2 hour exam, prac reports

This course will cover the fundamentals of molecular spectroscopy as a modern research tool and as a theoretical basis with which to understand everyday phenomena. This course is aimed at the student wishing a rigorous understanding of the interaction between light and matter. The course teaches the quantum theory needed to understand spectroscopic phenomena (such as the absorption of light) without the need for difficult mathematics. This low level theory is used as a tool with which to understand models of everyday phenomena. The course teaches application and theory, with descriptions of applied spectroscopic techniques. Alongside the coverage of modern spectroscopy, the course provides an accessible treatment of the science behind vision, flames, solar cells and photochemical smog. Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

Chemistry Honours

The Honours program in the School of Chemistry gives students the opportunity to get involved in a research program in an area that is of interest to them. It provides training in research techniques and experience using modern research instrumentation. The Honours program adds a new dimension to the skills that the students have acquired during their undergraduate years and enhances their immediate employment prospects and, more significantly, their future career potential. All students with a sound record in Chemistry are encouraged to apply for entry to the Honours program. The School of Chemistry offers a wide range of possible projects in all areas of contemporary chemistry including Biological and Medicinal Chemistry, Synthesis and Catalysis, Physical and Theoretical Chemistry, Supramolecular Chemistry, Polymers and Colloids and Chemical Spectroscopy. Details of available projects are contained in the School's Honours Booklet that is available from the School's Information Desk. In the Honours year, each student undertakes a research project under the supervision of a member of staff; writes a thesis which explains the problem; outlines the research undertaken and the results obtained; attends advanced lecture courses, normally given by leaders in their field from overseas or Australia; attends research seminars and undertakes additional written assessment. Further information is available from the Honours Coordinator, or at http://www.chem.usyd.edu.au/future/honours.html

Civil Engineering

The School of Civil Engineering is part of the Faculty of Engineering. In addition to providing professional training in this branch of engineering it offers units of study to students enrolled in the Faculty of Science majoring in Mathematics, Physics, Chemistry, Geology, Computer Science or Soil Science.The most relevant units of study are CIVL2201 - Structural Mechanics, CIVL2230 - Introduction to Structural Concepts and Design, CIVL2410 Soil Mechanics, and CIVL2611 Fluid Mechanics. Details regarding these units of study can be obtained from the Faculty of Engineering Handbook. These units of study are intended first to demonstrate the application of scientific principles in an engineering context. The second intention is to introduce the application of this understanding to analysis and design in civil engineering.As well as the above units of study, Faculty of Science students are invited to enrol in other civil engineering units of study, provided they have the appropriate pre-requisites and assumed knowledge.

Double Degree

BSc graduates, who have passed all four of the above four units of study within the School of Civil Engineering, may obtain a Bachelor of Engineering degree in Civil Engineering after an additional two years' study, following the award of the BSc. Students wishing to undertake this option must apply through UAC and compete on the basis of academic merit. Prospective students are advised to discuss their plans with the School of Civil Engineering before enrolment. Further details regarding admission to the BE in Civil Engineering may be obtained from the Engineering Faculty Office in the Engineering Faculty Building.

Computational Science

Computational Science is an interdisciplinary major offered within the BSc. It focuses on scientific problem solving using computers. It covers the formulation and analysis of problems, the use of software packages and programs to solve these problems computationally, simulations and modelling, mathematical and numerical analysis, high performance super-computing, graphics, visualisation and programming.Graduates with computational science skills are in strong and increasing demand in scientific research, industry, government and finance, particularly for their analytic and problem solving skills and their specific expertise in computing.The major in Computational Science can include a wide range of electives to suit individual interests, selected from computationally oriented offerings from various departments and schools from across the Faculty. Table 1 lists the core Senior units and electives, as well as Junior options. COSC units are described below. For descriptions of other units see their separate entries under the contributing school or department.The Computational Science unit coordinator is Dr Mike Wheatland

Junior units of study

COSC1001
Computational Science in Matlab

Credit points: 3 **Session:** Semester 2 **Classes:** One 1 hour lecture and one 2 hour practical per week. **Prohibitions:** COSC1901 **Assumed knowledge:** HSC Mathematics **Assessment:** Two assignments, practical work, including practical exam, theory exam.

This unit of study focuses on scientific problem solving and data visualisation using computers and is complementary to COSC1002. Students will learn how to solve problems arising in the natural sciences and mathematics using core features of the problem solving environment MATLAB, with a choice of problems from various areas of science at each stage. Emphasis will be placed on graphical display and visualisation of data and solutions to problems. No previous knowledge of programming is assumed.

Textbooks

Recommended reference:
Hahn, B.D Essential MATLAB for Scientists & Engineers, 2nd Ed, Butterworth-Heinemann, Oxford, 2002.

COSC1901
Computational Science in Matlab (Adv)

Credit points: 3 **Session:** Semester 2 **Classes:** One 1 hour lecture and one 2 hour practical per week. **Prerequisites:** UAI of at least 90, or COSC1902, or a distinction or better in COSC1002, SOFT (1001, 1002, 1901 or 1902). **Prohibitions:** COSC1001 **Assumed knowledge:** HSC Mathematics **Assessment:** Two assignments, practical work, including practical exam, theory exam.

This unit of study is the advanced version of COSC1001 and is complementary to COSC1902. The subject matter is very similar but more challenging problems will be covered and some additional programming and visualisation techniques will be used.

Textbooks

Recommended reference:
Hahn, B.D Essential MATLAB for Scientists & Engineers, 2nd Ed, Butterworth-Heinemann, Oxford, 2002.

COSC1002
Computational Science in C

Credit points: 3 **Session:** Semester 2 **Classes:** One 1 hour lecture and one 2 hour practical per week. **Prohibitions:** COSC1902 **Assumed knowledge:** HSC Mathematics **Assessment:** Two assignments, practical work, including practical exam, theory exam.

This unit of study focuses on scientific problem-solving using computers and is complementary to COSC1001. Students will learn how to solve problems arising in the natural sciences and mathematics using core features of the language C, with a choice of problems from various areas of science at each stage. No previous knowledge of programming is assumed.

Textbooks
Recommended references:
Gottfried B. Schaum's Outlines Programming with C, McGraw-Hill 1996.
Press, Teukolsky, Vetterling and Flannery. Numerical Recipes in C, The Art of Scientific Computing, 2nd ed, Cambridge Press 1992.

COSC1902
Computational Science in C (Adv)

Credit points: 3 **Session:** Semester 2 **Classes:** One 1 hour lecture and one 2 hour practical per week. **Prerequisites:** UAI of at least 90, or COSC1901, or a distinction or better in COSC1001, SOFT (1001, 1002, 1901 or 1902). **Prohibitions:** COSC1002 **Assumed knowledge:** HSC Mathematics **Assessment:** Two assignments, practical work, including practical exam, theory exam.

This unit of study is the advanced version of COSC1002 and is complementary to COSC1901. The subject matter is very similar, but more challenging problems will be covered and some additional programming techniques will be used.

Textbooks
Recommended references:
Gottfried B. Schaum's Outlines Programming with C, McGraw-Hill 1996.
Press, Teukolsky, Vetterling and Flannery. Numerical Recipes in C, The Art of Scientific Computing, 2nd ed, Cambridge Press 1992.

Senior units of study

For a major in Computational Science, the minimum requirement is 24 credit points chosen from the core or elective senior units of study listed for this subject area, of which at least 12 credit points must be from the following core senior units of study: COSC3011 Scientific Computing; COSC3911 Scientific Computing (Advanced); COSC3012 Parallel Computing & Visualisation; COSC3912 Parallel Computing & Visualisation (Adv); MATH3076 Mathematical Computing*; MATH3976 Mathematical Computing (Advanced)*.

Notes

*[[i||Refer to Mathematics listing in this chapter for descriptions of these units of study]]Senior elective units of study for a major in Computational Science are listed in Table 1 in chapter 3

COSC3011
Scientific Computing

Credit points: 6 **Teacher/Coordinator:** Dr Mike Wheatland **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 3 hour practical per week. **Prerequisites:** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. **Prohibitions:** COSC3911, COSC3001, COSC3901, PHYS3301, PHYS3901 **Assumed knowledge:** Programming experience in MATLAB **Assessment:** Lab, written exam

This unit of study provides a senior-level treatment of scientific problem solving using computers. Students will understand and apply a wide range of numerical schemes for solving ordinary and partial differential equations. Linear algebra is used to provide detailed insight into stability analysis, relaxation methods, and implicit integration. A variety of scientific problems are considered, including planetary motion, population demographics, neutron criticality, traffic flow and quantum mechanics. All coding is performed with MATLAB, and basic programming experience is assumed.

Textbooks
Numerical Methods for Physics, 2nd Edition, by A.L. Garcia

COSC3911
Scientific Computing (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Mike Wheatland **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 3 hour practical per week. **Prerequisites:** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. **Prohibitions:** COSC3011, COSC3001, COSC3901, PHYS3301, PHYS3901 **Assumed knowledge:** Programming experience in MATLAB **Assessment:** Lab, written exam

This unit is the Advanced version of COSC3011. The subject matter is very similar, but more challenging problems will be covered.

Textbooks
Numerical Methods for Physics, 2nd Edition, by A.L. Garcia

COSC3012
Parallel Computing & Visualisation

Credit points: 6 **Teacher/Coordinator:** Dr Nigel Marks **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 3 hour practical per week. **Prerequisites:** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. **Prohibitions:** COSC3912, COSC3002, COSC3902, COSC3601, PHYS3303, PHYS3933 **Assumed knowledge:** Programming experience in C and MATLAB or equivalent. **Assessment:** Lab, practical exam

The first half of the course considers Parallel Computing on distributed and shared memory architectures. Students learn the concepts of distributed-memory programming using the Message Passing Interface (MPI), while shared-memory programming is presented using OpenMP. Concepts covered include scalability, communication overheads, deadlocks, domain decomposition and incremental parallelism. Basic programming ability in Fortran or C (or equivalent) is assumed. The second half of this course considers Scientific Visualisation as a tool for analysing, interpreting and communicating multi-dimensional numerical data. Students learn the principles and practice of Scientific Visualisation in the context of OpenDX, the open-source Data Explorer package developed by IBM. No previous experience is required, and the object-oriented visual programming environment is taught in the laboratory sessions.

COSC3912
Parallel Computing & Visualisation (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Nigel Marks **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 3 hour practical per week. **Prerequisites:** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. **Prohibitions:** COSC3012, COSC3002, COSC3902, COSC3601, PHYS3303, PHYS3933 **Assumed knowledge:** Programming experience in C and MATLAB or equivalent. **Assessment:** Lab, practical exam

This unit is the advanced version of COSC3012. The subject matter is very similar, but more challenging problems will be covered.

Electrical Engineering

The School of Electrical and Information Engineering is part of the Faculty of Engineering. In addition to providing professional training in this branch of engineering it offers many units of study that are available to students enrolled in the Faculty of Science. Details regarding these units of study can be obtained from the Faculty of Engineering Handbook or from the school web site: http://www.ee.usyd.edu.au/ugrad/

Double Degree

Science graduates may obtain up to two years advanced standing towards a Bachelor of Engineering degree in Computer, Electrical, Software or Telecommunications Engineering. Students wishing to undertake this option must seek academic advice from the School of Electrical and Information Engineering. Further details regarding admission to the BE may be obtained from the Engineering Faculty Office. The School of Engineering is located in Building J03.

Environmental Science

Environmental Science is an applied interdisciplinary field concerned with the environment around us, regardless of whether it is natural or human-made, and how we can utilize or manage it for our benefit. It

draws on a wide range of science-based disciplines and applications, from ecology to solar power, analytical chemistry to geomorphology. Environmental Science is also concerned with the social issues involved, including environmental law and policy, sustainability, resource economics, urban planning, and environmental ethics. Environmental scientists and managers need to have a broad knowledge base and the ability to be flexible and innovative in their application of such knowledge. Consequently, the emphasis of the Environmental Science program is placed upon studies that span and integrate several disciplines, involve adaptive problem solving, and develop new skills and expertise. In particular, the Environmental Science program looks to supplement studies in the science disciplines with units that provide complimentary information on environmental issues that not only show how the sciences interact in the environment but how humans impact upon it. Prior to 2007, students wanting to Study Environmental Science did so through the specialist BSc (Environmental) degree - see Table 1B. Now students wanting to take Environmental Science can only do so by taking a double major in the BSc, one major in Environmental Studies and the other in a Science discipline of the students' choice. For descriptions of the ENVI units of study refer to the entries under Environmental Studies.

Honours in the Bachelor of Science (Environmental)

Students of sufficient merit may be admitted to an Honours course in the Bachelor of Science (Environmental). In the Honours year, a student will undertake an interdisciplinary research exercise in association with one or more supervising members of the academic staff at the University of Sydney, write a thesis based upon the research, and attend advanced lecture units of study and seminars as required by their supervisor(s). The Honours year is not only rewarding but enjoyable as well, and marks the transition period where a student becomes a research collaborator.Eligible students can choose to complete Honours in the following Science Subject Areas: Agricultural Chemistry, Biology, Chemistry, Geography, Geology, Marine Science, Microbiology, or Soil Science. (Please note that there are no Honours units of study entitled 'Environmental Science')

Environmental Studies

Environmental Studies is the examination of the human interactions with the natural and built environment. It encapsulates the fundamental social aspects of sustainability, environmental impact, law, ethics, development, energy use, economics and politics. In order to properly cover this material, the ENVI units are taught by various staff from within the Faculties of Science, Architecture and Law. Consequently, the ENVI units are complimentary to studies not only in the physical and natural Science disciplines but also to the social disciplines.

Obtaining a major in Environmental studies

A major in Environmental Studies constitutes the completion of 24 credit points of Senior units as listed in Table 1, including at least 12 credit points of Senior ENVI units of study listed below. Study of at least one Intermediate ENVI unit is highly recommended.

ENVI2111
Conservation Biology and Applied Ecology

Credit points: 6 **Teacher/Coordinator:** Dr C Taylor **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour practical per week plus one 2 day field trip during the semester. **Prerequisites:** 24 credit points of Junior Science units, including 12 credit points of Junior Biology **Prohibitions:** ENVI2001, ENVI2911 **Assessment:** Essays, tutorial papers, exam

This topic examines the role of conservation biology and applied ecology in environmental science, examining pattern and process in natural systems and evaluating how these are being affected by pervasive anthropogenic impacts. Focusing on the conservation, assessment of impacts and the restoration of natural systems, we consider the range of ecological issues environmental scientists must address. We examine the extent of environmental problems; derive explanations of why and how they are occurring and address management options for resolving them. We will derive general principles for these by addressing case studies, chosen from Australian examples when possible. The aim of this unit is for you to understand the processes that go into solving environmental problems from an ecological perspective and how to identify management options.

ENVI2911
Conservation Biology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Charlotte Taylor Dr Clare McArthur **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour practical per week plus one 2 day field trip during the semester. **Prerequisites:** Distinction average in BIOL(1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016. 12 credit points of Junior Chemistry (or for BSc (Marine Science) students 6 credit points of Junior Chemistry and 6 credit points of Junior Physics). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibitions:** ENVI2001, ENVI2111 **Assessment:** One 2 hour exam, field report, briefing paper, oral presentation.

Qualified students will participate in alternative components of ENVI2111, Conservation Biology, including an independent reseach project.

Textbooks

Caughley G & Gunn 1996 Conservation Biology in Theory and Practice, Blackwell; Oxford
Lindenmeyer D & Burgman M 2005 Practical Conservation Biology, CSIRO Publishing; Victoria
Attiwill P & Wilson B 2003 Ecology: An Australian Perspective, Oxford University Press

ENVI2112
Atmospheric Processes and Climate

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 2 hour practical per week. **Prerequisites:** 24 credit points of Junior Science units, including 12 credit points of Junior Chemistry or Physics **Prohibitions:** ENVI2002 **Assessment:** Assignments, tutorial papers, exam

This unit of study investigates the physical and chemical characteristics of our atmosphere, as well as the natural processes that occur within it and how these contribute to the climate we live in. Topics such as atmospheric structure, photochemical processes, and weather will be examined. The effects of ocean circulation are investigated, particularly examining the ocean's importance as a source/sink for atmospheric constituents and as a heat regulator. The impact of glaciation is also examined, including sources, quantity, magnitude of threat, and the potential impact to our climate, are then explored. Finally, the unit examines issues surrounding climate change and the modelling of these changes.

ENVI3111
Environmental Law and Ethics

Credit points: 6 **Teacher/Coordinator:** Dr Gerry Bates Dr Rachel Ankeny **Session:** Semester 1 **Classes:** Two 2 hour lectures per week. **Prerequisites:** 12 credit points of Intermediate Science or Agriculture units. **Prohibitions:** ENVI3001, ENVI3003. **Assumed knowledge:** Intermediate Environmental Science. **Assessment:** Essays, tutorial papers.

This unit of study covers topics in environmental law and ethics. The environmental law component provides an overview of all laws in Australia pertaining to environmental matters and looks at a number of environmental issues at the various levels of analysis, policy making, implementation of policy, enforcement, and dispute resolution. It also provides a broad background to the political and economical issues as they relate to the legal issues involved. It also examines international environmental law, particularly examining how these influence and affect our local policies. The ethics component helps students develop thoughtful and informed positions on issues in environmental ethics using arguments derived from traditional ethics as well as environmentally specific theories. Ethical conflicts are often inevitable and difficult to resolve but using the resources of philosophical ethics and regular reference to case studies, students can learn to recognize the values and considerations at stake in such conflicts, acknowledge differing viewpoints and defend their own well considered positions.

ENVI3112
Environmental Assessment

Credit points: 6 **Teacher/Coordinator:** Dr John Dee Dr Scott Kable **Session:** Semester 2 **Classes:** Two 2 hour lectures per week. **Prerequisites:** 12 credit points of Intermediate Science or Agriculture units. **Prohibitions:** ENVI3002,

ENVI3004. **Assumed knowledge:** Intermediate Environmental Science. **Assessment:** Essays, tutorial papers, report.

This unit of study is composed of two components: environmental impact assessment and risk assessment. The former is generally concerned with issues related to environmental impact assessment and builds toward the process of producing an EIS/EIA. Moor specifically it seeks to establish a critical understanding of the theory and practice of environmental impact studies/statements (EIS) and environmental impact assessment processes (EIA) from both the positive (scientific) and normative (value) perspectives. Emphasis is placed on gaining skills in writing and producing an assessment report, which contains logically ordered and tightly structured argumentation that can stand rigorous scrutiny by political processes, the judiciary, the public and the media. The risk assessment component considers a more chemical approach to the assessment of risk and issues of safety with respect to chemicals, ecotoxicology and the environment.

ENVI3113
Environmental Economics and Planning

Credit points: 6 **Teacher/Coordinator:** Dr Tihomir Ancev, Dr John Dee **Session:** Semester 1 **Classes:** 4 hours of lectures and one tutorial per week **Prerequisites:** 12 credit points of Intermediate Science or Agriculture units **Prohibitions:** ENVI3001 **Assumed knowledge:** Intermediate Environmental Science **Assessment:** Essays, tutorial papers/reports, exam

This unit of study covers topics in environmental economics and planning. The economics component will provide a general introduction to theoretical concepts and empirical work in natural resource and environmental economics. The basic economic concepts of consumption, choice, utility, production, costs, property rights, market failures, externalities and government institutions will be defined and discussed. A set of tools and methods that are used in resource and environmental economics practice will be introduced. These comprise optimisation, econometric and simulation models, as well as more specific methods such as benefit-cost analysis and non-market valuation methods. The concepts and tools will be applied to specific problems related to land and water. In particular, discussions will be focused on some of the following problems: agricultural and urban water supply and demand, water quality, land use, sustainable development. The planning component introduces the field of urban and regional planning and its application in Australia. The lectures cover a broad range of topics including urbanization, the scope of plan making, policy and implementation, development control measures, principles of environmental sustainability, indigenous development issues, and planning in regional and urban settings relevant to both the built and natural environment. The implications for planning in a liberal-pluralist political environment and the need to reconcile a wide range of competing interests in land use and natural resources will also be investigated

ENVI3114
Energy and the Environment

Credit points: 6 **Teacher/Coordinator:** Dr Chris Dey **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 1 hour tutorial per week and three field trips. **Prerequisites:** 12 credit points of Intermediate Science or Agriculture units. **Prohibitions:** ENVI3001, PHYS3600. **Assumed knowledge:** Junior Physics or Intermediate Environmental Science. **Assessment:** Essays, tutorial papers, field reports, exam.

This unit covers the following aspects of energy and the environment: energy use; electrical power generation including alternate methods such as wind turbines; the environmental impact of energy use and power generation including the enhanced greenhouse effect; transportation and pollution; energy management in buildings; solar thermal energy, photovoltaics, and nuclear energy; and, socio-economic and political issues related to energy use and power generation.

Financial Mathematics and Statistics

This is an interdisciplinary major offered in the Faculty of Science consisting of several core units and a number of elective units from mathematics, statistics and information technologies. The program is designed to meet the need for high level quantitative and modelling skills in the banking, insurance, stockbroking and finance industries without constraining students to a full major in mathematics or statistics. Graduates with specifically strong mathematical and statistics backgrounds are in very high demand. The core units Optimisation and Financial Mathematics (MATH2070/2970) and Financial Mathematics 2 (MATH3015/3933) are the backbone of the program and introduce the student to important financial concepts within a mathematical and statistical framework. The core mathematics and statistics units provide the technical base that is required by a quantitative analyst, while the elective units offer the student increased flexibility and additional opportunities to develop related skills. Students completing the program at the Advanced Level may continue into Fourth Year Honours where a number of further Financial Mathematics and Statistics units are on offer. It is envisaged that students completing the Honours program will not only be highly trained in quantitative finance, but will also be well prepared for active research in the field. Students should refer to Table 1 for an enrolment guide and to entries under the contributing Schools for unit of study descriptions.

Geosciences

The School of Geosciences offers units of study in the discipline areas of Geography and Geology & Geophysics. Students may take a major in either of these disciplines, and many of the Geoscience units also form key components of the Environmental Studies and Marine Science majors. The junior units GEOS1001, GEOS1002 and GEOS1003 provide a comprehensive introduction to both Geography and Geology & Geophysics. A major in Geography or Geology & Geophysics can be included within various degree programs across the University, including Science, Arts, Liberal Studies, Economics and Social Sciences.

Geography

Geography is the study of earth as the home of people. As the need to find solutions to issues of environmental sustainability, population change and globalisation have become more challenging, the skills and knowledge of geographers have come to the forefront. Students of Geography are interested in their world, and are taught to think critically about the relationships between people, environments and places. The knowledge and skills gained from studying Geography at the University of Sydney provide a launch pad to a professional career in an array of fields including environmental management, planning, overseas development and consulting research. Our Geography program has strong linkages with various national and international organizations that provide pathways for further studies at Honours and post-graduate levels, and into the work force. It differs from High School Geography in that it provides more opportunities for independent learning, introduces new techniques and skills, offers flexibility for you to follow your interests and is tailored to real world events and issues.

Geology and Geophysics

Geology & Geophysics provides a unifying context for understanding the workings of the earth system and the dynamic structural and ecosystem relationships between the continents and the oceans. Global climate change and shrinking resources have heightened our sense of dependence on Earth as a complex system. Geology & Geophysics provides students with an understanding of change on Earth, its origin, plate tectonics, surface processes, evolution of life and geologic time. Intermediate units highlight the role of the earth system in all natural phenomena, including those of concern to humans such as geo-biodiversity, salinity, seismicity, volcanic hazards, climate and sea level change. Senior units of study cover methods of field data collection and provide access to cutting edge computing and data resources used for turning such observations into knowledge. Students will acquire the skills necessary for employment in all areas of sustainable exploration and management of our natural, mineral and energy resources.

Geosciences Advice

As a Geoscience student at the University of Sydney, you will participate in an array of learning environments that complement traditional lecture and tutorial classes; for example, studies can include field trips to destinations in Australia and overseas. Students who wish to obtain advice concerning the units of study described below should approach School advisors during the enrolment week or the unit coordinators during semester. Further information is available at www.geosci.usyd.edu.au, as well as in the Geosciences' student handbook available from the School's administrative office (Room 348, Madsen Building).

Website

The School of Geosciences website is located at: http://www.geosci.usyd.edu.au/

Location

The School of Geosciences is located within two buildings. Staff with expertise in Geography, and the Head of School, are located on the second floor of the Madsen Building (F09). The Demountables (H11) houses staff with expertise in Geology and Geophysics. All enquiries can be made at the Madsen Building, Room 470, 8.30am to 4.30pm, Mon to Fri.

Further information

Further information is available at www.geosci.usyd.edu.au, as well as in the Geosciences' student handbook available from the School's administrative office (second floor, Madsen Building).

Geosciences junior units of study

Students are encouraged to commence their studies of Geography, Geology & Geophysics, Environmental Studies or Marine Science by enrolling in GEOS1001 (Earth, Environment and Society) (February semester). This unit of study provides an overarching introduction to issues and themes taught across the School of Geosciences. In the second (July) semester, Geography students should enroll in GEOS1002 (Introductory Geography); Geology & Geophysics students need to enroll in GEOS1003 (Introduction to Geology). Entry into any of these units of study does not require any prior knowledge

GEOS1001
Earth, Environment and Society

Credit points: 6 **Teacher/Coordinator:** Dr Tom Hubble, Dr Mel Neave, Dr Bill Pritchard **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour practical per week. **Prohibitions:** GEOS1901, GEOG1001, GEOG1002, GEOL1001, GEOL1002, GEOL1902 **Assessment:** One 2 hour exam, 2000 word essay, field and prac reports

This Unit of Study examines interactions between the physical Earth and the activities of its growing population of human inhabitants. Several themes will be explored to provide students with an overview of the way that the earth's physical systems have come into being and how they function. Firstly, past geological events will be used illustrate how habitats and ecosystems respond to environmental crises. Secondly, models of environmental and climate change will be examined. Thirdly, the requirements of growing human populations and their ecological footprints will be investigated. These three themes will then be integrated to enable students to think critically about the key issues facing the future of the planet, and provide a foundation for future studies in Geography and Geology.

GEOS1002
Introductory Geography

Credit points: 6 **Teacher/Coordinator:** Dr Mel Neave, Dr Kurt Iveson **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour practical per week. **Prohibitions:** GEOS1902, GEOG1001, GEOG1002 **Assessment:** One 2 hour exam, one 2000 word essay, five practical reports

This unit of study provides an introductory geographical analysis of the ways in which places and landscapes are produced. The unit focuses on both the physical and human processes that generate spatial variation and difference, as well as tracing the interactions between these processes. The unit will begin with an investigation of Earth's surface features, exploring the distribution of landforms across Earth and interpreting their evolutionary histories. Several landscapes will be examined including those formed by rivers, wind, oceans and glaciers. But physical landscapes evolve under the influence of and affect human operations. Therefore, the unit of study will also consider the political, economic, cultural and urban geographies which shape contemporary global society. Each of these themes will be discussed with reference to key examples, in order to consider the ways in which the various processes (both physical and human) interact in the shaping of places. The unit of study will also include short field trips to localities surrounding the university to observe processes of spatial change and conflict. The unit of study is designed to attract and interest students who wish to pursue geography as a major within their undergraduate degree, but also has relevance to students who wish to consider the way geographers understand the contemporary world.

GEOS1003
Introduction to Geology

Credit points: 6 **Teacher/Coordinator:** Dr Tom Hubble, A/Prof Clarke, Dr Julie Dickinson **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour practical per week. **Prohibitions:** GEOS1903, GEOL1002, GEOL1902 **Assessment:** One 2 hour exam, practical reports, field report

The aim of this unit of study is to examine the chemical and physical processes involved in mineral formation, the interior of the Earth, surface features, sedimentary environments, volcanoes, and metamorphism. Lectures and laboratory sessions on mountain building processes and the formation of mineral deposits will lead to an understanding of the forces controlling the geology of our planet. Processes such as weathering, erosion and nature of sedimentary environments are related to the origin of the Australian landscape. In addition to laboratory classes there is a two-day excursion to the western Blue Mountains and Lithgow to examine geological objects in their setting.

Textbooks

The recommended text is Hamblin & Christiansen (2001) Earth's Dynamic Systems, 9th Edition, Prentice Hall. This book can be purchased from the Co-op Bookshop.

GEOL1501
Engineering Geology 1

Credit points: 6 **Session:** Semester 2 **Classes:** 39 hours lectures, 26 hours laboratory. Field excursions in the Sydney region, as appropriate. **Prohibitions:** GEOL1002 **Assumed knowledge:** No previous knowledge of Geology assumed **Assessment:** Practical laboratory work, assignment, and a combined theory and practical exam.

Course objectives: To introduce basic geology to civil engineering students. Expected outcomes: Students should develop an appreciation of geologic processes as they influence civil engineering works and acquire knowledge of the most important rocks and minerals and be able to identify them. Syllabus summary: Geological concepts relevant to civil engineering and the building environment. Introduction to minerals; igneous, sedimentary and metamorphic rocks, their occurrence, formation and significance. General introduction to physical geology and geomorphology, structural geology, plate tectonics, and hydrogeology. Associated laboratory work on minerals, rocks and mapping.

Textbooks

T West, Geology Applied to Engineering; or
A Holmes, Principles of Physical Geology 4th Edition.

GEOS1901
Earth, Environment and Society Advanced

Credit points: 6 **Teacher/Coordinator:** Dr Tom Hubble, Dr Mel Neave, Dr Bill Pritchard **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour practical per week. **Prerequisites:** Departmental permission is required for enrolment. A UAI above 93 is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator. **Prohibitions:** GEOS1001, GEOG1001, GEOG1002, GEOL1001, GEOL1002, GEOL1902 **Assessment:** One 2 hour exam, 2000 word essay, field and prac reports

Note: Department permission required for enrolment .

Advanced students will complete the same core lecture material as for GEOS1001, but will be required to carry out more challenging practical assignments.

GEOS1902
Introductory Geography (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Mel Neave, Dr Kurt Iveson **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour practicals per week. **Prerequisites:** Departmental permission is required for enrolment. A UAI above 93 is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator. **Prohibitions:** GEOS1002, GEOG1001, GEOG1002 **Assessment:** One 2 hour exam, one 2000 word essay, five practical reports

Note: Department permission required for enrolment .

Advanced students will complete the same core lecture material as for GEOS1001, but will be required to carry out more challenging practical assignments.

GEOS1903
Introduction to Geology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Tom Hubble, A/Prof Clarke, Dr Julie Dickinson **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour practical per week. **Prerequisites:** Departmental permission is required for enrolment. A UAI above 93 is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator. **Prohibitions:** GEOL1002, GEOL1902, GEOS1003 **Assessment:** One 2 hour exam, practical reports, field report

Note: Department permission required for enrolment .

This unit has the same objectives as GEOS1003 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. This unit may be taken as part of the BSc (Advanced).

Geosciences intermediate units of study

Geoscience intermediate units of study are listed below. All intermediate students are encouraged to enroll in GEOS2111 (Natural Hazards: a GIS Approach) which covers concepts and skills relevant to all Geoscience disciplines. Students interested in different areas of the Geoscience disciplines might select intermediate units of study as follows: physical and environmental Geography: GEOS2111 and/or GEOS2113 (Feb semester); GEOS2121 and/or GEOS2124 (July semester), human and environmental Geography: GEOS2112 and/or GEOS2111 (Feb semester); GEOS2122 and/or GEOS2121 (July semester), Geology & Geophysics: GEOS2111, GEOL2112 and/or GEOS2114 (Feb semester); GEOS2124 and/or GEOS2121 (July semster). Regardless, subject to the prerequisites for each individual unit of study, students may vary their enrolment across these streams. The School of Geosciences encourages students to construct a sequential ordering of units that best meets their interests and aspirations.

GEOG2321
Fluvial and Groundwater Geomorphology

Credit points: 6 **Teacher/Coordinator:** Dr Melissa Neave **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour practical per week. **Prerequisites:** GEOG(2311 or 2001) or 36 credit points of Junior study including GEOG1001 or ENVI (1001 or 1002) or GEOL (1001 or 1002 or 1501). Students in the Bachelor of Resource Economics should have 36 credit points of study in Biology (or Land and Water Science), Chemistry and Mathematics. Students in the Bachelor of Land and Water Science should have ENVI1002, 12 credit points of Chemistry, 6 credit points of Biology, BIOM1002. **Prohibitions:** GEOG (2002 or 2302 or 2303) or MARS2002 or MARS2006 **Assessment:** One 2 hr exam, one quiz, one field report, practical exercises

This unit of study provides an introduction to the fundamentals of fluvial geomorphology (the study of surface water as an agent of landscape change) and groundwater hydrology. The fluvial geomorphology section of the unit will describe the movement of water in stream channels and investigate the landscape change associated with that movement. Topics to be covered will include open channel flow hydraulics, sediment transport processes and stream channel morphology. Practical work will focus on the collection and analysis of field data. The quantity and quality of the groundwater resources are closely linked to geology and fluvial geomorphology. The groundwater section of this unit is based around four common groundwater issues: contamination, extraction, dryland salinity and groundwater-surface water interaction. In the practical component, common groundwater computer models such as FLOWTUBE and MODFLOW will be used to further explore these problems.

Textbooks
Recommended Textbooks: Fetter (2001) & Knighton (1998)

GEOS2111
Natural Hazards: a GIS Approach

Credit points: 6 **Teacher/Coordinator:** Dr Eleanor Bruce Dr Michael Hughes and others **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 3 hour practical per week. **Prerequisites:** 24 credit points of junior units of study including one of GEOS1001 or GEOS1002 or GEOS1003 or GEOG1001 or GEOG1002 or ENVI1002 or GEOL1001 or GEOL1002 **Prohibitions:** GEOG2411, GEOS2911 **Assessment:** One 2 hour exam, one assignment, report.

The geosciences provide an essential framework for understanding the environmental response to short- and long-term geologic, oceanic and atmospheric processes. This unit of study introduces students to a variety of natural phenomena that affect society with impact levels ranging from nuisance to disastrous. The discussion of each hazard focuses on: (1) the process mechanics, (2) hazards and risk, and (3) methods for mitigation. Geographic Information Systems (GIS) are used by scientists, planners, policy-makers and the insurance industry alike to address many issues relating to natural hazards. This unit of study will introduce students to the major concepts relating to GIS and provide practical experience in the application of GIS techniques to hazard mapping, risk assessment and mitigation.

GEOS2112
Economic Geography of Global Development

Credit points: 6 **Teacher/Coordinator:** Dr Bill Pritchard, A/Prof Phil Hirsch **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour practical per week. **Prerequisites:** 24 credit points of Junior units of study, including GEOS1001 or GEOS1002 or GEOS1003 or GEOS1901 or GEOS1902 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1002 or GEOG1001 **Prohibitions:** GEOS2912, GEOG2511 **Assessment:** One 2 hour exam, 2000 word essay, tutorial papers, practical report

In this unit of study, students will be introduced to the sub-discipline of economic geography by way of debates on the spatial character of global development. We focus on questions relating to who are the winners and losers from contemporary patterns of global economic change. This includes the analysis of relevant conceptual approaches to these questions (including comparative advantage, global commodity chain theory, regionalism, economic governance etc), plus 'hands-on' examination of the key institutions (such as the WTO and ADB) driving these changes. In general, issues are tailored to themes being played out in Asia-Pacific countries. Students are expected to participate in a variety of practical class exercises throughout the semester, which will include presenting the fruits of independent research activities. This unit provides an especially relevant feeder-unit into GEOS 3053/ GEOS 3054, the Asia-Pacific Field School.

Textbooks
P. Dicken (2003) Global Shift, Sage, London.

GEOS2113
Making the Australian Landscape

Credit points: 6 **Teacher/Coordinator:** Associate Professor D. Dragovich Dr S.J. Gale **Session:** Semester 1 **Classes:** Two - three 1 hour lectures and one - two 1 hour practicals per week. **Prerequisites:** 24 credit points of Junior units of study, including GEOS1002 or GEOS1003 or GEOS1902 or GEOS1903 or GEOG1001 or ENVI1002 or GEOL1001 or GEOL1002 or GEOL1902 **Prohibitions:** GEOS2913 **Assessment:** One 2 hour examination, practical reports.

The shifts in the nature of the Earth's environment over time and the resultant changes in process regimes have had dramatic impacts on the way the Australian physical landscape has evolved. We consider here the effects of these changes on the broad pattern of the

landscape, focusing particularly on slopes and soils. We follow this by investigating the environmental changes that have taken place since the end of the last glacial, the time when the continent's climates and environments first took on a recognisably modern form. We deal specifically with the impact of human activity on the Australian biophysical environment, emphasising both pre-European impacts and those changes that have taken place since European contact.

GEOS2114
Volcanoes, Hot Rocks and Minerals

Credit points: 6 **Teacher/Coordinator:** Dr Derek Wyman, Dr Patrice Rey, Dr Geoff Clarke **Session:** Semester 1, Summer Late **Classes:** Two 1 hour lectures and one 3 hour practical per week. **Prerequisites:** GEOG1001, GEOL1001, GEOL1002, GEOS1003, GEOS1903 or ENVI1002 and 24 credit points of Junior Science units of study. **Prohibitions:** GEOL2111, GEOL2911, CIVL2409, GEOS2914 **Assessment:** One 2 hour exam, practical reports, field trip report, group presentation

This advanced unit of study relates the plate tectonics of subduction zones to a) volcanoes and their hazards, b) geological processes in the deep crust, and c) the formation of precious metal and gemstone ores around the Pacific Rim. A problem solving approach is used to develop the skills required to understand the history of individual volcanoes and predict their future activity and hazards. The unit includes a two- to three-day field trip to study an extinct volcano in NSW. Practical work includes independent study of igneous systems, rocks, and minerals employing both microscope-based techniques and computer modeling. A field excursion to volcanic terranes of New Zealand (North Island) is optional. The unit provides relevant knowledge for GEOS 3006 and GEOS 3906, Mineral Deposits & Spatial Data Analysis.

GEOS2121
Environmental and Resource Management

Credit points: 6 **Teacher/Coordinator:** Dr Phil McManus **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 1 hour tutorial per week, one fieldtrip. **Prerequisites:** 24 credit points of junior units of study, including one of: GEOS1001 or GEOS1002 or GEOS1003 or GEOS1901 or GEOS1902 or GEOS1903 or ECOP1001 or ECOP1002 **Prohibitions:** GEOG2421, GEOL2202, GEOS2921 **Assessment:** One 2 hour exam, one 2000 word essay, tutorial papers, one fieldtrip report

This unit of study explores cultural constructions of nature and resources, the evolution of environmental thought and the debates about sustainable development. It integrates environmental, economic, cultural and social considerations, with particular regard to water, mining, forestry and fishing industries in Australia and other countries. The unit includes a fieldtrip to the Hunter Valley to look at geological and geographical issues pertaining to mines, wines and the thoroughbred breeding industries in this region. The unit of study enables students to learn about the economics of resource extraction and the social, cultural and environmental considerations that must be taken into account when developing and implementing environmental and resource management policies.

GEOS2122
Urban Geography

Credit points: 6 **Teacher/Coordinator:** Prof John Connell, Dr Kurt Iveson **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour practical per week. **Prerequisites:** 24 credit points of Junior units of study, including GEOS1001 or GEOS1002 or GEOS1003 or ECOP1001 or ECOP1002. **Prohibitions:** GEOS2922, GEOG2521 **Assessment:** One 2 hour exam, 2000 word essay, tutorial papers, practical reports

By their very nature, cities are full of different people doing all sorts of different things. These activities all have their own geographies, people make the most of urban spaces available to them, and they shape and produce new kinds of cities through their actions. These urban geographies are unstable and contested. In fact, efforts to shape urban spaces in particular ways are fundamentally dynamic and political. This course will examine the politics of a range of different practices which use and shape urban space,such as shopping, eating, crime, religion, language, protest, sport, music, sex, mobility, and hanging out. In considering these various practices, we will investigate how different people perceive space and construct space, primarily in western contexts. The course as a whole seeks to understand the cultural and political dimensions of everyday life in cities, and to develop new perspectives on metropolitan change.

GEOS2124
Fossils and Tectonics

Credit points: 6 **Teacher/Coordinator:** Dr Julie Dickinson, A/Prof Dietmar Muller, Dr Patrice Rey, Prof Peter Hatherly **Session:** Semester 2 **Classes:** Two 1 hour lectures plus one 3 hour practical each week. **Prerequisites:** 24 credit points of Junior units of study, including GEOS1003 or GEOS1903 **Prohibitions:** GEOS2924, GEOL2123, GEOL2124 **Assessment:** One 2 hour exam, practical reports, field report

The unit aims to convey how fossils, stratigraphic and structural data are used together to determine ages and environments and the deformation history of rock layers. It covers an introduction to historical geology and the evolution of the major fossils groups. Methods of stratigraphic age determination include litho-, bio-, chemo-, magneto-stratigraphy, as well as radiometric geochronology and the stratigraphic characteristics of the main geological time intervals. Structural methods are focused on brittle deformation in the upper crust and sediments. Students will gain familiarity with the most important fossil groups and how to identify them, and with the most important types of faults and folds. The formation of fossil fuels such as coal, oil and gas will also be covered in an earth history and resource exploration context. The simultaneous use of fossils, stratigraphy and structure to unravel the geological history of a set of exposed rock layers is demonstrated during a field excursion to Yass.

Textbooks
Classnotes by Dickinson et al. available in co-op bookshop

GEOS2911
Natural Hazards: a GIS Approach Advanced

Credit points: 6 **Teacher/Coordinator:** Dr Eleanor Bruce Dr Michael Hughes and others. **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 3 hour practical per week. **Prerequisites:** 24 credit points of junior units of study including GEOS1001 or GEOS1002 or GEOS1003 or GEOG1001 or GEOG 1002 or ENVI1002 or GEOL1001 or GEOL1002 **Prohibitions:** GEOG2411, GEOS2111 **Assessment:** One 2 hour exam, one assignment, practical report.

The geosciences provide an essential framework for understanding the environmental response to short- and long-term geologic, oceanic and atmospheric processes. This unit of study introduces students to a variety of natural phenomena that affect society with impact levels ranging from nuisance to disastrous. The discussion of each hazard focuses on: (1) the process mechanics, (2) hazards and risk, and (3) methods for mitigation. Geographic Information Systems (GIS) are used by scientists, planners, policy-makers and the insurance industry alike to address many issues relating to natural hazards. This unit of study will introduce students to the major concepts relating to GIS and provide practical experience in the application of GIS techniques to hazard mapping, risk assessment and mitigation.

GEOS2912
Economic Geography of Global Dev. Adv.

Credit points: 6 **Teacher/Coordinator:** Dr Bill Pritchard, A/Prof Phil Hirsch **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour practicals per week. **Prerequisites:** 24 credit points of Junior units of study, including a distinction in one of: GEOS1001 or GEOS1901 or GEOS1002 or GEOS1902 or GEOS1003 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1001 or GEOG1002 **Prohibitions:** GEOS2112, GEOG2511 **Assessment:** One 2 hour exam, 2000 word essay, tutorial papers, practical reports.

This is an Advanced version of GEOS2112. In this unit of study, students will be introduced to the sub-discipline of economic geography by way of debates on the spatial character of global development. We focus on questions relating to who are the winners and losers from contemporary patterns of global economic change. This includes the analysis of relevant conceptual approaches to these questions (including comparative advantage, global commodity chain theory, regionalism, economic governance etc), plus 'hands-on' examination of the key institutions (such as the WTO and ADB) driving these changes. In general, issues are tailored to themes being played out in Asia-Pacific countries. Students are expected to participate in a variety of practical class exercises throughout the semester, which

will include presenting the fruits of independent research activities. This unit provides an especially relevant feeder-unit into GEOS3053/ GEOS3054, the Asia-Pacific Field School.

Textbooks
P. Dicken (2003) Global Shift, Sage, London.

GEOS2914
Volcanoes, Hot Rocks and Minerals Adv

Credit points: 6 **Teacher/Coordinator:** Dr Derek Wyman Dr Patrice Rey Dr Geoff Clarke **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 3 hour practical per week. **Prerequisites:** 24 credit points of Junior Science units of study and Distinction in one of GEOL1002 or GEOS1002 or ENVI1002.This requirement may be varied and students should consult the unit of study coordinator. **Prohibitions:** GEOL2001, CIVL2409, GEOS2114 **Assessment:** One 2 hour exam, practical reports, field trip report, group presentation.

This unit has the same objectives as GEOS2114 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. This unit may be taken as part of the BSc (Advanced).

Textbooks
No required textbook. Course notes available.

GEOS2921
Environmental & Resource Management Adv

Credit points: 6 **Teacher/Coordinator:** Dr Phil McManus **Session:** Semester 2 **Classes:** Two 1 hour lectures, one 1 hour tutorial per week and one fieldtrip. **Prerequisites:** 24 credit points of Junior units of study, including a distinction in one of: GEOS1001 or GEOS1901 or GEOS1002 or GEOS 1902 or GEOS1003 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1001 or GEOG1002 **Prohibitions:** GEOG2421, GEOL2202, GEOS2121 **Assessment:** One 2 hour exam, one 2000 word essay, one 2500 word essay, one fieldtrip report

Advanced students will complete the same core lecture materials as for GEOS2121 but are required to complete an essay in place of the regular tutorial reports prepared in GEOS2121.

GEOS2922
Urban Geography (Advanced)

Credit points: 6 **Teacher/Coordinator:** Prof John Connell, Dr Kurt Iveson **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour practical per week. **Prerequisites:** 24 credit points of Junior units of study, including a distinction in one of: GEOS1001 or GEOS1901 or GEOS1002 or GEOS 1902 or GEOS1003 or GEOS1903 or ECOP1001 or ECOP1002 or GEOG1001 or GEOG1002 **Prohibitions:** GEOS2122 **Assessment:** One 2 hour exam, 2000 word essay, tutorial papers, practical reports

By their very nature, cities are full of different people doing all sorts of different things. These activities all have their own geographies, people make the most of urban spaces available to them, and they shape and produce new kinds of cities through their actions. These urban geographies are unstable and contested. In fact, efforts to shape urban spaces in particular ways are fundamentally dynamic and political. This course will examine the politics of a range of different practices which use and shape urban space,such as shopping, eating, crime, religion, language, protest, sport, music, sex, mobility, and hanging out. In considering these various practices, we will investigate how different people perceive space and construct space, primarily in western contexts. The course as a whole seeks to understand the cultural and political dimensions of everyday life in cities, and to develop new perspectives on metropolitan change.

GEOS2924
Fossils and Tectonics (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Julie Dickinson, A/Prof Dietmar Muller, Dr Patrice Rey, Prof Peter Hatherly **Session:** Semester 2 **Classes:** Two 1 hour lectures plus one 3 hour practical each week. **Prerequisites:** Distinction in GEOS1003 or Distinction average in 12 credit points of Junior Geoscience units (Geoscience is the disciplines of Geography, Geology and Geophysics) **Prohibitions:** GEOS2124, GEOL2123, GEOL2124 **Assessment:** One 2 hour exam, practical reports, field report

This unit has the same objectives as GEOS2124 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. This unit may be taken as part of the BSc (Advanced).

Textbooks
Classnotes by Dickinson et al. available in co-op bookshop

Geosciences senior units of study

Geosciences Senior units of study provide specialist themes or topics relevant to ongoing studies or professions. Students may select from any of the units listed below.

Geography Major

The requirements for a Major in Geography are defined in Table 1. As with intermediate units, students would normally select sequential units of study from one of four overlapping streams - Physical Geography, Environmental Geography, Human Geography, and Geographic Computer Methods - although students may construct any ordering of these units that cater to their interests and aspirations, subject to satisfying any prerequisites.

Physical Geography stream

GEOS3009/3909 (Coastal Environments & Processes); GEOS3015/3915 (Environmental Geomorphology), GEOS3016/3916 (Seafloor Processes & Imaging)

Environmental Geography stream

GEOS3017/3917 (Global Energy-Exploration & Exploitation), GEOS3014/3914 (GIS in Coastal Management), GEOS3018/3918 (Rivers: Science, Policy and Management)GEOS3511/3911 (Understanding Australia's Regions)

Human Geography stream

GEOS3053/3953 (Asia-Pacific field school-Assessment A), GEOS3054/3954 (Asia-Pacific field school-Assessment B), GEOG3522/3922 (Cities and Citizenship), GEOS3521/3921 (Sustainable Cities), GEOS3512/3912 (Contemporary Global Geographies)

Geographic Computer Methods stream

GEOS3014/3914 (GIS in Coastal Management), GEOS3007/3917 (Remote Sensing: Imaging the Earth), GEOS3016/3916 (Seafloor Processes & Imaging).

Streams in Geology and Geophysics

Students can select units from three streams - Resource Exploration, Geological Hazard Management or Environmental and Engineering Site Investigation, and Computer Methods in Geology and Geophysics - or a more general training, to obtain vocational training for their future careers, as outlined below:

Resource Exploration

GEOS3008/3908 (Geology field school), GEOS3004/3904(Geophysics, Imaging, Oil/Ore Production), GEOS3006/3906 (Mineral Deposits) and one of GEOS3003/3903 (Dynamics of Continents and Basins), GEOS3007/3907 (Remote Sensing: Imaging the Earth), GEOS3016/3916 (Seafloor Processes & Imaging) or GEOS3017/3907 (Global Energy-Exploration & Exploitation);

Geological Hazard Management or Environmental and Engineering Site Investigation

GEOS3008/3908 (Geology field school), GEOS3003/3903 (Dynamics of Continents and Basins), GEOS3004/3904 (Geophysics, Imaging, Oil/Ore Production), GEOS3007/3907 (Remote Sensing: Imaging the Earth).

Computer Methods in Geology and Geophysics

GEOS3008/3908 (Geology field school), GEOS3004/3904 (Geophysics, Imaging, Oil/Ore Production), GEOS3007/3907 (Remote Sensing: Imaging the Earth), GEOS3014/3914 (GIS in Coastal Management), GEOS3016/3916 (Seafloor Processes & Imaging).

General Training

GEOS3008/3908 (Geology field school), GEOS3003/3903 (Dynamics of Continents and Basins) and GEOS3007/3907 (Remote Sensing: Imaging the Earth) as well as one of GEOS3009/3909 (Coastal Environments & Processes), GEOS3017/3917 (Global Energy-Exploration & Exploitation), GEOS3006/3916 (Mineral Deposits), GEOS3007/3917 (Remote Sensing: Imaging the Earth), or GEOS3018/3918 (Rivers: Science, Policy & Management).

GEOS3003

Dynamics of Continents and Basins

Credit points: 6 **Teacher/Coordinator:** A/Prof Dietmar Muller, Dr Patrice Rey **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour practical per week; excursion **Prerequisites:** (6 credit points of Intermediate Geoscience units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **Prohibitions:** GEOL3101, GEOS3903 **Assessment:** One 2 hour theory exam, class work

The Earth's crust hosts mineral and energy resources that have sustained our civilisation over the past five thousand years. These resources are formed along plate boundaries and in sedimentary basins. They are the by-products of dynamic and thermal processes that have affected the lithosphere since its formation in the Archaean. This unit focuses on the understanding the thermal and mechanical aspects of lithospheric deformation from continental break-up and basin formation and evolution to continental convergence and orogenesis. The main topics of this module include: Mantle convection, oceanic lithospheric evolution, heat transfer in the lithosphere; Isostasy and vertical motion of the Earth's surface; Plate boundaries, body forces and the dynamic of the Earth's lithosphere; Rheology of the lithosphere; Continental break-up and the formation of continental margins and basins; Thermo-mechanics of sedimentary basins; Thermo-mechanics of orogenesis; and, Thermal consequences and tectonic feedback of geodynamic processes. Practical classes are designed to enhance problem solving abilities, computational and communication skills as well as building a profound knowledge in Tectonics and Geodynamics. The course is relevant to all students interested in using computational methods to learn how the Earth works.

GEOS3004

Geophysics, Imaging, Oil/Ore Production

Credit points: 6 **Teacher/Coordinator:** Prof Iain Mason **Session:** Semester 2 **Classes:** 12 hours of lectures, practicals per week. **Prerequisites:** 12 credit points of Intermediate Science units of study or CIVL2409 **Prohibitions:** GEOP3202, GEOS3904 **Assessment:** One 2 hour theory exam, computer class work

This unit examines the use of computerised geophysical techniques to map high value sites. Sites of interest range from oil fields through mine sites to archaeological digs. Data sources include micro-gravity surveying, magnetism and aero-magnetism; radiometry, short-and long-range surveillance and tracking. The course is designed around the reality that while people, as much as data acquisition and reduction technology have influenced modern geophysics, recently, major strides have been made in digital data acquisition and reduction. Lectures deal with the creation, inversion and application of 2D and 3D potential and wave fields. Lab classes extend skills in computer aided image processing.

GEOS3006

Mineral Deposits & Spatial Data Analysis

Credit points: 6 **Teacher/Coordinator:** Dr Derek Wyman **Session:** Semester 2 **Classes:** 12 hours of lectures, practicals per week; field excursion. **Prerequisites:** 12 credit points of Intermediate Science units of study or CIVL2409 **Prohibitions:** GEOL3103, GEOS3906 **Assessment:** One 2 hour theory exams, class work and field reports

Global-scale tectonics and continental growth are examined in terms of their relationships to mineral deposits over the last 3.5 billion years. Deposits of metals and precious gems are linked to igneous rocks and hydrothermal fluids, which provide the basis for exploration strategies, account for specific ore deposit characteristics, and determine appropriate mining techniques. Representative ore deposits from New South Wales, Australia, and overseas will be included as case studies for a wide array of mineralisation types. Practical components of the course will introduce specimens of ore deposits and associated rocks and the spatial analysis of geological data at the global to district scale. In addition to laboratory classes there will be a four-day field excursion to active and historic mining sites in New South Wales.

GEOS3007

Remote Sensing: Imaging the Earth

Credit points: 6 **Teacher/Coordinator:** Dr Geoff Clarke **Session:** Semester 1 **Classes:** 12 hours of lectures, practicals per week. **Prerequisites:** 12 credit points of Intermediate Science units of study or CIVL2409 **Prohibitions:** GEOL3101 **Assessment:** Practical work, one 2 hour computer-based examination and an assignment

This unit of study initially addresses the evolution of the Australian landscape, involving tectonic influences, long-term climate variation and the effects of bedrock weathering. The unit then provides a comprehensive introduction to the use and manipulation of computer-based imaging techniques at the microscopic to macroscopic scales in the Earth Sciences. The application of image analysis as a tool in the interpretation of remote sensing techniques to geological terranes and landscapes is covered in computer-based practical exercises that use a mixture of Landsat thematic mapper, airborne radiometric and magnetic databases. Integrated lectures and laboratory exercises focus on the use of processed images in mineral exploration, tectonic analysis, and environmental studies.

GEOS3008

Field Geology and Geophysics

Credit points: 6 **Teacher/Coordinator:** Dr Patrice Rey, Prof Peter Hatherley **Session:** Semester 2 **Classes:** (weeks 1-7) 14 days of field work **Prerequisites:** 12 credit points of Intermediate GEOS units **Prohibitions:** GEOL3103, GEOS3908 **Assessment:** The field work will be assessed by written reports (up to 30 pages in total) and field exercises

This unit is considered an essential component all Geology and Geophysics majors. All students will undertake a range of exercises, but concentrate on aspects that emphasise their chosen major: (1) field mapping and the analysis of geological objects in the field, in weakly to complexly deformed sedimentary and volcanic sequences; (2) field investigations of mineral deposits and their relationships to host rocks; and (3) the practical application of magnetic and electrical methods commonly employed in the search for mineral deposits. The field course complements other subject areas in Geology & Geophysics and will give students experience in the field identification of rocks and minerals, regional geology, stratigraphy, structure and rock relationships. Students will be required to pay the cost of hostel-style accommodation during field work, which may involve camping.

GEOS3009

Coastal Environments & Processes

Credit points: 6 **Teacher/Coordinator:** Prof Andy Short, Dr Michael Hughes **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour practical per week; weekend excursion. **Prerequisites:** (6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **Prohibitions:** GEOS3909, MARS3003, MARS3105 **Assessment:** One 2 hour exam, two 1500 word reports.

*Note: * Geoscience is the disciplines of Geography, Geology and Geophysics.*

Australian coastal environments are dynamic systems responding to input sediments and processes as well as solid boundary conditions. The first half of this unit focuses on high-energy wave and wind dominated coastal systems; in particular the beach-surf zone, dunes and barriers, including their Holocene/Quaternary evolution. The regional impact of waves, tides, embayments, and other environmental parameters in controlling morphology are addressed. The second half of this unit focuses on the smaller-scale processes controlling beach-surf zone morphology. In particular, how waves and currents drive beach and bar morphodynamics via sediment transport. The practical program uses real data sets collected during recent research

programs and during a weekend field excursion, and they address issues specifically relevant to Australia's coastline.

Textbooks
Recommended:
Short, A D (ed), 1999, Beach and Shoreface Morphodynamics. John Wiley & Sons, Chichester, 379 pp.
Course notes will be available from the Photocopy Centre.

GEOS3014
GIS in Coastal Management

Credit points: 6 **Teacher/Coordinator:** Dr Eleanor Bruce, Dr Peter Cowell. **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 2 hour practical per week. **Prerequisites:** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **Prohibitions:** GEOS3914, MARS3104. **Assessment:** One 2 hour exam, two project reports, quizzes.

*Note: * Geoscience is the disciplines of Geography, Geology and Geophysics.*

Coastal Management is about how scientific knowledge is used to support policy formulation and planning decisions in coastal environments. The course links coastal science to policy and practice in management of estuaries, beaches and the coastal ocean. The principles are exemplified through specific issues, such as coastal erosion, pollution, and impacts of climate-change. The issues are dealt with in terms of how things work in nature, and how the issues are handled through administrative mechanisms. These mechanisms involve planning strategies like Marine Protected Areas and setback limits on civil development in the coastal zone. At a practical level, the link between science and coastal management is given substance through development and use of 'decision-support models'. These models involve geocomputing methods that entail application of simulation models, remotely sensed information, and Geographic Information Systems (GIS). The course therefore includes both principles and experience in use of these methods to address coastal-management issues. (It thus also involves extensive use of computers.) Although the focus is on the coast, the principles and methods have broader relevance to environmental management in particular, and to problem-solving in general. That is, the course has vocational relevance in showing how science can be exploited to the benefit of society and nature conservation.

Textbooks
Burrough, P.A. and McDonnell, R.A., 1998. Principles of Geographical Information Systems: Spatial information systems and geostatistics. Oxford University Press, Oxford, 333 pp.

GEOS3015
Environmental Geomorphology

Credit points: 6 **Teacher/Coordinator:** A/Professor Deirdre Dragovich, Dr Stephen Gale. **Session:** Semester 2 **Classes:** Two 1 hour lectures, one 1 hour tutorial and one 2 hour practical per week or equivalent. **Prerequisites:** 24 credit points of Intermediate units, including 6 credit points of Intermediate Geography. **Prohibitions:** GEOS3915 **Assumed knowledge:** Intermediate geomorphology/ physical geography/ geology. **Assessment:** One 2 hour exam, practical & field reports

The first part of this unit deals with the effects of weathering on the physical and the built environment, and considers the relationship between soil and landforms. The second part investigates the environmental changes that have taken place since the end of the last glacial, the time when the world's climates and environments first took on a recognisably modern form. It deals specifically with changes to the Australian biophysical environment and will focus on human-environmental impacts, both under pre-European and post-contact conditions.

GEOS3016
Seafloor Processes & Imaging

Credit points: 6 **Teacher/Coordinator:** Dr Dietmar Müller, Dr Julie Dickinson. **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour practical per week; one-day excursion. **Prerequisites:** 12 credit points of Intermediate Geoscience or ((one of MARS2005 and MARS2905) and (one of MARS2006 and MARS2906)) **Prohibitions:** GEOS3916, MARS3005, MARS3106 **Assessment:** One 2 hour exam, prac reports.

*Note: * Geoscience is the disciplines of Geography, Geology and Geophysics.*

Exploring the sediments and rocks that make up the continental shelves and deep ocean floor requires the use of remote sensing techniques, and the analysis of geological and geophysical data. This course teaches analytical and interpretive skills in both these areas, with a focus on the interaction of physical, biological and chemical processes on the sea floor. The aim of this course is to provide the student with skills to analyse sea floor environments and interpret a variety of relevant geological and geophysical datasets, including include side-scan sonar, swath-mapping, magnetics, gravity, and seismic reflection data. Students will also gain the skills to investigate marine sedimentary successions. The practical exercises will provide an introduction to standard data analysis tools such as Matlab, and the use of Australian and world data-bases. Students will also be introduced to seafloor samples from the shelf, slope and deep-ocean, where the role of physical and biological activity on the sediment characteristics will be examined. The course is relevant to students interested in seafloor environments, marine geology and geophysics, and computer-based marine data analysis.

GEOS3017
Global Energy-Exploration & Exploitation

Credit points: 6 **Teacher/Coordinator:** Prof Peter Davies, Dr Gavin Birch. **Session:** Semester 1 **Classes:** Four 1 hour lectures per week and fieldschool. **Prerequisites:** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **Prohibitions:** GEOS3917, MARS3008. **Assessment:** One 2 hour exam, report

*Note: * Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.*

This unit is aimed at geoscientists, biologists, environmental and marine scientists who are interested in the energy resources, particularly in the context of the evolution of coral reefs and how they have been affected by changing short and long-term environmental conditions. This interdisciplinary unit provides an introduction to offshore energy and coral reefs and explores this complex system in relation to geology, biology and ecology as well as the oceanographic setting. The unit acquaints students with tools currently being used in the industry and is underpinned by modern concepts of basin architecture and petroleum economics. Exploration techniques include the principals and practice of electrical logging, source rock evaluation and reservoir quality assessment. The controlling influence of basin architecture is examined in terms of critical factors such as hydrocarbon source, migration and entrapment are used to demonstrate climatic and tectonic control. Students will also become familiar with the factors and processors that control the structure, morphology, sediments and distribution of coral reefs and how they function as part of larger ecosystem. The unit is based on problem solving by groups and is underpinned by closely integrating geology, geophysics, marine science and economics. The theoretical base developed in course work will be used to solve a real-world exploration case study, using petroleum industry techniques and by simulating an economic competitive environment. The unit will include a 5 day field trip to the Great Barrier Reef. Students will be required to meet associated travel and accommodation costs.

GEOS3018
Rivers: Science, Policy and Management

Credit points: 6 **Teacher/Coordinator:** Dr Mel Neave. **Session:** Semester 1 **Classes:** Two 1 hour lectures, one 1 hour tutorial, two 4 hour practicals per week; fieldwork **Prerequisites:** (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **Prohibitions:** GEOS3918 **Assessment:** One 2 hour exam, two 1500 word essays

The unit of study is concerned with understanding the functioning of river catchments from both natural science and social science perspectives, at a variety of scales. The catchment as a morphodynamic process-response system is addressed with an emphasis on the relationships between processes and landform entities. Similarly, relationships within social, economic, and political systems are explored within the catchment context, with particular emphasis on the interactions between the social system and bio-physical system. Empirical context for the unit will primarily be

drawn from the Murray-Darling, Mekong, and Hawkesbury-Nepean catchments. Fieldwork in the latter is integral to the unit of study.

Textbooks
Gordon, et al., 2004. Stream Hydrology: An Introduction for Ecologists.

GEOS3511
Understanding Australia's Regions

Credit points: 6 **Teacher/Coordinator:** Dr Bill Pritchard **Session:** Semester 1 **Classes:** 2 one hour lectures plus 2 hours of tutorials including on-line participation and one 2 hour practical per week. **Prerequisites:** 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study - one of GEOG2311,GEOG2321, GEOG2411, GEOG2411, GEOG2421, GEOG2511, GEOG2521, GEOS2111, GEOS2112, GEOS2113, GEOS2121, GEOS2122, GEOS2124, GEOS2911, GEOS2912, GEOS2921, GEOS2922, GEOS2924 **Prohibitions:** GEOS3911 **Assessment:** One 2 hour exam; 2000 word essay, tutorial papers, fieldtrip or alternative report.

Regional difference in Australia is becoming more acute. This has major implications for the life chances and economic prospects of people across Australia. Thus unit of study examines these issues, using extensive case study material and introducing students to new approaches in regional development theory to account for and explain this state of affairs. Specific topics to be addressed include the concept of the triple bottom line, the future of family farming, population change across Australia, Indigenous rights over land, and how rural Australia fits withion our 'national imagination'. This unit provides students with a solid grounding for graduate employment or further studies in the field of regional development.

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

GEOS3512
Contemporary Global Geographies

Credit points: 6 **Teacher/Coordinator:** A/Prof Philip Hirsch **Session:** Semester 1 **Classes:** One 2 hour lecture, one 1 hour tutorial, one 2 hour practical per week. **Prerequisites:** 6 credit points of Intermediate units of study in Geography. **Prohibitions:** GEOS3912 **Assessment:** One 2 hour exam, one 2000 word essays, one 3000 word practical report, tutorial participation

This unit of study provides students with detailed exposure to contemporary thematic areas of human geography research. It seeks to apply the conceptual material introduced in intermediate human geography units of study to 'real-life' research problems, as a platform for engaging students with research issues, frameworks, conceptual debates, methods, and problem-solving techniques. In 2007, this unit of study examines thematic and regional geographies of environment and development in the Asia-Pacific region. It also provides experience of dealing with issues around multi-stakeholder negotiation, natural resource management and development decision making. The unit is "hands-on", framed around an award-winning electronic simulation/role play exercise (eSim). Using past and current research by human geography academic staff in the School of Geosciences, the unit engages students with research issues, frameworks, conceptual debates, methods, and problem-solving techniques. Specifically, the unit focuses on multiple issues around environment and development in the Mekong region of Southeast Asia. Lectures and tutorials cover relevant conceptual and methodological issues related to research on this subject area, including that of the Australian Mekong Resource Centre (www.mekong.es.usyd.edu.au). * The eSim requires more hours over fewer weeks. The Unit will be completed in nine weeks of the semester. ** The essay and practical reports will consist of shorter modular submissions through the eSim

GEOG3521
Sustainable Cities

Credit points: 6 **Teacher/Coordinator:** Dr Phil McManus **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour practical/tutorial per week. **Prerequisites:** 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **Prohibitions:** GEOG3921, GEOG3202 **Assessment:** One 2 hour exam; 2000 word essay, tutorial papers, practical reports

Are cities sustainable? Why or why not? This unit of study develops themes introduced in Intermediate units in Geography relating to sustainability, focusing on the ways we manage urban regions. This involves discussion of topics including utopian visions for cities, urban history, ecological footprint analysis, bioregionalism, transport options, urban form and urban policy, with reference to sustainable futures. The unit of study looks at different Australian cities and includes practical work on a current sustainability issue in Sydney.

GEOS3522
Cities and Citizenship

Credit points: 6 **Teacher/Coordinator:** Dr Kurt Iveson **Session:** Semester 2 **Classes:** One 2 hour lecture, one 1 hour tutorial and one 2 hour practical per week. **Prerequisites:** 6 credit points of intermediate geography. **Prohibitions:** GEOG3203, GEOS3922 **Assessment:** One 2 hour exam, one 2000 word essay, one 3000 word practical report, tutorial participation

What does it mean to be a 'citizen', and what has this got to do with cities? This module explores the urban dimension of contests over the meaning of citizenship. The first half of the module will consider historical configurations of urban citizenship, from the Greek city-states of antiquity through to imperial, colonial and industrial cities. The second half of the module will then focus on contemporary globalising cities. A series of case studies will consider the production of new configurations of urban citizenship across a range of cities in the world, looking at issues such as: asylum-seekers and the city; children and the city; homelessness in the city; 'culture jamming' and new forms of urban protest; trans-national social movements. The module will involve a substantial practical component, encouraging students to draw on their own experiences of city life to reflect on the meanings of citizenship.

GEOS3053
Asia-Pacific Field School-Assessment A

Credit points: 6 **Teacher/Coordinator:** A/Prof Phil Hirsch. **Session:** S1 Intensive **Classes:** 5 weeks intensive. eight modules of 3 lectures each; ten full days' equivalent fieldwork; 20 hours small group work. **Prerequisites:** 6 credit points of Intermediate units of study in Geography. **Corequisites:** GEOS3054 **Prohibitions:** GEOG3201, GEOS3953 **Assessment:** One tutorial paper, one extended field report

Note: Department permission required for enrolment .
Note: Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.

The unit of study can be taken only in coincidence with GEOS 3054 and with prior permission from the unit of study coordinator. It constitutes a Field School run over a five- week period in January-February, prior to the commencement of the semester. In 2006 the Field School will be held in Thailand, Laos and Viet Nam. In other years it may be held in the South Pacific (Vanuatu and Fiji). It is run in close association with local universities, whose staff and students participate in some components of the course. It focuses on environmental and development issues in the context of rapid social change. Places are limited, and students interested in the 2007 Field School should indicate expression of interest to jconnell@mail.usyd.edu.au before the end of June 2006.

GEOS3054
Asia-Pacific Field School-Assessment B

Credit points: 6 **Teacher/Coordinator:** A/Prof Phil Hirsch. **Session:** S1 Intensive **Classes:** Five weeks intensive. eight modules of 3 lectures each; ten full days' equivalent fieldwork; 20 hours small group work **Prerequisites:** 6 credit points of Intermediate units of study in Geography. **Corequisites:** GEOS3053 **Prohibitions:** GEOG3201, GEOS3954 **Assessment:** Two tutorial papers, one exam

Note: Department permission required for enrolment .
Note: Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.

The unit of study can be taken only in coincidence with GEOS 3053 and with prior permission from the unit of study coordinator. It constitutes a Field School run over a five- week period in January-February, prior to the commencement of the semester. In 2006 the Field School will be held in Thailand, Laos and Viet Nam. In other years it may be held in the South Pacific (Vanuatu and Fiji). It is run in close association with local universities, whose staff and students participate in some components of the course. It focuses on

environmental and development issues in the context of rapid social change. Places are limited, and students interested in the 2007 Field School should indicate expression of interest to jconnell@mail.usyd.edu.au before the end of June 2006.

GEOS3903
Dynamics of Continents & Basins (Adv)

Credit points: 6 **Teacher/Coordinator:** A/Prof Dietmar Muller, Dr Patrice Rey. **Session:** Semester 1 **Classes:** Four hours lectures, practicals per week, excursion. **Prerequisites:** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) **Prohibitions:** GEOL3101, GEOS3003 **Assessment:** One 2 hour theory exam, class work

Note: A Distinction in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.

This unit has the same objectives as GEOS3003 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in week 1 of semester. This unit of study may be taken as part of the BSc (Advanced).

GEOS3904
Geophysics, Imaging, Oil/Ore Prod (Adv)

Credit points: 6 **Teacher/Coordinator:** Prof Iain Mason **Session:** Semester 2 **Classes:** 12 hours per week lectures, practical, computer-based exercises. **Prerequisites:** Distinction average in 24 credit points of Intermediate Science Units, or Distinction in (GEOL2923 or CIVL2409) **Prohibitions:** GEOL3202, GEOS3004 **Assessment:** One 2 hour theory exam, practicals

Note: Department permission required for enrolment .
Note: A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.

This unit has the same objectives as GEOS3004 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in the week prior to the field camp which is usually in the break between semester 1 and 2. This unit of study may be taken as part of the BSc (Advanced).

GEOS3907
Remote Sensing: Imaging the Earth (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Geoff Clarke **Session:** Semester 1 **Classes:** 12 hours of lectures, practicals per week. **Prerequisites:** Distinction average in 12 credit points of Intermediate Science subjects or CIVL2409 **Prohibitions:** GEOL3101 or GEOS3007 **Assumed knowledge:** Intermediate level geology **Assessment:** One 2 hour exam, prac. reports, and assignments

This unit has the same objectives as GEOS3007 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in week 1 of semester. This unit of study may be taken as part of the BSc (Advanced).

GEOS3908
Field Geology and Geophysics (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Geoff Clarke **Session:** Semester 2 **Classes:** 14 days of fieldwork. **Prerequisites:** Distinction average in 12 credit points of Intermediate GEOS units **Prohibitions:** GEOS3008 **Assessment:** Written reports and field exercises

Note: Department permission required for enrolment .
Note: A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.

This unit has the same objectives as GEOS3008 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in week prior to the field camp which is usually in the break between semester 1 and 2. This unit of study may be taken as part of the BSc (Advanced).

GEOS3909
Coastal Environments and Processes (Adv)

Credit points: 6 **Teacher/Coordinator:** Prof Andy Short & Dr Michael Hughes. **Session:** Semester 1 **Classes:** Three 1 hour lectures, two 3 hour practicals per week, fieldwork. **Prerequisites:** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) **Prohibitions:** GEOS3009, MARS3003, MARS3105 **Assessment:** One 2 hour exam, two 1500 word reports.

Note: A distinction average in prior Geography or Geology units is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.

Advanced students will complete the same core lecture material as for GEOS3009, but will carry out more challenging projects, practicals, assignments and tutorials.

GEOS3914
GIS in Coastal Management (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Peter Cowell & Dr Eleanor Bruce. **Session:** Semester 2 **Classes:** Two hours of lectures, one 3 hour practical per week comprising one 1 hour practical demonstration and one 2 hour practical. **Prerequisites:** Distinction average in 12 credit points of intermediate geography or geology units or 12 credit points of intermediate marine science units. **Prohibitions:** GEOS3014, MARS3104 **Assessment:** One 2 hour exam, one 2 hour exam, project work, two practical-based project reports, biweekly progress quizzes.

Note: Department permission required for enrolment .
Note: A distinction average in prior Geography, Geology or Marine Science units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.

Advanced students will complete the same core lecture material as for GEOS3014, but will carry out more challenging projects, practicals, assignments and tutorials.

GEOS3915
Environmental Geomorphology (Advanced)

Credit points: 6 **Teacher/Coordinator:** A/Prof Deirdre Dragovich & Dr Stephen Gale. **Session:** Semester 2 **Classes:** 3 hours lectures, 6 hours practical per week, fieldwork. **Prerequisites:** Distinction average in 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study. **Prohibitions:** GEOS3015 **Assessment:** One 2 hour exam, two 1500 word essays, prac and field reports.

Note: Department permission required for enrolment .

Advanced students will complete the same core lecture material as for GEOS3015, but will carry out more challenging projects, practicals, and field reports.

GEOS3916
Seafloor Processing and Imaging (Adv)

Credit points: 6 **Teacher/Coordinator:** A/Prof Dietmar Müller, Dr Julie Dickinson. **Session:** Semester 2 **Classes:** Four 1 hour lectures and practicals per week, one-day excursion. **Prerequisites:** Distinction average in (12 credit points of Intermediate Geoscience or ((one of MARS2005 & MARS2905) and (one of MARS2006 & MARS2906))) **Prohibitions:** GEOS3016, MARS3005, MARS3106 **Assessment:** One 2 hour theory exam, class work

Note: Department permission required for enrolment .

Advanced students will complete the same core lecture material as for GEOS3016, but will carry out more challenging projects, practicals, assignments and tutorials.

GEOS3917
Global Energy Exploration (Advanced)

Credit points: 6 **Teacher/Coordinator:** Prof Peter Davies (Coordinator), Dr Gavin Birch. **Session:** Semester 1 **Classes:** 4 hours of lectures and practicals per week, excursion. **Prerequisites:** Distinction average in ((MARS(2005 or 2905) and MARS(2006 or 2906)), or 12 credit points of Intermediate Geoscience* units). **Prohibitions:** GEOS3017, MARS3008 **Assessment:** Assignments, fieldwork, one 2 hour exam

*Note: * Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.*

This unit has the same objectives as GEOS3017 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in week 1 of semester. This unit of study may be taken as part of the BSc (Advanced).

GEOS3918
Rivers: Science and Management (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Melissa Neave **Session:** Semester 1 **Classes:** Two 1 hour lecture, one 1 hour tutorial, two 4 hour practicals per week, fieldwork. **Prerequisites:** Distinction average in (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) **Prohibitions:** GEOS3018 **Assessment:** One 2 hour exam, two 1500 word essays.

Advanced students will complete the same core lecture material as for GEOS3018, but will carry out more challenging projects, practicals, assignments and tutorials.

GEOS3911
Understanding Australia's Regions (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Bill Pritchard **Session:** Semester 1 **Classes:** 2 one hour lectures plus 2 hours of tutorials including on-line paritcpation and one 2 hour practical per week. **Prerequisites:** Distinction average in 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study - one of GEOG2311,GEOG2321, GEOG2411, GEOG2411, GEOG2421, GEOG2511, GEOG2521, GEOS2111, GEOS2112, GEOS2113, GEOS2121, GEOS2122, GEOS2124, GEOS2911, GEOS2912, GEOS2921, GEOS2922, GEOS2924 **Prohibitions:** GEOS3511 **Assessment:** One 2 hour exam; 2000 word essay, tutorial papers, fieldtrip or alternative report.

Note: Department permission required for enrolment .

Advanced students will complete the same core lecture material as for GEOS3511, but will carry out more challenging projects, practicals, assignments and tutorials.

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

GEOS3912
Contemporary Global Geographies (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture, one 1 hour tutorial, one 2 hour practical per week. **Prerequisites:** Distinction in 6 credit points of Intermediate units of study in Geography. **Prohibitions:** GEOS3512 **Assessment:** One 2 hour exam, 2000 word essay, tutorial papers, prac reports.

Note: Department permission required for enrolment .

Advanced students will complete the same core lecture material as for GEOS3512, but will carry out more challenging projects, practicals, assignments and tutorials.

GEOG3921
Sustainable Cities (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Phil McManus **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour practical/tutorial per week. **Prerequisites:** Distinction average 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **Prohibitions:** GEOG3521, GEOG3202 **Assessment:** One 2 hour exam; 2000 word essay, tutorial papers, practical reports.

Advanced students will complete the same core lecture material as for GEOG3521, but will carry out more challenging projects, practicals, assignments and tutorials.

GEOS3922
Cities and Citizenship (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Kurt Iveson **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour practical per week. **Prerequisites:** Distinction average in 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **Prohibitions:** GEOS3522 **Assessment:** One 2 hour exam; e-Sim assignments, tutorial papers.

Advanced students will complete the same core lecture material as for GEOS3022, but will carry out more challenging projects, assignments and tutorials.

GEOS3953
Asia-Pacific Field School-A (Adv)

Credit points: 6 **Session:** S1 Intensive **Classes:** Five weeks intensive. eight modules of 3 lectures each; 10 full days' equivalent fieldwork; 20 hours small group work **Prerequisites:** Distinction average in 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study. **Corequisites:** GEOS3954 **Prohibitions:** GEOS3053 **Assessment:** Fieldwork reports.

Note: Department permission required for enrolment .
Note: Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.

The unit of study can be taken only in coincidence with GEOS3954 and with prior permission from the unit of study coordinator. Advanced students will will carry out more challenging fieldwork reports.

GEOS3954
Asia-Pacific Field School-B (Adv)

Credit points: 6 **Teacher/Coordinator:** A/Prof Phil Hirsch. **Session:** S1 Intensive **Classes:** 5 weeks intensive. eight modules of 3 lectures each; 10 full days' equivalent fieldwork; 20 hours small group work **Prerequisites:** Distinction average in 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study **Corequisites:** GEOS3953 **Prohibitions:** GEOS3054 **Assessment:** Fieldwork reports.

Note: Department permission required for enrolment .
Note: Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.

The unit of study can be taken only in coincidence with GEOS3953 and with prior permission from the unit of study coordinator. Advanced students will carry out more challenging fieldwork reports.

Geography or Geology & Geophysics Honours

Offered February and July. Information sessions about Geography or Geology & Geophysics Honours are held for interested third year students during Second Semester. Students contemplating Honours in their fourth year should consider possible thesis topics and discuss these with potential staff supervisors. Entry into fourth year Honours will require completion of units in Intermediate and Senior Geoscience units (to be passed at the level of credit or better) and a satisfactory WAM. In some years when the number of applicants exceeds resources (availability of supervisors, laboratory space etc.) offers will be made according to academic merit. Students will be notified in January of their formal acceptance into the Honours program. Honours students are required to undertake formal coursework during their first semester and to participate in seminars throughout the year as arranged. They will be required to study original problems, working as appropriate in the field, the laboratory, libraries, and in some instances in conjunction with other university or government departments. A dissertation of not more than 20 000 words must be submitted during the second semester, followed by an examination that may include both written and oral work. Further details relating to Geography Honours are available from Dr. Mel Neave (mneave@geosci.usyd.edu.au) Further details of Geology and Geophysics Honours are available from Dr. Michael Hughes (michaelh@mail.usyd.edu.au)

Geology and Geophysics Postgraduate Study

Details concerning fields of postgraduate study in Geology and Geophysics may be obtained from Dr Derek Wyman or the Head of School. Details concerning Geography may be obtained from A/Prof Deirdre Dragovich or the Head of School.

History and Philosophy of Science

History and Philosophy of Science allows students to enrich their knowledge of science and stand back from the specialised concerns of their other subjects by gaining a broader perspective on what science is, how it acquired its current form and how it fits into contemporary society. HPS is particularly relevant for students hoping to make careers in science policy, science administration, science education and science reporting. Any student with a genuine interest in science will derive benefit from study in HPS.

Course Advice

An advisor will be available in the Unit for History and Philosophy of Science during the enrolment period. The Unit is located on Level 4 of the Carslaw Building. More detailed information on courses is available either in a handbook from the Unit office or electronically via the Unit website http://www.usyd.edu.au/hps/.The Unit for History and Philosophy of Science offers the Junior unit of study Bioethics (HPSC1000), which analyses and discusses the ethical concerns raised by scientific accomplishments in modern society. Students interested in related topics should consider taking the unit Concepts and Issues in Physical Science (PHYS1600) offered in the School of Physics. This unit serves as useful background for further studies in HPS and is offered as an Arts unit for all students, including students enrolled in the Faculty of Science.

Junior units of study

HPSC1000
Bioethics

Credit points: 6 **Teacher/Coordinator:** Dr Rachel Ankeny **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** HPSC1900 **Assessment:** Short essays, tutorial work, tests

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

Science has given us nearly infinite possibilities for controlling life. Scientists probe the origins of life through research with stem cells and embryos. To unlock the secrets of disease, biomedicine conducts cruel experiments on animals. GM crops are presented as the answer to hunger. Organ transplantation is almost routine. The international traffic in human body parts and tissues is thriving. The concept of brain death makes harvesting organs ethically more acceptable. It may also result in fundamental changes in our ideas about life. Science has provided new ways of controlling and manipulating life and death. As a consequence, difficult ethical questions are raised in increasingly complex cultural and social environments. This course will discuss major issues in the ethics of biology and medicine, from gene modification to Dolly the sheep. This unit will be introductory, but a small number of topical issues will be studied in depth. No scientific background beyond School Certificate level will be assumed.

Textbooks
Course reader

HPSC1900
Bioethics (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Rachel Ankeny **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 1 hour tutorial per week. **Prohibitions:** HPSC1000 **Assessment:** Tutorial work, essays, exam, tutorial participation.

Note: Enrolment in this unit is limited, and will be on a first-come first-served basis.

The topics covered by HPSC1000 - Bioethics will be treated in more depth, in a special tutorial set aside for Advanced students.

Textbooks
Course reader

Intermediate units of study

There are two Intermediate units of study offered by the Unit for History and Philosophy of Science. They provide a broad background in the history and the philosophy of science, and a solid background for students in arts and science who wish to acquaint themselves with principles and methods in the history and philosophy of science. For students who wish to major in HPS, they provide essential background knowledge.

HPSC2100
The Birth of Modern Science

Credit points: 6 **Teacher/Coordinator:** Dr Ofer Gal **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 1 hour tutorial per week. **Prerequisites:** 24 credit points of Junior units of study **Prohibitions:** HPSC2002, HPSC2900 **Assessment:** Short essays, tutorial work, tests.

Modern culture is a culture of science. Modern Western science is the outcome of a historical process of 2,500 years. In this course we investigate how Western knowledge-theoretical, technological and medical-acquired the characteristics of modern science: its specific social structure, contents, values and methods. We will look at some primary chapters of this process, from antiquity to the end of the seventeenth century, and try to understand their implications to understanding contemporary science in its culture. Special emphasis will be given to the scientific revolution of the seventeenth century, which is often described as the most important period in the history of science and as one of the most vital stages in human intellectual history.

Textbooks
Henry, J. The Scientific Revolution and the Origins of Modern Science.
Course reader

HPSC2101
What Is This Thing Called Science?

Credit points: 6 **Teacher/Coordinator:** Dr Rachel Ankeny and HPS staff **Session:** Semester 2, Summer Main **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 24 credit points of Junior units of study **Prohibitions:** HPSC2001, HPSC2901 **Assessment:** Short essays, tutorial work, tests.

Philosophers of science aim to define what distinguishes creationism from evolutionary theory, or astrology from astronomy. They give reasons why we can believe that today's theories are improvements over those that preceded them and how we know that what we see and do in scientific practice reflects the nature of reality. This course critically examines the most important attempts to define the scientific method, to draw a line dividing science from non-science, and to justify the high status generally accorded to scientific knowledge. The philosophies of science studied include Karl Popper's idea that truly scientific theories are falsifiable, Thomas Kuhn's proposal that science consists of a series of paradigms separated by scientific revolutions; and Feyerabend's anarchist claim that there are no objective criteria by which science can be distinguished from pseudo-science. This Unit of Study also explores contemporary theories about the nature of science and explores ideas about the nature of the experimental method and concepts such as underdetermination, the nature of scientific explanation, theory confirmation, realism, the role of social values in science, sociological approaches to understanding science, and the nature of scientific change.

Textbooks
Alan F. Chalmers. What Is This Thing Called Science? 3rd edition.
Course reader

HPSC2900
The Birth of Modern Science (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Ofer Gal **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** Enrolment in the Talented Student Program or 24 credit points of Junior study with a Distinction average **Prohibitions:** HPSC2002, HPSC2100 **Assessment:** Short essays, tutorial work, tests.

Note: Enrolment in this unit is limited, and will be on a first-come, first-served basis.

The topics covered in 'The Birth of Modern Science' will be covered in more depth, in a special tutorial set aside for advanced students.

Textbooks
Henry, J. The Scientific Revolution and the Origins of Modern Science.
Course reader

HPSC2901
What Is This Thing Called Science? (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Rachel Ankeny and HPS staff **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** Enrolment in the Talented Student Program or 24 credit points of Junior study with a Distinction average **Prohibitions:** HPSC2002, HPSC2100 **Assessment:** Short essays, tutorial work, tests.

Note: Enrolment in this unit is limited and will be on a first-come, first-served basis.

The topics covered in 'What is This Thing Called Science?' will be covered in more depth, in a special tutorial set aside for advanced students.

Textbooks
Alan F. Chalmers. What Is This Thing Called Science? 3rd edition.
Course reader

Senior units of study

Students wishing to major in History and Philosophy of Science in either the BSc, BA or BLibSt must take 24 credit points from the following Senior units of study. Our Intermediate courses provide students with a background in the history and philosophy of science. HPSC3022 Science and Society, provides students with an essential background in the sociology of science. This unit of study is compulsory for majors in history and philosophy of science.

HPSC3002
History of Biological/Medical Sciences

Credit points: 6 **Teacher/Coordinator:** Dr Hans Pols or HPS staff **Session:** Semester 1 **Classes:** Two 1 hour lectures and two 1 hour tutorials per week. **Prerequisites:** At least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units **Assumed knowledge:** HPSC (2001 and 2002) or HPSC (2100 and 2101) **Assessment:** Short essays, presentation, tutorial work, final essay.

Throughout the ages people have been born, have died, and in between have lived in various stages of sickness or health. In this unit of study we shall look at how these states of being were perceived in different times and places throughout history, while at the same time noting the increasing medicalisation of everyday life, together with the irony that the "miracles" of modern medicine appear to have created a generation of the "worried well". Using this historical perspective, we shall ask how perceptions of sickness, health and the related provision of health care have been intertwined with social, political and economic factors and, indeed still are today.

Textbooks
Course reader

HPSC3016
The Scientific Revolution

Credit points: 6 **Teacher/Coordinator:** Dr Ofer Gal **Session:** Semester 2 **Classes:** Two 1 hour lectures and two 1 hour tutorials per week. Individual student consultation as required. **Prerequisites:** At least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units. **Prohibitions:** HPSC3001, HPSC3106 **Assumed knowledge:** HPSC (2100 and 2101) or HPSC (2001 and 2002) **Assessment:** Take-home tests, short essays, tutorial participation.

Note: This unit will not be offered every year.

Modern Western science has a number of characteristics which distinguish it from other scientific cultures. It ascribes its tremendous success to sophisticated experiments and meticulous observation. It understands the universe in terms of tiny particles in motion and the forces between them. It is characterised by high- powered mathematical theorizing and the rejection of any intention, value or purpose in Nature. Many of these characteristics were shaped in the 17th century, during the so called scientific revolution. We will consider them from an integrated historical- philosophical perspective, paying special attention to the intellectual motivations of the canonical figures of this revolution and the cultural context in which they operated. Topics will include: experimentation and instrumentation, clocks, mechanistic philosophy, and the changing role of mathematics.

Textbooks
Course reader

HPSC3022
Science and Society

Credit points: 6 **Teacher/Coordinator:** Dr Hans Pols or HPS staff **Session:** Semester 1 **Classes:** Two 1 hour lectures and two 1 hour tutorials per week. **Prerequisites:** At least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units. **Prohibitions:** HPSC3003 **Assumed knowledge:** HPSC (2100 and 2101) or HPSC (2001 and 2002). **Assessment:** Short essays, tutorial work, presentation.

Note: This unit is a requirement for HPS majors.

Science has become an essential element of Western societies. It is impossible to imagine our lives today without the achievements of science, technology, and medicine. Many scientists and laypeople think that scientific knowledge transcends political, social, cultural, and economic conditions. Sociologists of science think otherwise. In this unit, we will investigate the nature of science, the position of science in society, and the internal dynamics of science. Sociologists of science have compared scientific knowledge to a ship in a bottle: if you see the finished product, you can't understand how it came about, and you can't believe that it is not what it claims to be: the empirically-determined truth about the world. In this unit, we will have a close look at some of these ships in bottles and examine how they got there. When observing science-in-the- making, rather than the finished product, the factors that influence science become much clearer. We will introduce some the most exciting and innovative ideas about what science is and how it works by examining the sociological and anthropological approaches to science that have become the basis for research in the social studies of science, technology, and medicine, including: the norms of science, scientists' images of themselves, the boundaries between science and other subjects, the rhetoric of scientific writing, laboratory work, science museums and science in the media.

Textbooks
Course reader

HPSC3023
Psychology & Psychiatry: History & Phil

Credit points: 6 **Teacher/Coordinator:** Dr Hans Pols and Dr Fiona Hibberd **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour tutorials per week. **Prerequisites:** (at least 8 credit points of intermediate HPSC Units of study) OR (a CR or above in one HPSC intermediate Unit of Study) OR (12 intermediate credit points in psychology). **Prohibitions:** PSYC3202 **Assumed knowledge:** Basic knowledge about the history of modern science as taught in HPSC2100 AND the principles of philosophy of science as taught in HPSC2101 AND knowledge of the various sub-disciplines within Psychology. **Assessment:** Take-home essays (2000 words), take-home exams, tutorial work.

This course examines one of the most interesting developments in the history of science: it deals with the sciences that make human beings their object of study. We will examine the ways in which psychologists and psychiatrists have investigated human nature, what kinds of experimental approaches they have developed to that end, the major controversies in this field, and the basic philosophical assumptions that have been made in the sciences of human nature. We investigate the developments of psychological theories and investigative methods as well as the development of psychiatric theory, treatment methods, and institutions.

Textbooks
Course reader
Leahey, T.H. (2004). A History of Psychology: Main currents in Psychological Thought. Pearson. Upper Saddle River, N.J.

HPSC3024
Science and Ethics

Credit points: 6 **Teacher/Coordinator:** Dr Rachel Ankeny **Session:** Semester 2 **Classes:** Two 1 hour lectures and two 1 hour tutorials per week.

Prerequisites: At least 24 credit points of Intermediate or Senior units of study **Prohibitions:** HPSC3007 **Assessment:** Short essays, tutorial work, tests.

Note: This unit will not be offered every year.

Is science really neutral, impartial, and objective? Should it be? Or should it tell us what is right, good, fair, or just? Does scientific progress imply social progress and benefits for humanity? Are scientists responsible when their discoveries are used for evil purposes? Should the publication of dangerous discoveries be prevented? What if the same discoveries might be used for beneficial purposes as well? In this unit, we give study possible answers to these questions by examining the relationships between science and human values. We consider the extent to which science is, or should be, influenced by the values of scientists and the societies in which they operate. And we question the extent to which science promotes or threatens the good of humankind. Issues such as these are pursued via philosophical examination of major historical episodes involving weapons of mass destruction, Nazi medicine, cloning, mind control in neuroscience, human experimentation and censorship. We also examine contemporary developments in genetics and brain science. This unit is for science and non-science students alike. It will be of interest to anyone concerned about the social responsibilities of scientists, matters of science policy, and relationships between science and society.

Textbooks
Course reader

History and Philosophy of science Honours

An Honours course in HPS is available to students of sufficient merit who have satisfied the requirements for the degree of BSc or BA or BLibSt with a major in HPS or another relevant area and to students who have satisfied the requirements for the degree of BMedSc including the HPS options in the second and third years of study.The Honours course consists of 48 points of Honours level units of study, which must include HPSC4201 HPS Research Project 1, HPSC4202 HPS Research Project 2, HPSC4203 HPS Research Project 3 and HPSC4204 HPS Research Project 4. In their final semester all students must also enrol in the zero credit point non-assessable unit HPSC4999.Students intending to proceed to Honours or to enrol in the Graduate Diploma in Science (HPS) are strongly advised to contact the Unit towards the end of the previous academic year to discuss thesis topic and supervision.Note: Honours level (4000) Units of Study are available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. A number of our Honours-level courses are also open to students in the medical humanities and liberal studies.

HPSC4101
Philosophy of Science

Credit points: 6 **Teacher/Coordinator:** Dr Ofer Gal **Session:** Semester 1 **Classes:** One 2 hour seminar per week, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Written assignments, seminar participation.

Note: Department permission required for enrolment .

The success of science in enabling us to manipulate the natural world has been so surprising, so often, that it has caused many individuals to revise a large part of their pre-scientific philosophical and religious consensus. Something very important is going on, and a number of fascinating philosophical topics emerge when we try to analyse what it is. Working backwards from the success of an epistemological enterprise offers a fruitful way to do philosophy, and, reciprocally, our philosophical insights help to clarify the contentious question of what it means to claim that science is successful. This unit investigates the relationships between scientific theories and evidence, and the relationships between scientific theories. Participants will have an opportunity to relate the successes and failures of specific sciences to contemporary philosophical debates. Each week the seminar will discuss a piece of philosophical theory in the light of examples from particular sciences. Technical topics will be covered, but very little background knowledge will be assumed.

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

HPSC4102
History of Science

Credit points: 6 **Teacher/Coordinator:** HPS Staff **Session:** Semester 1, Semester 2 **Classes:** One 2 hour seminar per week. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Essays, seminar participation.

Note: Department permission required for enrolment .

This unit explores major episodes in the history of science as well as introducing students to historiographic methods. Special attention is paid to developing practical skills in the history and philosophy of science.

Textbooks
Course reader

HPSC4103
Sociology of Science

Credit points: 6 **Teacher/Coordinator:** Dr Hans Pols **Session:** Semester 2 **Classes:** One 2 hour seminar per week, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Essays, fieldwork report, seminar participation mark.

Note: Department permission required for enrolment .

This unit explores recent approaches in the social studies of scientific knowledge. Students evaluate various sociological approaches by conducting their own research on topics relevant to their own major thesis. The unit starts with an overview of the development of history and philosophy of science since 1945, to put the emergence of the sociology of science into perspective, before moving on to a selection of readings from the field. Topics will include: the strong program critique of traditional philosophy of science, the sociology of technology, the impact of feminism on the study of science, and the actor-network approach developed by Bruno Latour and Michel Callon.

Textbooks
Course reader

HPSC4104
Recent Topics in HPS

Credit points: 6 **Teacher/Coordinator:** HPS Staff **Session:** Semester 1, Semester 2 **Classes:** One 2 hour seminar per week, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Essays, seminar participation.

Note: Department permission required for enrolment .

An examination of one area of the contemporary literature in the history and philosophy of science. Special attention will be paid to development of research skills in the history and philosophy of science.

Textbooks
Course reader

HPSC4105
HPS Research Methods

Credit points: 6 **Teacher/Coordinator:** Dr Rachel Ankeny **Session:** Semester 1, Semester 2 **Classes:** One 2 hour seminar per week, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Literature review, archival research project, seminar participation mark, short essays.

Note: Department permission required for enrolment .

Adopting a seminar style, this unit provides students with an advanced knowledge of the skills necessarily to conduct their own original research in the sociology, history and philosophy of science. Participants will be given a weekly set of core readings, and specialists

both from within the Unit and from outside will present their views on the topic in question. This presentation will form the basis for a discussion involving the students, the academic members of the Unit, and invited speakers. Topics will include: the use of case studies in the philosophy of science, how to conduct oral history projects, institutional history, and sociological methodology.

Textbooks
Course reader

HPSC4108
Core topics: History & Philosophy of Sci

Credit points: 6 **Teacher/Coordinator:** HPS staff. **Session:** Semester 1, Semester 2 **Classes:** One 2 hour seminar per week. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission **Prohibitions:** Not available to students who have completed a major in History and Philosophy of Science or an equivalent program of study at another institution. **Assessment:** Essays, seminar presentations, seminar participation mark.

Note: Department permission required for enrolment .

An intensive reading course, supported by discussion seminars, in the main figures and events of the 'Scientific Revolution' of the 16th to 18th centuries, in the leading historiographic interpretations of the scientific revolution and in the use of episodes in the scientific revolution as evidence for the philosophies of science of Karl Popper, Imre Lakatos, Thomas Kuhn and contemporary authors.

Textbooks
Course reader

HPSC4201
HPS Research Project 1

Credit points: 6 **Teacher/Coordinator:** HPS Staff **Session:** Semester 1, Semester 2 **Classes:** Weekly individual supervision, fortnightly 90-minute research seminars. **Prerequisites:** Available only to students admitted to HPS Honours and Graduate Diploma or Certificate in Science (History and Philosophy of Science). **Prohibitions:** HPSC4106, HPSC4107 **Assumed knowledge:** HPSC (2001 and 2002) or HPSC (2100 and 2101) **Assessment:** HPSC4201, HPSC4202, HPSC4203 and HPSC4204 are jointly assessed by a research thesis of up to 15,000 words.

Note: Department permission required for enrolment .

Research into a topic in history, philosophy or sociology of science under the supervision of one or more members of the HPS staff.

HPSC4202
HPS Research Project 2

Credit points: 6 **Teacher/Coordinator:** HPS Staff **Session:** Semester 1, Semester 2 **Classes:** Weekly individual supervision, fortnightly 90-minute research seminars. **Prerequisites:** Available only to students admitted to HPS Honours and Graduate Diploma or Certificate in Science (History and Philosophy of Science). **Prohibitions:** HPSC4106 and HPSC4107 **Assumed knowledge:** HPSC (2001 and 2002) or HPSC (2100 and 2101) **Assessment:** HPSC4201, HPSC4202, HPSC4203 and HPSC4204 are jointly assessed by a research thesis of up to 15,000 words.

Note: Department permission required for enrolment .

Research into a topic in history, philosophy or sociology of science under the supervision of one or more members of the HPS staff.

HPSC4203
HPS Research Project 3

Credit points: 6 **Teacher/Coordinator:** HPS Staff **Session:** Semester 1, Semester 2 **Classes:** Weekly individual supervision, fortnightly 90-minute research seminars. **Prerequisites:** Available only to students admitted to HPS Honours and Graduate Diploma or Certificate in Science (History and Philosophy of Science). **Prohibitions:** HPSC4106, HPSC4107 **Assumed knowledge:** HPSC (2001 and 2002) or HPSC (2100 and 2101) **Assessment:** HPSC4201, HPSC4202, HPSC4203 and HPSC4204 are jointly assessed by a research thesis of up to 15,000 words.

Note: Department permission required for enrolment .

Research into a topic in history, philosophy or sociology of science under the supervision of one or more members of the HPS staff.

HPSC4204
HPS Research Project 4

Credit points: 6 **Teacher/Coordinator:** HPS Staff **Session:** Semester 1, Semester 2 **Classes:** Weekly individual supervision, fortnightly 90-minute research seminars. **Prerequisites:** Available only to students admitted to HPS Honours and Graduate Diploma or Certificate in Science (History and Philosophy of Science). **Prohibitions:** HPSC4106, HPSC4107 **Assumed knowledge:** HPSC (2001 and 2002) or HPSC (2100 and 2101) **Assessment:** HPSC4201, HPSC4202, HPSC4203 and HPSC4204 are jointly assessed by a research thesis of up to 15,000 words.

Note: Department permission required for enrolment .

Research into a topic in history, philosophy or sociology of science under the supervision of one or more members of the HPS staff.

HPSC4999
History & Philosophy of Science Honours

Session: Semester 1, Semester 2 **Prerequisites:** Available only to students admitted to HPS Honours.

Note: Department permission required for enrolment .

All students in History and Philosophy of Science Honours must enrol in this non-assessable unit of study in their final semester.

Immunobiology major

Immunology in the Discipline of Infectious Diseases and Immunology administers the Immunobiology Major. Our location is on Level 6, Blackburn Building D06. Further information from Helen Briscoe (phone: (02) 9351 7308, email: hbriscoe@med.usyd.edu.au). A major in Immunobiology requires successful completion of 12 credit points of Senior study in Immunology plus 12 credit points from the elective Senior units of study in Biochemistry, Biology, Cell Pathology, Molecular Biology and Genetics, Microbiology, Physiology or Virology listed in Table I. Participants in the Immunobiology major will select an accompanying Senior unit according to their particular interest. Concurrent study in the life science disciplines will add a depth of understanding in a particular aspect of immunology. Participants are invited to consult with Helen Briscoe and with elective unit of study co-ordinators before selecting concurrent study units and should note that a unit of study taken as part of the Immunobiology Major cannot count towards a major in another Science discipline area.

Immunology

Immunology is offered as Introductory Immunology (IMMU2101) at Intermediate level, Molecular and Cellular Immunology (IMMU3102) and Immunology in Human Disease (IMMU3202) at Senior level, and Immunology Honours. Further information can be obtained from Helen Briscoe (phone: (02) 9351 7308, email: hbriscoe@med.usyd.edu.au).

Immunology intermediate units of study

IMMU2101
Introductory Immunology

Credit points: 6 **Teacher/Coordinator:** A/Prof Helen Briscoe **Session:** Semester 1 **Classes:** Two 1 hour lectures per week, one 3 hour tutorial or practical or independent study per week. **Prerequisites:** 24 credit points of Junior units of study from any of the Science discipline areas. **Prohibitions:** IMMU2001, BMED2506, BMED2807 **Assumed knowledge:** Junior Biology and Junior Chemistry. **Assessment:** One 2 hour examination (60%), one 2000 word essay (20%), on-line quizzes and tutorial group presentation (20%)

Note: This is a prerequisite unit of study for IMMU3102 and IMMU3202. The completion of 6 credit points of MBLG units of study is highly recommended.

This unit of study will provide an overview of the human immune system and essential features of immune responses. The lecture course begins with a study of immunology as a basic research science. This includes the nature of the cells and molecules that recognise antigens and how these cells respond at the cellular and molecular levels. Practical / tutorial sessions will illustrate particular concepts introduced in the lecture program. Further lectures and self-directed learning sessions will integrate this fundamental information into studies of mechanisms of host defence against infection,

transplantation, and dysfunction of the immune system including allergy, immunodeficiency and autoimmune diseases.

Textbooks

Basic Immunology Functions and Disorders of the Immune System.
AK Abbas & AH Lichtman. Saunders 2004

Immunology senior units of study

IMMU3102
Molecular and Cellular Immunology

Credit points: 6 **Teacher/Coordinator:** Dr Allison Abendroth **Session:** Semester 2 **Classes:** Three 1 hour lectures, one tutorial and one practical per fortnight. **Prerequisites:** BMED2807 or BMED2506 or IMMU2101 or IMMU2001 and 6cp of Intermediate units of study from Biochemistry, or Biology or Microbiology or Molecular Biology and Genetics or Pharmacology or Physiology. **Prohibitions:** IMMU3002, BMED3003 **Assumed knowledge:** Intermediate biochemistry and molecular biology and genetics. **Assessment:** Formal examination: 60% one 2 hour exam. Progressive assessment: 40% includes practical assessment (lab quizzes/practical assignment), 2000w essay, tutorial presentation,

Note: The completion of 6 CP of MBLG units of study is highly recommended. Concurrent study of IMMU3202 Immunology in Human Disease is strongly recommended.

This study unit builds on the series of lectures that outlined the general properties of the immune system, effector lymphocytes and their functions, delivered in the core courses, IMMU2101 - Introductory Immunology and BMED2807 -Microbes & Body Defences (formerly IMMU2001 and BMED2506). In this unit the molecular and cellular aspects of the immune system are investigated in detail. We emphasise fundamental concepts to provide a scientific basis for studies of the coordinated and regulated immune responses that lead to elimination of infectious organisms. Guest lectures from research scientists eminent in particular branches of immunological research are a special feature of the course. These provide challenging information from the forefront of research that will enable the student to become aware of the many components that come under the broad heading 'Immunology'. Three lectures (1 hour each) will be given each fortnight: 2 lectures in one week and one lecture the following week, for the duration of the course. This unit directly complements the unit "Immunology in human disease IMMU3202" and students are strongly advised to undertake these study units concurrently.

Textbooks

Cellular and Molecular Immunology 5th edition 2003. AK Abbas & AH Lichtman, WB Saunders Company and / or Immunobiology -the immune system in health and disease 6th edition 2005CA Janeway, P Travers, M Walport and M Shlomchik, Garland Press.

IMMU3202
Immunology in Human Disease

Credit points: 6 **Teacher/Coordinator:** Dr Allison Abendroth **Session:** Semester 2 **Classes:** Three 1 hour lectures, one tutorial and one practical per fortnight. **Prerequisites:** BMED2807 or BMED2506 or IMMU2101 or IMMU2001 and 6cp of Intermediate units of study from Biochemistry, or Biology or Microbiology or Molecular Biology and Genetics or Pharmacology or Physiology. **Prohibitions:** IMMU3002, BMED3003 **Assumed knowledge:** Intermediate biochemistry and molecular biology and genetics. **Assessment:** Progressive assessment: 40% includes practical assignment, portfolio of case studies, poster presentation, tutorial presentation. Formal examination: 60% one 2 hour exam.

Note: The completion of 6CP of MBLG units of study is highly recommended. Concurrent study of IMMU3102 Molecular and Cellular Immunology is very strongly recommended.

This study unit builds on the series of lectures that outlined the general properties of the immune system, effector lymphocytes and their functions, delivered in the core courses, IMMU 2101 - Introductory Immunology and BMED 2807 - Microbes & Body Defences (formerly IMMU 2001 and BMED 2506). We emphasise fundamental concepts to provide a scientific basis for studies in clinical immunology; dysfunctions of the immune system eg. autoimmune disease, immunodeficiencies, and allergy, and immunity in terms of host - pathogen interactions. This unit has a strong focus on significant clinical problems in immunology and the scientific background to these problems. The unit includes lectures from research scientists and clinicians covering areas such as allergy, immunodeficiency, autoimmune disease and transplantation. This course provides challenging information from the forefront of clinical immunology and helps the student develop an understanding of immune responses in human health and disease. Three lectures (1 hour each) will be given each fortnight: 2 lectures in one week and one lecture the following week, for the duration of the course. This unit directly complements the unit "Molecular and Cellular Immunology" and students are very strongly advised to undertake these study units concurrently.

Textbooks

Cellular and Molecular Immunology 5th edition 2003. AK Abbas & AH Lichtman, WB Saunders Company and / or Immunobiology -the immune system in health and disease 6th edition, 2005, CA Janeway, P Travers, M Walport and M Shlomchik, Garland Press. Case studies in immunology-a clinical companion 4th edition Rosen and Geha, Garland Press

Immunology Honours

The Honours program in Immunology provides the opportunity for full-time research on a proposed project supervised by a staff member expert in that field. Experimental research, a seminar and a thesis constitute the major part of the program and of assessment. Guidance in research techniques is given in training programs covering experimental design, data analysis, written and oral communication and critical appraisal of the literature. Student contributions to this program are also assessed. In addition, a supplementary seminar program keeps students informed and abreast of wider issues in immunology.

Applying for Honours

Students are invited to apply for Honours enrolment during semester two of the year preceding Honours. Applicants should consult the Honours coordinator in the first instance. A list of possible research topics is provided, and students select projects of interest, speak with prospective supervisors and apply for permission to enrol, before the end of semester two. Within the constraints of availability, an attempt is made to assign students to the project of their choice.

General Requirements for Admission

Usually Honours candidates will have achieved a Credit in Senior Immunology units of study and will also have successfully completed Senior study in Biochemistry, Biology, Cell Pathology, Microbiology, Physiology or Virology. BSc candidates will have gained a major in Immunobiology, or a related discipline such as Biochemistry, Biology, Cell Pathology, Microbiology or Physiology. Usually Honours candidates will have an overall SCIWAM of 65 or greater. Departmental permission is required for enrolment.

Honours coordinators

The Immunology Honours coordinators for 2007 are Dr Allison Abendroth (allisona@med.usyd.edu.au, 9351 6867) and Associate Professor Helen Briscoe (hbriscoe@med.usyd.edu.au, 9351 7308).

Information Technologies

Information Technologies in the Bachelor of Science degree

The School of Information Technologies administers the disciplines of Information Systems and Computer Science, each of which is available as a major in the Bachelor of Science degree.

Computer Science

Computer Science is the scientific discipline which has grown out of the use of digital computers to manage and transform information. Computer Science is concerned with the design of computers, their applications in science, government and business, and the formal and theoretical properties which can be shown to characterise these applications. Teaching in Computer Science covers a diversity of topics such as Software Development, Networks and Systems, Multimedia Technologies and Principles of Computer Science.The diversity of the discipline is demonstrated by current research interests in the School which include biomedical image processing, parallel and distributed computing, user-adaptive systems and information visualisation. The School has a range of computers and specialised laboratories for its teaching and research.Note that units of study beginning with COMP, MULT, NETS, SOFT and INFO (but not ISYS) can be counted as Computer Science. Each INFO unit may only be

counted to one subject area (either Computer Science or Information Systems, but not both). Students who intend to major in Computer Science should pay particular attention to the prerequisites of each unit of study. Students should note that entry to Honours requires an average of Credit or better in the Senior units of study.

Information Systems

Information Systems studies people and organisations to determine and deliver their technological needs. Hence Information Systems encompasses issues such as strategic planning, system development, system implementation, operational management, end-user needs and education. Information Systems study is related to Computer Science but there is an important distinction in that Information Systems is about the architecture of computer systems and making them work for people, hence people are the focus of attention, whereas much of Computer Science is about developing and improving the performance of computers. The School performs IS research in a number of areas including natural language processing, data mining, knowledge management and workflow methods. Students who wish to complete a major in Information Systems need to appreciate that effective communication and critical analysis are important parts of the curriculum and though taught explicitly in one unit ARIN1000 (or an equivalent unit) are expected to be practised throughout all units of study. Intending Honours students need to complete at least 18 credit points of Information systems units at Senior level. Note that units beginning with both ISYS and INFO codes (but not COMP, MULT, NETS or SOFT) can be counted as Information systems units.

Information Technologies in the BCST, BCST(Adv), BIT degrees

Information on majors for the BCST, BCST(Adv) and BIT degrees may be found in Table 3 and the chapter on the IT degrees.

Other Information

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

Summer School: January-February

This School offers some units of study in The Sydney Summer School. Consult The Sydney Summer School web site for more information: www.summer.usyd.edu.au/

Computer Science and Information Systems junior units of study

See the School web site www.it.usyd.edu.au for advice on choosing appropriate units of study from this list.

SOFT1001
Software Development 1

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture, one 2 hour tutorial and one 2 hour practical per week. **Prohibitions:** SOFT1901, COMP1001, COMP1901, DECO2011 **Assumed knowledge:** HSC Mathematics Extension 1 **Assessment:** Written and practical assignments, quizzes, exam.

The unit introduces a structured approach to problem solving using computers. The main emphasis will be to teach students about modular design in programming and software development. Although the unit will use a programming language for teaching, the concepts taught are universal and can be applied through other languages as well.

SOFT1901
Software Development 1 (Adv)

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture, one 2 hour tutorial and one 2 hour laboratory per week. **Prohibitions:** SOFT1001, COMP1001, COMP1901 **Assumed knowledge:** HSC Mathematics Extension 1 **Assessment:** Written and practical assignments, quizzes, exam.

Note: Department permission required for enrolment .

Note: Entry requires departmental permission, except for students in BSc(Adv), BCST(Adv) or BIT degrees

An advanced alternative to SOFT 1001; covers material at an advanced and challenging level. See the description of SOFT 1001 for more information.

SOFT1002
Software Development 2

Credit points: 6 **Session:** Semester 1, Semester 2, Summer Main **Classes:** One 2 hour lecture, one 2 hour tutorial and one 3 hour practical per week. **Prerequisites:** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 **Prohibitions:** SOFT1902, COMP1002, COMP1902 **Assessment:** Written and practical assignments, quizzes, exam

Note: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.

This unit extends the students' software development skills in several important directions. It covers a number of advanced features of Java programming such as inheritance and recursion. It deals with important issues in using library classes to manage collections of similar objects. It also provides students with experience in design; that is, in choosing which classes to write to respond to a user's demands. Design in group work raises special issues of dealing with conflict and misunderstanding between group members.

SOFT1902
Software Development 2 (Adv)

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture, one 2 hour tutorial and one 3 hour laboratory per week. **Prerequisites:** Distinction in one of SOFT (1001 or 1901) or COMP (1001 or 1901) **Prohibitions:** SOFT1002, COMP1002, COMP1902, DECO2011 **Assessment:** Written and practical assignments, quizzes, exam.

Note: Department permission required for enrolment in the following sessions: Semester 1 .
Note: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.

An advanced alternative to SOFT 1002; covers material at an advanced and challenging level. See the description of SOFT 1002 for more information.

INFO1003
Foundations of Information Technology

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture, one 1 hour tutorial and one 2 hour practical per week **Prohibitions:** INFO1000, INFS1000, ISYS1003, INFO1903 **Assumed knowledge:** Basic computer operations **Assessment:** Assignments, written exam, prac exam

In our society computer systems have become a major platform for communication, commerce, education and entertainment. Students, using a systems thinking approach, will undertake meaningful research and authoring tasks using various kinds of software including word processors, spreadsheets, web browsers and databases, in order to understand how hardware, software and human systems support communication, collaboration, modelling and decision-making. Students will be expected to understand how information is structured, linked and flowed in different situations, and to be able to customise an IT environment to streamline or share tasks. In addition, the course will emphasise the importance of documenting decisions and processes, and understanding the many social, ethical, and intellectual propery issues that arise when creating and handling information.

INFO1903
Foundations of Information Tech (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and two 1 hour laboratories per week **Prerequisites:** UAI at least that for acceptance into BSc(Adv) degree program. **Prohibitions:** INFO1003, ISYS1003, INFO1000, INFS1000 **Assumed knowledge:** Basic computer operations **Assessment:** Practical assignments, quizzes, tutorial contribution, written examination.

Note: Department permission required for enrolment .

Analysing empirical information is the cornerstone of many domains, including science, engineering, economics and social science. Graduates in these domains must be able to process, manipulate and present the growing quantities of data effectively. Although computing should play a key role, we rarely exploit the full power of existing or

custom software to efficiently convert data into information and then knowledge. INFO1903 will equip students with the skills and techniques for exploiting data effectively. INFO1903 covers advanced data processing and management, integrating the use of existing productivity software, e.g. spreadsheets and databases, with the development of custom software using the powerful general-purpose Python scripting language. It will focus on skills directly applicable to research in any quantitative domain. The course will also cover presentation of data through written publications and dynamically generated web pages, visual representations and oral presentation skills.The assessment, a semester long project, involves the demonstration of these skills and techniques for processing and presenting data in a choice of domains.

Textbooks

Given the diversity of the material, the main resource for INFO1903 will be the course notes, which will be made available through the University Copy Centre. Additional suggested readings:
M. Lutz and D. Ascher. Learning Python, 2nd Ed., O'Reilly, 2003. ISBN 0-596-00281-5

Computer Science and Information Systems intermediate units of study

It is important to choose second year subjects appropriately to keep options open for further study. See www.it.usyd.edu.au for advice.

COMP2160
Data Structures

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** SOFT (1002 or 1902) or COMP (1002 or 1902) **Prohibitions:** COMP2111, COMP2811, COMP2002, COMP2902, COMP2860 **Assessment:** Assignments, 2 hour exam

One of the worst things that can happen when implementing a large software system is to find, after months of hard work, that the underlying design is too inefficient, or is fundamentally flawed. Such situations can often be avoided through careful design using well understood structures, and an analysis of the time complexity and correctness of these designs. This unit includes a formal introduction to commonly used data structures such as lists, stacks, queues, priority queues, search trees, hash tables and graphs. It also covers the analysis of algorithms and all data structured introduced are analysed according to a notion of asymptotic complexity. There will be a programming project in which students will design an algorithmic solution to a problem, analyse its time complexity, and implement it.

COMP2860
Data Structures (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** [SOFT (1002 or 1902) or COMP (1002 or 1902)] and Distinction in one COMP, SOFT or MATH unit. **Prohibitions:** COMP(2111 or 2811 or 2002 or 2902 or 2160) **Assessment:** Assignments, one 2 hour exam

An advanced alternative to COMP2160; covers material at an advanced and challenging level. See the description of COMP2160 for more information.

INFO2110
Systems Analysis and Modelling

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture, one 1 hour tutorial and one 2 hour practical week. **Prerequisites:** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. **Prohibitions:** INFO (2000 or 2810 or 2900) **Assessment:** Written and practical assignments, exam

This unit provides a comprehensive introduction to the analysis of complex systems, and the representation of models of the system in widely-understood notations. It addresses the roles a systems analyst plays in different stages in the systems lifecycle. It covers a collection of methodologies, models, tools, and techniques that can be used to model systems. The major topics are requirements elicitation and representation, data models, process models, and project planning. We will cover both the traditional structured approach which includes process modelling using data flow diagrams (DFDs) and conceptual data modelling using Entity-Relationship Diagram (ERDs), and the object-oriented approach using class diagrams, sequence diagrams, collaboration diagrams, and statechart diagrams, expressed in UML. Tools such as Microsoft Access will be used to produce simple system prototypes, based on models.

INFO2810
Systems Analysis and Modelling (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hrs lecture, one 1 hr tut and one 2 hrs prac/wk **Prerequisites:** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC units of study) or DECO2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. **Prohibitions:** INFO (2000 or 2110 or 2900) **Assessment:** Exam, assignments, tutorial papers

An advanced alternative to INFO2110; covers material at an advanced and challenging level. See the description of INFO2110 for more information.

INFO2120
Database Systems 1

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture one, 1 hour tutorial and one 2 hour lab per week. **Prerequisites:** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC) or DECO2011 **Prohibitions:** INFO (2005 or 2820 or 2905). **Assessment:** written and practical assignments plus a written exam

This unit of study will provide a comprehensive introduction to database management, SQL query language, and application development using databases. The fundamentals of relational database technology will be covered. Contents: data modelling, relational data model, data normalisation, logical and physical database design, SQL query language, Form-based application development, client server and web-enabled transactions processing systems, and distributed database systems.

INFO2820
Database Systems 1 (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture, one 1 hour tutorial and one 2 hour laboratory per week. **Prerequisites:** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DEC2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. **Prohibitions:** INFO (2005 or 2120 or 2905) **Assessment:** Exam, written and/or practical assignments

An advanced alternative to INFO2120; covers material at an advanced and challenging level. See the description of INFO2120 for more information.

ISYS2140
Information Systems

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture, one 1 hour tutorial and one 1 hour practical per week. **Prerequisites:** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901). **Prohibitions:** ISYS (2006 or 2007) **Assessment:** One 2 hours exam, written assignments and Tutorial presentations

This unit of study will provide a comprehensive conceptual and practical introduction to information systems (IS) in contemporary organisations. Content: General Systems Theory; Basic concepts of organisations, systems and information; The role of information systems in operating and managing organisations; How IS and the Internet enables organisations to adopt more competitive business models, including e-Commerce; The technologies that underpin IS; Distributed systems, including security, networking principles, the client server model and how distributed components locate and communicate with each other; The integration of disparate systems both within the organisation and between organisations, including the role of XML; Behavioural, managerial and ethical issues in implementing and managing IS

Textbooks

Management Information Systems: Managing the Digital Firm, 8th Edition, Kenneth C. Laudon & Jane P. Laudon, Prentice Hall 2004
Computer Networking: A Top-down Approach Featuring the Internet, 2nd edition, James F. Kurose and Keith W. Ross, Pearson/Addison Wesley 2003

SOFT2130
Software Construction 1

Credit points: 6 **Session:** Semester 2, Summer Main **Classes:** One 2 hour lecture and one 2 hour laboratory per week. **Prerequisites:** SOFT (1002 or 1902) or COMP (1002 or 1902) **Prohibitions:** COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). **Assessment:** Programming assignments, in-lab quizzes, 2 hr written exam.

Note: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.

In this unit of study we cover elementary methods for developing robust, efficient, and re-usable software. The unit is taught in C, in a Unix environment. Specific coding topics include memory management, the pragmatic aspects of implementing data structures such as lists and hash tables, and managing concurrent threads. Debugging tools and techniques are discussed and common programming errors are considered along with defensive programming techniques to avoid such errors. Emphasis is placed on using common Unix tools to manage aspects of the software construction process, such as version control and regression testing. The subject is taught from a practical engineering viewpoint and it includes a considerable amount of programming practice, using existing tools as building blocks to complete a large-scale task. The unit discusses professionalism issues relevant to a career in software development, including intellectual property in software and employment conditions for programmers

SOFT2830
Software Construction 1 (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture pand one 2 hour lab per week. **Prerequisites:** SOFT (1002 or 1902) or COMP (1002 or 1902) and Distinction in one of these, or in any SOFT unit at 2000-level or above. **Prohibitions:** COMP (2004 or 2904) or SOFT (2004 or 2904 or 2130). **Assessment:** Programming assignments, in-lab quizzes, 2 hr written exam.

Note: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.

In this unit of study we learn elementary methods for developing robust, efficient and reusable software. An advanced alternative to SOFT 2130; covers material at an advanced and challenging level. See the description of SOFT 2130 for more information.

Computer Science and Information Systems senior units of study

Students are advised that doing less than 24 Senior credit points is not regarded as adequate preparation for a professional career in computing or for further study. Students are advised to balance their workload between semesters. It is important to choose second year subjects appropriately to keep options open for further study. See www.it.usyd.edu.au for advice.

COMP3308
Introduction to Artificial Intelligence

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** 18 crpts of 2000-level units. **Prohibitions:** COMP(3002 or 3902 or 3608) **Assumed knowledge:** Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO1903 or SOFT1002 **Assessment:** Assignments, written exam.

Artificial Intelligence (AI) is all about programming computers to perform tasks normally associated with intelligent behaviour. Classical AI programs have played games, proved theorems, discovered patterns in data, planned complex assembly sequences and so on. This unit of study will introduce representations, techniques and architectures used to build intelligent systems. It will explore selected topics such as heuristic search, game playing, machine learning, and knowledge representation. Students who complete it will have an understanding of some of the fundamental methods and algorithms of AI, and an appreciation of how they can be applied to interesting problems. The unit will involve a practical component in which some simple problems are solved using AI techniques.

Textbooks
S.J. Russell and P.Norvig, Artificial Intelligence, A Modern Approach, 2d edition Prentice Hall, 0-13-080302-2, 2003

COMP3608
Intro. to Artificial Intelligence (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** 18 crpts of 2000-level units, and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. **Prohibitions:** COMP(3002, 3902 or 3308) **Assumed knowledge:** Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO1903 or SOFT1002. **Assessment:** Assignments, written exam.

An advanced alternative to COMP3308; covers material at an advanced and challenging level. See the description of COMP3308 for more information.

Textbooks
S.J. Russell and P.Norvig, Artificial Intelligence, A Modern Approach, 2d edition Prentice Hall, 0-13-080302-2, 2003

COMP3309
Algorithms

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902). **Prohibitions:** COMP(3111 or 3811), COMP(3001 or 3901) or COMP3609 **Assessment:** Assignments, written exam

This unit will discuss techniques of algorithm design and analysis and their applications. The contents include review of analysis of algorithms; divide and conquer; greedy algorithms; dynamic programming; preprocessing; case study of sorting/selection; case study of pattern matching; case study of graph algorithms; randomised algorithms; NP completeness; approximation algorithms for NPC problems.

COMP3310
Theory of Computation

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lectures and one 2 hour tutorial per week. **Prerequisites:** COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902). **Prohibitions:** COMP (2003 or 2903 or 3610) **Assessment:** Assignments One 2 hr exam

This unit explores the fundamental nature of computing. We investigate the expressive power of computer languages, and learn how to describe them with grammars. We discuss the computational power of computers: what can be computed, and what cannot be computed; what can be computed efficiently?

COMP3610
Theory of Computation (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** COMP (2160 or 2860 or 2111 or 2811 or 2002 or 2902), and Distinction in a COMP, SOFT, or MATH unit at 2000-level or above. **Prohibitions:** COMP (2003 or 2903 or 3310) **Assessment:** Assignments One 2 hr exam

An advanced alternative to COMP3310; covers material at an advanced and challenging level. See the description of COMP3310 for more information.

INFO3402
Management of IT Projects and Systems

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lectures and one 2 hour tutorials per week. **Prerequisites:** INFO (2000 or 2110 or 2810 or 2900). **Prohibitions:** ISYS (3000 or 3012) **Assessment:** One two hour exam, 2 written assignments, tutorial preparation, participation and presentation

This course introduces the basic processes and techniques for managing IT projects, systems and services, throughout the IT lifecycle. It addresses both the technical and behavioural aspects of IT management at the enterprise level. Major topics include: organisational strategy and IT alignment, IT planning, project planning, tracking, resource estimation, team management, software testing, delivery and support of IT services, service level agreements, change and problem management, cost effectiveness and quality assurance.

Textbooks
Martin, E. W., C. V. Brown, et al. (2002). Managing Information Technology. New Jersey, Pearson Education Inc.

INFO3404
Database Systems 2

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** INFO(2120 or 2820 or 2005 or 2905). **Prohibitions:** INFO (3005 or 3504 or 3905) or COMP (3005 or 3905) **Assessment:** Assignments, written exam.

This unit builds on INFO2120 Database Systems 1. It has two main parts. The first part provides a deeper understanding of the internal mechanisms of a database engine, as it is needed e.g. by Database Administrators (DBA) or Software Engineers for successful performance tuning. Topics include: internal mechanisms in the DBMS engine, database tuning, physical data placement and access structures, query processing and optimisation, transaction management, and security. The second part focuses on the diversity of post-relational systems, and extensions to the relational data model to support different application needs. Topics include: object-relational systems, semi-structured data including XML, and information retrieval for textual data. The unit will be of interest to students seeking an introduction to database tuning, disk-based data structures and algorithms, and advanced data models. It will be valuable to those pursuing such careers as Software Engineers, Database Experts, Database Administrators, or e-Business Consultants.

INFO3504
Database Systems 2 (Adv)

Credit points: 6 **Teacher/Coordinator:** - **Session:** Semester 2 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** INFO (2005 or 2120 or 2820 or 2905),and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above. **Prohibitions:** INFO (3005 or 3404 or 3905) or COMP (3005 or 3905) **Assessment:** Assignments, written exam.

An advanced alternative to INFO3404; covers material at an advanced and challenging level.

ISYS3400
Information Systems Project

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour meetings **Prerequisites:** (INFO3402 or ISYS3012) and (ISYS (3401 or 3015) or ARIN2000). **Prohibitions:** ISYS3207 **Assessment:** Individual presentation, oral examination, group report

The objective is to enable students to design and implement a solution to a complex data processing problem or to investigate an issue in the management or development of a real-world information system. The project consists of students working together in teams to complete a task of adequate complexity that draws on their education in Information Systems to date. The project will either investigate an issue that is important to the successful practice of the management of Information systems including topics in such areas as end-user computing, IS methodologies, business process re-engineering. Alternatively, it will follow through the life-cycle of systems creation and development and delivery using the traditional tools and methods of the systems analyst.

ISYS3401
Analytical Methods & Information Systems

Credit points: 6 **Session:** Semester 1 **Classes:** 2 hrs lecture and 2 hrs tut / wk **Prerequisites:** ISYS (2140 or 2006) and INFO (2000 or 2110 or 2810 or 2900) and (MATH(1005 or 1015 or 1905) or STAT1021) and (ARIN1000 or ENGL1050 or ENGL1005 or LNGS1001 or LNGS1002 or LNGS1005 or any HPSC unit) **Prohibitions:** ISYS3015 **Assessment:** Assignments, written exam.

This course will provide an introduction to the scientific approach and basic research methods that are relevant for conceptualizing and solving complex problems encountered Information Systems practice. It will guide students through the essential stages of a research project through a variety of case scenarios. A collection of different methods for collecting and analyzing information will be studied in the context of a systems thinking approach to investigative research. These methods include participative methods, surveys, focus groups, controlled experiments and case studies.

Textbooks

Leedy P. and Ornrod J. Practical Research: planning and design (7th ed). Prentice Hall

ISYS3403
IT Systems in Arts and Humanities

Credit points: 6 **Session:** Semester 1 **Classes:** 2 hr lectures, 2 hr tutorials /wk **Prerequisites:** INFO (2000 or 2110 or 2810 or 2900) and INFO (2005 or 2120 or 2820 or 2905). **Prohibitions:** ISYS3113 or EBUS(3002 or 3004). **Assessment:** Assignments, written exam.

This unit provides a conceptual overview of the key technological directions in Fine Arts, History, New Media, Literature, Politics, & Archaeology. It frames actual technological applications in a theoretical systems context, and builds an understanding of common technological approaches to systems solutions in the Arts and Humanities. Representational technologies such as New Media, Digital Streaming and Content Servers are explored. Concepts underlying Analytical systems and field technologies are also examined to build an understanding of their place in an overall systems context. The course elaborates this understanding through specific experience in web-based scripting, web services, relational database interfaces, XML technologies, and qualitative analysis tools.

MULT3306
Multimedia Computing and Processing

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour practical per week. **Prerequisites:** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **Prohibitions:** MULT3019, MULT3919, MULT3004, MULT3904, MULT3606, COMP3004, COMP3904 **Assessment:** Assignments, written exam.

Multimedia has become an indispensable part of our heterogeneous computing and communication environment. This unit covers basic and advanced topics of coding and manipulating digital media, which mainly include image, audio, video, graphics, animation, etc. It introduces principles and current techniques such as multimedia data processing, content analysis, media coding and compression. It also elaborates different multimedia coding standards such as JPEG, MP3, and MPEG. Various multimedia systems and cutting-edge multimedia applications are presented. Practice of multimedia programming is also covered. In particular, computer graphics (CG) is of fundamental importance in multimedia. It allows us not only to generate and display still pictures, but also to underlie the display of moving pictures and text. CG is the enabling technology for all the visual elements of multimedia. Therefore, in this unit, we pay special attention to computer graphics and examine established CG algorithms, covering such topics as hidden-line elimination, shading and texturing, and ray-tracing. The effects on performance of algorithmic design choices are considered.

MULT3606
Multimedia Computing & Processing (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a COMP or MULT or SOFT unit at 2000-level or above. **Prohibitions:** MULT3019, MULT3919, MULT3004, MULT3904, MULT3306, COMP3004, COMP3904 **Assessment:** Assignments, written exam.

An advanced alternative to MULT3306; covers material at an advanced and challenging level.

MULT3307
Interactive Multimedia Systems

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **Prohibitions:** SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607. **Assessment:** Assignments, written exam.

Interactive multimedia is becoming one of the fastest growing areas in our modern computing and communication industries, and providing effective and flexible access of business, education and cultural information. This unit offers a comprehensive and detailed approach

for the design and development of interactive multimedia systems, with maximizing the use of different multimedia building blocks (audio, image, video, graphics and animation). It covers principles and expertise for creation and delivery of interactive multimedia, and looks specifically at media integration, hypermedia design models, human computer interaction, user interface design and programming, multimedia authoring and the design and development process. Practice of creating interactive multimedia systems using a range of programming tools is also included and emphasized.

MULT3607
Interactive Multimedia Systems (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a MULT or SOFT or INFO or COMP unit at 2000-level or above. **Prohibitions:** SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3307. **Assessment:** Assignments, written exam.

An advanced alternative to MULT3307; covers material at an advanced and challenging level.

NETS3303
Network Protocols & Programming

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour practicals per week. **Prerequisites:** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)). **Prohibitions:** NETS(3007 or 3907), COMP(3007 or3907) or NETS3603. **Assessment:** Assignments, written exam.

Distributed and networked computing has become the norm rather than an exception. Today, the advantages of being able to communicate between computing devices extend beyond computers to incorporate such diverse devices as mobile phones and sensors. This unit covers the mechanisms that enable different computing devices to communicate in networked environments. The focus lies on the fundamental mechanisms and functions that are used to build communication protocols, and the design decisions and system consideration that have to be made for protocols to operate well. In particular, the TCP/IP protocol stack is examined as example protocols. In addition, the unit covers fundamental programming techniques in networked environments. After successful completion of this unit, students are expected to be able to design protocols for specified purposes and also be able to implement protocols according to standardization documents (RFCs).

Textbooks
Douglas Comer, Internetworking with TCP/IP, Principles, Protocols, and Architectures, Fourth Edition ISBN: 0-13-01830-6, Publisher: Pearson-Prentice Hall

NETS3603
Network Protocols & Programming (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. **Prohibitions:** NETS(3007 or 3907), COMP(3007 or3907) or NETS3303. **Assessment:** Assignments, written exam.

An advanced alternative to NETS3303; covers material at an advanced and challenging level.

Textbooks
Douglas Comer, Internetworking with TCP/IP, Principles, Protocols, and Architectures, Fourth Edition ISBN: 0-13-01830-6, Publisher: Pearson-Prentice Hall

NETS3305
Computer and Network Security

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **Prohibitions:** NETS(3016 or 3916), NETS3605 or ELEC(5610 or 5616) **Assessment:** Assignments, written exam.

This unit examines the main issues of security for enterprise systems and networks. It covers confidentiality, integrity, data-origin authentication, non-repudiation, user authentication, access control. At the end of this unit students will know and understand properties of and evaluate a variety of common techniques to address security threats (public-key crypto, private-key crypto, firewalls, role-based access-control, etc). We pay special attention to the variety of attacks to which systems are subjected, and we address ways of managing the risks associated with different attacks. In this unit, cryptography is treated as a tool with given properties; to learn more about cryptography see units offered by the School of Mathematics and Statistics.

NETS3605
Computer and Network Security (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. **Prohibitions:** NETS(3016 or 3916), NETS3305 or ELEC(5610 or 5616) **Assessment:** Assignments, written exam.

An advanced alternative to NETS3305; covers material at an advanced and challenging level.

NETS3304
Operating System Internals

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** (ELEC1601 or NETS(2008 or 2908) or COMP(2001 or 2901) or ELEC2601) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **Prohibitions:** NETS(3009 or 3909 or 3604), COMP(3009 or 3909). **Assessment:** Assignments, written exam

Note: Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enrol in this unit.

This unit will provide a comprehensive discussion of relevant OS issues and principles and discuss how those principles are put into practice in real operating systems. The contents include internal structure of OS; several ways each major aspect (process scheduling, inter-process communication, memory management, device management, file systems) can be implemented; the performance impact of design choices; case studies of common OS (Linux, MS Windows NT, etc). The contents also include concepts of distributed systems: naming and binding, time in distributed systems, resource sharing, synchronization models (distributed shared memory, message passing), fault-tolerance, and case study of distributed file systems.

NETS3604
Operating Systems Internals (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** (ELEC1601 or NETS(2008 or 2908) or COMP(2001 or 2901) or ELEC2601) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. **Prohibitions:** NETS(3009 or 3909 or 3304), COMP(3009 or 3909) **Assessment:** Assignments, written exam.

Note: Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enroll in this unit.

An advanced alternative to NETS3304; covers material at an advanced and challenging level. See the description of NETS3304 for more information.

SOFT3300
Software Development Project

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 1 hour lecture, or supervision meeting, per week. **Prerequisites:** INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations). **Prohibitions:** SOFT3600, SOFT3200, SOFT3700 **Assessment:** Project process documentation, oral presentation, written report.

This unit is a capstone for the undergraduate curriculum. It provides students with the chance to demonstrate their skills in developing a substantial software system, working in a group which needs to carry out the full range of activities including requirements capture, analysis and design, coding, testing and documentation.

SOFT3600
Software Development Project (Advanced)

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 1 hour lecture, or supervision meeting, per week. **Prerequisites:** (INFO2110 or INFO2810 or INFO2000 or INFO2900) and (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2904 or COMP2004 or COMP2904), and 12 crpts of 3000-level IT-related units (from Table III(iv) or III(v) of the BIT regulations), and Distinction in any 2000-level or above IT-related unit. **Prohibitions:** SOFT3300, SOFT3200, SOFT3700 **Assessment:** Project process documentation, oral presentation, written report.

An advanced alternative to SOFT3300; covers material at an advanced and challenging level.

SOFT3301
Software Construction 2

Credit points: 6 **Session:** Semester 1 **Classes:** 2 hours lecture, 2 hours tutorial per week. **Prerequisites:** SOFT(2130 or 2830 or 2004 or 2904) or COMP2004 or COMP2904 **Prohibitions:** SOFT3601, SOFT3104, SOFT3804, COMP3008, COMP3908 **Assessment:** Programming assignments, in-lab quizzes, written exam.

At the end of this course you should have an easy familiarity with C++ and know when (and when not) to use it to solve a problem. In particular, we deal with those issues which differ from Java and C, including multiple inheritance, name spaces, destructors, the difference between virtual and non-virtual overriding, and templates. You should be comfortable reading the STL source. You will know many of the recognized Design Patterns, and be able to use them appropriately to evaluate and improve (refactor) existing code. You will have experience with coding using an Integrated Development Environment.

SOFT3601
Software Construction 2 (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2004 or COMP2004 or COMP2904), and Distinction in any 2000-level or above SOFT or INFO unit. **Prohibitions:** SOFT3301, SOFT3104, SOFT3804, COMP3008, COMP3908 **Assessment:** Programming assignments, in-lab quizzes, written exam.

An advanced alternative to SOFT 3301; covers material at an advanced and challenging level.

SOFT3302
Software Quality Assurance

Credit points: 6 **Session:** Semester 2 **Classes:** 2 hours lecture, 2 hours tutorial per week. **Prerequisites:** (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))). **Prohibitions:** SOFT(3602 or 3103 or 3803) **Assessment:** Programming assignments, in-lab quizzes, written exam.

This unit will discuss ways in which the quality of software systems can be enhanced through processes that occur within the Software Development Life Cycle (SDLC). We cover both agile methodologies such as extreme programming (XP), and heavier methodologies such as Rational's RUP. We deal with ways to enhance quality of designs and of code construction, and we particularly emphasize the role of testing, for functionality and also for nonfunctional issues such as performance, usability, conformance to policy). You will learn to produce a testing strategy, starting from a careful analysis of the risks faced by the system; this strategy is elaborated into a detailed test plan. You will evaluate test plans in terms of coverage and contribution to system reliability. Emphasis is also placed on the management of the testing activity, especially on tracing from test results back to the aspect of the requirements being tested. You will have experience using some automated tools for managing the testing process.

SOFT3602
Software Quality Assurance (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 2 hour tutorial per week. **Prerequisites:** (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))), and Distinction in any 2000-level or above SOFT or INFO unit. **Prohibitions:** SOFT(3302 or 3103 or 3803) or, COMP(3008 or COMP3908) **Assessment:** Programming assignments, in-lab quizzes, written exam.

An advanced alternative to SOFT 3302; covers material at an advanced and challenging level.

Computer Science Honours

To be awarded Honours in Computer Science, a student must complete units of study to a total of 48 credit points, as approved by the School and the Faculty, as follows: 6 credit points of research preparation through the unit INFO4990, covering a literature review and research plan, 18 credit points of research project through the unit INFO4991 and 4992, and 24 credit points of coursework units of study, which, except with permission of the School and Faculty, must all be from 4000-level units of study which are in the subject area of Computer Science (that is, units of study or selected 5000-level units of study (see Honours units of study). Seek special permission from the School of Information Technologies for 5000-level units.Note that the Faculty requires that Honours be completed in two consecutive semesters of full-time study, or four consecutive semesters of part-time study; a single final grade and mark is given for the Honours course, as determined by the Faculty based on performance in Honours and in prior undergraduate study.

Honours units of study

COMP4045
Computational Geometry

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour scheduled small-group class per week, plus 10 hours per week private work. **Assumed knowledge:** Data structures, analysis of algorithms **Assessment:** Practical assignments, written assignments, exam

Geometric data are used in fields including information and scientific visualisation, image processing, pattern recognition, chip layout, and geographic information systems. This unit focuses on the study of computational algorithms which efficiently process geometric data. Students will approach relevant research being done in the University of Sydney.

Textbooks
M. de Berg, et al "Computational Geometry: Algorithms and Applications", Springer (2000)

COMP4046
Statistical Natural Language Processing

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour scheduled small-group class per week, plus 10 hours per week private work. **Assumed knowledge:** Concepts of linguistics, elementary statistics, AI techniques **Assessment:** Practical assignments, written assignments, exam

This unit deals with techniques that allow computers to handle natural human languages (such as English, French), by analysis of large corpora of text. Particulat emphasis is given to methods that analyse the meaning in texts, the categorisation of texts, and the general application of machine learning methods to these topics. Students will approach the relevant research being done in the University of Sydney.

COMP4048
Information Visualisation

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour scheduled small-group class per week, plus 10 hours per week private work. **Assumed knowledge:** Discrete mathematics **Assessment:** Practical assignments, written assignments, exam

This unit provides knowledge of the concepts techniques and algorithms involved in producing graphical representations of relational information, especially graph drawings. Students will approach relevant research in the University of Sydney.

Textbooks
C. Ware "Information Visualisation" Morgan Kaufman (2000); R. Spence "Information Visualisation" Addison-Wesley (2000)

COMP5318
Knowledge, Discovery and Data Mining

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5138 Relational Database Management Systems. **Assessment:** Assignments, written exam.

Knowledge discovery is the process of extracting useful knowledge from data. Data mining is a discipline within knowledge discovery that seeks to facilitate the exploration and analysis of large quantities of data, by automatic or semiautomatic means. This subject provides a practical and technical introduction to knowledge discovery and data mining. Objectives: Topics to be covered include problems of data analysis in databases, discovering patterns in the data, and knowledge interpretation, extraction and visualisation. Also covered are analysis, comparison and usage of various types of machine learning techniques and statistical techniques: clustering, classification, prediction, estimation, affinity grouping, description and scientific visualisation.

COMP5338
Advanced Data Models

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Prohibitions:** COMP5306 **Assumed knowledge:** COMP5138 Relational Database Management Systems **Assessment:** Assignments, written exam.

This course will offer a comprehensive survey of post-relational data models and technologies with significant emphasis on XML and content management on the world wide web. The important challenges in managing the complex and varied data in modern database environments will be specifically addressed.

COMP5347
e-Commerce Technology

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5028 Object Oriented Analysis and Design **Assessment:** Assignments, written exam.

This unit will focus on technological advances supporting the development of e-commerce applications and systems. This includes server-side development of e-business applications, methodologies and practices for the development of web-applications, J2EE/Java-based support for front-end development, XML processing, and database integration, as well as web services development (SOAP, WSDL, UDDI) and handheld wireless integration.

COMP5348
Enterprise Scale Software Development

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5028 Object Oriented Analysis and Design **Assessment:** Assignments, exam

This unit covers a range of approaches for constructing large-scale computer-based systems which can deal with data and business processes through a large company or other organisation. In building software on this scale, it is essential to integrate existing "legacy" code and data stores. The unit includes a study of both middleware technologies and process management techniques needed to develop enterprise scale computer-based systems.

COMP5416
Advanced Network Technologies

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5116 Internet Protocols and COMP5126 Distributed Systems Programming **Assessment:** Assignments, written exam

The unit introduces networking concepts beyond the best effort service of the core TCP/IP protocol suite. Provides understanding of the fundamental issues in building an integrated multi-service network for global Internet services, taking into account service objectives, application characteristics and needs and network mechanisms. Enables students to understand the core issues and be aware of proposed solutions so they can actively follow and participate in the development of the Internet beyond the basic bit transport service.

COMP5424
Information Technology in Biomedicine

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

Specialist/Elective Information technology (IT) has significantly contributed to the research and practice of medicine, biology and health care. The IT field is growing enormously in scope with biomedicine taking a lead role in utilizing the evolving applications to its best advantage. The goal of this unit is to provide students with the necessary knowledge to understand the information technology in biomedicine. The major emphasis will be on the principles associated with biomedical digital imaging systems and their applications, computer modeling of biomedical systems, and biomedical system identification. Specialist areas such as medical image compression, telemedicine, Picture Archiving and Communication System (PACS), and web technology in biomedicine etc. will also be addressed.

COMP5425
Multimedia Storage, Retrieval & Delivery

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP 5122 Multimedia Human Computer Interaction **Assessment:** Assignments, written exam

The unit covers Multimedia Storage and Compression, fundamental compression techniques, audio storage and compression, image storage and compression (JPEG, JBIG and JPEG2000), video storage and compression (MPEG, MPEG1, MPEG2, MPEG4 and MPEG7), Multimedia Information Retrieval information retrieval fundamentals, visual information retrieval, video cataloguing and retrieval issues of multimedia systems and delivery image watermarking, video watermarking, video encryption, future HCI, progressive transmitted images and video, multicasting control, immersive video for future digital TV

COMP5426
Network Based High Performance Computing

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5126 Distributed Systems Programming **Assessment:** Assignments, written exam.

This unit is intended to introduce and motivate the study of high performance computer systems. The student will be presented with the foundational concepts pertaining to the different types and classes of high performance computers. The student will be exposed to the description of the technological context of current high performance computer systems. Students will gain skills in evaluating, experimenting with, and optimizing the performance of high performance computers. The unit also provides students with the ability to undertake more advanced topics and courses on high performance computing.

Information Systems Honours

To be awarded Honours in Information Systems, a student must complete units of study to a total of 48 credit points, as approved by the School and the Faculty, as follows: 6 credit points of research preparation through the unit INFO4990, covering a literature review and research plan, 18 credit points of research project through the unit INFO4991 and 4992, and 24 credit points of coursework units of study, which, except with permission of the School and Faculty, must all be from 4000-level units of study which are in the subject area of Information Systems (that is, units of study or selected 5000-level units of study (see Honours units of study). Seek special permission from the School of Information Technologies for 5000-level units.Note that the Faculty requires that Honours be completed in two consecutive semesters of full-time study, or four consecutive semesters of part-time study; a single final grade and mark is given for the Honours course, as determined by the Faculty based on performance in Honours and in prior undergraduate study.

Honours units of study

INFO4010
IT Advanced Topic A

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour scheduled small-group class per week, plus 10 hours per week private work. **Prerequisites:** Permission of Head of School **Assessment:** Practical assignments, written assignments, exam

Note: Department permission required for enrolment .

This unit will cover some topic of active research within IT; it will change in content depending on special opportunities such as a distinguished researcher visiting the University. Topics depend upon staff availability.

INFO4011
IT Advanced Topic B

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour scheduled small-group class per week, plus 10 hours per week private work. **Prerequisites:** Permission of Head of School **Assessment:** Practical assignments, written assignments, exam

Note: Department permission required for enrolment .

This unit will cover some topic of active research within IT; it will change in content depending on special opportunities such as a distinguished researcher visiting the University. Topics depend upon staff availability.

INFO4990
IT Research Methods

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 3 hour scheduled small-group class per week, plus 9 hours per week private work (including interaction with research supervisor). **Assumed knowledge:** Elementary statistics **Assessment:** Written papers (critical evaluation of a research paper, literature survey, research plan, thesis structure) and oral presentation.

Note: Department permission required for enrolment .

This unit forms a key foundation for the student's work on their IT-related research project within an Honours degree. It introduces the varied approaches to research common in different fields of IT, such as experimentation, simulation, prototyping/design, mathematical proof, surveys, and interpretive methods. The main focus is on understanding how research is done, and how it is evaluated. Key assessment tasks include writing a critical evaluation of a research paper from the literature, a survey of the literature within some topic, a research plan, and a presentation of a research plan. It is expected that the student would use their thesis research as the basis for this assessment, and use feedback provided in this unit to improve the work for inclusion in the final thesis.

ISYS4050
Knowledge Management Systems

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour scheduled small-group class per week, plus 10 hours per week private work. **Assumed knowledge:** Information systems concepts, database concepts **Assessment:** Practical assignments, written assignments, exam

This unit will provide a comprehensive introduction to the emerging area of Knowledge Management (KM) from both technological and organisational perspectives. Topics include document repositories, ontologies and the semantic web, customer relationship management systems, communities of practice, and computer-supported cooperative work. Students will approach relevant research being done in the University of Sydney.

NETS4047
Pervasive Computing

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour scheduled small-group class per week, plus 10 hours per week private work. **Assumed knowledge:** Networking concepts, operating system concepts, programming expertise **Assessment:** Practical assignments, written assignments, exam

Pervasive computing deals with the likely future where many computational devices are widely dispersed in the environment: there will be sensors in rooms, people will carry PDAs or mobile phones with capacity for running sophisticated software, etc, there may be chips in one's clothing. Key isues include communication between the devices and humans; interpretation of, and adapting computation to, the human context; managing the information and communication efficiently so knowledge gets to the places where it is needed. Students will approach the relevant research being done in the University of Sydney.

INFO4991
IT Research Thesis A

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** 12 hours per week research work (including interaction with supervisor and research group). **Corequisites:** INFO4990 and INFO4992 **Assessment:** Thesis

Together with INFO4992, this unit covers the research and writing of the student's Honours thesis.

INFO4992
IT Research Thesis B

Credit points: 12 **Session:** Semester 1, Semester 2 **Classes:** 24 hours per week research work (including interaction with supervisor and research group). **Corequisites:** INFO4990 and INFO4991 **Assessment:** Thesis

Together with INFO4991, this unit covers the research and writing of the student's Honours thesis.

INFO4999
Computer Science Honours Result

Session: Semester 1, Semester 2 **Prerequisites:** Permission of the Head of Department

Note: Department permission required for enrolment .

All students in Computer Science Honours must enrol in this non assessable unit of study in their final semester.

Law units of study

The following units of study are only available to students in the Bachelor of Science/Bachelor of Laws degree. Please consult degree information in chapter 9, and the relevant Departments/Schools entries in this chapter for descriptions of other units of study required for this degree.

Curriculum Review

The Faculty of Law is undertaking a curriculum review, anticipated to be completed in 2007/2008. Combined law students are expected to complete 48 credit points of Law units of study in the first three years of the combined degree. Third year combined law students who are not able to accumulate 48 credit points of Law units of study using the unit of study codes in Table 2 as it appears in Chapter 9 must contact the Faculty of Law for alternative unit of study codes for Federal Constitutional Law and Law, Lawyers and Justice.

LAWS1006
Foundations of Law

Credit points: 6 **Teacher/Coordinator:** Dr Belinda Smith **Session:** Semester 1 **Classes:** (1x1hr lec and 2x2hr seminars)/wk **Prohibitions:** LAWS1000 **Assessment:** class participation (20%), 1x case assignment (30%) and 1x research essay (50%)

Note: Available to Combined Law candidates only.

This unit of study provides a foundation core for the study of law. We aim to provide a practical overview of the Australian legal system, an introduction to the skills of legal reasoning and analysis which are necessary to complete your law degree, and an opportunity for critical engagement in debate about the role of law in our lives. The course will introduce students to issues such as: - the development of judge made and statute law - the relationship between courts and parliament - the role and function of courts, tribunals and other forms of dispute resolution - understanding and interrogating principles of judicial reasoning and statutory interpretation - the relationship between law, government and politics - what are rights in Australian law, where do they come from and where are they going - the development and relevance of international law.

LAWS1010
Torts

Credit points: 6 **Teacher/Coordinator:** Mr Ross Anderson **Session:** Semester 2 **Classes:** (1x2hr seminar and 1x1hr seminar)/wk **Prerequisites:** LAWS1006 **Prohibitions:** LAWS3001, LAWS1012, LAWS1005 **Assessment:** 2x class tests (15% each) and 1x2hr open book exam (70%)

Note: Department permission required for enrolment .
Note: Available to Combined Law candidates who commenced prior to 2006 and are progressing under the old LLB resolutions.

This is a general introductory unit of study concerned with liability for civil wrongs. The unit seeks to examine and evaluate, through a critical and analytical study of primary and secondary materials, the function and scope of modern tort law and the rationale and utility of its governing principles. Particular topics on which the unit will focus include: (a) The relationship between torts and other branches of the common law including contract and criminal law; (b) The role of fault as the principal basis of liability in the modern law; (c) Historical development of trespass and the action on the case and the contemporary relevance of this development; (d) Trespass to the person (battery, assault, and false imprisonment); (e) Interference with goods (trespass, detinue and conversion) (f) Trespass to land and private nuisance; (g) The action on the case for intentional injury; (h) Defences to trespass, including consent, intellectual disability, childhood, necessity and contributory negligence; (i) Development and scope of the modern tort of negligence, including detailed consideration of duty of care and breach of duty with particular reference to personal and psychiatric injury; (j) Injuries to relational interests, including compensation to relatives of victims of fatal accidents; (k) Defences to negligence.

LAWS1012
Torts

Credit points: 6 **Teacher/Coordinator:** Mr Ross Anderson **Session:** Semester 2 **Classes:** (1x2hr seminar and 1x1hr seminar)/wk **Prerequisites:** LAWS1006 **Prohibitions:** LAWS1005, LAWS1010, LAWS3001 **Assessment:** 2x class tests (15% each) and 1x2hr open book exam (70%)

Note: Available to Combined Law candidates who commence in 2007.

This is a general introductory unit of study concerned with liability for civil wrongs. The unit seeks to examine and evaluate, through a critical and analytical study of primary and secondary materials, the function and scope of modern tort law and the rationale and utility of its governing principles. Particular topics on which the unit will focus include: (a) The relationship between torts and other branches of the common law including contract and criminal law; (b) The role of fault as the principal basis of liability in the modern law; (c) Historical development of trespass and the action on the case and the contemporary relevance of this development; (d) Trespass to the person (battery, assault, and false imprisonment); (e) Interference with goods (trespass, detinue and conversion) (f) Trespass to land and private nuisance; (g) The action on the case for intentional injury; (h) Defences to trespass, including consent, intellectual disability, childhood, necessity and contributory negligence; (i) Development and scope of the modern tort of negligence, including detailed consideration of duty of care and breach of duty with particular reference to personal and psychiatric injury; (j) Injuries to relational interests, including compensation to relatives of victims of fatal accidents; (k) Defences to negligence.

LAWS1013
Legal Research I

Teacher/Coordinator: Ms Margaret McAleese **Session:** Semester 1 **Classes:** 1x1hr seminar/fortnight **Corequisites:** LAWS1006 **Prohibitions:** LAWS1008 **Assessment:** 1x assignment

Note: Available to Combined Law candidates only in 2007.

This is a compulsory unit taught on a pass/fail basis. It consists of five classes which meet once a fortnight during first semester. The aim of this course is to introduce you to finding and citing primary and secondary legal materials and introducing you to legal research techniques. These are skills which are essential for a law student and which you will be required to apply in your other units.

LAWS1014
Processes of Justice

Credit points: 6 **Teacher/Coordinator:** Ms Miiko Kumar **Session:** Semester 1 **Classes:** 2x2hr seminars/wk **Prerequisites:** LAWS1006 **Corequisites:** LAWS1006 (for transfer students only) **Prohibitions:** LAWS1007, LAWS3002, LAWS3004, LAWS1001 **Assessment:** 1x2000wd assignment (35%), class participation (15%) (subject to class size) and 1x2hr exam (50%)

Note: Available to Combined Law candidates who commenced in 2006 or 2007 and are progressing under the new LLB resolutions.

This unit of study aims to introduce students to the procedures that administer justice. It is concerned with the processes relating to civil dispute resolution and criminal justice which are separate to the substantive hearing. The unit will consider the features of an adversarial system of justice and its impact on process. Recent reforms to adversarial process will be explored. The civil dispute resolution part of the unit will cover alternative dispute resolution, the procedures for commencing a civil action, case management, gathering evidence and the rules of privilege. Criminal process will be explored by reference to crime and society, the phenomenon of crime, colonisation and crime, police powers, bail and sentencing. The course focuses on practical examples with consideration of ethics, and contextual and theoretical perspectives.

LAWS1015
Contracts

Credit points: 6 **Teacher/Coordinator:** Assoc Prof Elisabeth Peden **Session:** Semester 1 **Classes:** 2x2hr seminars/wk **Prerequisites:** LAWS1006 **Prohibitions:** LAWS1002, LAWS2000, LAWS2008 **Assessment:** 1x1hr in-class test (25%), online quizzes (15%) and 1x2hr exam (60%)

Note: Available to Combined Law candidates who commenced in 2006 or 2007 and are progressing under the new LLB resolutions.

Contract law provides the legal background for transactions involving the supply of goods and services and is, arguably the most significant means by which the ownership of property is transferred from one person to another. It vitally affects all members of the community and a thorough knowledge of contract law is essential to all practising lawyers. In the context of the law curriculum as a whole, Contracts provides background which is assumed knowledge in many other units. The aims of the course are composite in nature. The course examines the rules that regulate the creation, terms, performance, breach and discharge of a contract. Remedies and factors that may vitiate a contract such as misrepresentation are dealt with in Torts and Contracts II. The central aim of the course is to provide an understanding of the basic principles of contract law and how those principles are applied in practice to solve problems. Students will develop the skills of rules based reasoning and case law analysis. A second aim is to provide students an opportunity to critically evaluate and make normative judgments about the operation of the law. Successful completion of this unit of study is a prerequisite to the option Advanced Contracts.

LAWS1016
Criminal Law

Credit points: 6 **Teacher/Coordinator:** Prof Mark Findlay **Session:** Semester 2 **Classes:** 2x2hr seminars/wk **Prohibitions:** LAWS1003, LAWS2001, LAWS2009 **Assessment:** class participation (10%), 1x in-class problem (10%), 1x research problem (30%) and 1x exam (50%)

Note: Available to Combined Law candidates who commenced in 2006 or 2007 and are progressing under the new LLB resolutions.

This unit of study is designed to introduce the general principles of criminal law in context as they operate in NSW, and to critically analyse these in their contemporary social and political relevance. In order to achieve these goals, the unit will consider a range of theoretical literature as well as critical commentary, and will focus on particular substantive legal topics in problem-centred contexts. Although the topic structure is necessarily selective, it is intended that students will gain a broad understanding of crime and justice issues, as well as of the applications of the criminal law. Students will encounter problem-based learning and will be encouraged to challenge a range of conventional wisdom concerning the operation of criminal justice. This unit of study is designed to assist students in developing the following understandings: (1) A critical appreciation of certain key concepts which recur throughout the substantive criminal law. (2) A knowledge of the legal rules in certain specified areas of criminal law and their application. (3) A preliminary knowledge of how the criminal law operates in its broader societal context. (4) Through following the process of proof in a criminal prosecution and its defense, to understand the determination of criminal liability. The understandings referred to in the foregoing paragraphs will have a critical focus and will draw on procedural, substantive, theoretical and empirical sources.

The contradictions presented by the application of legal principle to complex social problems will be investigated.

LAWS2008
Contracts

Credit points: 6 **Teacher/Coordinator:** Assoc Prof Elisabeth Peden **Session:** Semester 1, Summer Dec **Classes:** 2x2hr seminars/wk **Prerequisites:** LAWS1006 **Prohibitions:** LAWS1002, LAWS1015 **Assessment:** 1x1hr in-class test (25%), online quizzes (15%) and 1x2hr exam (60%)

Note: Department permission required for enrolment in the following sessions: Semester 1 .
Note: Available to Combined Law candidates who commenced prior to 2006 and are progressing under the old LLB resolutions.

Contract law provides the legal background for transactions involving the supply of goods and services and is, arguably the most significant means by which the ownership of property is transferred from one person to another. It vitally affects all members of the community and a thorough knowledge of contract law is essential to all practising lawyers. In the context of the law curriculum as a whole, Contracts provides background which is assumed knowledge in many other units. The aims of the unit are composite in nature. The central aim is to provide an understanding of the basic principles of the common law, equity and statutes applicable to contracts. A second aim is to provide students an opportunity to critically evaluate and make normative judgments about the operation of the law. As Contracts is basically a case law unit, the final aim of the unit of study is to provide experience in problem solving through application of the principles derived from decided cases. Successful completion of this unit of study is a prerequisite to the option Advanced Contracts.

LAWS2009
Criminal Law

Credit points: 6 **Teacher/Coordinator:** Prof Mark Findlay **Session:** Semester 2 **Classes:** 2x2hr seminars/wk **Prerequisites:** LAWS1006 **Prohibitions:** LAWS1003, LAWS1016 **Assessment:** class participation (10%), 1x in-class problem (10%), 1x research problem (30%) and 1x exam (50%)

Note: Department permission required for enrolment .
Note: Available only to Combined Law candidates who commenced prior to 2006 and are progressing under the old LLB resolutions.

This unit of study is designed to introduce the general principles of criminal law and process as they operate in NSW, and to critically analyse these in their contemporary social context. In order to achieve these goals, the unit will consider a range of socio-legal literature, and will focus on particular substantive legal topics. Although the topic structure is necessarily selective, it is intended that students will gain a broad understanding of crime and justice issues, as well as of the applications of the criminal law. Students will encounter problem-based learning and will be encouraged to challenge a range of conventional wisdom concerning the operation of criminal justice. This unit of study is designed to assist students in developing the following understandings: (1) A critical appreciation of certain key concepts which recur throughout the substantive criminal law. (2) A knowledge of the legal rules in certain specified areas of criminal law and their application. (3) A preliminary understanding of the working criminal justice system as a process and the interaction of that process with the substantive criminal law. (4) A preliminary knowledge of how the criminal law operates in its broader societal context. (5) Through following the process of proof in a criminal prosecution and its defense, to understand the determination of criminal liability. The understandings referred to in the foregoing paragraphs will have a critical focus and will draw on procedural, substantive, theoretical and empirical sources. The contradictions presented by the application of legal principle to complex social problems will be investigated.

LAWS3003
Federal Constitutional Law

Credit points: 12 **Teacher/Coordinator:** Dr Peter Gerangelos **Session:** Semester 1 **Classes:** 2x2hr seminars/wk **Prerequisites:** LAWS1006 **Prohibitions:** LAWS3000 **Assessment:** 1x mid-semester assignment/exam (40%) and 1x3hr exam (60%)

Note: Available to Combined Law candidates only.

This unit of study aims to achieve an understanding of the principles of Australian constitutional law. The unit commences with a development of an understanding of Australia's constitutional independence, parliamentary sovereignty, indigenous rights and the concepts of representative and responsible government. Further topics covered include federalism (including the external affairs power and the relationship between Commonwealth and state laws); economic and financial power and relations (including the corporations power, the trade and commerce power, freedom of interstate trade, and excise); the doctrine of separation of powers and judicial power of the Commonwealth; express and implied constitutional rights; and principles of constitutional interpretation. The unit aims to develop a capacity to evaluate the principles critically, with regard to political theory and the social context within which cases have been decided.

LAWS3004
Law, Lawyers and Justice

Credit points: 12 **Teacher/Coordinator:** Assoc Prof Mary Crock **Session:** Semester 2 **Classes:** 2x2hr seminars/wk **Prerequisites:** LAWS1006 **Prohibitions:** LAWS3002, LAWS1007, LAWS1001 **Assessment:** class participation (10%), reflective journal (30%) and 1x open book exam (60%)

Note: Available to Combined Law candidates proceeding under the old resolutions.

Law, Lawyers and Justice has a distinct intellectual focus. It is the only unit in the curriculum that concentrates on the regulation of the legal profession and legal practice. Part 1 of Law, Lawyers and Justice examines the nature and structure of the legal profession, historical struggles to regulate the profession, and the current regulatory regime in New South Wales. Part 2 explores specific forms of legal practice, highlights the major cultural and economic forces that challenge attempts to regulate the profession and canvasses alternative ways of organising legal practice and providing legal services. Part 3 investigates the adversary system and considers its advantages and limitations. More specifically, the material in Part 3 addresses how the adversary system moulds lawyers' behaviour within and outside the judicial process and analyses current regulatory measures aimed at curbing the undesirable aspects of an adversarial culture. Part 4 evaluates the way clients are treated by lawyers and suggests strategies to change their conduct in the interests of both equality and effective communication. Furthermore, it examines lawyers' duties to their clients and the ways in which the rules and principles of confidentiality, legal professional privilege and conflicts of interest shape the advice and representation lawyers provide for their clients.

Liberal Studies units of study

The Bachelor of Liberal Studies degree is offered jointly by the Faculties of Science and Arts. The Faculty of Arts administers the degree program. Liberal Studies students should consider the Faculty of Arts their home Faculty for administrative purposes. The following units of study form part of the requirements of the Bachelor of Liberal Studies degree. Please consult degree information in Chapter 2, the Tables earlier in this chapter, and the relevant Departments/Schools entries in this chapter for descriptions of other units of study required for this degree.

ENGL1000
Academic Writing

Credit points: 6 **Teacher/Coordinator:** Dr R Johinke (Sem 1 2007); Dr S Thomas (Sem 2 2007) **Session:** Semester 1, Semester 2, Summer Main, Winter Main **Classes:** One 1 hour lecture and one 2 hour workshop per week **Prerequisites:** This unit is available to all enrolled students and will count for credit across all faculties. There are no specific pre-requisites, co-requisites or prohibitions, but students are expected to have native or near native competence in written English. Students not meeting this requirement should enrol in appropriate remedial English courses before undertaking ENGL1000. ENGL1000 cannot be counted towards the junior credit points required to enrol in senior units of English, though it can be counted as an elective in most degree programs. **Assessment:** One 750 word annotated bibliography, one 1500 word essay, one 1000 word critical reading task, one oral presentation and a weekly journal

Academic Writing is designed to improve student writing at all undergraduate levels in a variety of formats across a range of

disciplines. Lectures and workshops are organized around readings about rhetoric and its aims, films that illustrate the arts of rhetoric at work and exercises in writing, critical analysis and editing. Students are presented with examples of 'real' student writing and taught to differentiate between effective and ineffective approaches.

Textbooks
Corbett, Edward P.J. and Robert Connors. Classical Rhetoric for the Modern Student. 4th Ed. Oxford UP: 1999.

ENGL1007
Language, Texts and Time

Credit points: 6 **Teacher/Coordinator:** Dr N Riemer **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 1 hour tutorial per week **Assessment:** Two 500 word assignments, one 2000 word essay and one 1.5 hour exam

This course equips students with some general tools for the close analysis of literary language. Grammatical concepts will be introduced and applied to the description of prose, poetry and drama, and students will explore the changing relations between form and meaning in English from the earliest times up to the present. A number of key strands in contemporary language study will also be presented, including semiotic theory, rhetoric and discourse studies and theorizations of the relationship between texts and subjectivity.

Textbooks
Crystal, David, The Cambridge Encyclopedia of the English Language 2ed (Cambridge, 2003)
Barber, Charles, The English Language: A Historical Introduction (Cambridge, 1993).
Lennard, John, The Poetry Handbook 2ed (Oxford, 2005).
A Resource book will be available from the University Copy Centre.

LNGS1001
Structure of Language

Credit points: 6 **Teacher/Coordinator:** Prof W Foley **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 1 hour tutorial per week **Prohibitions:** LNGS1004, LNGS1005 **Assessment:** Ten short problem based assignments, each about 150 words, for a total of 1500 words; one 1 hour mid-term exam (equivalent to 1000 words); one 2 hour formal final examination (equivalent to 2000 words)

This unit is a comparative look at the general structure of human language. It looks at the sounds of human language: how the speech organs make them and their variety, in particular, a detailed description of English consonants and vowels and how to transcribe them. It investigates what is a possible word in English and other languages. It looks at the way speakers put words together to form sentences and how and why is English different from Japanese or even Irish.

Textbooks
Fromkin, V., Rodman, R., Hyams, N., Collins., Collins, P., Amberber, M. 2005. 'An Introduction to Language'. Fifth edition. Sydney: Harcourt.

Marine Science

The University of Sydney Institute of Marine Science (USIMS) provides for undergraduate units of study of a transdisciplinary nature in the marine sciences at the Intermediate, Senior and Honours levels. Staff from the School of Biological Sciences and the School of Geosciences teach these units. For further information on all units of study, please refer to the Marine Science website (www.usyd.edu.au/marine)

Marine Science Intermediate units of study

MARS2005
Global Oceans (Introduction)

Credit points: 6 **Teacher/Coordinator:** Dr Michael Hughes **Session:** Semester 1 **Classes:** Three 1 hour lectures per week and six tutorials per semester and 1 day field trip. **Prerequisites:** 24 credit points of Junior units of study from Science Discipline Areas. **Prohibitions:** MARS2001, MARS2905 **Assessment:** One 2 hour exam, assignments

Note: This is a qualifying unit for some Senior Marine Science units. Some Senior electives may have additional prerequisites.

This course is split into two sections: physical and geological oceanography. Major physical oceanography topics include the physical and chemical properties of ocean water, ocean circulation, waves and tides. Major geological oceanography topics include the origins and geological history of ocean basins, ocean volcanism, sediments and continental margins. Both the regional oceanography and continental shelf of Australia are emphasised. Although this is principally a lecture-based course, you will receive feedback on your understanding of the course content through regular assignments and six tutorials. The learning outcome you should expect at the end of the course is a broad knowledge of the fundamental concepts in physical and geological oceanography, and their particular relevance to the Australasian region. This provides the necessary background for senior-level Marine Science courses in which you will learn more advanced concepts, and also become involved in the practical and field-based aspects of marine science.

Textbooks
H.V. Thurman and E.A. Burton, 2001. Introductory Oceanography, 9th Edition. Prentice Hall

MARS2006
Marine Ecosystems and Geomorphology

Credit points: 6 **Teacher/Coordinator:** Dr Peter Cowell **Session:** Semester 2 **Classes:** Three 1 hour lectures and six tutorials per semester and 1 day field excursion. **Prerequisites:** 24 credit points of Junior units of study from Science Discipline Areas. **Prohibitions:** MARS2002, MARS2906, GEOG2002 **Assumed knowledge:** MARS2005 **Assessment:** One 2 hour exam, assignments

Note: This is a qualifying unit for Senior Marine Science units. Some Senior electives may have additional prerequisites.

This course is split into two sections: marine biology and coastal geomorphology. The marine biology section describes some of the ways that the properties of the oceans affect marine organisms. It also introduces coral reefs and other marine ecosystems, together with their productivity, biological oceanography, the reproductive biology of marine organisms, and marine biological resources. The coastal geomorphology section provides an introduction to coastal geomorphology by examining the geographic variability of coasts as the sum effect of variations in terrestrial, climatic and oceanographic factors. These factors are introduced in terms of the main physical processes (geology, sea-level, waves, tides, winds) governing coastal geomorphology on a range of space-time scales. Geographic variation in the physical processes is illustrated by reference to the local coast: ie, Sydney. The illustration is amplified by drawing comparisons with other parts of SE Australia, and with overseas examples (especially from coastal environments very different to that of Sydney).

Textbooks
Castro P, Huber M (2003) Marine Biology, 4th edn. McGraw-Hill Higher Education, Sydney

MARS2007
Marine Science Field School

Credit points: 6 **Teacher/Coordinator:** Prof Andy Short **Session:** S1 Intensive **Classes:** Field school, four 3 hour practicals. **Prerequisites:** 24 credit points of Junior Science units **Corequisites:** MARS (2005 or 2905). **Prohibitions:** MARS2003, MARS2907 **Assessment:** Participation in field school, field report **Practical field work:** The practical classes are intended to familiarise the student with laboratory and data processing techniques, and report writing, with an intention to connect fieldwork and theoretical issues.

Note: This unit of study is available to students in the Bachelor of Science (Marine Science) only.

Marine Scientists are generally involved in a wide variety of fieldwork throughout their careers. A detailed knowledge of field methods and techniques is therefore a necessary component in the education of marine scientists. This unit of study introduces students to a range of field issues within the coastal and marine environment during a 5 day field school held prior to commencement of lectures in Semester 1. Many of the field methods focused on are generic across the marine disciplines. In addition, techniques specific to the disciplines of Biological Sciences and Geosciences are taught. Students will be expected to participate in a hands-on way, undertaking small project-based data collection exercises during the field school. These data will provide resources for the practical part of the course undertaken during semester.

Textbooks
Castro P, Huber M (2003) Marine Biology, 4th edn. McGraw-Hill Higher Education, Sydney
Pechenik JA (2003) A Short Guide to Writing About Biology, 5th edn. Addison Wesley Longman, Sydney

MARS2905
Global Oceans (Introduction) (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Michael Hughes **Session:** Semester 1 **Classes:** Three 1 hour lectures per week, six tutorials per semester and 1 day field trip. **Prerequisites:** Credit average in 24 credit points of Junior Science units. **Prohibitions:** MARS2005, MARS2001 **Assessment:** One 2 hour exam, 8 assignments, participation in field trip activities

Note: This unit of study is available to advanced students only.

Qualified students will participate in alternative components of MARS2005, while sharing the same lectures. The content and nature of these components may vary from year to year.

Textbooks
H.V. Thurman and E.A. Burton, 2001. Introductory Oceanography, 9th Edition. Prentice Hall.

MARS2906
Marine Ecosystems and Geomorphology Adv

Credit points: 6 **Teacher/Coordinator:** Dr Peter Cowell **Session:** Semester 2 **Classes:** Three 1 hour lectures, 6 hours tutorial per semester and 1 day field excursion. **Prerequisites:** Credit average in 24 credit points of Junior Science units **Prohibitions:** MARS2006, MARS2002, GEOG2002 **Assessment:** One 2 hour exam and assignments.

Note: This unit of study is available to advanced students only.

Qualified students will participate in alternative components of MARS2006, while sharing the same lectures. The content and nature of these components may vary from year to year.

Textbooks
Castro P, Huber M (2003) Marine Biology, 4th edn. McGraw-Hill Higher Education, Sydney

MARS2907
Marine Science Field School (Advanced)

Credit points: 6 **Teacher/Coordinator:** Prof Andy Short **Session:** S1 Intensive **Classes:** Field school and four 3 hour practicals. **Prerequisites:** Credit average in 24 credit points of Junior Science units. **Corequisites:** MARS2005 or MARS2905 **Prohibitions:** MARS2007, MARS2003 **Assessment:** Participation in field school activities and submission of a field report.

Note: This unit of study is available to advanced students only.

Qualified students will participate in alternative components of MARS2007, while sharing the same practical and fieldwork. The content and nature of these components may vary from year to year.

Marine Science senior units of study

Students intending to major in Marine Science should enrol in Senior units of study to a total worth of 24 credit points from the list below, including at least one BIOL and one GEOS unit. Students in the specialist BSc (Marine Science) degree must enrol in a minimum of 36 credit points of Senior Marine Science units of study, which may include up to 3 Tropical Marine Science (NTMP) units, and which must include at least one BIOL and one GEOS unit. Students are encouraged to select those electives in which they have a particular interest, subject to certain conditions (see Table 1). Because of limited facilities available for some units of study, particularly in marine biology, it may be necessary to restrict number of students taking these electives. If this need arises selection will be based on academic merit and/or other courses completed. All students intending to enrol in any of the biology options must consult the booklet information for Students Considering Senior Biology Units of Study available from the School of Biological Sciences Office during the last few weeks of the academic year prior to this enrolment. Each student should also complete a preliminary enrolment form in the School of Biological Sciences before first semester commences.

Descriptions of senior Marine Science options

Students should consult electives as listed in this chapter under Biological Sciences and Geosciences in this handbook. BIOL3006 Ecological Methods; BIOL3007 Ecology; BIOL3008 Marine Field Ecology; BIOL3011 Ecophysiology; BIOL3013 Marine Biology; GEOS3003 Dynamics of Continents and Basins; GEOS3009 Coastal Environments and Processes; GEOS3014 GIS in Coastal Management; GEOS3016 Seafloor Processes and Imaging; GEOS3017 Global Energy Exploration and Exploitation; GEOS3018 Rivers: Science, Policy and Management; (Plus Advanced versions of the above - BIOL39XX, GEOS39XX).

Marine Sciences Honours

The structure of Honours in Marine Science (including in Tropical Marine Science for interested students in the Bachelor of Science (Marine Science)) will be about one third formal coursework, seminars and reading, and about two thirds devoted to preparation of a thesis on a topic with a clear marine or estuarine orientation. The formal coursework may comprise units of study mainly chosen from existing Honours options offered in the Department of the student's principal interest. Background study in a subsidiary field of interest may be required. Students may commence Honours in either semester 1 or semester 2.

Admission to Honours

In general, a Credit average or better in Senior Marine Sciences units of study and at least a Pass in another Senior unit of study are required for entry. Arrangements for the supervision and Department of primary location of students will be made in the light of their proposed thesis topic. Joint supervision involving staff of more than one Department may be arranged if a thesis topic is deemed to be transdisciplinary. Upon acceptance, students should register formally with the Undergraduate Advisor of USIMS.

Tropical Marine Network Program

Students enrolled in the BSc (Marine Science) are be eligible to enrol in units of study offered as part of the Tropical Marine Network Program. This is a joint program of the University of Sydney, the University of Queensland and James Cook University, which offers four units of study in tropical marine science, all taught at marine island research stations off the Queensland coast.

Stations used

The following stations will be used:Lizard Island (Australian Museum field station, north of Cairns); Orpheus Island (James Cook University field station, off Townsville); Heron Island (University of Queensland field station, off Gladstone); One Tree Island (University of Sydney field station, off Gladstone); North Stradbroke Island (University of Queensland field station, off Brisbane)

Teaching and assessment

The four units of study, each worth 6 credit points, are conducted as field schools offered only during the Easter (Semester 1 mid-semester) break and the July mid-year break. Each field school will run for approximately 10 days. Assessment will be based on participation and reports completed during the field school, and an assignment to be completed following the field school. The Coral Reef Ecosystems unit and the Coastal Management unit will be offered each year, together with one of the other two units. Students may enrol in these units in academic year 2 and year 3 as part of the BSc (Marine Science). Students enrolling in these units of study will be selected from the three participating Universities, as well as some overseas Study Abroad students. Preference will however be given to students enrolled in the program at the three participating universities.

Quotas on numbers of students enrolling in NTMP units

Owing to the size of facilities and accommodation at the island research stations all units will have a quota with entry based on merit. There are no Advanced versions of these units. For further information on the availability and timing of these units please refer to the website: www.usyd.edu.au/marine.

NTMP3001
Coral Reef Ecosystems

Credit points: 6 **Teacher/Coordinator:** Associate Professor Maria Byrne **Session:** S2 Intensive **Classes:** Fieldwork, 80 hours block mode. **Prerequisites:** MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. **Corequisites:** MARS(2006 or 2906) **Assumed knowledge:** General concepts in Biology **Assessment:** Participation in field work and submission of a report.

Note: Department permission required for enrolment .
Note: These units are only available to BSc (Marine Science) students.

Coral Reef Ecosystems is an intensive unit that will be held at either the Heron Island or One Tree Island Tropical Research Stations on the Great Barrier Reef. The unit focuses on the dominant taxa in reef environments ad linkages between them. Emphasis is given to corals, other reef associated invertebrates (eg. echinoderms and plankton) and fishes. Ecological and physiological aspects of key organisms are explored. Aspects covered include: distribution of corals; coral bleaching; coral symbionts and the health of the corals based on photosynthetic activity; predation on corals; the input of plankton to reefs; and, the role of fishes and invertebrates in reef environments.

NTMP3003
Fisheries Biology and Management

Credit points: 6 **Teacher/Coordinator:** Associate Professor Maria Byrne **Session:** S2 Intensive **Classes:** Fieldwork, 80 hours block mode. **Prerequisites:** MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. **Corequisites:** MARS(2006 or 2906) **Assumed knowledge:** General concepts in Biology. **Assessment:** Participation in field work and submission of a report

Note: Department permission required for enrolment .
Note: These units are only available to BSc (Marine Science) students.

Fisheries Biology and Management is an intensive unit that will be held at the tropical research station on Orpheus Island in the Great Barrier Reef. The unit focuses on approaches to quantitative fisheries biology in tropical marine environments. Emphasis is given to sampling design and hypothesis testing, underwater visual census surveys, fishery surveys, assessments of habitat types, and tagging and trapping of organisms. Most field aspects will be covered while diving and data storage will be dealt with at the end of each day. The assessment will focus on the manipulation of data and reporting.

NTMP3004
Aquaculture

Credit points: 6 **Teacher/Coordinator:** Associate Professor Maria Byrne **Session:** S2 Intensive **Classes:** Fieldwork, 80 hours block mode. **Prerequisites:** MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. **Corequisites:** MARS(2006 or 2906) **Assumed knowledge:** General concepts in Biology. **Assessment:** Assignments and report.

Note: Department permission required for enrolment .
Note: These units are only available to BSc (Marine Science) students.

Aquaculture is an intensive unit that will be held at the tropical research station on Orpheus Island in the Great Barrier Reef. The unit focuses on approaches to aquaculture in tropical marine environments. Emphasis is given to aquaculture of tropical invertebrates (especially bivalves and clams) and fishes. Some aspects of the unit may also be done using the aquarium system on campus at James Cook University. Aspects covered include: the design of aquarium facilities; water quality; rearing of algae; rearing of planktonic food; stocking densities; and, growth and genetics of the target species.

NTMP3005
Coastal Management

Credit points: 6 **Teacher/Coordinator:** Professor Andrew Short **Session:** S2 Intensive **Classes:** Fieldwork, 80 hours block mode. **Prerequisites:** MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. **Corequisites:** MARS(2006 or 2906) **Assumed knowledge:** General concepts in Biology. **Assessment:** Assignment and report.

Note: Department permission required for enrolment .
Note: These units are only available to BSc (Marine Science) students.

This unit examines the impacts of human activities on coastal and marine environments. It explores the complex relationships among the ecological and social values of these environments and outlines strategies and tools for their management. This is an intensive unit that will be held at the Moreton Bay Research Station.

Mathematics and Statistics

The School of Mathematics and Statistics offers units of study in Applied Mathematics, Mathematical Statistics and Pure Mathematics. The Junior units of study cover a range of topics in mathematics and statistics and are offered at four levels, viz. Introductory, Life Sciences, Normal and Advanced, to suit various levels of previous knowledge. Intermediate, Senior and Honours units of study are mostly provided within one of the subject areas of Applied Mathematics, Mathematical Statistics and Pure Mathematics.

Applied Mathematics

Applied Mathematics is concerned with the development of mathematical and computing methods and their application in particular contexts which may arise in the natural sciences, engineering, economics or the social sciences. Units of study are designed to give training to students who will specialise in other subjects, and also for training applied mathematicians. While mathematical rigour is not neglected, particular emphasis is given to questions such as the treatment of observational models which are relevant to particular contexts.

Mathematical Statistics

Mathematical Statistics is concerned with the theory of probability and the mathematical methods of statistics applied to such problems as statistical inference, the design of experiments and sample surveys, and all problems of data analysis. The major units of study are designed to train those who wish to become professional statisticians, tertiary teachers and research workers, but there are units of study which provide a knowledge of statistical methods and techniques for students specialising in other fields.

Pure Mathematics

Pure Mathematics units of study have two main aims. One of these is to equip students with the background of mathematical knowledge, understanding and skill necessary for units of study in many branches of science. The other is the provision of training in pure mathematics necessary for those who wish to make a career in mathematics. This might be either in teaching or research or in one of the many avenues where highly developed mathematical ability and a thorough knowledge of modern mathematical techniques are required, such as computing, operations research, management, finance and economics. Website: Further information about all units of study is available at www.maths.usyd.edu.au/Teaching.html

Summer School

This School offers some units of study in The Sydney Summer School (January-February). Consult The Sydney Summer School website for more information: www.summer.usyd.edu.au/

Mathematics Junior units of study

Various combinations of Junior units of study may be taken, subject to the prerequisites listed. Often specific Junior units of study are prerequisites for Mathematics and Statistics units in the Intermediate and Senior years. Before deciding on a particular combination of Junior units of study, students are advised to check carefully the prerequisites relating to Mathematics for all units of study.

Junior introductory unit of study

Students who have not studied a calculus course at high school may enrol in the Introductory Calculus 6-credit point unit.

MATH1111
Introduction to Calculus

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and two 1 hour tutorials per week. **Prohibitions:** MATH1001, MATH1901, MATH1011, MATH1906 **Assumed knowledge:** At least Year 10 Mathematics **Assessment:** One 2 hour exam, assignments, quizzes

Note: Department permission required for enrolment .
Note: Students with HSC Mathematics/Extension 1/Extension 2 (or equivalent) are prohibited.

This unit is an introduction to the calculus of one and two variables. Topics covered include elementary functions, differentiation, basic integration techniques and partial derivatives. Applications in science and engineering are emphasised.

Textbooks
Calculus: Single and Multivariable. Hughes-Hallett, Gleason, McCallum, et al. Wiley

Junior Life Sciences units of study

Life Sciences units of study are designed to provide students with an overview of the necessary mathematical and statistical background for studies in the Life Sciences. They are provided for students in the Faculty of Science whose major interest lies outside mathematics. There are more details in the Junior Mathematics Handbook, available from the School at the time of enrolment.

Assumed knowledge

Knowledge equivalent to the HSC 2-unit Mathematics course is assumed. Students who do not have this knowledge are strongly advised to attend a bridging course conducted jointly by the School and the Mathematics Learning Centre in February.

Relationship of Life Sciences units to other units of study and recommendations

The four Life Science units of study together give 12 credit points of mathematics, which is the minimum required by the BSc degree regulations. Students obtaining a Distinction in MATH1011 are encouraged to enrol in normal units of study in subsequent semesters. Students obtaining a Distinction or better in MATH1011, 1012 or 1013 may proceed to Intermediate units of study in the Mathematics Discipline Area. Students with a Credit or better in MATH1011 and a Pass or better in MATH1015 may proceed to Intermediate units of study in the Statistics discipline area. Students with a Pass in only MATH1015 are limited to the Intermediate Statistics units of study STAT2011 and STAT2012.

MATH1011
Life Sciences Calculus

Credit points: 3 **Session:** Semester 1, Summer Main **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1111, MATH1001, MATH1901, MATH1906 **Assumed knowledge:** HSC Mathematics **Assessment:** One 1.5 hour examination, assignments and quizzes.

This unit is designed to provide calculus for students of the life sciences who do not intend to undertake higher year mathematics and statistics. It includes the fitting of data to various functions, introduces finite difference methods, and it demonstrates the use of calculus in optimisation problems. It extends differential calculus to functions of two variables and develops integral calculus, including the definite integral and multiple integrals.

Textbooks
As set out in the Junior Mathematics Handbook

MATH1013
Differential and Difference Equations

Credit points: 3 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1003, MATH1903, MATH1907 **Assumed knowledge:** HSC Mathematics or MATH1111 **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH1013 is designed to provide the theory of difference and differential equations for students of the life sciences who do not intend to undertake higher year mathematics and statistics. This unit of study looks at the solution of equations by bisection and iteration, first and second order difference equations where chaos is met, and examples of modelling using simple first and second order differential equations.

Textbooks
As set out in the Junior Mathematics Handbook

MATH1014
Introduction to Linear Algebra

Credit points: 3 **Session:** Semester 2, Summer Main **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1012, MATH1002, MATH1902 **Assumed knowledge:** HSC Mathematics or MATH1111 **Assessment:** One 1.5 hour exam, assignments, quizzes

This unit is an introduction to Linear Algebra. Topics covered include vectors, systems of linear equations, matrices, eigenvalues and eigenvectors. Applications in life and technological sciences are emphasised.

Textbooks
Linear Algebra: A Modern Introduction, David Poole, Thompson Brook/Cole

MATH1015
Life Science Statistics

Credit points: 3 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1005, MATH1905, STAT1021, STAT1022, ECMT Junior units of study. **Assumed knowledge:** HSC Mathematics **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH1015 is designed to provide a thorough preparation in statistics for students of the Life Sciences.It offers a comprehensive introduction to data analysis, probability and sampling, inference including t-tests, confidence intervals and chi-squared goodness of fit tests. There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks
As set out in the Junior Mathematics Handbook

Mathematics and Statistics Normal units of study

Normal units of study are designed for students who have both the necessary background and the interest in mathematics and who need to study mathematics beyond Junior units of study in order to satisfy their own aspirations or degree requirements. There are more details of these units of study in the Junior Mathematics Handbook, available from the School at the time of enrolment.

Assumed knowledge

For the units MATH1001, MATH1002 and MATH1004, knowledge equivalent to the HSC Mathematics Extension 1 course is assumed. The assumed knowledge for MATH1005 is HSC 2-unit Mathematics. For MATH1003 the assumed knowledge is MATH1001 or HSC Mathematics Extension 2.

Relation to other units of study and recommendations

Students should take at least two units of study in each semester in order to meet the minimum requirement of 12 credit points of Mathematics in the BSc award course. The usual enrolment for Normal level students is in the three units MATH1001, MATH1002, MATH1003 and (at least) one of MATH1004 and MATH1005. Passes in Junior units of study at this level qualify students to proceed to Intermediate units of study in Mathematics and Statistics. Students should note however that some Intermediate units of study in both Mathematics and Statistics require specific Junior units of study to be passed as prerequisites. Students obtaining a Credit or better in Normal units of study may enrol in other Advanced units of study.

MATH1001
Differential Calculus

Credit points: 3 **Session:** Semester 1, Summer Main **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1011, MATH1901, MATH1906, MATH1111 **Assumed knowledge:** HSC Mathematics Extension 1 **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH1001 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering. This unit of study looks at complex numbers, functions of a single variable, limits and continuity, vector functions and functions of two variables. Differential calculus is extended to functions of two variables. Taylor's theorem as a higher order mean value theorem.

Textbooks
As set out in the Junior Mathematics Handbook.

MATH1002
Linear Algebra

Credit points: 3 **Session:** Semester 1, Summer Main **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1902, MATH1012, MATH1014 **Assumed knowledge:** HSC Mathematics Extension 1 **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH1002 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering. This unit of study introduces vectors and vector algebra, linear algebra

including solutions of linear systems, matrices, determinants, eigenvalues and eigenvectors.

Textbooks
As set out in the Junior Mathematics Handbook

MATH1003
Integral Calculus and Modelling

Credit points: 3 **Session:** Semester 2, Summer Main **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1013, MATH1903, MATH1907 **Assumed knowledge:** HSC Mathematics Extension 2 or MATH1001 or MATH1111 **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH1003 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.This unit of study first develops the idea of the definite integral from Riemann sums, leading to the Fundamental Theorem of Calculus. Various forms of integration are considered, such as integration by parts.The second part is an introduction to the use of first and second order differential equations to model a variety of scientific phenomena.

Textbooks
As set out in the Junior Mathematics Handbook

MATH1004
Discrete Mathematics

Credit points: 3 **Session:** Semester 2, Summer Main **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1904, MATH2011 **Assumed knowledge:** HSC Mathematics Extension 1 **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH1004 is designed to provide a thorough preparation for further study in Mathematics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering. This unit provides an introduction to fundamental aspects of discrete mathematics, which deals with 'things that come in chunks that can be counted'. It focuses on the enumeration of a set of numbers, viz. Catalan numbers. Topics include sets and functions, counting principles, Boolean expressions, mathematical induction, generating functions and linear recurrence relations, graphs and trees.

Textbooks
As set out in the Junior Mathematics Handbook

MATH1005
Statistics

Credit points: 3 **Session:** Semester 2, Summer Main **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1905, MATH1015, ECMT Junior units of study, STAT1021, STAT1022 **Assumed knowledge:** HSC Mathematics **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH1005 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering. This unit offers a comprehensive introduction to data analysis, probability, sampling, and inference including t-tests, confidence intervals and chi-squared goodness of fit tests.

Textbooks
As set out in the Junior Mathematics Handbook

Mathematics & Statistics Junior Advanced units of study

Advanced units of study are designed for students who have a strong background and a keen interest in mathematics and who need to study mathematics at a higher level to satisfy their own aspirations or degree requirements. All students aiming for high achievement, such as an Honours degree or postgraduate study, are advised to enrol in Advanced units of study.

Content

The unit of study content is similar in outline to that of the Normal units of study above but proceeds more deeply and at a faster rate, covers more difficult material and requires more mathematical sophistication. There are more details of these units of study in the Junior Mathematics Unit of Study Handbook, available from the School at the time of enrolment.

Assumed knowledge

Knowledge equivalent to the HSC Mathematics Extension 2 course is assumed. Students who have a very good result in the equivalent of the HSC Mathematics Extension 1 course may enrol in these units of study but should discuss their plans with a Mathematics adviser.

Relation to other units of study and recommendations

Students should take two units of study in each semester in order to meet the minimum requirement of 12 credit points of Mathematics in the BSc award course. The usual enrolment for Advanced level students is in the units MATH1901, MATH1902, MATH1903 and (at least) one of the units MATH1904 and MATH1905. Passes in Junior units of study at this level qualify students to proceed to Intermediate units of study in Mathematics and Statistics at the Advanced level. It should be noted that some Intermediate and Senior units of study in both Mathematics and Statistics require specific Junior units of study as prerequisites. Students who are awarded at least a Credit grade in this level are encouraged to proceed to Intermediate units of study in Mathematics and Statistics at the Advanced level.

MATH1901
Differential Calculus (Advanced)

Credit points: 3 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1111, MATH1011, MATH1001, MATH1906 **Assumed knowledge:** HSC Mathematics Extension 2 **Assessment:** One 1.5 hour examination, assignments and quizzes.

Note: Department permission required for enrolment .

This unit is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering. It parallels the normal unit MATH1001 but goes more deeply into the subject matter and requires more mathematical sophistication.

Textbooks
As set out in the Junior Mathematics Handbook

MATH1902
Linear Algebra (Advanced)

Credit points: 3 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1002, MATH1012, MATH1014 **Assumed knowledge:** HSC Mathematics Extension 2 **Assessment:** One 1.5 hour examination, assignments and quizzes.

Note: Department permission required for enrolment .

This unit is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering. It parallels the normal unit MATH1002 but goes more deeply into the subject matter and requires more mathematical sophistication.

Textbooks
As set out in the Junior Mathematics Handbook

MATH1903
Integral Calculus and Modelling Advanced

Credit points: 3 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1003, MATH1013, MATH1907 **Assumed knowledge:** HSC Mathematics Extension 2 or Credit or better in MATH1001 or MATH1901 **Assessment:** One 1.5 hour examination, assignments and quizzes.

Note: Department permission required for enrolment .

MATH1903 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering. This

unit of study parallels the normal unit MATH1003 but goes more deeply into the subject matter and requires more mathematical sophisticaton.

Textbooks
As set out in the Junior Mathematics Handbook

MATH1904
Discrete Mathematics (Advanced)

Credit points: 3 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1004, MATH2011 **Assumed knowledge:** HSC Mathematics Extension 2 **Assessment:** One 1.5 hour examination, assignments and quizzes.

Note: Department permission required for enrolment .

This unit is designed to provide a thorough preparation for further study in mathematics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering. It parallels the normal unit MATH1004 but goes more deeply into the subject matter and requires more mathematical sophistication.

Textbooks
As set out in the Junior Mathematics Handbook

MATH1905
Statistics (Advanced)

Credit points: 3 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 1 hour tutorial per week. **Prohibitions:** MATH1005, MATH1015, ECMT Junior units of study, STAT1021, STAT1022 **Assumed knowledge:** HSC Mathematics Extension 2 **Assessment:** One 1.5 hour examination, assignments and quizzes.

Note: Department permission required for enrolment .

This unit is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering. This Advanced level unit of study parallels the normal unit MATH1005 but goes more deeply into the subject matter and requires more mathematical sophistication.

Textbooks
As set out in the Junior Mathematics Handbook

MATH1906
Mathematics (Special Studies Program) A

Credit points: 3 **Session:** Semester 1 **Classes:** Two 1 hour lectures, one 1 hour seminar and one 1 hour tutorial per week. **Prerequisites:** UAI of at least 98.5 and result in Band E4 HSC Mathematics Extension 2; by invitation **Prohibitions:** MATH1111, MATH1001, MATH1011, MATH1901 **Assessment:** One 1.5 hour exam, assignments, classwork.

Note: Department permission required for enrolment .

This is an Advanced unit of study. Entry to Mathematics (Special Studies Program) A is restricted to students with a UAI of 98.5 and an excellent school record in Mathematics. Students will cover the material in MATH1901 Differential Calculus (Advanced). In addition there will be a selection of special topics, which are not available elsewhere in the Mathematics and Statistics program.

MATH1907
Mathematics (Special Studies Program) B

Credit points: 3 **Session:** Semester 2 **Classes:** Two 1 hour lectures, one 1 hour seminar and one 1 hour tutorial per week. **Prerequisites:** Distinction in MATH1906; by invitation **Prohibitions:** MATH1003, MATH1013, MATH1903 **Assessment:** One 1.5 hour exam, assignments, classwork.

Note: Department permission required for enrolment .

This is an Advanced unit of study. Entry to Mathematics (Special Studies Program) B is normally restricted to students with a Distinction in MATH1906. Students will cover the material in MATH1903 Integral Calculus and Modelling (Advanced). In addition there will be a selection of special topics, which are not available elsewhere in the Mathematics and Statistics program.

Mathematics Intermediate units of study

The School of Mathematics provides a range of Intermediate units of study, each worth 6 credit points covering a variety of topics in Pure and Applied Mathematics. A normal Intermediate load in a discipline is 12 credit points and this is the minimum that should be undertaken by anyone intending to specialise in Senior Mathematics. The units of study are taught at either the Normal or the Advanced level. Entry to an Advanced unit of study usually requires a Credit or better in a Normal level prerequisite or a Pass in an Advanced level prerequisite. For ease of overview the units of study are arranged under Pure, for students wishing to specialise in Pure Mathematics, and Applied, for those wishing to specialise in Applied Mathematics. Several units of study are suitable for either. Details of each unit of study appear below whilst full details of unit of study structure, content and examination procedures are provided in the Second Year Mathematics Handbook available from the School at the time of enrolment.

Pure units of study (each 6 credit points)

Algebra (Adv) MATH2968; Discrete Maths & Graph Theory MATH2069; Discrete Maths & Graph Theory (Adv) MATH2969; Linear Mathematics & Vector Calculus MATH2061; Linear Mathematics & Vector Calculus (Adv) MATH2961; Number Theory and Cryptography MATH2068; Real and Complex Analysis (Adv) MATH2962

Applied units of study (each 6 credit points)

Introduction to Partial Differential Equations MATH2065; Introduction to Partial Differential Equations (Adv) MATH2965; Linear Mathematics & Vector Calculus MATH2061; Linear Mathematics & Vector Calculus (Adv) MATH2961; Mathematical Computing & Nonlinear Systems MATH2063; Mathematical Computing & Nonlinear Systems (Adv) MATH2963; Optimisation & Financial Mathematics MATH2070; Optimisation & Financial Mathematics (Adv) MATH 2970

Relation to other units of study and recommendations

In general, 2 units of study (12 credit points) of Intermediate mathematics are needed to progress to a Senior Mathematics unit of study. If your major interest is in mathematics, then you are strongly encouraged to enrol in at least 3 units of study in Intermediate Mathematics. If you are considering doing Honours in mathematics, they should include some Advanced units of study. Students intending to specialise in Applied Mathematics are encouraged to include MATH2061 or 2961, and MATH2065 or 2965. Students intending to specialise in Pure Mathematics should include MATH2061 or 2961. Students considering Honours in Pure Mathematics should also take MATH2962 and MATH2968. Computer Science students may like to include MATH2069 or 2969 among their choices. Physics students would be well-advised to choose MATH2061 or 2961, and MATH2065 or 2965. Prospective teachers of mathematics should consider MATH2061 and 2068.

MATH2916
Working Seminar A (SSP)

Credit points: 3 **Session:** Semester 1 **Classes:** One 1 hour seminar per week. **Prerequisites:** By invitation, High Distinction average over 12 credit points of Advanced Junior Mathematics **Assessment:** One 1 hour presentation, 15-20 page essay.

Note: Department permission required for enrolment .

The main aim of this unit is to develop the students' written and oral presentation skills. The material will consist of a series of connected topics relevant to modern mathematics and statistics. The topics are chosen to suit the students' background and interests, and are not covered by other mathematics or statistics units. The first session will be an introduction on the principles of written and oral presentation of mathematics. Under the supervision and advice of the lecturer(s) in charge, the students present the topics to the other students and the lecturer in a seminar series and a written essay in a manner that reflects the practice of research in mathematics and statistics.

MATH2917
Working Seminar B (SSP)

Credit points: 3 **Session:** Semester 2 **Classes:** One 1 hour seminar per week. **Prerequisites:** By invitation, High Distinction average over 12 credit points of Advanced Junior Mathematics **Assessment:** One 1 hour presentation, 15-20 page essay.

Note: Department permission required for enrolment .

The main aim of this unit is to develop the students' written and oral presentation skills. The material will consist of a series of connected topics relevant to modern mathematics and statistics. The topics are chosen to suit the students' background and interests, and are not covered by other mathematics or statistics units. The first session will be an introduction on the principles of written and oral presentation of mathematics. Under the supervision and advice of the lecturer(s) in charge, the students present the topics to the other students and the lecturer in a seminar series and a written essay in a manner that reflects the practice of research in mathematics and statistics.

MATH2061
Linear Mathematics and Vector Calculus

Credit points: 6 **Session:** Semester 1, Summer Main **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour practice class per week. **Prerequisites:** MATH (1111 or 1001 or 1901 or 1906) and MATH (1014 or 1002 or 1902) and MATH (1003 or 1903 or 1907) **Prohibitions:** MATH2001, MATH2901, MATH2002, MATH2902, MATH2961, MATH2067 **Assessment:** Two 1.5 hour exams, assignments, quizzes

This unit starts with an investigation of linearity: linear functions, general principles relating to the solution sets of homogeneous and inhomogeneous linear equations (including differential equations), linear independence and the dimension of a linear space. The study of eigenvalues and eigenvectors, begun in junior level linear algebra, is extended and developed. Linear operators on two-dimensional real space are investigated, paying particular attention to the geometrical significance of eigenvalues and eigenvectors. The unit then moves on to topics from vector calculus, including vector-valued functions (parametrised curves and surfaces; vector fields; div, grad and curl; gradient fields and potential functions), line integrals (arc length; work; path-independent integrals and conservative fields; flux across a curve), iterated integrals (double and triple integrals; polar, cylindrical and spherical coordinates; areas, volumes and mass; Green's Theorem), flux integrals (flow through a surface; flux integrals through a surface defined by a function of two variables, though cylinders, spheres and parametrised surfaces), Gauss' Divergence Theorem and Stokes' Theorem.

MATH2961
Linear Mathematics & Vector Calculus Adv

Credit points: 6 **Session:** Semester 1 **Classes:** Four 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) **Prohibitions:** MATH2001, MATH2901, MATH2002, MATH2902, MATH2061, MATH2067 **Assessment:** 2 hour exam, assignments

This unit is an advanced version of MATH2061, with more emphasis on the underlying concepts and on mathematical rigour. Topics from linear algebra focus on the theory of vector spaces and linear transformations. The connection between matrices and linear transformations is studied in detail. Determinants, introduced in first year, are revised and investigated further, as are eigenvalues and eigenvectors. The calculus component of the unit includes local maxima and minima, Lagrange multipliers, the inverse function theorem and Jacobians. There is an informal treatment of multiple integrals: double integrals, change of variables, triple integrals, line and surface integrals, Green's theorem and Stokes' theorem.

MATH2962
Real and Complex Analysis (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour practice class per week. **Prerequisites:** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) **Prohibitions:** MATH2007, MATH2907 **Assessment:** 2 hour exam, assignments

Analysis is one of the fundamental topics underlying much of mathematics including differential equations, dynamical systems, differential geometry, topology and Fourier analysis. Starting off with an axiomatic description of the real number system, this first course in analysis concentrates on the limiting behaviour of infinite sequences and series on the real line and the complex plane. These concepts are then applied to sequences and series of functions, looking at point-wise and uniform convergence. Particular attention is given to power series leading into the theory of analytic functions and complex analysis. Topics in complex analysis include elementary functions on the complex plane, the Cauchy integral theorem, Cauchy integral formula, residues and related topics with applications to real integrals.

MATH2063
Math Computing and Nonlinear Systems

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week (lectures in common with MATH2963). **Prerequisites:** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) **Prohibitions:** MATH2003, MATH903, MATH2006, MATH2906, MATH2963 **Assessment:** 2 hour exam, assignments, quizzes

This unit will introduce students to techniques of mathematical computation as applied to nonlinear systems, using the numerical programming language MATLAB and, where appropriate, computer algebra. This knowledge will be applied to a number of modelling problems, particularly those involving nonlinear mappings and nonlinear ordinary differential equations (ODEs). Throughout the unit of study the essential nonlinear theory will be developed, and the resulting ideas will be explored computationally. This will allow us to explore the modern concepts of chaos using a variety of examples, including the logistic map, the Henon map and the Lorenz equations. No prior knowledge of programming or of the MATLAB language or computer algebra is required.

MATH2963
Math Computing & Nonlinear Systems (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week (lectures in common with MATH2063). **Prerequisites:** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) **Prohibitions:** MATH2003, MATH2903, MATH2006, MATH2906, MATH2063 **Assessment:** 2 hour exam, assignments/quizzes

The content of this unit of study parallels that of MATH2063, but both computational and theory components will place more emphasis on Advanced topics, including Lyapunov exponents, stability, 2- and 3-cycles for mappings and concepts such as strange attractors. No prior knowledge of programming or of the MATLAB language or computer algebra is required.

MATH2065
Partial Differential Equations (Intro)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 1 hour tutorial, one 1 hour example class per week. **Prerequisites:** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) **Prohibitions:** MATH2005, MATH2905, MATH2965, MATH2067 **Assessment:** 2 hour exam, mid-semester test, assignments

This is an introductory course in the analytical solutions of PDEs (partial differential equations) and boundary value problems. The techniques covered include separation of variables, Fourier series, Fourier transforms and Laplace transforms.

MATH2965
Partial Differential Equations Intro Adv

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week (lectures in common with MATH2065). **Prerequisites:** MATH (2961 or Credit in 2061) or {MATH (2901 or Credit in 2001) and MATH (2902 or Credit in 2002)} **Prohibitions:** MATH2005, MATH 2905, MATH2065, MATH2067 **Assessment:** 2 hour exam, assignments

This unit of study is essentially an Advanced version of MATH2065, the emphasis being on solutions of differential equations in applied mathematics. The theory of ordinary differential equations is developed for second order linear equations, including series solutions, special functions and Laplace transforms. Some use is made of computer programs such as Mathematica. Methods for PDEs (partial differential equations) and boundary-value problems include separation of variables, Fourier series and Fourier transforms.

MATH2068
Number Theory and Cryptography

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week. **Prerequisites:** 9 credit points of Junior level Mathematics including MATH (1002 or 1902) **Prohibitions:** MATH3024, MATH3009 **Assessment:** 2 hour exam, assignments, quizzes

Cryptography is the branch of mathematics that provides the techniques for confidential exchange and authentication of information sent over public networks. This unit introduces tools from elementary number theory, then applies them to the analysis of block ciphers and stream ciphers, as the foundation for modern public key cryptography.

MATH2968
Algebra (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour practice class per week. **Prerequisites:** 9 credit points of Junior Mathematics (advanced level or Credit at normal level) including (MATH1902 or Credit in MATH1002) **Prohibitions:** MATH2908, MATH2918, MATH2008 **Assessment:** 2 hour exam, assignments

This unit provides an introduction to modern abstract algebra, via linear algebra and group theory. It starts with a revision of linear algebra concepts from Junior Mathematics and MATH2961, and proceeds with a detailed investigation of inner product spaces over the real and complex fields. Applications here include least squares lines and curves of best fit, and approximation of continuous functions by finite Fourier series. Further topics in linear algebra covered in this unit include dual space, quotient spaces and (if time permits) possibly tensor products. The second part of the unit is concerned with introductory group theory, motivated by examples of matrix groups and permutation groups. Topics include actions of groups on sets, including linear actions on vector spaces. Subgroups, homomorphisms and quotient groups are investigated, and the First Isomorphism Theorem is proved.

MATH2069
Discrete Mathematics and Graph Theory

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour practice class per week. **Prerequisites:** 6 credit points of Junior level Mathematics **Prohibitions:** MATH2011, MATH2009, MATH2969 **Assessment:** Two 1.5 hour exams, assignments, quizzes

This unit introduces students to several related areas of discrete mathematics, which serve their interests for further study in pure and applied mathematics, computer science and engineering. Topics to be covered in the first part of the unit include recursion and induction, generating functions and recurrences, combinatorics, including connections with probability theory, asymptotics and analysis of algorithms, set theory and logic. Topics covered in the second part of the unit include Eulerian and Hamiltonian graphs, the theory of trees (used in the study of data structures), planar graphs, the study of chromatic polynomials (important in scheduling problems), maximal flows in networks, matching theory.

MATH2969
Discrete Mathematics & Graph Theory Adv

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour practice class per week. **Prerequisites:** 9 credit points of Junior Mathematics (advanced level or Credit at the normal level) **Prohibitions:** MATH2011, MATH2009, MATH2069 **Assessment:** Two 1.5 hour exams, assignments, quizzes

This unit will cover the same material as MATH2069 with some extensions and additional topics.

MATH2070
Optimisation and Financial Mathematics

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week. **Prerequisites:** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) **Prohibitions:** MATH2010, MATH2033, MATH2933, MATH2970, ECMT3510 **Assumed knowledge:** MATH (1003 or 1903 or 1907) **Assessment:** One 2 hour exam, assignments, quiz, project

Note: Students may enrol in both MATH2070 and MATH3075 in the same semester

Problems in industry and commerce often involve maximising profits or minimising costs subject to constraints arising from resource limitations. The first part of this unit looks at the important class of linear optimisation programming problems and their solution using the simplex algorithm. The second part of the unit deals with utility theory and modern portfolio theory. Topics covered include: pricing under the principles of expected return and expected utility; mean-variance Markowitz portfolio theory, the Capital Asset Pricing Model, log-optimal portfolios and the Kely criterion; dynamical programming. Some understanding of probability theory including distributions and expectations is required in this part. Theory developed in lectures will be complemented by computer laboratory sessions using MATLAB. Minimal computing experience will be required.

MATH2970
Optimisation & Financial Mathematics Adv

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week (lectures given in common with MATH2070). **Prerequisites:** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) **Prohibitions:** MATH2010, MATH2033, MATH2933, MATH2070 **Assumed knowledge:** MATH (1903 or 1907) or Credit in MATH1003 **Assessment:** One 2 hour exam, assignments, quizzes

Note: Students may enrol in both MATH2970 and MATH3975 in the same semester

The content of this unit of study parallels that of MATH2070, but students enrolled at Advanced level will undertake more advanced problem solving and assessment tasks, and some additional topics may be included.

Mathematics Senior units of study

The School of Mathematics and Statistics provides a range of senior units of study in the Science Subject Area MATH. (The separate Science Subject Area STAT is dealt with in the next section.) Each unit of study is worth 6 credit points; students wishing to obtain a major in mathematics must therefore take at least 4 units of senior mathematics, while those wishing to obtain a double major must take 8. To proceed to honours in either Applied Mathematics or Pure Mathematics, students must have a major in mathematics. Honours entry is further restricted to students attaining a sufficiently high average mark in their senior year. Students interested in doing honours should consult the School to find out the precise details, and obtain advice on an appropriate senior year program. As well as majors in Mathematics and Statistics, the School offers a major in Financial Mathematics and Statistics. The precise requirements for this major can be found in Table 1. Alternatively, consult the School directly.

Normal and Advance

Each unit of study is designated either as "Normal" or "Advanced". Advanced units have more stringent prerequisites than normal units, and are significantly more demanding. Although the precise requirements vary from unit to unit, it is generally inadvisable for a student who has not achieved a Credit average in intermediate level mathematics to attempt an advanced senior mathematics unit.

Semester 1

MATH3063 Differential Equations and Biomaths; MATH3065 Logic and Foundations; MATH3068 Analysis; MATH3076 Mathematical Computing; MATH3961 Metric Spaces (Advanced); MATH3962 Rings, Fields and Galois Theory (Adv); MATH3963 Differential Equations and Biomaths (Adv); MATH3974 Fluid Dynamics (Advanced); MATH3976 Mathematical Computing (Advanced)

Semester 2

MATH3061 Geometry and Topology; MATH3062 Algebra and Number Theory; MATH3067 Information and Coding Theory; MATH3075 Financial Mathematics; MATH3078 PDEs and Waves; MATH3964 Complex Analysis with Applications (Adv); MATH3966 Modules and Group Representations (Adv); MATH3968 Differential Geometry (Adv); MATH3969 Measure Theory & Fourier Analysis (Adv); MATH3975

Financial Mathematics (Advanced); MATH3977 Lagrangian & Hamiltonian Dynamics (Adv); MATH3978 PDEs and Waves (Advanced)

Relation to other units of study and recommendations

In general, 4 units of study (24 credit points) are required in order to major in Mathematics and a credit average is required to progress to an Honours year. Potential Honours students are strongly encouraged to include one or more Advanced level unit(s) of study and seek advice from a Senior year coodinator. Particular combinations would be suitable for students with special interests.

Computer Science students

MATH3065, MATH3962, MATH3076/3976, MATH3062, MATH3067, MATH3966, MATH3061, MATH3075/3975.

Engineering (BSc/BE) students

MATH3961, MATH3068, MATH3063/3963, MATH3065, MATH3974, MATH3076/3976, MATH3969, MATH3078/3978, MATH3968, MATH3067, MATH3977, MATH3964, MATH3075/3975.

Physics or Chemistry students

MATH3061/3961, MATH3068, MATH3962, MATH3063/3963, MATH3065, MATH3974, MATH3076/3976, MATH3969, MATH3966, MATH3968, MATH3078/3978, MATH3964, MATH3977, 3075/3975, MATH3067.

Prospective teachers of Mathematics

MATH3065, MATH3068, MATH3063/3963, MATH3962, MATH3961, MATH3076/3976, MATH3067, MATH3062, MATH3061, MATH3078/3978.

MATH3061
Geometry and Topology

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics **Prohibitions:** MATH3001, MATH3006 **Assessment:** One 2 hour exam, tutorial tests, assignments.

The aim of the unit is to expand visual/geometric ways of thinking. The geometry section is concerned mainly with transformations of the Euclidean plane (that is, bijections from the plane to itself), with a focus on the study of isometries (proving the classification theorem for transformations which preserve distances between points), symmetries (including the classification of frieze groups) and affine transformations (transformations which map lines to lines). The basic approach is via vectors and matrices, emphasizing the interplay between geometry and linear algebra. The study of affine transformations is then extended to the study of collineations in the real projective plane, including collineations which map conics to conics. The topology section considers graphs, surfaces and knots from a combinatorial point of view. Key ideas such as homeomorphism, subdivision, cutting and pasting and the Euler invariant are introduced first for graphs (1-dimensional objects) and then for triangulated surfaces (2-dimensional objects). The classification of surfaces is given in several equivalent forms. The problem of colouring maps on surfaces is interpreted via graphs. The main geometric fact about knots is that every knot bounds a surface in 3-space. This is proven by a simple direct construction, and this fact is used to show that every knot is a sum of prime knots.

MATH3961
Metric Spaces (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics units **Prohibitions:** MATH3901, MATH3001 **Assumed knowledge:** MATH2961 or MATH2962 **Assessment:** 2 hour exam, assignments, quizzes

Topology, developed at the end of the 19th Century to investigate the subtle interaction of analysis and geometry, is now one of the basic disciplines of mathematics. A working knowledge of the language and concepts of topology is essential in fields as diverse as algebraic number theory and non-linear analysis. This unit develops the basic ideas of topology using the example of metric spaces to illustrate and motivate the general theory. Topics covered include: Metric spaces, convergence, completeness and the contraction mapping theorem; Metric topology, open and closed subsets; Topological spaces, subspaces, product spaces; Continuous mappings and homeomorphisms; Compact spaces; Connected spaces; Hausdorff spaces and normal spaces, Applications include the implicit function theorem, chaotic dynamical systems and an introduction to Hilbert spaces and abstract Fourier series.

MATH3062
Algebra and Number Theory

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics **Prohibitions:** MATH3962, MATH3902, MATH3002, MATH3009 **Assessment:** One 2 hour exam, quizzes and assignments

Note: Students are advised to take MATH(2068 or 2968) before attempting this unit.

The first half of the unit continues the study of elementary number theory, with an emphasis on the solution of Diophantine equations (for example, finding all integer squares which are one more than twice a square). Topics include the Law of Quadratic Reciprocity, representing an integer as the sum of two squares, and continued fractions. The second half of the unit introduces the abstract algebraic concepts which arise naturally in this context: rings, fields, irreducibles, and unique factorization. Polynomial rings, algebraic numbers, and constructible numbers are also discussed.

Textbooks

R.F.C. Walters, 'Number Theory: an Introduction', Carslaw Publications.
I. Niven, H.S. Zuckerman, H.L. Montgomery, 'An Introduction to the Theory of Numbers', Wiley.
I.N. Herstein, 'Topics in Algebra', Blaisdell.
L.N. Childs, 'A Concrete Introduction to Higher Algebra', Springer.

MATH3962
Rings, Fields and Galois Theory (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics **Prohibitions:** MATH3062, MATH3902, MATH3002 **Assumed knowledge:** MATH2961 **Assessment:** One 2 hour exam, assignments and quizzes

Note: Students are advised to take MATH2968 before attempting this unit.

This unit of study investigates the modern mathematical theory that was originally developed for the purpose of studying polynomial equations. The philosophy is that it should be possible to factorize any polynomial into a product of linear factors by working over a "large enough" field (such as the field of all complex numbers). Viewed like this, the problem of solving polynomial equations leads naturally to the problem of understanding extensions of fields. This in turn leads into the area of mathematics known as Galois theory. The basic theoretical tool needed for this program is the concept of a ring, which generalizes the concept of a field. The course begins with examples of rings, and associated concepts such as subrings, ring homomorphisms, ideals and quotient rings. These tools are then applied to study quotient rings of polynomial rings. The final part of the course deals with the basics of Galois theory, which gives a way of understanding field extensions.

Textbooks

I.H. Herstein, Abstract algebra, second edition, MacMillian, 1990.
S. Lang Algebra, third edition, Springer-Verlag, Graduate texts in Mathematics, 2002.
I.N. Stewart, Galois Theory, Chapman and Hall, 1973.

MATH3063
Differential Equations & Biomaths

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics **Prohibitions:** MATH3020, MATH3920, MATH3003, MATH3923, MATH3963 **Assumed knowledge:** MATH2061 **Assessment:** One 2 hour exam, assignments, quizzes

This unit of study is an introduction to the theory of systems of ordinary differential equations. Such systems model many types of phenomena in engineering, biology and the physical sciences. The emphasis will

not be on finding explicit solutions, but instead on the qualitative features of these systems, such as stability, instability and oscillatory behaviour. The aim is to develop a good geometrical intuition into the behaviour of solutions to such systems. Some background in linear algebra, and familiarity with concepts such as limits and continuity, will be assumed. The applications in this unit will be drawn from predator-prey systems, transmission of diseases, chemical reactions, beating of the heart and other equations and systems from mathematical biology.

MATH3963
Differential Equations & Biomaths (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics **Prohibitions:** MATH3020, MATH3920, MATH3003, MATH3923, MATH3063 **Assumed knowledge:** MATH2961 **Assessment:** One 2 hour exam, assignments, quizzes

The theory of ordinary differential equations is a classical topic going back to Newton and Leibniz. It comprises a vast number of ideas and methods of different nature. The theory has many applications and stimulates new developments in almost all areas of mathematics. The applications in this unit will be drawn from predator-prey systems, transmission of diseases, chemical reactions, beating of the heart and other equations and systems from mathematical biology. The emphasis is on qualitative analysis including phase-plane methods, bifurcation theory and the study of limit cycles. The more theoretical part includes existence and uniqueness theorems, stability analysis, linearisation, and hyperbolic critical points, and omega limit sets.

MATH3964
Complex Analysis with Applications (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics **Prohibitions:** MATH3904, MATH3915 **Assumed knowledge:** MATH2962 **Assessment:** One 2 hour exam, assignments and quizzes

This unit continues the study of functions of a complex variable and their applications introduced in the second year unit Real and Complex Analysis (MATH2962). It is aimed at highlighting certain topics from analytic function theory and the analytic theory of differential equations that have intrinsic beauty and wide applications. This part of the analysis of functions of a complex variable will form a very important background for students in applied and pure mathematics, physics, chemistry and engineering. The course will begin with a revision of properties of holomorphic functions and Cauchy theorem with added topics not covered in the second year course. This will be followed by meromorphic functions, entire functions, harmonic functions, elliptic functions, elliptic integrals, analytic differential equations, hypergeometric functions. The rest of the course will consist of selected topics from Greens functions, complex differential forms and Riemann surfaces.

MATH3065
Logic and Foundations

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 6 credit points of Intermediate Mathematics **Prohibitions:** MATH3005 **Assessment:** One 2 hour exam, tutorial tests, assignments.

This unit is in two halves. The first half provides a working knowledge of the propositional and predicate calculi, discussing techniques of proof, consistency, models and completeness. The second half discusses notions of computability by means of Turing machines (simple abstract computers). (No knowledge of computer programming is assumed.) It is shown that there are some mathematical tasks (such as the halting problem) that cannot be carried out by any Turing machine. Results are applied to first-order Peano arithmetic, culminating in Gödel's Incompleteness Theorem: any statement that includes first-order Peano arithmetic contains true statements that cannot be proved in the system. A brief discussion is given of Zermelo-Fraenkel set theory (a candidate for the foundations of mathematics), which still succumbs to Gödel's Theorem.

MATH3966
Modules and Group Representations (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics **Prohibitions:** MATH3906, MATH3907 **Assumed knowledge:** MATH3962 **Assessment:** One 2 hour exam, assignments and quizzes

This unit deals first with generalized linear algebra, in which the field of scalars is replaced by an integral domain. In particular we investigate the structure of modules, which are the analogues of vector spaces in this setting, and which are of fundamental importance in modern pure mathematics. Applications of the theory include the solution over the integers of simultaneous equations with integer coefficients and analysis of the structure of finite abelian groups. In the second half of this unit we focus on linear representations of groups. A group occurs naturally in many contexts as a symmetry group of a set or space. Representation theory provides techniques for analysing these symmetries. The component will deals with the decomposition of representation into simple constituents, the remarkable theory of characters, and orthogonality relations which these characters satisfy.

MATH3067
Information and Coding Theory

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics **Prohibitions:** MATH3007, MATH3010 **Assessment:** One 2 hour exam, tutorial tests, assignments.

The related theories of information and coding provide the basis for reliable and efficient storage and transmission of digital data, including techniques for data compression, digital broadcasting and broadband internet connectivity. The first part of this unit is a general introduction to the ideas and applications of information theory, where the basic concept is that of entropy. This gives a theoretical measure of how much data can be compressed for storage or transmission. Information theory also addresses the important practical problem of making data immune to partial loss caused by transmission noise or physical damage to storage media. This leads to the second part of the unit, which deals with the theory of error-correcting codes. We develop the algebra behind the theory of linear and cyclic codes used in modern digital communication systems such as compact disk players and digital television.

MATH3068
Analysis

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics **Prohibitions:** MATH3008, MATH2007, MATH2907, MATH2962 **Assessment:** One 2 hour exam, tutorial tests, assignments.

Analysis grew out of calculus, which leads to the study of limits of functions, sequences and series. The aim of the unit is to present enduring beautiful and practical results that continue to justify and inspire the study of analysis. The unit starts with the foundations of calculus and the real number system. It goes on to study the limiting behaviour of sequences and series of real and complex numbers. This leads naturally to the study of functions defined as limits and to the notion of uniform convergence. Returning to the beginnings of calculus and power series expansions leads to complex variable theory: analytic functions, Taylor expansions and the Cauchy Integral Theorem. Power series are not adequate to solve the problem of representing periodic phenomena such as wave motion. This requires Fourier theory, the expansion of functions as sums of sines and cosines. This unit deals with this theory, Parseval's identity, pointwise convergence theorems and applications. The unit goes on to introduce Bernoulli numbers, Bernoulli polynomials, the Euler MacLaurin formula and applications, the gamma function and the Riemann zeta function. Lastly we return to the foundations of analysis, and study limits from the point of view of topology.

MATH3968
Differential Geometry (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate

Mathematics, including MATH2961 **Prohibitions:** MATH3903 **Assumed knowledge:** At least 6 credit points of Advanced Mathematics units of study at Intermediate or Senior level. **Assessment:** One 2 hour exam and 2 assignments

This unit is an introduction to Differential Geometry, using ideas from calculus of several variables to develop the mathematical theory of geometrical objects such as curves, surfaces and their higher-dimensional analogues. Differential geometry also plays an important part in both classical and modern theoretical physics. The initial aim is to develop geometrical ideas such as curvature in the context of curves and surfaces in space, leading to the famous Gauss-Bonnet formula relating the curvature and topology of a surface. A second aim is to present the calculus of differential forms as the natural setting for the key ideas of vector calculus, along with some applications.

MATH3969
Measure Theory & Fourier Analysis (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorials per week. **Prerequisites:** 12 credit points Intermediate Mathematics **Prohibitions:** MATH3909 **Assumed knowledge:** At least 6 credit points of Advanced Mathematics units of study at Intermediate or Senior level **Assessment:** One 2 hour exam, assignments, quizzes

Measure theory is the study of such fundamental ideas as length, area, volume, arc length and surface area. It is the basis for the integration theory used in advanced mathematics since it was developed by Henri Lebesgue in about 1900. Moreover, it is the basis for modern probability theory. The course starts by setting up measure theory and integration, establishing important results such as Fubini's Theorem and the Dominated Convergence Theorem which allow us to manipulate integrals. This is then applied to Fourier Analysis, and results such as the Inversion Formula and Plancherel's Theorem are derived. Probability Theory is then discussed, with topics including independence, conditional probabilities, and the Law of Large Numbers.

MATH3974
Fluid Dynamics (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics with average grade of at least Credit **Prohibitions:** MATH3914 **Assumed knowledge:** MATH2961, MATH2965 **Assessment:** One 2 hour exam

This unit of study provides an introduction to fluid dynamics, starting with a description of the governing equations and the simplifications gained by using stream functions or potentials. It develops elementary theorems and tools, including Bernoulli's equation, the role of vorticity, the vorticity equation, Kelvin's circulation theorem, Helmholtz's theorem, and an introduction to the use of tensors. Topics covered include viscous flows, lubrication theory, boundary layers, potential theory, and complex variable methods for 2-D airfoils. The unit concludes with an introduction to hydrodynamic stability theory and the transition to turbulent flow.

MATH3075
Financial Mathematics

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics **Prohibitions:** MATH3975, MATH 3015, MATH3933 **Assessment:** Two class quizzes and one 2 hour exam

This unit is an introduction to the mathematical theory of modern finance. Topics include: notion of arbitrage, pricing riskless securities, risky securities, utility theory, fundamental theorems of asset pricing, complete markets, introduction to options, binomial option pricing model, discrete random walks, Brownian motion, derivation of the Black-Scholes option pricing model, extensions and introduction to pricing exotic options, credit derivatives. A strong background in mathematical statistics and partial differential equations is an advantage, but is not essential. Students completing this unit have been highly sought by the finance industry, which continues to need graduates with quantitative skills. The lectures in the Normal unit are held concurrently with those of the corresponding Advanced unit.

MATH3975
Financial Mathematics (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics with at least Credit average **Prohibitions:** MATH3933, MATH3015, MATH3075 **Assessment:** Two class quizzes and one 2 hour exam

This unit is an introduction to the mathematical theory of modern finance. Topics include: notion of arbitrage, pricing riskless securities, risky securities, utility theory, fundamental theorems of asset pricing, complete markets, introduction to options, binomial option pricing model, discrete random walks, Brownian motion, derivation of the Black-Scholes option pricing model, extensions and introduction to pricing exotic options, credit derivatives. A strong background in mathematical statistics and partial differential equations is an advantage, but is not essential. Students completing this unit have been highly sought by the finance industry, which continues to need graduates with quantitative skills. Students enrolled in this unit at the Advanced level will be expected to undertake more challenging assessment tasks. The lectures in the Advanced unit are held concurrently with those of the corresponding Normal unit.

MATH3076
Mathematical Computing

Credit points: 6 **Teacher/Coordinator:** Dr D J Ivers **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour laboratory per week. **Prerequisites:** 12 credit points of Intermediate Mathematics and one of MATH(1001 or 1003 or 1901 or 1903 or 1906 or 1907) **Prohibitions:** MATH3976, MATH3016, MATH3916 **Assessment:** One 2 hour exam, assignments, quizzes

This unit of study provides an introduction to Fortran 95 programming and numerical methods. Topics covered include computer arithmetic and computational errors, systems of linear equations, interpolation and approximation, solution of nonlinear equations, quadrature, initial value problems for ordinary differential equations and boundary value problems.

MATH3976
Mathematical Computing (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr D J Ivers **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics and one of MATH(1903 or 1907) or Credit in MATH1003 **Prohibitions:** MATH3076, MATH3016, MATH3916 **Assessment:** One 2 hour exam, assignments, quizzes

See entry for MATH3076 Mathematical Computing.

MATH3977
Lagrangian & Hamiltonian Dynamics (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr. Leon Poladian **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics with at least Credit average **Prohibitions:** MATH2904, MATH2004, MATH3917 **Assessment:** One 2 hour exam and assignments

This unit provides a comprehensive treatment of dynamical systems using the mathematically sophisticated framework of Lagrange and Hamilton. This formulation of classical mechanics generalizes elegantly to modern theories of relativity and quantum mechanics. The unit develops dynamical theory from the Principle of Least Action using the calculus of variations. Emphasis is placed on the relation between the symmetry and invariance properties of the Lagrangian and Hamiltonian functions and conservation laws. Coordinate and canonical transformations are introduced to make apparently complicated dynamical problems appear very simple. The unit will also explore connections between geometry and different physical theories beyond classical mechanics. Students will be expected to solve fully dynamical systems of some complexity including planetary motion and to investigate stability using perturbation analysis. Hamilton-Jacobi theory will be used to elegantly solve problems ranging from geodesics (shortest path between two points) on curved surfaces to relativistic motion in the vicinity of black holes. This unit is a useful preparation for units in dynamical systems and chaos, and

complements units in differential equations, quantum theory and general relativity.

MATH3078
PDEs and Waves

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics **Prohibitions:** MATH3978, MATH3018, MATH3921 **Assumed knowledge:** MATH(2061/2961) and MATH(2065/2965) **Assessment:** One 2 hour exam, one lecture quiz

This unit of study introduces Sturm-Liouville eigenvalue problems and their role in finding solutions to boundary value problems. Analytical solutions of linear PDEs are found using separation of variables and integral transform methods. Three of the most important equations of mathematical physics - the wave equation, the diffusion (heat) equation and Laplace's equation - are treated, together with a range of applications. There is particular emphasis on wave phenomena, with an introduction to the theory of sound waves and water waves.

Textbooks
D L Powers. Boundary Value Problems. Harcourt-Brace 4th Edition. 1999.

MATH3978
PDEs and Waves (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Intermediate Mathematics with at least Credit average **Prohibitions:** MATH3078, MATH3018, MATH3921 **Assumed knowledge:** MATH(2061/2961) and MATH(2065/2965) **Assessment:** One 2 hour exam, one lecture quiz

As for MATH3078 PDEs & Waves but with more advanced problem solving and assessment tasks. Some additional topics may be included.

Textbooks
D L Powers. Boundary Value Problems. Harcourt-Brace 4th Edition. 1999.

Statistics Intermediate units of study

The School of Mathematics and Statistics provides Intermediate units of study, each worth 6 credit points, in Statistics. A normal Intermediate load in a discipline is 12 credit points and students intending to specialise in Senior Statistics should take 2 units of study (12 credit points) of Intermediate Statistics.Topics are offered at Normal and Advanced levels and may not be counted together. Further information follows, whilst details of units of study structure, content and assessment procedures are provided in the Intermediate Year Unit of Study Handbook available from the School at the time of enrolment.The units of study (each 6 credit points) are listed below:

First semester
Statistical Models STAT2011; Probability and Statistical Models (Adv) STAT2911

Second semester
Statistical Tests STAT2012; Statistical Tests (Advanced) STAT2912

Relation to other units of study and recommendations

Students should note that all Senior Statistics units of study have statistics prerequisites and some require MATH1003 or 1903 or MATH1002 or 1902. MATH2061 or MATH2961 is also desirable. If your major interest is statistics, then you are encouraged to enrol in 2 units of study (12 credit points) in Intermediate Statistics. If you are considering doing Honours in Statistics, these units of study should be the Advanced units of study, and choices from Intermediate Mathematics should include at least MATH2061 or 2961. If you do not intend to major in Statistics but want a solid introduction to Applied Statistics, you should take STAT2012 in your second semester.

STAT2011
Statistical Models

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory week. **Prerequisites:** MATH (1001 or 1901 or 1906 or 1011) and [MATH (1005 or 1905 or 1015) or STAT1021] **Prohibitions:** STAT2901, STAT2001, STAT2911 **Assessment:** One 2 hour exam, assignments, quizzes, computer practical reports, one 1 hour computer practical class assessment task

This unit provides an introduction to univariate techniques in data analysis and the most common statistical distributions that are used to model patterns of variability. Common discrete random models like the binomial, Poisson and geometric and continuous models including the normal and exponential will be studied. The method of moments and maximum likelihood techniques for fitting statistical distributions to data will be explored. The unit will have weekly computer classes where candidates will learn to use a statistical computing package to perform simulations and carry out computer intensive estimation techniques like the bootstrap method.

STAT2911
Probability and Statistical Models (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week. **Prerequisites:** MATH (1903 or 1907 or Credit in 1003) and MATH (1905 or Credit in 1005) **Prohibitions:** STAT2001, STAT2011, STAT2901 **Assessment:** One 2 hour exam, assignments, quizzes, computer practical reports, one 1 hour computer practical class assessment task.

This unit is essentially an advanced version of STAT2011, with an emphasis being on the mathematical techniques used to manipulate random variables and probability models. Common random variables including the Poisson, normal, beta and gamma families are introduced. Probability generating functions and convolution methods are used to understand the behaviour of sums of random variables. The method of moments and maximum likelihood techniques for fitting statistical distributions to data will be explored. The unit will have weekly computer classes where candidates will learn to use a statistical computing package to perform simulations and carry out computer intensive estimation techniques like the bootstrap method.

STAT2012
Statistical Tests

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week. **Prerequisites:** MATH (1005 or 1905 or 1015) **Prohibitions:** STAT2004, STAT2912 **Assumed knowledge:** STAT (2011 or 2002) **Assessment:** One 2 hour exam, assignments, quizzes, computer practical reports, one 1 hour computer practical class assessment task.

This unit provides an introduction to the standard methods of statistical analysis of data: Tests of hypotheses and confidence intervals, including t-tests, analysis of variance, regression - least squares and robust methods, power of tests, non-parametric tests, non-parametric smoothing, tests for count data, goodness of fit, contingency tables. Graphical methods and diagnostic methods are used throughout with all analyses discussed in the context of computation with real data using an interactive statistical package.

STAT2912
Statistical Tests (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week. **Prerequisites:** MATH1905 or Credit in MATH1005 **Prohibitions:** STAT2004, STAT2012 **Assumed knowledge:** STAT (2911 or 2901) **Assessment:** One 2 hour exam, assignments, quizzes, computer practical reports, one 1 hour computer practical class assessment task.

This unit is essentially an advanced version of STAT2012 with an emphasis on both methods and the mathematical derivation of these methods: Tests of hypotheses and confidence intervals, including t-tests, analysis of variance, regression - least squares and robust methods, power of tests, non-parametric methods, non-parametric smoothing, tests for count data, goodness of fit, contingency tables. Graphical methods and diagnostic methods are used throughout with all analyses discussed in the context of computation with real data using an interactive statistical package.

Statistics senior units of study

The School of Mathematics and Statistics provides several Senior units of study, each worth 6 credit points, in Statistics. Students wishing to major in Statistics should take 4 units of study (24 credit points) of Senior Statistics.Some topics are offered at Normal and Advanced levels and may not be counted together. Entry to some Advanced

units of study requires a Credit or better in a Normal level prerequisite or a Pass or better in an Advanced level prerequisite. Further information follows, whilst details of unit of study structure, content, and assessment procedures are provided in the Senior Units of Study Handbook available from the School at the time of enrolment. The units of study (each 6 credit points) are listed below:

First semester

STAT3011 Stochastic Processes and Time Series; STAT3911 Stochastic Processes and Time Series Adv; STAT3012 Applied Linear Methods; STAT3912 Applied Linear Methods Advanced

Second semester

STAT3013 Statistical Inference; STAT3913 Statistical Inference Advanced; STAT3014 Applied Statistics; STAT3914 Applied Statistics Advanced

Relation to other units of study and recommendations

In general 4 units of study (24 credit points) are required in order to major in Statistics, and a Credit average is required to progress to an Honours year. Potential Honours students are expected to include at least two Advanced level units of study. Students intending to major in Statistics should choose 2 units of study of Senior Statistics each semester, making 24 credit points in total.

STAT3011
Stochastic Processes and Time Series

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week; ten 1 hour computer laboratories per semester. **Prerequisites:** STAT (2011 or 2911 or 2001 or 2901) and MATH (1003 or 1903 or 1907). **Prohibitions:** STAT3911, STAT3003, STAT3903, STAT3005, STAT3905 **Assessment:** One 3 hour exam, assignments / quizzes, computer practical reports.

Section I of this course will introduce the fundamental concepts of applied stochastic processes and Markov chains used in financial mathematics, mathematical statistics, applied mathematics and physics. Section II of the course establishes some methods of modeling and analysing situations which depend on time. Fitting ARMA models for certain time series are considered from both theoretical and practical points of view. Throughout the course we will use the S-PLUS (or R) statistical packages to give analyses and graphical displays.

STAT3911
Stochastic Processes and Time Series Adv

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lecture, one 1 hour tutorial per week, plus an extra 1 hour lecture per week on advanced material in the first half of the semester. Seven 1 hour computer laboratories (on time series) in the second half of the semester (one 1 hour class per **Prerequisites:** (STAT2911 or credit in STAT2011) and MATH(1003 or 1903 or 1907). **Prohibitions:** STAT3011, STAT3003, STAT3903, STAT3005, STAT3905 **Assessment:** One 3 hour exam, assignments / quizzes, computer practical reports.

This is an Advanced version of STAT3011. There will be 3 lectures in common with STAT3011. In addition to STAT3011 material, theory on branching processes and birth and death processes will be covered. There will be more advanced tutorial and assessment work associated with this unit.

STAT3012
Applied Linear Methods

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratories per week. **Prerequisites:** STAT(2012 or 2912 or 2004) and MATH(1002 or 1902). **Prohibitions:** STAT3912, STAT3002, STAT3902, STAT3004, STAT3904 **Assessment:** One 3 hour exam, assignments / quizzes, computer practical reports, one 1 hour computer practical class assessment task.

This course will introduce the fundamental concepts of analysis of data from both observational studies and experimental designs using classical linear methods, together with concepts of collection of data and design of experiments. First we will consider linear models and regression methods with diagnostics for checking appropriateness of models. We will look briefly at robust regression methods here. Then we will consider the design and analysis of experiments considering notions of replication, randomization and ideas of factorial designs. Throughout the course we will use the S-PLUS (or R) statistical packages to give analyses and graphical displays.

STAT3912
Applied Linear Methods Advanced

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week. **Prerequisites:** (STAT2912 or Credit in STAT2004 or Credit in STAT2012) and MATH(2061 or 2961 or 1902). **Prohibitions:** STAT3012, STAT3002, STAT3902, STAT3004, STAT3904 **Assessment:** One 3 hour exam, assignments / quizzes, computer practical reports, one 1 hour computer practical class assessment task.

This unit is essentially an Advanced version of STAT3012, with emphasis on the mathematical techniques underlying applied linear models together with proofs of distribution theory based on vector space methods. There will be 3 lectures per week in common with STAT3012 and some advanced material given in a separate advanced tutorial together with more advanced assessment work.

STAT3013
Statistical Inference

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week. **Prerequisites:** STAT(2012 or 2912 or 2003 or 2903). **Prohibitions:** STAT3913, STAT3001, STAT3901 **Assessment:** One 3 hour exam, assignments / quizzes, computer practical reports, one 1 hour computer practical class assessment task.

In this course we will study basic topics in modern statistical inference. This will include traditional concepts of mathematical statistics: likelihood estimation, method of moments, properties of estimators, exponential families, decision-theory approach to hypothesis testing, likelihood ratio test as well as more recent approaches such as Bayes estimation, Empirical Bayes and nonparametric estimation. During the weekly computer classes (using S-PLUS or R software packages) we will illustrate the various estimation techniques and give an introduction to computationally intensive methods like Monte Carlo, Gibbs sampling and EM-algorithm.

STAT3913
Statistical Inference Advanced

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week. **Prerequisites:** STAT(2912 or 2903). **Prohibitions:** STAT3013, STAT3001, STAT3901 **Assessment:** One 3 hour exam, assignments / quizzes, computer practical reports, one 1 hour computer practical class assessment task.

This unit is essentially an Advanced version of STAT3013, with emphasis on the mathematical techniques underlying statistical inference together with proofs based on distribution theory. There will be 3 lectures per week in common with some material required only in this advanced course and some advanced material given in a separate advanced tutorial together with more advanced assessment work.

STAT3014
Applied Statistics

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 1 hour tutorial and one 1 hour computer laboratory per week. **Prerequisites:** STAT(2012 or 2912 or 2004). **Prohibitions:** STAT3914, STAT3002, STAT3902, STAT3006 **Assumed knowledge:** STAT(3012 or 3912). **Assessment:** One 3 hour exam, assignments / quizzes, computer practical reports, one 1 hour computer practical assessment task.

This unit has three distinct but related components: Multivariate analysis; sampling and surveys; and generalized linear models. The first component deals with multivariate data covering simple data reduction techniques like principal components analysis and core multivariate tests including Hotelling's T^2, Mahalanobis' distance and Multivariate Analysis of Variance (MANOVA). The sampling section includes sampling without replacement, stratified sampling, ratio estimation, and cluster sampling. The final section looks at the analysis of categorical data via generalized linear models. Logistic regression and log-linear models will be looked at in some detail along with special techniques for analyzing discrete data with special structure.

STAT3914
Applied Statistics Advanced

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour computer laboratory per week plus an extra hour each week which will alternate between lectures and tutorials. **Prerequisites:** STAT2912 or credit or better in (STAT2004 or STAT2012). **Prohibitions:** STAT3014, STAT3002, STAT3902, STAT3006, STAT3907 **Assumed knowledge:** STAT3912 **Assessment:** One 3 hour exam, quizzes, computer practical reports, one 1 hour computer practical assessment task.

This unit is an Advanced version of STAT3014. There will be 3 lectures per week in common with STAT3014. The unit will have extra lectures focusing on multivariate distribution theory developing results for the multivariate normal, partial correlation, the Wishart distribution and Hotellling's T^2. There will also be more advanced tutorial and assessment work associated with this unit.

Media and Communications units of studies

The following units of study are only available to students in the Bachelor of Science Media and Communications degree.

MECO1001
Australian Media Studies

Credit points: 6 **Teacher/Coordinator:** Dr M Brennan **Session:** Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week **Assessment:** One 1500 word essay (30%); One 1500 word essay (40%); one 2 hour exam (30%)

Note: Available to BA (Media and Comm) and BSc (Media and Comm) students only.

This unit offers an introduction to the history and theory of media and communications studies. Students will gain a foundation in key concepts, methodologies and theorists in the field. They will also explore the interdisciplinary roots of media and communications studies and acquire basic research skills. By the end of the unit students should be familiar with major shifts in the history and theory of media and communications studies and with basic concepts and methodologies in the field.

Textbooks
It is recommended that students purchase a reader from the Copy Centre.
Recommended Reading:
Alan McKee, Textual Analysis: A Beginner's Guide, SAGE London. 2003

MECO1003
Principles of Media Writing

Credit points: 6 **Teacher/Coordinator:** A/Prof C Lumby **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week **Assessment:** One 400 word news story (20%); one 500 word colour news story (20%); one 700 word broadcast script (20%);and one 2 hour exam (30 %)

Note: Available to BA (Media and Comm) and BSc (Media and Comm) students only.

This unit will give students foundational skills in writing for the print and broadcast media. Students will learn the elements of journalistic style, how to structure news and feature articles, how to script basic broadcast and online news, and be introduced to the principles of interviewing and journalistic research.

Textbooks
Course reader;
Recommended readings:
David Conley, 'The Daily Miracle: An Introduction to Journalism', Oxford University Press, Melbourne, 1997; Style, News Custom, 2005.
Graeme Turner and Stuart Cunningham, Media and Communications in Australia, Allen and Unwin, Sydney, 2006; Style, News Custom, 2005

MECO2601
Radio Broadcasting

Credit points: 6 **Teacher/Coordinator:** Dr A Dunn **Session:** Semester 1 **Classes:** One 2 hour lecture and one 2 hour workshop per week **Prerequisites:** 12 junior credit points of MECO units and ENGL1000 (or ENGL1050 or ENGL1005 or LNGS1005 for students who commenced prior to 2005) **Prohibitions:** MECO2001 **Assessment:** One radio news exercise, one production diary, radio scripts and final work (equivalent 2500 words) and one 2 hour exam

Note: Available to BA (Media and Comm) and BSc (Media and Comm) students only.

This unit is designed to introduce students to the history, nature and contemporary status of radio. It specifically considers such concepts as news values and the role of the Internet in audio broadcasts. Students will also apply critical analytical approaches to radio and online broadcast texts. Practically, the unit offers an introduction to radio presentation and production, using professional quality digital audio recording and editing facilities.

Textbooks
Phillips, G and Lindgren, M (2002) Australian Broadcasting Journalism Manual,2nd edn., Oxford University Press.
It is recommended that students purchase a reader from the Copy Centre

MECO3603
Media, Law and Ethics

Credit points: 6 **Teacher/Coordinator:** Dr S Maras **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week **Prerequisites:** 12 junior credit points of MECO units and ENGL1000 (or ENGL1050 or ENGL1005 or LNGS1005 for students who commenced prior to 2005) **Prohibitions:** MECO3003 **Assessment:** One 2000 word essay (40%), one 2 hour exam (40%) and one Web CT Posting (20%)

Note: Available to BA(Media and Comm) and BSc (Media and Comm) students only.

MECO3603 will introduce students to the area of Media Law and Ethics through discussion of key legal, ethical, and cultural issues relevant to journalism and the professional fields of public communication. Students will be given an introductory survey of the main ethical theories in Western thought to establish a framework within which to examine specific ethical issues that relate to media. They will also be introduced to those aspects of the law that impinge on the work of media professionals.

Textbooks
There is a Reader of key articles, available from the University Copy Centre.
There are also two textbooks:
Catharine Lumby and Elspeth Probyn, Eds. Remote Control: New Media, New Ethics, Cambridge University Press, Melbourne, 2003.
Mark Pearson, The Journalist's Guide to Media Law: Dealing with Legal and Ethical Issues. 2nd Edition. Allen and Unwin, Crows Nest, 2004. (New edition forthcoming)

MECO3601
Video Production

Credit points: 6 **Teacher/Coordinator:** Dr S Maras **Session:** Semester 2 **Classes:** One 2 hour lecture and one 2 hour workshop per week **Prerequisites:** 12 junior credit points of MECO units and ENGL1000 (or ENGL1050 or ENGL1005 or LNGS1005 for students who commenced prior to 2005) **Prohibitions:** MECO3001 **Assessment:** Individual 90 second News Piece; Group produced video; weekly Production Report; Reflection statement; 2 hour exam **Practical field work:** This unit will involve substantial group video production project work outside of class time.

Note: Available to BA (Media and Comm) and BSc (Media and Comm) students only.

This is an introduction to the theory and practice of digital video production, with a strong practical component, emphasizing information-based programming (news, current affairs, corporate video, documentary and infotainment). Students will be expected to produce short video items individually and in groups, using professional standard desktop editing software.

Textbooks
There is a recommended Reader, available from the University Copy Centre.
Supplementary text:
Martha Mollison, Producing Videos: A Complete Guide. 2nd edition. AFTRS/ Allen & Unwin: Sydney, 2003.

MECO3602
Online Media

Credit points: 6 **Teacher/Coordinator:** Ms K Crawford **Session:** Semester 2 **Classes:** One 1 hour lecture and one 2 hour seminar per week **Prerequisites:** 12 junior credit points of MECO units and ENGL1000 (or ENGL1050 or ENGL1005 or LNGS1005 for students who commenced prior to 2005) **Prohibitions:** MECO3002 **Assessment:** Group produced web site (50%); one individual production essay (20%); one two hour exam (30%); one web site proposal (Pass/Fail) **Practical field work:** This unit will involve substantial group web site production project work outside of class time.

Note: Available to BA(Media and Comm) and BSc (Media and Comm) students only.

This unit will examine the role of the Internet, new media and the way the web is changing the media landscape. It explores the development and growth of the Internet, and provides a critical framework in which to understand the current industry. By the end of the unit, students will be familiar with key theoretical and cultural issues in online media, and will engage in both offline and online analysis of the Internet. Students will also gain practical skills in writing and producing for the web and will develop their own web sites.

Textbooks
There is a reader of key articles, available from the University Copy Centre.
There is also one textbook:
Flew, Terry (2005), 'New Media:An Introduction'. 2nd Edition. Melbourne:Oxford University Press.pp280. ISBN 0195550412.

MECO3603
Media, Law and Ethics

Credit points: 6 **Teacher/Coordinator:** Dr S Maras **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week **Prerequisites:** 12 junior credit points of MECO units and ENGL1000 (or ENGL1050 or ENGL1005 or LNGS1005 for students who commenced prior to 2005) **Prohibitions:** MECO3003 **Assessment:** One 2000 word essay (40%), one 2 hour exam (40%) and one Web CT Posting (20%)

Note: Available to BA(Media and Comm) and BSc (Media and Comm) students only.

MECO3603 will introduce students to the area of Media Law and Ethics through discussion of key legal, ethical, and cultural issues relevant to journalism and the professional fields of public communication. Students will be given an introductory survey of the main ethical theories in Western thought to establish a framework within which to examine specific ethical issues that relate to media. They will also be introduced to those aspects of the law that impinge on the work of media professionals.

Textbooks
There is a Reader of key articles, available from the University Copy Centre.
There are also two textbooks:
Catharine Lumby and Elspeth Probyn, Eds. Remote Control: New Media, New Ethics, Cambridge University Press, Melbourne, 2003.
Mark Pearson, The Journalist's Guide to Media Law: Dealing with Legal and Ethical Issues. 2nd Edition. Allen and Unwin, Crows Nest, 2004. (New edition forthcoming)

MECO3605
Media Globalisation

Credit points: 6 **Teacher/Coordinator:** Dr M Brennan **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week **Prerequisites:** 12 junior credit points of MECO units and ENGL1000 (or ENGL1050 or ENGL1005 or LNGS1005 for students who commenced prior to 2005) **Prohibitions:** MECO3005 **Assessment:** One 2000 word essay (40%); tutorial presentation/debate (20%) and one 2 hour exam (40%)

Note: Available to BA (Media and Comm) and, subject to departmental approval, students undertaking a major in Cultural Studies.

This unit aims to demonstrate the complexity of media globalisation and to examine in depth some of the common assumptions associated with the term. While the unit will consider the impact of global market forces (i.e. cheap labour in developing countries, environmental issues, etc), it is interested in the dynamics of globalisation more generally, and media globalisation more specifically. Students can expect to appreciate that media globalisation is a complex proposal that involves formats, localisation, symbolic currency and negotiation.

Textbooks
It is recommended that students purchase a reader from the Copy Centre.
Recommended Reading:
Stuart Cunningham and Graeme Turner (Ed.), The Media and Communications in Australia, Allen & Unwin, Sydney, 2002

MECO3671
Media and Communications Internship

Credit points: 6 **Teacher/Coordinator:** Ms I Blue **Session:** Semester 1, Semester 2, Summer Main, Winter Main **Classes:** There are no lectures, but attendance may be required at a programme of industry talks. **Prerequisites:** 30 senior credit points of MECO, including MECO3603. Students may not enrol in MECO3671 prior to the second semester of their 3rd year. **Assessment:** Students must satisfy the requirements of an internship contract with their workplace, including attendance and performance, as evaluated through a workplace supervisor report.

Note: Available to BA(Media and Comm) and BSc (Media and Comm) students only.

The internship consists of a work placement comprising a minimum of 20 working days in a media organisation, assisted and supervised by both the workplace and the department. Placements may include print, broadcast, online and new media, public relations and advertising organisations. Students will be required to present a 2000 word journal recounting their experiences during the internship. The internship and internship journal are assessed on a satisfactory/unsatisfactory basis.

MECO3672
Internship Project

Credit points: 6 **Teacher/Coordinator:** Ms I Blue **Session:** Semester 1, Semester 2, Winter Main **Prerequisites:** 30 senior credit points of MECO, including MECO3603. Students may not enrol in MECO3672 prior to the first semester of their 4th year. **Corequisites:** MECO3671 and MECO3002 and MECO3003 (4th Years) or MECO3671 and MECO3602 and MECO3603 (3rd years) **Prohibitions:** MECO3701, MECO3702 **Assessment:** One 4000 word research essay

Note: Available to BA(Media and Comm) and BSc (Media and Comm) students only.

This unit is based around the production of a 4000 word research essay arising from issues encountered during the internship. Students are required to attend a minimum of four seminars, which they will direct (in the presence of the unit co-ordinator) to discuss and refine their research approaches and questions. Students will also need to provide documentation of their research question and approach before submitting their essay.

Textbooks
Stokes, Jane (2002) How to do Media and Cultural Studies, London: Sage

Medical Science units of study

Bachelor of Medical Science junior units of study

All prerequisite and corequisite units of study, details of staff, examinations, units of study delivery and descriptions are as described under the appropriate Department or School entry in this chapter.

Bachelor of Medical Science Intermediate Core units of study

BMED2801
Cell Structure and Function

Credit points: 6 **Teacher/Coordinator:** Dr Vladimir Balcar **Session:** Semester 1 **Classes:** Two 1 hour lectures per week; five hours of tutorials or practicals every fortnight. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916) **Assessment:** One 2hr exam; on-line quizzes, continuous assessment, prac report; prac exam.

This unit of study begins with a discussion of the unique morphology of unicellular prokaryotic organisms (bacteria, fungi and viruses) followed by the structure and function of human cells. A strong understanding of cellular structures is essential for an appreciation of whole body function. Basic cell structure is examined by focussing on cell specialisation and tissue organisation in humans. The structure and function of excitable cells such as nerve and muscle will lead to a discussion of membrane potential, synaptic transmission and neuromuscular junction. The unit of study then gives an introduction into how gene expression is regulated during development, and how the cell cycle is controlled to coordinate programmed events such as differentiation and cell death. This allows discussion of the consequences and treatment of abnormal tissue growth (cancer). Practical classes not only complement the lecture material but also introduce students to a wide range of technical skills, tissue processing and bacterial cultivation. In addition, the sessions are also designed to provide students with generic skills such as record keeping, data collection and presentation, protocol planning and written communication.

BMED2802
Molecular Basis of Medical Sciences

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures per week; five hours of tutorials or practicals every fortnight. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916) **Assessment:** One 2hr exam; on-line quizzes, prac reports

This unit of study extends pre-existing understanding of the way in which genetic information is stored, transmitted and expressed. Students will be introduced to the role of enzymes in the catalysis of cellular reactions and the pharmacological strategies employed to exploit our knowledge of these mechanisms is then discussed. Intracellular signalling cascades, cell to cell signalling and pharmacological intervention in these processes is covered. The molecular basis of drug action and the use of DNA technology in drug design will be discussed. Students will then cover the application of medical genetics to the study of advanced gene expression, recombinant technology, cloning and gene products, transgenics and the linkage and mapping of genes including reference to DNA fingerprinting and the human genome project and gene therapy. The technical skills taught in the practical classes include the use of restriction enzymes, the separation of DNA molecules using electrophoresis, the inspection of chromosomes, linkage mapping, gene transfer and the measurement of gene expression. In addition to nurturing the skills involved in the design and execution of experiments, the practical sessions will formally teach students report writing skills and will give students practice at articulating feedback to their peers.

BMED2803
Cardiac, Respiratory and Renal Function

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures per week; five hours of tutorials or practicals every fortnight. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916) **Assessment:** One 2hr exam; on-line quizzes, essay, prac reports

The maintenance of constant conditions in the human body is dependent on thousands of intricate control mechanisms. This unit of study examines many of those homeostatic processes with specific reference to major apparatus such as the respiratory, cardiovascular and renal. The structure and function of the cardiovascular system is discussed and cardiac output, blood pressure and blood flow are studied. Discussion of the respiratory system embraces the structure of the respiratory organs and description of the mechanism of the transport of gases to and from cells. Similar treatment of the renal system involves anatomical and histological investigation of kidney structure and a physiological description of kidney function. Practical classes are designed to nurture the same generic attributes taught in BMED2801 and BMED2802 but, in addition, students are introduced to a wide range of anatomical and physiological technical skills. Specifically, students will investigate the structure and function of the heart and blood vessels, the components of the respiratory system and the kidney - all at the cellular and organ level. Students will also conduct experiments (often on themselves) which show how heart rate and blood pressure are controlled, how breathing is regulated and how urine output is modulated in response to both physiological and pharmacological stimuli.

BMED2804
Digestion, Absorption and Metabolism

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures per week; five hours of tutorials or practicals every fortnight. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916) **Assessment:** One 2hr exam; on-line quizzes, prac reports

This unit of study gives an introduction to the structures used to digest and absorb fuels, at both the anatomical and histological level. This is then followed by discussion of the utilisation and fate of absorbed nutrients. After an overview of the alimentary tract and associated organs, the detailed anatomy of the oral cavity, oesophagus, stomach, intestines, liver, etc is considered. This is complemented by description of the specialised cell types in the digestive system, discussion of the transport mechanisms employed to absorb nutrients, and consideration of the control systems used to regulate activity of the digestive process. The role of intestinal microflora in the gastrointestinal tract, contributing to both beneficial digestion and absorption of nutrients, as well as to pathogenic disruption, is also discussed in this unit of study. The fundamentals of metabolism are introduced, in particular, the chemical reactions that are responsible for fuel processing. The pharmacokinetic angle is explored further with discussion of the metabolism and absorption of drugs including the detoxification and excretion of xenobiotic compounds. Practical classes give students extensive experience with inspection of the digestive system at both the cellular and gross anatomical level. The peristaltic reflex and pharmacological influences are explored. These sessions are designed to nurture observation, data analysis, record keeping and report writing skills.

BMED2805
Hormones, Reproduction and Development

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures per week; five hours of tutorials or practicals every fortnight. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916) **Assessment:** One 2 hour exam; quizzes, essay, practical assay

This unit of study examines hormonal control of human body processes. Specifically, students will investigate the structure and function of endocrine glands: the pituitary, thyroid and pancreas - all at the cellular and organ level. Examples of the influence of hormones on metabolic processes are provided by consideration of fuel selection during exercise and starvation, and diabetes and obesity. This enables students to appreciate the extent of the contribution of hormones to organ co-ordination in response to circumstances such as starvation, obesity, exercise and diabetes. Students extrapolate to consider the regulation of fuel selection during exercise and the cause of fatigue. The fate of the macronutrients (carbohydrate, fat and protein) is then considered by reference to their uptake, disposal and reassembly into storage fuels and cellular structures. The biochemical pathways involved in the extraction of energy from the macronutrient fuels are then covered, with particular emphasis on the whole body integration and regulation of these metabolic processes. This leads onto discussion of performance enhancing drugs and also provides a solid background for the understanding of pharmacological intervention in these conditions. The hormones involved in reproduction, contraception, fertilisation and pregnancy are also discussed, leading on to foetal-new-born transition and discussion of the development of the human embryo and cell differentiation. In the practical classes, students are introduced to a wide range of biochemical technical skills. Specifically, students will investigate the structure and function of the important endocrine glands - all at the cellular and organ level. Students will design a biochemical kit for the evaluation of blood glucose and will perform a glucose tolerance test to investigate how glucose levels are regulated and modulated in response to a glucose load. In addition, sessions are designed to nurture oral presentation skills, hypothesis testing, data analysis, troubleshooting, instruction writing and feedback skills.

BMED2806
Sensory and Motor Functions

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures per week; five hours of tutorials or practicals every fortnight. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916) **Assessment:** One 2 hour exam; on-line quizzes, practical reports

This unit of study examines how neural and motor systems are adapted to sense and respond to changes in the external environment. After consideration of the basic anatomical organisation of the nervous and sensory systems, the way in which nerve signals are integrated and co-ordinated in response to external stimuli are covered in more

detail. Various senses such as vision, touch and hearing are studied, together with a discussion on motor reflexes. The receptors involved in normal modes of communications are discussed before specific examples such as the fright and flight and stress responses are considered. This is complemented by discussion of the effects of drugs on the nervous system, with special reference to pain and analgesics. An appreciation is gained of how toxins and infections can perturb the normal neuromuscular co-ordination. Thus pharmacological and pathological considerations, such as the use of poisoned arrows and muscle paralysis and viral and tetanus infections, are studied in concert with relevant physiological concepts. In practical classes, students perform experiments (often on themselves) to illustrate the functioning of the senses and motor control and co-ordination involving both stretch and flexor reflexes. In addition, students extend their anatomical expertise by examining the structure and function of the nervous system and the skeleton (especially the vertebral column, the thorax and the limbs). Practical sessions also include the effects of analgesics on experimental pain and case studies of tetanus and botulism. The practical sessions draw widely on, and nurture, the generic skills taught in preceding units of study but particularly in BMED2804 and BMED2805.

BMED2807
Microbes and Body Defences

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures per week; five hours of tutorials or practicals every fortnight. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916) **Assessment:** One 2 hour exam; on-line quizzes, continuous assessment, practical examinations

This unit of study begins by introducing the concepts of disease transmission, pathogenicity and virulence mechanisms of microbes. How the body deals with injury and infection is discussed by exploring host defences. Sections on wound healing, clotting and inflammation cover the response to physical damage and this is complemented by discussion of the pharmacological basis of anti-inflammatory agents and anti-coagulants. For a full understanding of the process of infection, it is necessary to have an appreciation of the range of pathogens and injuries with which the body must cope. Therefore this unit of study examines the structure and function of pathogenic microorganisms (including bacteria, fungi, protists, and viruses, etc). The response of the body to pathogen invasion is studied by discussion of both molecular and cellular immune responses. In particular, this gives students an appreciation of the structure, production and diversity of antibodies, the processing of antigens, operation of the complement system and recognition and destruction of invading cells. This allows students to appreciate the basis of derangements of the immune system and the mechanism of action of immuno-modulatory drugs. Practical classes allow students to obtain experience in, and an understanding of, a range of techniques in classical and molecular virology, bacteriology and immunology. In addition, the practical sessions draw widely on, and nurture, the generic skills taught in preceding units of study.

BMED2808
Disease in Society

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures per week; five hours of tutorials or practicals every fortnight. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916) **Assessment:** One 2 hour exam; quizzes, continuous assessment

Disease in Society seeks to integrate basic knowledge of important diseases, ranging from metabolic diseases through infections and heart disease to 'social' diseases such as drug addiction and use of psychoactive compounds. About half the unit considers infectious diseases: viral, bacterial, fungal and parasitic. The other half looks at inherited disorders, cardio-respiratory disorders such as angina, heart failure and asthma. Society's approaches to dealing with these diseases - whether by pharmacological intervention, counselling or lifestyle change are discussed. Putting the disease in the relevant social context is emphasized in all aspects of the unit. The impact of bacteria and viruses on individuals and society is taught with reference to specific infectious diseases (eg influenza, polio, herpes, STDs, etc) and this leads into an introduction of epidemiology. Included in the discussion of the way in which these organisms cause and transmit disease is a consideration of how antibiotics and anti-viral drugs work and how microbes can become drug resistant. Practical classes are designed to complement the lectures and provide a 'hands-on' experience in investigating disease. Also included are tutorial sessions in which hospital microbiologists guide students though clinical case studies and in an integrated session, students examine the infection, immunity and pathology of tuberculosis. These sessions are designed to nurture an appreciation of the importance of an integrative approach to the study of disease in today's society. The generic skills taught in preceding units of study are further reinforced.

Bachelor of Medical Science Senior Core units of study

Students are required to complete at least 36 credit points of Senior units of study chosen from the core subject areas of Anatomy and Histology, Biology (Genetics), Biochemistry, Cell Pathology, Immunology, Infectious diseases, Microbiology, Pharmacology and Physiology, as listed in Table IV. Descriptions are listed here and under the relevant department headings in this chapter where the units are offered by other Schools/Departments in the faculty.

INFD3012
Infectious Diseases

Credit points: 6 **Teacher/Coordinator:** A/Prof. Colin Harbour **Session:** Semester 2 **Classes:** One 1 hour lecture and one 1 hour tutorial and one 2 hour practical and one 2 hour case study or theme session a week. **Prerequisites:** 42 cedit points of intermediate BMED units including BMED2807. **Assumed knowledge:** Intermediate microbiology, immunology, molecular biology and genetics. **Assessment:** Formal examination: one 2 hour exam, 60% Progressive assessment: includes: 2000w essay, tutorial case presentation, poster presentation, 40%.

Note: The completion of MICR3011 is strongly recommended prior to undertaking this course.

Infectious diseases occur as a result of interactions between a host and a microbial parasite. This unit of study will explain how infectious agents interact with human hosts at the molecular, cellular, individual patient and community levels to cause diseases and how the hosts attempt to combat these infections. The unit will be taught by the discipline of Infectious Diseases and Immunology of the Department of Medicine within the Central Clinical School, Faculty of Medicine with involvement of associated clinical and research experts who will contribute lectures and theme sessions on their own special interests. The primary learning vehicle in this unit will be the case study involving three or four cases per week on the diseases theme of the week, e.g. Pneumonia in week 1, wound infections in week 2 etc. Students are strongly recommended to complete MICR3011 before enrolling in this unit.

Textbooks
Medical Microbiology. Edited by Cedric Mims et al. Mosby, 2004. ISBN 07234-3260-0

Bachelor of Medical Science Honours

The Bachelor of Medical Science Honours degree is governed by regulations of the Senate and of the Faculty of Science as described in chapter 5. An Honours degree may be taken by students of sufficient merit in any of the Departments offering Senior level core units. Entry to Honours units is regulated by individual Departments and the exact detail of Honours programs also varies from Department to Department. Students interested in undertaking Honours should consult the relevant Department for further details.

Medical Science Honours - Infectious Diseases Honours

The Honours program in Infectious Diseases provides the opportunity for full-time research on a proposed project supervised by a staff member expert in that field. Experimental research, a seminar and a thesis constitute the major part of the program and of assessment. Guidance in research techniques is given in training programs covering experimental design, data analysis, written and oral communication

and critical appraisal of the literature. Student contributions to this program are also assessed. In addition, a supplementary seminar program keeps students informed and abreast of wider issues in infectious diseases.

Applying for admission to Infectious Diseases Honours

Students are invited to apply for Honours enrolment during semester two of the year preceding Honours. Applicants should consult the Honours coordinator in the first instance. A list of possible research topics is provided, and students select projects of interest, speak with prospective supervisors and apply for permission to enrol, before the end of semester two. Within the constraints of availability, an attempt is made to assign students to the project of their choice. Usually Honours candidates will have achieved a Credit in the senior unit Infectious Diseases and will also have successfully completed Senior study in Biochemistry, Microbiology, or Virology. Usually Honours candidates will have an overall SCIWAM of 65 or greater. Departmental permission is required for enrolment.

Medicinal Chemistry

Medicinal Chemistry is an interdisciplinary major offered within the BSc. It is concerned with the chemistry underpinning the design, discovery and development of new pharmaceuticals, and is jointly administered by the School of Chemistry and the Department of Pharmacology. Medicinal Chemistry examines why some types of chemical compounds are toxic, why some have therapeutic value, and the mode of drug action at the molecular level. A major in Medicinal Chemistry includes the study of natural and synthetic compounds of biological and medicinal importance, how molecules interact with each other and how specific molecules can influence metabolic pathways in living organisms. A student seeking to complete this major will study Junior and Intermediate Chemistry, and also Intermediate Pharmacology, as prerequisites for the Senior units of study. Refer to Table 1 for an enrolment guide and to entries under the contributing schools and departments for unit descriptions.

Microbiology

The discipline of Microbiology in the School of Molecular and Microbial Biosciences offers units of study that equip students for a career in Microbiology in fields of health, industry and basic research.In addition, it provides introductory units of study to students of agriculture, pharmacy and science. These units of study will help students who wish to specialise in related fields where microorganisms are often used in studying life processes, e.g. biochemistry, genetics and botany.

Microbiology Intermediate units of study

MICR2021
Introductory Microbiology

Credit points: 6 **Teacher/Coordinator:** Dr Dee Carter **Session:** Semester 1 **Classes:** Two 1 hour lectures per week, plus an additional six 1 hour lectures or tutorials per semester. Eleven 3 hour practicals per semester. **Prerequisites:** 6cp of Junior Biology and (6cp of MBLG1001 or MBLG2901 or PLNT2001 or PLNT2901) and 6cp of Junior Chemistry **Prohibitions:** MICR2921, MICR2024, MICR2001, MICR2901, MICR2003, MICR2007, MICR2011, MICR2909 **Assessment:** One 2 hour exam, continuous assessment in practical, two assignments, practical exam

Note: Students are very strongly recommended to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2022 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT (2001 or 2901).

Microorganisms are by far the most ubiquitous organisms on the planet, and underpin healthy ecosystems through nutrient recycling and biodegradation, as well as providing many aspects of plant and animal nutrition. They are used in many industrial processes such as producing enzymes, vitamins and antibiotics, and in the manufacture of some foods and beverages. Microorganisms can also cause problems, however, such as human, animal and plant diseases, poisoning, pollution and spoilage. The small size of most microrganisms means special techniques are required to view, measure, classify and identify them. In this unit of study, the diversity of microbial life, including viruses, bacteria, fungi, algae and protozoa, and their importance to humans, are introduced. The course is designed for the students wishing to major in microbiology as well as those requiring microbial skills while specializing in related fields, such as molecular biology. Theoretical aspects of microbiology are supplemented with laboratory classes that teach the safe handling and viewing of microorganisms, and draw on research in microbiology laboratories.

Textbooks

Prescott L M et al. Microbiology. 6th edn, WCB/McGraw-Hill, 2005

MICR2921
Introductory Microbiology (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures per week, plus an additional six 1 hour lectures per semester. Eleven 3 hour practicals per semester. **Prerequisites:** (6credit points of Junior Biology) and (6credit points of MBLG1001 or MBLG2901 or PLNT2001 or PLNT2911) and 6 credit points of Junior Chemistry. Distinction grade required in at least one of Junior Biology or MBLG1001 or PLNT2001 or PLNT2911. **Prohibitions:** MICR2021, MICR2024, MICR2001, MICR2901, MICR2003, MICR2007, MICR2011, MICR2909 **Assessment:** One 2 hour exam, continuous assessment in practical, 2 assignments, practical exam

Note: Students are very strongly advised to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2022 or 2922 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT(2001 or 2901).

This unit of study is based on MICR2021 with approximately six alternative lectures/tutorials on advanced aspects of the material covered in MICR2021. The content and nature of these components may vary from year to year.

Textbooks

As for MICR2021

MICR2022
Microbes in Society

Credit points: 6 **Teacher/Coordinator:** Dr Nick Coleman **Session:** Semester 2 **Classes:** Two 1 hour lectures per week, plus an additional six 1 hour lectures or tutorials per semester. Eleven 3 hour practicals per semester. **Prerequisites:** 6 credit points of Junior Biology and (6 credit points of MBLG1001 or PLNT2001 or PLNT2911) and 6 credit points of Junior Chemistry **Prohibitions:** MICR2922, MICR2002, MICR2902, MICR2004, MICR2008, MICR2012, MICR2909 **Assumed knowledge:** MICR (2021 or 2921 or 2024) **Assessment:** One 2 hour exam, continuous assessment in prac, 2 assignments, prac exam

Note: Students are very strongly advised to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2022 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT (2001 or 2901).

Microorganisms have a large impact on human society, and are particularly notorious as the causative agents of infectious diseases. However, microbes also have many beneficial roles in agricultural, industrial, biotechnological, and environmental processes. Understanding the biology of microorganisms and their relationship to human society is critical to fighting the 'bad' microbes, and harnessing the activities of the 'good' microbes. MICR2022 will build on the skills and knowledge gained in MICR2021/2921. An extensive set of Medical Microbiology lectures will cover bacterial, viral, and fungal pathogens, and will introduce key concepts including epidemiology and disease transmission, pathogenicity and virulence factors, host/parasite relationships, host defences, prevention of disease, and antibiotic types and functions. Lecture topics in other areas include Food Microbiology (microbial ecology of food, fermentation and production, spoilage and food poisoning), Agricultural Microbiology (plant/microbe associations), Microbial Evolution and Genomics (incl. structural and functional genomics), and Industrial Microbiology (large-scale fermentation, traditional and recombinant products, biosensors and biocontrol agents, biodeterioration and bioremediation). The laboratory sessions are integrated with the lecture series and are designed to give students practical experience in isolating, identifying and manipulating microorganisms. Work Experience - students who have completed MICR2021/2921 and MICR2022/2922 and are enrolled in the BSc or BSc (Advanced) may be offered the opportunity to undertake work experience for approximately one month in a local microbiology laboratory (hospital, food, research, environmental, etc) subject to availability of places.

Textbooks

Prescott L M et al. Microbiology. 6th edn, WCB/McGraw-Hill, 2005

MICR2922
Microbes in Society (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures per week, plus an additional six 1 hour lectures per semester. Eleven 3 hour practicals per semester. **Prerequisites:** 6 credit points of Junior Biology and (6 credit points of MBLG1001 or PLNT2001 or PLNT2901) and 6 credit points of Junior Chemistry. Distinction grade required in at least one of Junior Biology or MBLG1001 or PLNT2001 or PLNT2911. **Prohibitions:** MICR2022, MICR2002, MICR2902, MICR2004, MICR2008, MICR2012, MICR2909 **Assumed knowledge:** MICR (2021 or 2921 or 2024) **Assessment:** One 2 hour exam, continuous assessment in practical, 2 assignments, practical exam

Note: Students are very strongly advised to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2922 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT (2001 or 2901).

This unit of study is based on MICR2022 with approximately six alternative lectures/tutorials on advanced aspects of the material covered in MICR2022. The content and nature of the alternative components may vary from year to year.

Textbooks
As for MICR 2021

MICR2024
Microbes in the Environment

Credit points: 6 **Teacher/Coordinator:** Dr Andrew Holmes **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 3 hour practical per week. **Prerequisites:** 30 credit points of Junior Science or Faculty of Agriculture, Food and Natural Resource units including 6 credit points of Junior Biology. **Prohibitions:** MICR2021, MICR2921, MICR2001, MICR2901, MICR2003, MICR2007, MICR2011, MICR2909 **Assessment:** One 2 hour exam, fortnightly practical quiz, project report and continuous practical assessment.

Note: Students are very strongly recommended to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2922 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT (2001 or 2901).

This unit introduces the diversity of microbes found in soil, water, air, plants and animal environments. Through an examination of their physiology and genetics it explores their interactions with plants, animals and each other, and their roles as decomposers and recyclers in the environment. The soil is a rich microbial environment, and the concept of soil health and its relationship to plant growth is discussed. Practical classes introduce techniques and skills in isolating, quantifying and culturing microbes, designing and interpreting experiments to study microbial growth, and in preparing and presenting data.

Textbooks
Atlas RM and Bartha R (1997) Microbial Ecology: Fundamentals and applications. 4th Edition. Benjamin/Cummings Scientific Publishing, Menlo Park, CA

Microbiology Senior units of study

MICR3011
Microbes in Infection

Credit points: 6 **Teacher/Coordinator:** Mrs Helen Agus **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 3 hour practical per week. **Prerequisites:** At least 6 credit points of MBLG units and MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2807 and 2808). For BScAgr students: PLNT (2001 or 2901) and MICR (2022 or 2922). **Prohibitions:** MICR3911, MICR3001, MICR3901 **Assessment:** One 2 hour exam, continuous assessment, practical work

This unit is designed to further develop an interest in, and understanding of, medical microbiology from the introduction in Intermediate Microbiology. Through an examination of microbial structure, virulence, body defences and pathogenesis, the process of acquisition and establishment of disease is covered. The unit is divided into three themes: 1. Infections of body systems: bacterial and fungal infections that are problematic at particular sites, host defences, virulence mechanisms; 2. Public health microbiology: epidemiology, international public health, transmission, water and food borne outbreaks; 3. Emerging and re-emerging diseases: the impact of societal change with respect to triggering new diseases and causing the re-emergence of past problems. The practical component is designed to enhance students' practical skills and to complement the lecture series. Clinical tutorial sessions underpin and investigate the application of the material covered in the practical classes.

Textbooks
Murray P.R.et al. Medical Microbiology. 5th ed., Mosby, 2005.

MICR3911
Microbes in Infection (Advanced)

Credit points: 6 **Teacher/Coordinator:** Mrs Helen Agus **Session:** Semester 1 **Classes:** Two 1 hour lectures per week, plus an additional six 1 hour lectures per semester. One 3 hour practical per week. **Prerequisites:** At least 6 credit points of MBLG units and Distinction in MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including in BMED (2807 or 2808) with a Distinction in one of these two. For BScAgr students: PLNT (2001 or 2901) and MICR (2022 or 2922) including one Distinction. **Prohibitions:** MICR3011, MICR3001, MICR3901 **Assessment:** One 2 hour exam, continuous assessment, practical work, one essay, one group presentation.

This unit is available to students who have performed well in Intermediate Microbiology and is based on MICR3011 with a series of additional lectures related to the research interests in the Discipline. Consequently, the unit of study content may change from year to year.

Textbooks
Murray P.R.et al. Medical Microbiology. 5th ed., Mosby, 2005.

MICR3012
Molecular Biology of Pathogens

Credit points: 6 **Teacher/Coordinator:** Dr D Carter **Session:** Semester 2 **Classes:** Two 1 hour lectures per week, six 5 hour practicals plus two practical-based tutorials per semester. **Prerequisites:** At least 6 credit points of MBLG units and MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802, 2807 and 2808). For BScAgr students: PLNT (2001 or 2901) and MICR2024. **Prohibitions:** MICR3912, MICR3002, MICR3902, MICR3003, MICR3903, MICR3004, MICR3904 **Assessment:** One 2 hour exam, continuous assessment, practical work

This unit of study is designed to provide an understanding of the virulence mechanisms underlying microbial disease at the molecular level. The following topics will be covered: pathogenic processes and the molecular basis of adhesion, cell invasion and immune evasion in bacteria; bacterial and fungal toxins and their associated diseases; modern topics in microbiology using selected microbial pathogens as examples; and modern techniques in the analysis, diagnosis and prevention of microbial diseases.

Textbooks
Salyers A.A. and Whitt D.D. Bacterial Pathogenesis. A Molecular Approach. 2nd ed., ASM, 2002

MICR3912
Molecular Biology of Pathogens (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr D Carter **Session:** Semester 2 **Classes:** Two 1 hour lectures per week plus an additional six 1 hour lectures per semester. Six 5 hour practicals plus two prac-based tutorials. **Prerequisites:** At least 6 credit points of MBLG units and Distinction in MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 or 2807 or 2808) with a Distinction in one of these three. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. **Prohibitions:** MICR3012, MICR3002, MICR3902, MICR3003, MICR3903, MICR3004, MICR3904 **Assessment:** One 2 hour exam, in class theory assessment, continuous assessment, practical work, written or oral report on advanced lecture topics.

This unit is available to students who have performed well in Intermediate Microbiology and is based on MICR3012 with a series of additional lectures related to the research interests in the Discipline. Consequently, the unit of study content may change from year to year.

Textbooks
Salyers A.A. and Whitt D.D. Bacterial Pathogenesis. A Molecular Approach. 2nd ed., ASM, 2002

MICR3022
Microbial Biotechnology

Credit points: 6 **Teacher/Coordinator:** Dr A Holmes **Session:** Semester 2 **Classes:** Two 1 hour lectures per week and six 5 hour practicals. **Prerequisites:** At least 6 credit points of MBLG units and 6 credit points of Intermediate MICR

units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 and 2807). For BScAgr students: PLNT (2001 or 2901) and MICR2024. **Prohibitions:** MICR3922, MICR3002, MICR3902 **Assessment:** One 2 hour exam, continuous assessment, practical work, practical reports

This unit of study will cover both traditional microbial biotechnologies and the impact of new technologies on the emergence of new industries. Existing applications are based on empirical management of a remarkably small proportion of microbial diversity. The past ten years have seen dramatic advances in the capacity to explore microbial diversity and actively manage microbial communities. This course will focus on how these new techniques are creating new opportunities in biotechnology. General applications to be covered include production of metabolites or small molecules by microbial cultures (alcohols and antibiotics), production of macromolecules in microorganisms (protein expression and DNA manipulations), and management of microbial communities in biotechnology (gastrointestinal health, waste treatment and prospecting). Specific new techniques covered will include gene discovery via environmental metagenomics; microarrays and high throughput screening for isolation and recovery of producers of novel bioactive compounds.

Textbooks
To be advised

MICR3922
Microbial Biotechnology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr A Holmes **Session:** Semester 2 **Classes:** Two 1 hour lectures per week, plus an additional six 1 hour lectures per semester. Six 5 hour practicals. **Prerequisites:** At least 6 credit points of MBLG units and Distinction in 6 credit points of Intermediate MICR units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 and 2807) with a Distinction in at least one of these two. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. **Prohibitions:** MICR3022, MICR3002, MICR3902 **Assessment:** One 2 hour exam, in class theory assessment, continuous assessment, practical work, practical reports, written or oral report on advanced lecture topics.

This unit is available to students who have performed well in Intermediate Microbiology and is based on MICR3022 with a series of additional lectures related to the research interests in the Discipline. Consequently, the unit of study content may change from year to year.

Textbooks
To be advised

VIRO3001
Virology

Credit points: 6 **Teacher/Coordinator:** Mrs Helen Agus **Session:** Semester 1 **Classes:** Two 1 hour lectures per week; Five 2 hour tutorials and six 4 hour practicals per semester. **Prerequisites:** At least 6 credit points of MBLG units and at least 6 credit points in Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI or PLNT units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED2802. For BScAgr students: PLNT (2001 or 2901) and MICR2024. **Prohibitions:** VIRO3901 **Assumed knowledge:** MICR (2021 or 2921 or 2022 or 2922) **Assessment:** One 2 hour exam, practical work, group presentations

Note: Students are very strongly advised to complete VIRO (3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Session 2.

This unit of study is designed to introduce students who have a basic understanding of molecular biology to the field of virology. Through an examination of virus structure, genomes, replication and gene expression, viral infection in plant and animal cells is covered, progressing to examine host-virus interactions, pathogenesis, cell injury and prevention and control of infection in both eukaryotic and prokaryotic cells. Bacteriophage structure and infection of prokaryotic cells is also covered. The structure and replication of sub-viral agents: viroids and prions, and their role in disease and significance in the context of transmission via blood products are discussed. Detection of viral illness by serology and molecular techniques such as ELISA, Western blotting, PCR and sequencing will also be covered. The hands-on practical component is designed to enhance students' practical skills and to complement the lecture series by introducing students to cell culture, cytopathic effect, serology and molecular detection techniques. Tutorials and case studies will cover specific themes and problems.

Textbooks
To be advised

VIRO3901
Virology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Mrs Helen Agus **Session:** Semester 1 **Classes:** Two 1 hour lectures per week, plus an additional five 1 hour lectures per semester; five 2 hour tutorials and six 4 hour practicals per semester. **Prerequisites:** At least 6 credit points of MBLG units and at least 6 credit points including one Distinction in Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI or PLNT units. For BMedSc students: 42 credit points of Intermediate BMED units including Distinction in BMED2802. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. **Prohibitions:** VIRO3001 **Assumed knowledge:** MICR (2021 or 2921 or 2022 or 2922) **Assessment:** One 2 and a half hour exam, continuous assessment, practical work, group presentations.

Note: Students are very strongly advised to complete VIRO (3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Session 2.

This unit is available to students who have performed well in Intermediate Microbiology and is based on VIRO3001 with a series of additional lectures related to the research interests in the Discipline. Consequently, the unit of study content may change from year to year.

VIRO3002
Medical and Applied Virology

Credit points: 6 **Teacher/Coordinator:** Dr Belinda Herring **Session:** Semester 2 **Classes:** One 2 hour lecture per week; one 2 hour tutorial and one 4 hour practical per fortnight. **Prerequisites:** 6 CP MBLG units and at least 6 CP from Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI units. For BMedSc Students: 42 credit points of Intermediate BMED units including BMED2807. **Assumed knowledge:** Intermediate microbiology, immunology, molecular biology and genetics. **Assessment:** Formal examination, progressive assessment, presentation, 2000 word essay, practical assignment.

Note: Students are very strongly recommended to complete VIRO(3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Semester 2.

This unit of study explores the way viruses invade cells, infect individual patients and spread in the community. Host/Virus interactions will also be described with a focus on the viral mechanisms that have evolved to combat and/or evade host defence systems. These features will be used to explain the symptoms, spread and control of particular human diseases ranging from the common cold to HIV. The unit will be taught by the Infectious Diseases and Immunology Unit of the Department of Medicine with the involvement of associated clinical and research experts who will contribute lectures on their own special interests and with contributions from the discipline of Microbiology. In the practical classes students will have the opportunity to develop their skills in performing and interpreting the methods currently used in diagnostic and research virology. In the tutorials emerging problems as diverse as SARS and liver cancer will be analysed in the light of the concepts and knowledge being studied in the course.

Textbooks
Principles of Virology. SJ Flint et al. ASM Press. 2004. ISBN 1-55581-259-7

Microbiology Honours

During the Honours year, students will be involved in a research program to produce a thesis under the direction of a supervisor. A seminar at the end of the year will also be given to provide a summary of the research project. Students are also expected to broaden their general knowledge of Microbiology through attendance at research seminars and through a coursework component in their first semester which will cover diverse aspects of the subject. The coursework involves an essay as well as analysis of recently published papers in Microbiology. An expression of interest in Honours is required from students before the Honours year, on a form to be lodged with the Honours Coordinator. Entry into the Honours year is usually dependent on an average of Credit level performance in Senior Microbiology units of study. Additionally, strong students with related training may be admitted by permission of the Head of School.

Molecular Biology and Genetics

Molecular Biology and Genetics units of study in at Junior and Intermediate level will be taught by staff from the School of Molecular and Microbial Biosciences and the School of Biological Sciences. The Junior unit, MBLG1001, and the Intermediate unit, MBLG2071/2971,

are coordinated by the School of Molecular and Microbial Biosciences, while MBLG 2072/2972 is coordinated by the School of Biological Sciences.

MBLG1001
Molecular Biology and Genetics (Intro)

Credit points: 6 **Teacher/Coordinator:** Dr Dale Hancock **Session:** Semester 2 **Classes:** Two 1 hour lectures per week; one 1 hour tutorial and one 4 hour practical per fortnight. **Prohibitions:** AGCH2001, BCHM2001, BCHM2101, BCHM2901, MBLG2101, MBLG2901, MBLG2001, MBLG2111, MBLG2771, MBLG2871 **Assumed knowledge:** 6 credit points of Junior Biology and 6 cp of Junior Chemistry **Assessment:** One 2.5 hour exam, in-semester skills test and assignments

The lectures in this unit of study introduce the "Central Dogma" of molecular biology and genetics -i.e., the molecular basis of life. The course begins with the information macro- molecules in living cells: DNA,RNA and protein, and explores how their structures allow them to fulfill their various biological roles. This is followed by a review of how DNA is organised into genes and chromosomes leading to discussion of gene expression (transcription and translation) and replication. The unit concludes with an introduction to the techniques of molecular biology and, in particular, how these techniques have led to an explosion of interest and research in Molecular Biology. The practical component complements the lectures by exposing students to experiments which explore the measurement of enzyme activity, the isolation of DNA and the 'cutting' of DNA using restriction enzymes. However,a key aim of the practicals is to give students higher level generic skills in computing, communication, criticism, data analysis/evaluation and experimental design.

Textbooks
Malacinski,G M The Essentials of Molecular Biology (4th edition, Jones and Bartlett,2003)

MBLG1999
Molecular Biology & Genetics Seminar A

Session: Semester 2 **Classes:** Four 1 hour seminars per semester. **Corequisites:** MBLG1001 **Assessment:** There will be no assessment for this unit.

Note: Only available in the BSc(MBG)

This unit consists of four introductory molecular biology and genetics research based seminars.

MBLG2071
Molecular Biology and Genetics A

Credit points: 6 **Teacher/Coordinator:** Ms Vanessa Gysbers **Session:** Semester 1 **Classes:** Two 1 hour lectures per week; one 1 hour tutorial and one 4 hour practical per fortnight. **Prerequisites:** MBLG1001 and 12 CP of Junior Chemistry. **Prohibitions:** MBLG2971, MBLG2771, MBLG2871, MBLG2001, MBLG2101, MBLG2901, MBLG2111, PLNT2001, AGCH2001, BCHM2001, BCHM2101, BCHM2901 **Assessment:** One 2.5 hour exam, practical work, 2 assignments.

Note: Students enrolled in the combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) must have completed all Junior units for this course prior to enrolling in this unit.

This unit of study extends the basic concepts introduced in MBLG1001 and provides a firm foundation for students wishing to continue in the molecular biosciences as well as for those students who intend to apply molecular techniques to other biological or medical questions. The unit explores the regulation of the flow of genetic information in both eukaryotes and prokaryotes. The central focus is on the control of replication, transcription and translation and how these processes can be studied and manipulated in the laboratory. Experiments in model organisms are provided to illustrate how the field has advanced, together with discussion of work carried out in human systems and the relevance to human genetic diseases. The tools of molecular biology are taught within the context of recombinant DNA-cloning - with an emphasis on essential knowledge required to use plasmid vectors to produce proteins from cloned genes, the use of genomic libraries, cDNA libraries, and methods for screening libraries. The methods of gene introduction (examples of transgenic plants and animals) are also discussed. Other techniques include PCR methodology and its use for cloning specific genes and detection of polymorphisms, separating DNA fragments by gel electrophoresis and analysis of macromolecules by Southern, Northern & Western blotting. In the genomics section, topics include assigning genes to specific chromosomes, high resolution chromosome mapping, DNA markers, physical mapping of genomes as well as DNA and genome sequencing methods and international projects in genome mapping. The practical course complements the theory and builds on the skills learnt in MBLG1001. Specifically students will: use spectrophotometry for the identification and quantification of nucleic acids, explore the lac operon system for the investigation of gene expression control, perform PCR analysisAs with MBLG1001, strong emphasis is placed on the acquisition of generic and technical skills.

Textbooks
Watson, J et al. Molecular Biology of the Gene (5th edition, Pearson, 2004)

MBLG2971
Molecular Biology and Genetics A (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Dale Hancock **Session:** Semester 1 **Classes:** Two 1 hour lectures per week; one 1 hour tutorial and one 4 hour practical per fortnight. **Prerequisites:** 12 credit points of Junior Chemistry and Distinction in MBLG1001 **Prohibitions:** MBLG2071, MBLG2771, MBLG2871, MBLG2001, MBLG2101, MBLG2901, MBLG2111, PLNT2001, AGCH2001, BCHM2001, BCHM2101, BCHM2901 **Assessment:** One 2.5 hour exam, practical work, 2 assignments.

Note: Students enrolled in the combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) must have completed all Junior units for this course prior to enrolling in this unit.

Extension of concepts presented in MBLG2771 which will be taught in the context of practical laboratory experiments.

Textbooks
Watson, J et al. Molecular Biology of the Gener (5th edition, Pearson, 2004)

MBLG2072
Molecular Biology and Genetics B

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures per week; one 2-3 hour practical per week. One tutorial every second week. **Prerequisites:** BIOL (1001 or 1101 or 1901) and MBLG1001 and 12 credit points of Junior Chemistry **Prohibitions:** MBLG2972, MBLG2102, MBLG2002, MBLG2902 **Assumed knowledge:** One of MBLG2071, MBLG2771, MBLG2001, MBLG2871, MBLG2971, MBLG2901 **Assessment:** One 2 hour exam (50%), laboratory reports and quizzes (50%).

This unit of study builds on the concepts introduced in MBLG2071 and shows how modern molecular biology is being applied to the study of the genetics of all life forms from bacteria through to complex multicellular organism including plants, animals and humans. Lecture topics include classical Mendelian genetics with an emphasis on its molecular basis, cytogenetics, bacterial genetics and evolution, molecular evolution, bioinformatics and genomics, developmental genetics and the techniques and applications of molecular genetics. Practical: In laboratory exercises you will use a variety of prokaryotic and eukaryotic organisms to illustrate aspects of the lecture material, while developing familiarity and competence with equipment used in molecular techniques, microscopes, computers and statistical tests. Generic skills are developed in report writing, oral presentation, problem solving and data analysis. This is a core Intermediate unit of study in the BSc (Molecular Biology and Genetics) degree program.

MBLG2972
Molecular Biology and Genetics B (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures per week; one 2-3 hour practical per week. One tutorial every second week. **Prerequisites:** Distinction in one of MBLG2071, MBLG2771, MBLG2001, MBLG2871, MBLG2971, MBLG2901 **Prohibitions:** MBLG2072, MBLG2102, MBLG2002, MBLG2902 **Assessment:** One 2 hour exam (50%), laboratory reports and quizzes (50%).

Qualified students will participate in alternative components of MBLG2072, Molecular Biology and Genetics B. The content and nature of these components may vary from year to year.

MBLG3999
Molecular Biology & Genetics Seminar B

Session: Semester 2 **Classes:** Four 1 hour seminars (available by invitation only from MBLG program chair) **Assessment:** There will be no assessment for this unit.

Note: Department permission required for enrolment .
Note: Only available in the BSc(MBG)

This unit consists of four advanced molecular biology and genetics research based seminars.

Molecular Biotechnology

The following units of study are only available to students in the Bachelor of Science (Molecular Biotechnology) degree. Please consult degree information in chapter 4, and the relevant Departments/Schools entries in this chapter for descriptions of other units of study required for this degree.

MOBT2102
Molecular Biotechnology 2

Credit points: 6 **Teacher/Coordinator:** Dr Rachel Codd **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** 12 credit points of Junior Biology and 12 credit points of Junior Chemistry **Prohibitions:** MOBT2001 **Assessment:** One 2 hour theory exam (70%) and in-semester assessments (30%). NB Students must pass the theory exam to pass the unit overall.

Note: This unit of study is only available to students in the BSc (Molecular Biotechnology).

The main purpose of this unit of study is to introduce students to the core concepts of modern molecular biotechnology and build a base for future study in this discipline. It assumes students will have knowledge of Molecular Biology and Genetics through previous study of MBLG1001 and MBLG2771/2871 and concurrent study of MBLG2072/2972. It commences with an introduction to the biotechnology revolution and its impact worldwide. Students are then introduced to how large biomolecules are exploited in drug discovery with discussions of structural diversity in macromolecules, the construction of synthetic peptide and oligonucleotide combinatorial libraries, the uses and screening of such libraries in drug discovery together with examples from industry. This unit proceeds with considerations of the chemical synthesis of pharmaceuticals to specific drug targets. Structure-activity relationships, the use of biomolecules such as proteins versus natural products in drug design, the role of DNA as a drug target, and the importance of metals ions are all discussed together with case studies from industry. Issues associated with pharmaceutical stability and metabolism are then described. The unit concludes with an overview of the commercialization of discoveries in science with consideration given to the role of researchers, university and industry interactions, and regulatory and patent issues. This is followed by an appreciation of the societal impact and ethics of biotechnology, including how the industry and researchers interact with, and inform, the public. Guest lecturers will contribute to these presentations to help students develop an appreciation of emerging areas in molecular biotechnology from a broad perspective.

Textbooks
Molecular Biotechnology: Principles and Applications of Recombinant DNA, Bernard R. Glick and Jack J. Pasternak, 3rd Edition, 2003, ASM Press, Washington, ISBN 1-55581-224-4 (hardcover) or ISBN 1-55581-269-4 (paperback)

MOBT3101
Molecular Biotechnology 3A

Credit points: 6 **Teacher/Coordinator:** Dr. Neville Firth **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** MOBT2102 **Prohibitions:** MOBT2002 **Assumed knowledge:** MBLG (2072 or 2972). **Assessment:** One 2 hour theory exam (70%) and in-semester assessments (30%). Students must pass the theory exam to pass the unit overall.

Note: NB: This unit of study is only available to students in the BSc (Molecular Biotechnology).

This unit of study builds on MOBT 2102 and to expand concepts and applications of modern molecular biotechnology. It assumes students have previously been taught molecular biology and genetics through MBLG 2072/2972. It commences with the synthesis of commercial products by recombinant microorganisms, including small biological molecules, antibiotics, polymers, nucleic acids and proteins, then leads onto large-scale production of proteins from recombinant microorganisms. Students will be introduced to scaled-up microbial growth and bioreactors, combined with typical large-scale fermentation systems and downstream processing. This will be broadened to an appreciation of yeast and mammalian cells in large-scale production. Examples of major protein-based therapeutics will be examined in detail. The unit introduces students to genome sequencing and technologies, and follows with the impact of proteomics in identifying new drug targets and therapeutics, its interplay with genomics, disease states, quantitative vs. qualitative profiles, and the role of bioinformatics in data and database management. The role of protein structure on function and the engineering of protein structures in briefly described. Agricultural and environmental biotechnology is introduced with a focus on promoting plant growth, the utilization of starch and cellulose, the application of enzymes in food processing, bioremediation strategies and green manufacturing technologies, and the impact heavy metals and pesticides on the environment. Issues facing start-up companies and the commercialization of discoveries complete the unit.

Textbooks
"Molecular Biotechnology: Principles and Applications of Recombinant DNA", Bernard R. Glick and Jack J. Pasternak, 3rd Edition, 2003, ASM Press, Washington, ISBN 1-55581-224-4 (hardcover) or ISBN 1-55581-269-4 (paperback)

MOBT3202
Molecular Biotechnology 3B Project

Credit points: 6 **Teacher/Coordinator:** A/Prof Kevin Downard **Session:** Semester 2 **Classes:** 75 hours industry related project over the semester **Prerequisites:** MOBT2002 or MOBT3101 **Prohibitions:** MOBT3002, MOBT3102 **Assessment:** Presentation, project report and essay

Note: This unit of study is only available to students in the BSc (Molecular Biotechnology).

This Senior unit of study builds on the knowledge gained in earlier units of modern molecular biotechnology. It emphasizes applications of molecular biotechnology including product design, research and development, and the importance of recognizing industry trends. This will typically involve an industry placement or a detailed industry case study, on-site visits, and interactions with industry partners in association with university staff. To maximize future opportunities, students will learn about funding and research and development. As well as industry-relevant experience, students will research biotechnology kits and technologies.

Textbooks
"Molecular Biotechnology: Principles and applications of Recombinant DNA", Bernard R.Glick and Jack J Pasternack, 3rd edition, 2003, ASM Press, Washington, ISBN 1-55581-224-4 (hardcover) or ISBN 1-5581-269-4 (paperback)

School of Molecular and Microbial Biosciences

The School brings together the disciplines of Biochemistry, Microbiology, Molecular Biotechnology and Nutrition , with separate study codes BCHM, MICR, MOBT [see Table IE for details of the BSc (Molecular Biotechnology)] and NUTR [see Table IF for details of the BSc (Nutrition)]. Significant contributions are also made to the Intermediate faculty units of study in Molecular Biology and Genetics with study code MBLG[see Table ID for details of the BSc (Molecular Biology and Genetics)] and to the units of study in Molecular Biotechnology [see Table IE for details of the BSc (Molecular Biotechnology)].

Location of unit descriptions

Unit descriptions are located under separate headings in this chapter: Biochemistry (BCHM); Microbiology (MICR); Molecular Biology and Genetics (MBLG); Molecular Biotechnology (MOBT); Molecular Biology and Genetics; Nutrition (NUTR).

Location

The School is located in the Biosciences Biochemistry and Microbiology Building (G08), across near City Road in the Darlington area behind the Wentworth Building.

Nanoscience and Technology

Nanoscience and Technology is an interdisciplinary major offered within the BSc. It is directed at students interested in understanding the emerging science of working and building at and near the molecular level. It incorporates study of the fundamental sciences in order to understand the structure of matter, as well as technological elements of the mechanical properties of materials. Students undertaking this major are strongly encouraged to take suitable units from the Faculty of Engineering in combination with Physics and Chemistry.

Majoring in Nanoscience and Technology

A student seeking to complete this major should study Physics and Chemistry in their Junior and Intermediate years together with some Engineering and Mathematics. In the Senior year it is possible to focus on two of the three discipline areas, or to continue to study elements of all three. This major may also be seen as a complement to a traditional major in Chemistry or Physics. Refer to Table 1 for an enrolment guide and to entries under the contributing schools and departments for unit descriptions. Engineering units are described in the Engineering Handbook.

Neuroscience

Neuroscience encompasses a diverse range of disciplines that cross traditional subject boundaries. The study of Neuroscience ranges from anatomy to neuronal function; the cellular and molecular biology of the neuron to the complex phenomena of perception; emotion and memory; from the regulation of breathing and blood pressure to movement; developing to ageing; normal cognition to neurodegeneration.

Majoring in Neuroscience

A major in Neuroscience is designed to provide a foundation in the basic biology of the brain as well as the fundamentals of cognition. Students are able to focus their cross-disciplinary studies with a molecular, cellular, anatomical and behavioural concentration. Refer to Table I for an enrolment guide and to entries in specific subject areas for Unit of Study descriptions. A cross-disciplinary major requires careful selection of subjects to fulfill the requirements of the major. Research in Neuroscience is vibrant and an international priority area.

Research in Neuroscience

There are many opportunities for high-achieving students to undertake honours study within the field of Neuroscience. Honours projects are typically undertaken within individual departments: Physiology, Anatomy, Pharmacology, Psychology, Pathology and associated institutes. Students should canvass respective departments during their senior studies for details of projects, admission criteria and enrolment details.

Neuroscience Coordinator

Dr Karen Cullen (Anatomy) is the co-ordinator for the Neuroscience major. Dr Cullen's contact email address is: kcullen@anatomy.usyd.edu.au

Nutrition

The Human Nutrition Unit in the School of Molecular and Microbial Biosciences offers units of study to students enrolled in the Bachelor of Science (Nutrition) degree. Please consult degree information in chapter 4 and Table 1F entries. Check the relevant Department/school entries in this chapter for descriptions of other units of study required for this degree.

NUTR2911

Food Science Introductory (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Kim Bell-Anderson **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 2.5 hour practical per week. **Prerequisites:** MBLG1001 and CHEM (1001 or 1101 or 1901 or 1903 or 1909) and CHEM (1002 or 1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1003 or 1902 or 1903). For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree completion of all Junior units in the table of units for this course. **Prohibitions:** NUTR2901 **Assessment:** One 3 hour exam, one 1 hour theory of practical exam, one assignment and 4 quizzes.

This unit of study aims to give a broad appreciation of foods as commodities; that is, the origin, history, cultural and nutritional importance of the major foods for human use. Further, aspects of food processing and cooking that affect the nutritional quality of these foods will be discussed. Food groups covered include animal foods, seafood, cereals, sugars, fats and oils, dairy products, legumes, nuts, vegetables, fruits, herbs and spices and alcohol. Topics in food science and technology include the principles of food preservation, aspects of the preparation and processing of cereals, dairy products, fats and oils, sugars and starches and meats. Food legislation is discussed as well as food additives, naturally occurring toxicants in foods, food pollutants, food safety, food hygiene and food microbiology. Practical classes investigate the nutritional and physical composition of food commodities, and demonstrate their behaviour and functional properties during normal culinary processes.

Textbooks

Charley H & Weaver C, Foods: A Scientific Approach 3rd Edition, Prentice Hall Inc.: New Jersey, 1998.
English R & Lewis J, Nutritional values of Australian Foods, AGPS: Canberra.
Mann J & Truswell AS, Essentials of Human Nutrition, Oxford University Press: Oxford. 3rd Edition 2006.

NUTR2912

Nutritional Science Introductory (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Kim Bell-Anderson **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 2.5 hour practical per week. **Prerequisites:** MBLG1001 and CHEM (1001 or 1101 or 1901 or 1903 or 1909) and CHEM (1002 or 1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1003 or 1902 or 1903). For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree completion of all Junior units in the table of units for this course. **Prohibitions:** NUTR2902 **Assumed knowledge:** NUTR2911 **Assessment:** One 3 hour exam, one 1 hour theory of practical exam, one assignment.

Information about the major nutrients, vitamins, the major and trace elements is presented with respect to food sources, consumption patterns, requirements for health, absorption, metabolism, nutritional/disease significance, deficiency states and the consequences of excess intakes. Practical classes cover aspects of food analysis of the student's own diet. The practicals are designed to give students hands-on experience in the determination of major and minor nutrients in foods using procedures and instrumentation used in food research and analytical laboratories. The data obtained in the laboratory will be compared with that obtained with reference to published data in food composition tables. Students will gain an appreciation of the limitations of both methods of data collection and will become competent in the use and interpretation of food composition software packages.

Textbooks

Proudlove RK, The Science and Technology of Foods, Forbes: London, 1985.
English R and Lewis J, Nutritional values of Australian Foods, AGPS: Canberra.
Mann J and Truswell AS, Essentials of Human Nutrition, Oxford University Press: Oxford. 3rd Edition, 2006.

NUTR3911

Nutritional Assessment Methods

Credit points: 6 **Teacher/Coordinator:** Dr Karen Webb **Session:** Semester 1 **Classes:** One 2 hour lecture, one 1 hour tutorial and one 2 hour practical per week. **Prerequisites:** NUTR2911 and NUTR2912 **Prohibitions:** NUTR3901 **Assessment:** 1 assignment, 3 practical reports, 3 tutorial papers

Basic concepts in nutritional status; four methods of dietary assessment in individuals, advantages and limitations; validation of dietary methods; nutritional guidelines, targets and recommended dietary intakes; computerized nutrient analysis; limitations of food

composition analysis. Behavioural influences on food intake. Nutritional assessment of individuals through clinical examination and commonly used laboratory biochemical tests for nutritional status; methods used to diagnose nutritional deficiencies; specificity, reliability of biochemical tests. Anthropometry and body composition; soft tissue measurement; percent body fat; reference standards; growth standards and percentiles.

Textbooks

Principles of Nutritional Assessment. 2nd ed. R.S. Gibson, Oxford University Press, New York, 2005.
Nutritional Assessment. A Laboratory Manual. RS Gibson, Oxford University Press, New York, 1993.

NUTR3912
Community and Public Health Nutrition

Credit points: 6 **Teacher/Coordinator:** Ms Soumela Amanatidis. **Session:** Semester 2 **Classes:** One 3 hour lecture and one 2 hour practical per week. **Prerequisites:** NUTR2911 and NUTR2912 **Prohibitions:** NUTR3902 **Assessment:** One 1 hour exam, 3 assignments

This unit of study covers topics such as nutrition through the Life cycle from infancy to old age; nutrition in vulnerable groups such as low income groups, indigenous populations and homeless youth and theories of food habits It helps students gain skills and knowledge in planning, implementing and evaluating nutrition health promotion programs for various population groups. Topics covered include, principles of health promotion, effective nutrition promotion strategies, program evaluation and program planning. It also looks at current public health nutrition strategies for promoting health and preventing diet related diseases. The delivery of material involves lectures, tutorials and workshops.

Textbooks

Hawe P, Degeling D and Hall J. Evaluating Health Promotion: A health worker's guide. McLennan and Petty, 1990. ISBN: 086 4330677.
Germov J and Williams L (Editors). A Sociology of Food and Nutrition (The Social Appetite). 2nd Edition, Oxford University Press, 2004. ISBN: 019550609.
Mann J & Truswell AS, Essentials of Human Nutrition. Oxford University Press, 2002. ISBN: 0-19-262756-2.

NUTR3921
Methods in Nutrition Practice

Credit points: 6 **Teacher/Coordinator:** Ms Soumela Amanatidis **Session:** Semester 1 **Classes:** One 2 hour lecture and one 3 hour practical per week. **Prerequisites:** NUTR2911 and NUTR2912 **Prohibitions:** NUTR3901 **Assessment:** One 2 hour exam

Basic concepts in nutritional epidemiology, advantages and limitations of epidemiological methods; biological markers of chronic disease; use of biostatistical tools in epidemiology; critical interpretation of published data. Survey questionnaire design and statistics.

Textbooks

Beagolehole, R, Bonita, R, Kjellstrom, T, Basic Epidemiology, World Health Organisation, Geneva, 2003, ISBN 924154465
Gibso, R, Principles of Nutritional Assessment, 2nd Ed., Oxford University Press, New York, 2005.

NUTR3922
Nutrition and Chronic Disease

Credit points: 6 **Teacher/Coordinator:** Ms Soumela Amanatidis **Session:** Semester 2 **Classes:** One 3 hour lecture and one 2 hour workshop per week. **Prerequisites:** NUTR2911 and NUTR2912 **Prohibitions:** NUTR3902 **Assessment:** One 2 hour exam, 2 assignments

This unit of study examines the relationship and evidence for the role of nutrition in the etiology of chronic diseases such as cancer, coronary heart disease, hypertension, obesity,dental caries and osteoporosis. It also investigates the current nutrition policies and guidelines that are aimed at preventing these diseases at a population level. These include National Dietary Guidelines, Recommended Dietary Intakes, food legislation and Commonwealth and State food policies. Students will also get an opportunity to examine the current popular fad diets on the market. There is also a section on developing communication skills for promoting positive nutrition messages using the media. The delivery of material involves lectures, tutorials and workshops.

Textbooks

Mann J & Truswell AS, Essentials of Human Nutrition. Oxford University Press, 2002. ISBN: 0-19-262756-2.
Bauer K and Sokokil C. Basic Nutrition Counselling Skills. Wadsworth, 2002. ISBN: 0727 916645.

Nutrition Honours

The coordinators for Nutrition Honours are Associate Professor S Samman and Ms Beth RohrlachStudents who have completed the three year Bachelor (Nutrition) may complete an honours year in either the clinical strand, or by research. Students who want accreditation as a dietician will need to complete the clinical strand.

Clinical Nutritional Science and Dietetics

Students in this strand enrol in and complete: NUTR4001 Clinical Nutritional Science A; NUTR4002 Clinical Nutritional Science B. The contact hours per week are a minimum of 15 and during intensive practicals will be 35. With problem based learning it is expected that a student will need to spend minimum of 20 h in self-directed learning. At the completion of this course students will be able to describe the pathophysiology and biochemistry of disease processes where nutrition is an important part of prevention and/or treatment and will be able to construct appropriate treatment regimes and prevention strategies for these diseases using their nutritional science knowledge.

Nutrition Research

Students in this strand enrol in and complete: NUTR 4101 Nutrition Research A; NUTR 4102 Nutrition Research B; NUTR 4103 Nutrition Research C; NUTR 4103 Nutrition Research D; Students will be involved in full-time research under the supervision of a staff member within the Human Nutrition Unit or a cognate department. During the year, students will be required to: (i) carry out a supervised research project; (ii) present a written project proposal and present orally a brief literature survey and aims of the project; (iii) write an essay based on the project; and (iv) deliver a seminar on the project. Students will prepare a project proposal, which should outline the aims, significance and background of the project, including an indication of the relationship of the project to the work of others, citing key references (not to be included in the 1000 word limit) where appropriate. A brief outline of methods and techniques to be used.

Pharmacology

This Department offers a general training in Pharmacology to students in the Faculty of Science. It provides three intermediate 6-credit point units of study and eight senior 6-credit point units of study.

PCOL2011
Pharmacology Fundamentals

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures per week; tutorials and laboratory sessions. **Prerequisites:** 6 credit points of Junior Chemistry and 6 credit points of Junior Biology or MBLG1001. **Prohibitions:** PCOL2001 **Assessment:** One 2 hour exam, in semester quizzes and reports.

This unit of study examines four basic areas in Pharmacology: (1) principles of drug action (2) pharmacokinetics and drug metabolism (3) autonomic and endocrine pharmacology, and (4) drug design. The delivery of material involves lectures, practicals, computer-aided learning and problem-based tutorials. Practical classes provide students with the opportunity of acquiring technical experience and teamwork skills. Problem-based tutorials are based on real-life scenarios of drug use in the community. These tutorials require students to integrate information obtained in lectures in order to provide solutions to the problems. Online quizzes accompany each module for self assessment.

Textbooks

Rang HP, Dale MM, Ritter JM & Moore PK, Pharmacology. 5th edn, Churchill Livingstone, 2003.
Study aid:
Neal MJ, Medical Pharmacology at a Glance. 4th edn, Blackwell Science, 2002
Reference books
Goodman and Gilman's The Pharmacological Basis of Therapeutics 10th edn, editors JG Hardman,
LE Limbird, 2001.
Patrick GL, An Introduction to Medicinal Chemistry 2nd edn, Oxford Uni press, 2001.

PCOL2012
Pharmacology: Drugs and People

Credit points: 6 **Teacher/Coordinator:** Dr B McParland **Session:** Semester 2 **Classes:** Two 1 hour lectures per week; tutorials and laboratory sessions. **Prerequisites:** 6 credit points of Junior Chemistry and 6 credit points of Junior Biology or MBLG1001. **Prohibitions:** PCOL2002, PCOL2003 **Assumed knowledge:** PCOL2011 **Assessment:** One 2 hour exam, in semester quizzes, reports.

This unit of study examines four important areas of Pharmacology: (1) drug action in the nervous system (2) drug discovery and development (3) pharmacotherapy of inflammation, allergy and gut disorders, and (4) drugs of recreation, dependence and addiction. The delivery of material involves lectures, practicals, computer-aided learning and problem-based tutorials. Practical classes provide students with the opportunity of acquiring technical experience and teamwork. Problem-based tutorials are based on real-life scenarios of drug use in the community. These tutorials require students to integrate information obtained in lectures in order to provide solutions to the problems. Online quizzes accompany each module.

Textbooks
Rang HP, Dale MM, Ritter JM & Moore PK, Pharmacology. 5th edn, Churchill Livingstone, 2003.
Study aid:
Neal MJ, Medical Pharmacology at a Glance. 4th edn, Blackwell Science, 2002
Reference books
Goodman and Gilman's The Pharmacological Basis of Therapeutics 10th edn, editors JG Hardman,
LE Limbird, 2001.

PCOL2555
Essentials of Pharmacology

Credit points: 6 **Session:** Summer Main **Classes:** On-line lectures and face-to-face tutorial and laboratory classes. **Prohibitions:** PCOL2011, PCOL2012 **Assumed knowledge:** 6cp of Junior Biology, 6 cp of junior Chemistry. **Assessment:** on-line quizzes and a final examination

This unit of study introduces students to the principles of drug action and allows them to develop an understanding of the therapeutic applications of drugs based on their underlying pharmacodynamic properties. It covers cardiovascular and renal drugs, chemotherapy, analgesics and anti-inflammatory agents, respiratory and gastro-intestinal drugs, drugs affecting peripheral and central neurotransmission and the principles of chemotherapy.

PCOL3011
Toxicology

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 3 hour tutorial/practical per week. **Prerequisites:** PCOL2001 or PCOL2011 and PCOL2012 or 36 credit points from Intermediate BMED units of study. **Prohibitions:** PCOL3001, PCOL3901, PCOL3911 **Assessment:** One 2 hour exam, in class quizzes, assignments.

This unit of study is designed to introduce students with a basic understanding of pharmacology to the discipline of toxicology. The unit considers the toxicology associated with therapeutic drugs (adverse drug reactions) and the associated issue of drug interactions. The pharmacogenetic basis of adverse reactions is also considered. The unit also considers aspects of environmental toxicology, particularly toxic reactions to environmental agents such as asbestos and pesticides. As part of the unit students are introduced to basic ideas about the collection and analysis of data from human populations, both in the structured situation of clinical trials and in analysis of retrospective data.

Textbooks
Klaasen, Curtis D. (2001) Casarett and Doull's Toxicology. 6th edition. McGraw Hill.

PCOL3911
Toxicology (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 3 hour tutorial/practical per week. **Prerequisites:** Distinction average in PCOL2011 and PCOL2012 or Distinction average in 36 credit points from Intermediate BMED units of study. **Prohibitions:** PCOL3001, PCOL3901, PCOL3011 **Assessment:** One 2 hour exam, in class quizzes, assignments.

This unit will consist of the lecture and practical components of PCOL3011. Students will be set special advanced assignments related to the material covered in core areas. These may also involve advanced practical work or detailed investigation of a theoretical problem.

Textbooks
Klaasen, Curtis D. (2001) Casarett and Doull's Toxicology. 6th edition. McGraw Hill.

PCOL3012
Drug Design and Development

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 3 hour tutorial/practical per week. **Prerequisites:** PCOL2001 or PCOL2011 and PCOL2012 or 36 credit points from Intermediate BMED units of study. **Prohibitions:** PCOL3001, PCOL3901, PCOL3912 **Assessment:** One 2 hour exam, in class quizzes, assignments.

This unit of study is designed to introduce students with a basic understanding of pharmacology to the field of medicinal chemistry associated with drug design, development and registration. It covers the main aspects of drug discovery and development by outlining the main considerations, and illustrates these using examples which include COX-2 inhibitors, statins, and viagra. The role of computers in drug design is emphasised by classwork and assignments on molecular modelling and structure-activity relationships. The course also extends to a section on the design of diverse pharmacological agents which include compounds for imaging by positron emission tomography (PET), as well as chemical and biological warfare agents, and riot control agents.

Textbooks
Patrick, Graham L. (2005) An Introduction to Medicinal Chemistry. 3rd edition. Oxford University Press.

PCOL3912
Drug Design and Development (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 3 hour tutorial/practical per week. **Prerequisites:** Distinction average in PCOL2011 and PCOL2012 or Distinction average in 36 credit points from Intermediate BMED units of study. **Prohibitions:** PCOL3001, PCOL3901, PCOL3012 **Assessment:** One 2 hour exam, in class quizzes, assignments.

This unit will consist of the lecture and practical components of PCOL3012. Students will be set special advanced assignments related to the material covered in core areas. These may also involve advanced practical work or detailed investigation of a theoretical problem.

Textbooks
Patrick, Graham L. (2005) An Introduction to Medicinal Chemistry. 3rd edition. Oxford University Press.

PCOL3021
Drug Therapy

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 3 hour tutorial/practical per week. **Prerequisites:** PCOL2011 and PCOL2012 or 36 credit points from Intermediate BMED units of study **Prohibitions:** PCOL3002, PCOL3902, PCOL3921 **Assessment:** One 2 hour exam, in class quizzes, assignments

This unit of study is designed to introduce students with a basic understanding of pharmacology to the theory and practice of drug therapy in the treatment of major disorders such as asthma, cancer and hypertension.

Textbooks
H.P. Rang, M.M. Dale, J.M. Ritter and P.K. Moore: Pharmacology, 5th edn (Churchill Livingstone, 2003)

PCOL3921
Drug Therapy (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 3 hour tutorial/practical per week. **Prerequisites:** Distinction average in PCOL2011 and PCOL2012 or in 36 credit points from Intermediate BMED units of study **Prohibitions:** PCOL3002, PCOL3902, PCOL3021 **Assessment:** One 2 hour exam, in class quizzes, assignments

Advanced students will complete the same core lecture material as students in PCOL3021 but carry out advanced level elective projects, practicals and tutorials.

Textbooks

H.P. Rang, M.M. Dale, J.M. Ritter and P.K. Moore: Pharmacology, 5th edn (Churchill Livingstone, 2003)

PCOL3022

Neuropharmacology

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 3 hour tutorial/practical per week. **Prerequisites:** PCOL2011, PCOL2012 or 36 credit points from Intermediate BMED units of study **Prohibitions:** PCOL3002, PCOL3902, PCOL3922 **Assessment:** One 2 hour exam, in-classes quizzes, assignments.

This unit of study is designed to introduce students with a basic understanding of pharmacology to the theory and practice of neuropharmacology in the treatment of neurological disorders such as Alzheimer's disease, epilepsy, depression, insomnia, pain, schizophrenia and stroke.

Textbooks

H.P. Rang, M.M. Dale, J.M. Ritter and P.K. Moore: Pharmacology, 5th edn (Churchill Livingstone, 2003).

PCOL3922

Neuropharmacology (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 3 hour tutorial/practical per week. **Prerequisites:** Distinction average in PCOL2011 and PCOL2012 or in 36 credit points from Intermediate BMED units of study **Prohibitions:** PCOL3002, PCOL3902, PCOL3022 **Assessment:** 2 lectures per week, 3 tutorials/practicals per week

Advanced students will complete the same core lecture material as PCOL3022 Neuropharmacology but carry out advanced level elective projects, practicals and tutorials.

Textbooks

As for PCOL3022

Pharmacology Honours

Subject to a satisfactory standard being attained in Pharmacology, a student may arrange to read for the Honours degree in this subject area. Much of the work will be arranged to suit the interest of the individual. The student will participate in a research project in progress in the Discipline. A research plan, literature review and a 50-page thesis on the research project must be prepared. Seminars on the literature review, the project and another chosen topic will be given by the student.

Physics

The School of Physics provides undergraduate units of study in Physics at Junior, Intermediate, Senior and Honours levels. Appropriate unit of study choices are available for candidates who wish to major in Physics, to proceed to Honours in Physics, or to combine Physics with a major in another subject area. Several other Faculties and Departments within the Faculty of Science require that Junior Physics be taken as part of the students' preparation for later studies in their more specialised fields. Similarly, Intermediate Physics units of study are taken by many Faculty of Engineering students, as well as by many Faculty of Science students who intend to major in other subjects. The School of Physics also provides units of study in Computational Science at Junior, Intermediate, Senior and Honours levels. For details see the Computational Science entry.

Location

Physics Junior units of study: lectures in Physics Building, laboratories in Carslaw Building. Physics Intermediate, Senior and Honours units of study: Physics Building.

Information

On noticeboards in the Physics Building as appropriate for each unit of study and outside the Physics Student Support Office (Room 202, ground floor, Physics Building), and also at the School of Physics website: www.physics.usyd.edu.au.

Registration

Junior units of study: In assigned laboratory sessions during the second week of each semester. Intermediate units of study: At first lecture, in the Physics Building. Senior units of study: At first lecture, in the Physics Building.

Advice on units of study

A member of the Physics staff is normally present among Faculty advisers during enrolment week to advise students. The Physics Student Support Office, Room 202, Physics Building, will arrange for students to meet advisers at other times. Further information about the School of Physics and its teaching program are available at www.physics.usyd.edu.au and on WebCT.

Physics junior units of study

There are seven different semester length units of study offered at the Junior level. Completion of one unit of study in each semester provides a solid foundation for further studies in Physics in higher years. PHYS1500 Astronomy cannot be counted towards the 12 credit points of Junior Physics needed as a prerequisite for Intermediate Physics. Each unit of study has a laboratory component. The first semester laboratory work provides an introduction to experimental techniques while reinforcing concepts of physics introduced in lectures. In second semester the laboratory work provides an introduction to electrical circuits and offers students the opportunity to design and undertake short experimental projects.

First semester

PHYS1001 (Regular); PHYS1002 (Fundamentals); PHYS1901 (Advanced)

Second semester

PHYS1003 (Technological); PHYS1004 (Environmental and Life Sciences); PHYS1902 (Advanced); PHYS1500 (Astronomy)

Information Booklet

Further information about Junior Physics units of study is contained in a booklet for intending commencing students available at enrolment or during O-Week or from the Physics Student Support Office (Room 202, ground floor, Physics Building (A28)). It is also available on the School of Physics website at www.physics.usyd.edu.au

PHYS1001

Physics 1 (Regular)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 3 hour laboratory and one 1 hour tutorial per week. **Corequisites:** Recommended concurrent Units of Study: MATH (1001/1901, 1002/1902) **Prohibitions:** PHYS1002 , PHYS1901 **Assumed knowledge:** HSC Physics **Assessment:** Laboratory (20%), assignments (10%), progressive test (5%), skills test (5%), examination (60%)

This unit of study is for students who gained 65 marks or better in HSC Physics or equivalent. The lecture series contains three modules on the topics of mechanics, thermal physics, and oscillations and waves.

Textbooks

Young & Freedman. University Physics. 11th edition, Addison-Wesley. 2004
Experimental Physics Laboratory Manual - School of Physics Publication.

PHYS1002

Physics 1 (Fundamentals)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 3 hour laboratory and one 1 hour tutorial per week. **Corequisites:** Recommended concurrent Units of Study: MATH (1001/1901, 1002/1902) **Prohibitions:** PHYS1001, PHYS1901 **Assumed knowledge:** No assumed knowledge of Physics **Assessment:** Laboratory (20%), assignments (10%), progressive tests (10%), examination (60%).

This unit of study is designed for students who have not studied Physics previously or scored below 65 in HSC Physics. The lecture series contains modules on the language of physics, mechanics, and oscillations and waves.

Textbooks

Hecht, E. Physics: Calculus, 2nd edition, Brooks/Cole 2000
Experimental Physics Laboratory Manual - School of Physics Publication.

PHYS1003
Physics 1 (Technological)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1hr lectures, one 3hr laboratory, one 1 hr tutorial per week. **Corequisites:** Recommended concurrent Units of Study: MATH (1003/1903), MATH (1005/1905). **Prohibitions:** PHYS1004, PHYS1902 **Assumed knowledge:** HSC Physics or PHYS (1001 or 1002 or 1901) or equivalent. **Assessment:** Laboratory (25%), assignments (10%), examination (65%)

Note: It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit

This unit of study is designed for students majoring in physical and engineering sciences and emphasis is placed on applications of physical principles to the technological world. The lecture series contains modules on the topics of fluids, electromagnetism, and quantum physics.

Textbooks
Young & Freedman. University Physics, 11th edition, Addison-Wesley. 2004
Experimental Physics Laboratory Manual - School of Physics Publication.

PHYS1004
Physics 1 (Environmental & Life Science)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 3 hour laboratory and one 1 hour tutorial per week. **Corequisites:** Recommended concurrent Units of Study: MATH (1003/1903), MATH (1005/1905). **Prohibitions:** PHYS1003, PHYS1902 **Assumed knowledge:** HSC Physics or PHYS (1001 or 1002 or 1901) or equivalent. **Assessment:** Laboratory (25%), assignments (10%), examination (65%)

Note: It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit

This unit of study has been designed specifically for students interested in further study in environmental and life sciences. The lecture series contains modules on the topics of properties of matter, electromagnetism, and radiation and its interactions with matter.

Textbooks
Hecht, E. Physics: Calculus, 2nd edition, Brooks/Cole 2000.
Experimental Physics Laboratory Manual - School of Physics Publication.

PHYS1500
Astronomy

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 2 hour laboratory and one 1 hour tutorial per week. **Assumed knowledge:** No assumed knowledge of Physics. **Assessment:** Laboratory (25%), essay (15%), tutorials (5%), night viewing project (5%), examination (50%)

This unit of study provides a broad understanding of the structure, scale and diversity of the universe and an appreciation of the scientific methods used to achieve this understanding. Current areas of investigation, new ideas and concepts which often receive wide media attention will be used to demonstrate how science attempts to understand new and remote phenomena and how our ideas of our place in the universe are changing. The range of topics includes the planets, the solar system and its origin, spacecraft discoveries, stars, supernovas, black holes, galaxies, quasars, cosmology and the Big Bang. It also includes day and night sky observing sessions. This unit of study cannot be counted as part of the 12 credit points of Junior Physics necessary for enrolment in Intermediate Physics.

Textbooks
Seeds MA. Horizons: Exploring the Universe. 9th edition, Brooks/Cole 2005
Astronomy Computer Exercises - School of Physics Publication.

PHYS1901
Physics 1A (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** Three 1 hour lectures, one 3 hour laboratory and one 1 hour tutorial per week. **Prerequisites:** UAI of at least 96, or HSC Physics result in Band 6, or PHYS1902, or Distinction or better in PHYS (1003 or 1004) or an equivalent unit. **Corequisites:** Recommended concurrent Units of Study: MATH (1001/1901,1002/1902). **Prohibitions:** PHYS1001, PHYS1002 **Assessment:** Laboratory (20%), assignments (10%), progressive test (5%), skills test (5%), examination (60%)

This Unit of Study is intended for students who have a strong background in Physics and an interest in studying more advanced topics. It proceeds faster than Physics 1 (Regular), covering further and more difficult material. The lecture series contains modules on the topics of mechanics, thermal physics, oscillations and waves, and chaos. The laboratory work also provides an introduction to computational physics using chaos theory as the topic of study.

Textbooks
Young and Freedman. University Physics, 11th edition, Addison-Wesley. 2004.
Experimental Physics Laboratory Manual - School of Physics Publication.

PHYS1902
Physics 1B (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures, one 3 hour laboratory and one 1 hour tutorial per week. **Prerequisites:** UAI of at least 96, or HSC Physics result in Band 6, or PHYS1901, or Distinction or better in PHYS (1001 or 1002) or an equivalent unit. **Corequisites:** Recommended concurrent unit of study: MATH (1003/1903), MATH (1005/1905). **Prohibitions:** PHYS1003, PHYS1004 **Assessment:** Laboratory (25%), assignments (10%), examination (65%).

Note: It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit

This unit of study is a continuation of Physics 1A (Advanced). Students who have completed PHYS1001 or PHYS1002 at Distinction level may enrol. It proceeds faster than Physics 1 (Technological), covering further and more difficult material. The lecture series contains modules on the topics of fluids, electricity and magnetism, and quantum physics.

Textbooks
Young & Freedman. University Physics, 11th edition, Addison-Wesley. 2004.
Experimental Physics Laboratory Manual - School of Physics Publication.

Physics intermediate units of study

Coordinator
Dr Gordon Robertson

Units of Study
There are three units at the Normal level and three at the Advanced level: PHYS2011/2911 Physics 2A (Normal/Advanced) - Semester 1; PHYS2012/2912 Physics 2B (Normal/Advanced) - Semester 2; PHYS2013/2913 Astrophysics and Relativity (Normal/Advanced) - Semester 2.

Students intending to major in Physics
Students intending to major in Physics are strongly encouraged to take all three. The Advanced versions can be taken by students who have achieved a Credit or better in their previous Physics units.

Progression to senior Physics
The prerequisites for Senior Physics units are PHYS2011/2911 and PHYS2012/2912. Students intending to major in Physics are strongly encouraged to take PHYS2013/2913 as well. Full details of Intermediate Physics unit of study structures, content and assessment policies are provided in the unit of study handbooks available at the start of semester on the School of Physics website at www.physics.usyd.edu.au and also on WebCT.

PHYS2011
Physics 2A

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures per week for 11 weeks; one 2 hour computational laboratory and one 3 hour laboratory per week for 9 weeks. **Prerequisites:** 12 credit points of Junior Physics (excluding PHYS1500 and PHYS1600) **Prohibitions:** PHYS2001, PHYS2901, PHYS2911, PHYS2101, PHYS2103, PHYS2213, PHYS2203 **Assumed knowledge:** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH (1005/1905) would also be useful **Assessment:** One 2 hour exam, one 1 hour computational test, practical work, practical report and oral presentation

In combination with two semesters of Junior Physics, this unit of study continues a first pass through the major branches of classical and modern physics, providing students with a sound basis for later Physics units or for studies in other areas of science or technology. Hence this unit suits students continuing with the study of physics at the general Intermediate level, and those wishing to round out their knowledge of physics before continuing in other fields. The major topics in this unit of study are: Optics: The wave nature of light, and its interactions with matter. Applications including spectroscopy and fibre optics. Nuclear Physics: The fundamental structure of matter. Computational Physics: In a PC-based computing laboratory students use simulation software to conduct virtual experiments in optics, which

illustrate and extend the relevant lectures. Students also gain experience in the use of computers to solve problems in physics. An introductory session is held at the beginning of semester for students who are not familiar with personal computers. Practical: Experimental Physics is taught as a laboratory module and includes experiments in the areas of optics, nuclear decay and particles, properties of matter, and other topics. Assessment is based on mastery of each attempted experiment. At the end of the semester students prepare a short report on one experiment and make an oral presentation on it.

Textbooks

Young and Freedman, University Physics, 11th ed. Pearson Education Inc. 2004
Serway, Moses and Moyer 'Modern Physics'. Brooks/Cole
Experimental Physics Notes, published by the School of Physics.

PHYS2012
Physics 2B

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures per week; one 2 hour computational laboratory per week for 11 weeks. **Prerequisites:** PHYS (1003 or 1004 or 1902) and PHYS (1001 or 1002 or 1901 or 2001 or 2901 or 2011 or 2911) **Prohibitions:** PHYS2102, PHYS2104, PHYS2902, PHYS2002, PHYS2912, PHYS2213, PHYS2203 **Assumed knowledge:** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH (1005/1905) would also be useful **Assessment:** One 3 hour exam, one 1 hour computational test

This unit of study is designed for students continuing with the study of physics at the general Intermediate level, and represents the beginning of a more in-depth study of the main topics of classical and modern physics. The lecture topics are: Quantum physics: The behaviour of matter and radiation at the microscopic level, modelled by the Schroedinger equation. Application to 1-dimensional systems including solid state physics. Electromagnetic properties of matter: Electric and magnetic effects in materials; the combination of electric and magnetic fields to produce light and other electromagnetic waves; the effects of matter on electromagnetic waves. Computational Physics: The computational physics component is similar to that of PHYS2011, except that the material illustrates topics in the quantum physics module.

Textbooks

Serway, Moses and Moyer 'Modern Physics'. Brooks/Cole

PHYS2013
Astrophysics and Relativity

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lectures per week for 11 weeks and one 3 hour laboratory per week for 12 weeks. **Prerequisites:** PHYS (1003 or 1004 or 1902) and PHYS (1001 or 1002 or 1901 or 2011 or 2911) **Corequisites:** PHYS (2012 or 2912) **Prohibitions:** PHYS2001, PHYS2901, PHYS2913, PHYS2101, PHYS2103 **Assumed knowledge:** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH 1005/1905 would also be useful **Assessment:** One 2 hour exam, practical work, practical report and oral presentation

This unit of study builds on the foundation provided by Junior Physics and first semester of Intermediate Physics, to provide an introduction to Astrophysics (Structure and evolution of stars), and Special Relativity (Space and time at high velocities). Practical: Experimental Physics is taught as a laboratory module and includes experiments in the areas of analysis of stellar images, electromagnetic phenomena, electronic instrumentation, quantum physics, and other topics. Assessment is based on mastery of each attempted experiment. At the end of the semester students may work in teams on a project. Students prepare a written report and oral presentation on their project or one experiment.

Textbooks

Young and Freedman, University Physics, 11th ed. Pearson Education Inc. 2004
Tango, Introduction to Stellar Astrophysics, published by the School of Physics
Experimental Physics Notes, published by the School of Physics
Other texts to be advised

PHYS2911
Physics 2A (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** Two 1 hour lectures per week for 11 weeks; one 2 hour computational laboratory and one 3 hour laboratory per week for 9 weeks. **Prerequisites:** Credit or better in PHYS (1901 or 1001 or 1002) and Credit or better in PHYS (1902 or 1003 or 1004). **Prohibitions:** PHYS2901, PHYS2001, PHYS2011, PHYS2101, PHYS2103, PHYS2213, PHYS2203 **Assumed knowledge:** MATH (1901/1001 and 1902/1002 and 1903/1003). MATH (1905/1005) would also be useful **Assessment:** One 2 hour exam, one 1 hour computational test, practical work, practical report and oral presentation

This unit of study is designed for students with a strong interest in Physics. The lecture topics are as for PHYS2011. They are treated in greater depth and with more rigorous attention to derivations than in PHYS2011. The assessment reflects the more challenging nature of the material presented. Computational Physics: As for PHYS2011, but at a more advanced level. Practical: As for PHYS2011, but at a more advanced level.

Textbooks

Young and Freedman, University Physics, 11th ed. Pearson Education Inc. 2004
Serway, Moses and Moyer 'Modern Physics'. Brooks/Cole
Experimental Physics Notes, published by the School of Physics.

PHYS2912
Physics 2B (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Three 1 hour lectures per week; one 2 hour computational laboratory per week for 11 weeks. **Prerequisites:** Credit or better in PHYS (1003 or 1004 or 1902) and Credit or better in PHYS (1001 or 1002 or 1901 or 2001 or 2901 or 2011 or 2911). **Prohibitions:** PHYS2102, PHYS2104, PHYS2902, PHYS2002, PHYS2012, PHYS2213, PHYS203 **Assumed knowledge:** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH 1005/1905 would also be useful **Assessment:** One 3 hour exam, one 1 hour computational test

Refer to PHYS2911 for an overall description of the Advanced Intermediate Physics program. The lecture topics are as for PHYS2012. Computational Physics: As for PHYS2012, but at a more advanced level.

Textbooks

Serway, Moses and Moyer 'Modern Physics'. Brooks/Cole

PHYS2913
Astrophysics and Relativity (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** Two 1 hour lecture per week for 11weeks; one 3 hour laboratory per week for 12 weeks. **Prerequisites:** Credit or better in PHYS (1003 or 1004 or 1902) and Credit or better in PHYS (1001 or 1002 or 1901 or 2011 or 2911) **Corequisites:** PHYS (2912 or 2012). **Prohibitions:** PHYS2001, PHYS2901, PHYS2013, PHYS2101, PHYS2103 **Assumed knowledge:** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH 1005/1905 would also be useful. **Assessment:** One 3 hour exam, practical work, practical report and oral presentation

This unit of study builds on the foundation provided by Junior Physics and first semester of Intermediate Physics, to provide an introduction to Astrophysics (Structure and evolution of stars), and Special Relativity (Space and time at high velocities). The material for the advanced unit is treated with more depth and more rigorous attention to derivations than in PHYS2013. Practical: Experimental Physics is taught as a laboratory module and includes experiments in the areas of analysis of stellar images, electromagnetic phenomena, electronic instrumentation, quantum physics, and other topics. Assessment is based on mastery of each attempted experiment. At the end of the semester students may work in teams on a project. Students prepare a written report and oral presentation on their project or one experiement.

Textbooks

Young and Freedman, University Physics, 11th ed. Pearson Education Inc. 2004
Tango, Introduction to Stellar Astrophysics, published by the School of Physics
Experimental Physics Notes, published by the School of Physics

Physics senior units of study

Coordinator

Associate Professor Tim Bedding

Majoring in Physics

Students intending to major in Physics, or to proceed to Physics Honours, must take at least 24 credit points of Senior Physics, which must include a Semester 1 Core unit (PHYS3040, 3940 or 3941); a Semester 2 Core unit (PHYS3060, 3960 or 3961); two Options units

(usually one in each semester). Further information concerning Senior Physics is available via www.physics.usyd.edu.au.

PHYS3015
Topics in Senior Physics A

Credit points: 6 **Session:** Semester 1 **Classes:** 40 per semester. **Prerequisites:** 12 credit points of Intermediate Physics **Assumed knowledge:** 6 credit points of Intermediate Mathematics **Assessment:** Exams and/or laboratory reports.

Note: Department permission required for enrolment .

This unit is normally restricted to students not majoring in Physics, giving them the flexibility to take a combination of modules that is not offered in the standard units. Please obtain permission from the Senior Physics Coordinator.

Textbooks
See the Senior Physics Handbook, available from the School of Physics or the website
http://www.physics.usyd.edu.au/ugrad/spc.html

PHYS3915
Topics in Senior Physics A (Advanced)

Credit points: 6 **Session:** Semester 1 **Classes:** 40 hours per semester **Prerequisites:** 12 credit points of Intermediate Physics. **Assumed knowledge:** 6 credit points of Intermediate Mathematics **Assessment:** Exams and/or laboratory reports.

Note: Department permission required for enrolment .

This unit of study covers the same topics as PHYS3015, with some more challenging material.

PHYS3025
Topics in Senior Physics B

Credit points: 6 **Session:** Semester 2 **Classes:** 40 hours per semester. **Prerequisites:** 12 credit points of Intermediate Physics **Assumed knowledge:** 6 credit points of Intermediate Mathematics **Assessment:** Exams and/or laboratory reports.

Note: Department permission required for enrolment .

This unit is normally restricted to students not majoring in Physics, giving them the flexibility to take a combination of modules that is not offered in the standard units. Please obtain permission from the Senior Physics Coordinator.

PHYS3925
Topics in Senior Physics B (Advanced)

Credit points: 6 **Session:** Semester 2 **Classes:** 40 hours per semester **Prerequisites:** 12 credit points of Intermediate Physics with a Credit average and 6 credit points of Intermediate Mathematics. **Assessment:** Exams and/or laboratory reports.

Note: Department permission required for enrolment .

This unit of study covers the same topics as PHYS3025, with some more challenging material.

PHYS3040
Electromagnetism & Physics Lab

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen lectures, twelve 4 hour practicals per semester **Prerequisites:** PHYS(2011 or 2911 or 2001 or 2901), PHYS(2012 or 2912 or 2002 or 2902), MATH(2061 or 2961 or 2067) **Prohibitions:** PHYS3940, PHYS3941, PHYS3011, PHYS3014, PHYS3016, PHYS3017, PHYS3911, PHYS3914, PHYS3916, PHYS3917 **Assessment:** One 1.5 hour exam, practical reports and oral presentation

The lectures cover the theory of electromagnetism, one of the cornerstones of classical physics. They introduce Maxwell's equations in their differential form, using the power of vector calculus. The main application will be to electromagnetic waves, including reflection and absorption, which have application in fields such as optics, plasma physics and astrophysics. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

Textbooks
Introduction to Electrodynamics (Third Edition) by David J Griffiths

PHYS3940
Electromagnetism & Physics Lab (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen 1 hour lectures and twelve x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with a grade of at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with a grade of at least Credit; MATH (2061 or 2961 or 2067) **Prohibitions:** PHYS3040, PHYS3941, PHYS3011, PHYS3014, PHYS3016, PHYS3017, PHYS3911, PHYS3914, PHYS3916, PHYS3917 **Assessment:** One 1.5 hour exam, practical reports and oral presentation

This unit covers the same topics as PHYS3040, but with greater depth and some more challenging material.

Textbooks
Introduction to Electrodynamics (Third Edition) by David J. Griffiths

PHYS3941
Electromagnetism & Special Project (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen lectures per semester, 3.5 hours per week in School of Physics **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; MATH (2061 or 2961 or 2067) **Prohibitions:** PHYS3040, PHYS3940, PHYS3961, PHYS3011, PHYS3911, PHYS3918, PHYS3928 **Assessment:** One 1.5 hour exam, project report and talk

Note: Department permission required for enrolment .
Note: Approval for this unit must be obtained from the School of Physics Senior Coordinator.

The lectures cover the theory of electromagnetism, one of the cornerstones of classical physics. They introduce Maxwell's equations in their differential form, using the power of vector calculus. The main application will be to electromagnetic waves, including reflection and absorption, which have application in fields such as optics, plasma physics and astrophysics. The project is carried out in a research group within the School of Physics, working on a research experiment or theoretical project supervised by a researcher. The aim is for students to acquire an understanding of the nature of research, to apply their knowledge of physics and scientific practice, and to serve as preparation for a research project at Honours level and beyond.

Textbooks
Introduction to Electrodynamics (Third Edition) by David J. Griffiths

PHYS3051
Thermodynamics/Biol. Physics & Lab

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **Prohibitions:** PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3058, PHYS3958, PHYS3059, PHYS3959 **Assessment:** One 2 hour exam, practical reports

The lectures on Thermodynamics provide a formal introduction to classical equilibrium thermodynamics, including chemical reactions, phases, and electric and magnetic fields, and an introduction to the principles of statistical mechanics. The Biological Physics component will cover applications of physics to biological systems, including topics such as molecular biology, structure and properties of polymers and proteins, thermodynamics of cells, transport of biomolecules, excitation of nerve impulses, and computer simulations of biological systems. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS3951
Thermodynamics/Biol. Physics & Lab (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **Prohibitions:** PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3058, PHYS3958, PHYS3059, PHYS3959 **Assessment:** One 2 hour exam, practical reports

This unit covers the same topics as PHYS3051, but with greater depth and some more challenging material.

PHYS3054

Nanoscience/Plasma Physics & Physics Lab

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **Prohibitions:** PHYS3954, PHYS3050, PHYS3950, PHYS3052, PHYS3952, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3059, PHYS3959, PHYS3070, PHYS3970, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978 **Assumed knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 2 hour exams, practical reports

Nanoscience is the study of the behaviour of light and matter as they interact with structures that have features on nanometre scales. This part of the course will cover the fundamental physics of nanoscience and the methods used for manipulating matter and creating structures on these scales. Plasma Physics is the study of ionised gases, which are collections of charged and neutral particles and form the main constituent of the Universe. The lectures cover the properties of plasmas and their applications, including nuclear fusion energy, materials synthesis and modification, environmental remediation, aerospace, nano and biomedical technologies. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS3954

Nanoscience/Plasma Physics & Lab (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **Prohibitions:** PHYS3054, PHYS3050, PHYS3950, PHYS3052, PHYS3952, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3059, PHYS3959, PHYS3070, PHYS3970, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978 **Assumed knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 2 hour exam, practical reports

This unit covers the same topics as PHYS3054, but with greater depth and some more challenging material.

PHYS3055

Nanoscience/Plasma/Thermodynamics

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen x three 1 hour lectures per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **Prohibitions:** PHYS3955, PHYS3050, PHYS3950, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3058, PHYS3958, PHYS3059, PHYS3959, PHYS3070, PHYS3970, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978 **Assumed knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 3 hour exam

Nanoscience is the study of the behaviour of light and matter as they interact with structures that have features on nanometre scales. This part of the course will cover the fundamental physics of nanoscience and the methods used for manipulating matter and creating structures on these scales. Plasma Physics is the study of ionised gases, which are collections of charged and neutral particles and form the main constituent of the Universe. The lectures cover the properties of plasmas and their applications, including nuclear fusion energy, materials synthesis and modification, environmental remediation, aerospace, nano and biomedical technologies. The lectures on Thermodynamics provide a formal introduction to classical equilibrium thermodynamics, including chemical reactions, phases, and electric and magnetic fields, and an introduction to the principles of statistical mechanics.

PHYS3955

Nanoscience/Plasma/Thermodynamics (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen x three 1 hour lectures per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **Prohibitions:** PHYS3055, PHYS3050, PHYS3950, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3058, PHYS3958, PHYS3059, PHYS3959, PHYS3070, PHYS3970, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978 **Assumed knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 3 hour exam

This unit covers the same topics as PHYS3055, but with greater depth and some more challenging material.

PHYS3057

Nanoscience/Thermodynamic/Biol.Phys

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen x three 1 hour lectures per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **Prohibitions:** PHYS3957, PHYS3050, PHYS3950, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3059, PHYS3959 **Assessment:** One 3 hour exam

Nanoscience is the study of the behaviour of light and matter as they interact with structures that have features on nanometre scales. This part of the course will cover the fundamental physics of nanoscience and the methods used for manipulating matter and creating structures on these scales. The lectures on Thermodynamics provide a formal introduction to classical equilibrium thermodynamics, including chemical reactions, phases, and electric and magnetic fields, and an introduction to the principles of statistical mechanics. The Biological Physics component will cover applications of physics to biological systems, including topics such as molecular biology, structure and properties of polymers and proteins, thermodynamics of cells, transport of biomolecules, excitation of nerve impulses, and computer simulations of biological systems.

PHYS3957

Nanoscience/Thermodynamic/Biol.Phys(Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen x three 1 hour lectures per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **Prohibitions:** PHYS3057, PHYS3050, PHYS3950, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3055, PHYS3955, PHYS3056, PHYS3958, PHYS3059, PHYS3959 **Assessment:** One 3 hour exam

This unit covers the same topics as PHYS 3057, but with greater depth and some more challenging material.

PHYS3059

Plasma/Thermodynamics/Biol. Physics

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen x three 1 hour lectures per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **Prohibitions:** PHYS3959, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3058, PHYS3958, PHYS3070, PHYS3970, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978 **Assumed knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 3 hour exam

Plasma Physics is the study of ionised gases, which are collections of charged and neutral particles and form the main constituent of the Universe. The lectures cover the properties of plasmas and their applications, including nuclear fusion energy, materials synthesis and modification, environmental remediation, aerospace, nano and biomedical technologies. The lectures on Thermodynamics provide a formal introduction to classical equilibrium thermodynamics, including chemical reactions, phases, and electric and magnetic fields, and an introduction to the principles of statistical mechanics. The Biological Physics component will cover applications of physics to biological systems, including topics such as molecular biology, structure and properties of polymers and proteins, thermodynamics of cells, transport of biomolecules, excitation of nerve impulses, and computer simulations of biological systems.

PHYS3959

Plasma/Thermodynamics/Biol.Physics (Adv)

Credit points: 6 **Session:** Semester 1 **Classes:** Nineteen x three 1 hour lectures per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901)

with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **Prohibitions:** PHYS3059, PHYS3051, PHYS3951, PHYS3052, PHYS3952, PHYS3053, PHYS3953, PHYS3054, PHYS3954, PHYS3055, PHYS3955, PHYS3056, PHYS3956, PHYS3057, PHYS3957, PHYS3058, PHYS3958, PHYS3070, PHYS3970, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978 **Assumed knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 3 hour exam

This unit covers the same topics as PHYS3059, but with greater depth and some more challenging material.

PHYS3060
Quantum Mechanics & Physics Lab

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS 2011 or 2911 or 2001 or 2901; PHYS 2012 or 2912 or 2002 or 2902; MATH 2061 or 2961 or 2067 **Prohibitions:** PHYS3960, PHYS3961, PHYS3011, PHYS3024, PHYS3026, PHYS3027, PHYS3911, PHYS3924, PHYS3926, PHYS3927 **Assessment:** One 1.5 hour exam, practical reports

The lectures cover the fundamental concepts and formalism of quantum dynamics, and the application to angular momentum and symmetry in quantum mechanics. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

Textbooks
None. Recommended reference: Quantum Physics of Atoms, Molecules, Solids, Nuclei, and Particles (Second Edition) by Robert Eisberg and Robert Resnick

PHYS3960
Quantum Mechanics & Physics Lab (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen 1 hour lectures and twelve x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; MATH (2061 or 2961 or 2067) **Prohibitions:** PHYS3060, PHYS3961, PHYS3011, PHYS3024, PHYS3026, PHYS3027, PHYS3911, PHYS3924, PHYS3926, PHYS3927 **Assessment:** One 1.5 hour exam, practical reports and oral presentation

This unit covers the same topics as PHYS3060, but with greater depth and some more challenging material.

Textbooks
Introductory Quantum Mechanics (Fourth Edition) by Richard L. Liboff

PHYS3961
Quantum Mechanics & Special Project(Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen lectures per semester, 3.5 hours in School of Physics **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; MATH (2061 or 2961 or 2067) **Prohibitions:** PHYS3060, PHYS3960, PHYS3941, PHYS3011, PHYS3911, PHYS3918, PHYS3928 **Assessment:** One 1.5 hour exam, project report and oral presentation

Note: Department permission required for enrolment .
Note: Approval for this unit must be obtained from the School of Physics Senior Coordinator

The lectures cover the fundamental concepts and formalism of quantum dynamics, and the application to angular momentum and symmetry in quantum mechanics. The project is carried out in a research group within the School of Physics, working on a research experiment or theoretical project supervised by a researcher. The aim is for students to acquire an understanding of the nature of research, to apply their knowledge of physics and scientific practice, and to serve as preparation for a research project at Honours level and beyond.

Textbooks
Introductory Quantum Mechanics (Fourth Edition) by Richard L. Liboff

PHYS3062
Quantum/Cond Matter Physics & Lab

Credit points: 6 **Teacher/Coordinator:** Dr Tim Bedding **Session:** Semester 2 **Classes:** 19 x 2 one-hour lectures plus 6 x 4hr practicals per semester **Prerequisites:** PHYS2012 or PHYS2912 **Prohibitions:** PHYS3060, PHYS3960, PHYS3961, PHYS3962, PHYS3068, PHYS3968, PHYS3070, PHYS3970, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981 **Assessment:** one 1.5 hours exam, one 1hr exam, practical reports

This unit of study is intended for students majoring in Nanoscience and Technology. It should not be taken by students majoring in Physics. The lectures on Quantum Mechanics cover the fundamental concepts and formalism of quantum dynamics, and the application to angular momentum and symmetry in quantum mechanics. The lectures on Condensed Matter Physics cover the theoretical underpinning and properties of condensed matter, specifically the physics of solids. Semiconductors are investigated in detail, considering recent discoveries and new developments in nanotechnology and lattice dynamics. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS3962
Quantum/Cond Matter Physics & Lab (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Tim Bedding **Session:** Semester 2 **Classes:** 19 x 2 one-hour lectures plus 6 x 4hr practicals per semester **Prerequisites:** PHYS2012 or PHYS2912 with result of credit or better **Prohibitions:** PHYS3060, PHYS3960, PHYS3961, PHYS3062, PHYS3068, PHYS3968, PHYS3070, PHYS3970, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981 **Assessment:** one 1.5 hours exam, one 1hr exam, practical reports

This unit of study covers the same topics as PHYS3062, but with greater depth and some more challenging material.

PHYS3068
Optics/Cond. Matter & Lab

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) **Prohibitions:** PHYS3968, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3062, PHYS3962, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982 **Assumed knowledge:** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 2 hour exam, practical reports

The lectures on Optics introduce students to modern optics, using the laser to illustrate the applications in studying the properties of matter and many important optical phenomena. The lectures on Condensed Matter Physics cover the theoretical underpinning and properties of condensed matter, specifically the physics of solids. Semiconductors are investigated in detail, considering recent discoveries and new developments in nanotechnology and lattice dynamics. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS3968
Optics/Cond. Matter & Lab (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit **Prohibitions:** PHYS3068, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3062, PHYS3962, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982 **Assumed knowledge:** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 2 hour exam, practical reports

This unit covers the same topics as PHYS3068, but with greater depth and some more challenging material.

PHYS3069
Optics/High Energy Physics & Lab

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **Prohibitions:** PHYS3969, PHYS3050, PHYS3950,

PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3068, PHYS3968, PHYS3071, PHYS3971, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3076, PHYS3976, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982 **Assumed knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 2 hour exam, practical reports

The lectures on Optics introduce students to modern optics, using the laser to illustrate the applications in studying the properties of matter and many important optical phenomena. The lectures on High Energy Physics cover the basic constituents of matter, such as quarks and leptons, examining their fundamental properties and interactions, and their origin at the creation of the universe. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS3969

Optics/High Energy Physics & Lab (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **Prohibitions:** PHYS3069, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3068, PHYS3968, PHYS3071, PHYS3971, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3076, PHYS3976, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982 **Assumed knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 2 hour exam, practical reports

This unit covers the same topics as PHYS3069, but with greater depth and some more challenging material.

PHYS3071

High Energy/Astrophysics & Lab

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **Prohibitions:** PHYS3971, PHYS3069, PHYS3969, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982 **Assessment:** One 2 hour exam, practical reports

The lectures on High Energy Physics cover the basic constituents of matter, such as quarks and leptons, examining their fundamental properties and interactions, and their origin at the creation of the universe. The lectures on Astrophysics explore astrophysical environments inside stars and beyond (e.g. the interstellar medium, the intergalactic medium and galaxies themselves) and focus on one of the most important physical processes in astrophysics: the transport of radiative energy. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS3971

High Energy/Astrophysics & Lab (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **Prohibitions:** PHYS3071, PHYS3069, PHYS3969, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982 **Assessment:** One 2 hour exam, practical reports

This unit covers the same topics as PHYS3071, but with greater depth and some more challenging material.

PHYS3074

High Energy/Cond. Matter Physics & Lab

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **Prohibitions:** PHYS3974, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3073, PHYS3973, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982 **Assumed knowledge:** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) **Assessment:** One 2 hour exam, practical reports

Plasma Physics is the study of ionized gases, which are collections of charged and neutral particles and form the main constituent of the Universe. The lectures cover the properties of plasmas and their applications, including nuclear fusion energy, materials synthesis and modification, environmental remediation, aerospace, nano- and biomedical technologies. The lectures on High Energy Physics cover the basic constituents of matter, such as quarks and leptons, examining their fundamental properties and interactions, and their origin at the creation of the universe. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS3974

High Energy/Cond. Matter Phys.& Lab(Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x two 1 hour lectures and six x four 1 hour practicals per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit ; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **Prohibitions:** PHYS3074, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3073, PHYS3973, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982 **Assumed knowledge:** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) **Assessment:** One 2 hour exam, practical reports

This unit covers the same topics as PHYS3074, but with greater depth and some more challenging material.

PHYS3079

Cond. Matter/High Energy/Astrophysics

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen 3 hour lectures per semester **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **Prohibitions:** PHYS3979, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982 **Assumed knowledge:** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) **Assessment:** One 3 hour exam

The lectures on Condensed Matter Physics cover the theoretical underpinning and properties of condensed matter, specifically the physics of solids. Semiconductors are investigated in detail, considering recent discoveries and new developments in nanotechnology and lattice dynamics. The lectures on High Energy Physics cover the basic constituents of matter, such as quarks and leptons, examining their fundamental properties and interactions, and their origin at the creation of the universe. The lectures on Astrophysics explore astrophysical environments inside stars and beyond (e.g. the interstellar medium, the intergalactic medium and galaxies themselves) and focus on one of the most important physical processes in astrophysics: the transport of radiative energy.

PHYS3979

Cond. Matter/High Energy/Astrophys (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x three 1 hour lectures per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **Prohibitions:** PHYS3079, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3080, PHYS3980, PHYS3081, PHYS3981, PHYS3082, PHYS3982 **Assumed knowledge:** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) **Assessment:** One 3 hour exam

This unit covers the same topics as PHYS3079, but with greater depth and some more challenging material.

PHYS3080
Optics/Cond.Matter/High Energy Physics

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen 3 hour lectures per semester **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **Prohibitions:** PHYS3980, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3081, PHYS3981, PHYS3082, PHYS3982 **Assumed knowledge:** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 3 hour exam

The lectures on Optics introduce students to modern optics, using the laser to illustrate the applications in studying the properties of matter and many important optical phenomena. The lectures on Condensed Matter Physics cover the theoretical underpinning and properties of condensed matter, specifically the physics of solids. Semiconductors are investigated in detail, considering recent discoveries and new developments in nanotechnology and lattice dynamics. The lectures on High Energy Physics cover the basic constituents of matter, such as quarks and leptons, examining their fundamental properties and interactions, and their origin at the creation of the universe.

PHYS3980
Optics/Cond.Matter/High Energy Phys(Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x three 1 hour lectures per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **Prohibitions:** PHYS3080, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3081, PHYS3981, PHYS3082, PHYS3982 **Assumed knowledge:** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 3 hour exam

This unit covers the same topics as PHYS3080, but with greater depth and some more challenging material.

PHYS3081
Optics/Cond. Matter/Astrophysics

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen 3 hour lectures per semester **Prerequisites:** PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **Prohibitions:** PHYS3981, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3072, PHYS3972, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3082, PHYS3982 **Assumed knowledge:** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 3 hour exam

The lectures on Optics introduce students to modern optics, using the laser to illustrate the applications in studying the properties of matter and many important optical phenomena. The lectures on Condensed Matter Physics cover the theoretical underpinning and properties of condensed matter, specifically the physics of solids. Semiconductors are investigated in detail, considering recent discoveries and new developments in nanotechnology and lattice dynamics. The lectures on Astrophysics explore astrophysical environments inside stars and beyond (e.g. the interstellar medium, the intergalactic medium and galaxies themselves) and focus on one of the most important physical processes in astrophysics: the transport of radiative energy.

PHYS3981
Optics/Cond. Matter/Astrophysics (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x three 1 hour lectures per semester. **Prerequisites:** PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **Prohibitions:** PHYS3081, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3062, PHYS3962, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3070, PHYS3970, PHYS3071, PHYS3971, PHYS3072, PHYS3972, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3082, PHYS3982 **Assumed knowledge:** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 3 hour exam

This unit covers the same topics as PHYS3081, but with greater depth and some more challenging material.

PHYS3082
Optics/High Energy/Astrophysics

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen 3 hour lectures per semester **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) **Prohibitions:** PHYS3982, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3071, PHYS3971, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981 **Assumed knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 3 hour exam

The lectures on Optics introduce students to modern optics, using the laser to illustrate the applications in studying the properties of matter and many important optical phenomena. The lectures on High Energy Physics cover the basic constituents of matter, such as quarks and leptons, examining their fundamental properties and interactions, and their origin at the creation of the universe. The lectures on Astrophysics explore astrophysical environments inside stars and beyond (e.g. the interstellar medium, the intergalactic medium and galaxies themselves) and focus on one of the most important physical processes in astrophysics: the transport of radiative energy.

PHYS3982
Optics/High Energy/Astrophysics (Adv)

Credit points: 6 **Session:** Semester 2 **Classes:** Nineteen x three 1 hour lectures per semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit **Prohibitions:** PHYS3082, PHYS3050, PHYS3950, PHYS3053, PHYS3953, PHYS3056, PHYS3956, PHYS3058, PHYS3958, PHYS3068, PHYS3968, PHYS3069, PHYS3969, PHYS3071, PHYS3971, PHYS3072, PHYS3972, PHYS3073, PHYS3973, PHYS3074, PHYS3974, PHYS3075, PHYS3975, PHYS3076, PHYS3976, PHYS3077, PHYS3977, PHYS3078, PHYS3978, PHYS3079, PHYS3979, PHYS3080, PHYS3980, PHYS3081, PHYS3981 **Assumed knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) **Assessment:** One 3 hour exam

This unit covers the same topics as PHYS3082, but with greater depth and some more challenging material.

Physics Honours

Honours Coordinator

Dr Stephan Bartlett

Qualifying

24 credit points of senior Physics units of study or equivalent.

Classes

Six lecture courses and a research project

Assessment

Coursework examinations, a 40 page Research report and oral presentation of the Research project. Physics Honours comprises formal cousework (weight 50%) and a research project (weight 50%)

Undertaking an Honours year in Physics

The Honours program in Physics provides students with an opportunity to undertake an original research project as well as attend advanced lecture courses to give students a broad understanding of modern physics at a high level. All students satisfying the qualifying requirements as set out above and in the Science Faculty Honours section of this handbook are strongly encouraged to apply for entry into Physics Honours. Fulltime enrolment is equivalent to 48 credit

points for the year. Students are offered an opportunity to carry out independent research as a member of one of the active research groups in the School of Physics, under the supervision of a member of staff. Students may also study with staff from complementary disciplines, subject to the approval of the Honours coordinator. Honours students join a research group in the School of Physics and are encouraged to participate with staff and research students in activities within the School.They are provided with office accommodation, and are expected to attend colloquia and seminars. They may be employed for several hours per week in Junior teaching. Further information is available from the Physics Student Support Office, the Honours co-ordinator or from the website www.physics.usyd.edu.au/ugrad/hons.html.

Physiology

The Department of Physiology provides introductory general Intermediate units of study and for those wishing to major in the subject, in-depth Senior units of study. For Senior units the February semester offers Neuroscience and Human Cellular Physiology, and the July semester offers Heart and Circulation as well as further study in Neuroscience.

PHSI2005
Integrated Physiology A

Credit points: 6 **Teacher/Coordinator:** Dr Meloni Muir **Session:** Semester 1 **Classes:** Five 1 hour lectures, one 3 hour practical and one 3 hour tutorial per fortnight. **Prerequisites:** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study **Prohibitions:** PHSI2905, PHSI2001, PHSI2101, PHSI2901 **Assessment:** One written exam; group and individual written and oral presentations

Note: The completion of 6 credit points of MBLG units of study is highly recommended for progression to Senior Physiology. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites.

This unit of study gives a basic introduction to the functions of the nervous system, including excitable cell (nerve and muscle) physiology, sensory and motor systems and central processing. It also incorporates haematology and cardiovascular physiology. The practical component involves experiments on humans, isolated tissues, and computer simulations, with an emphasis on hypothesis generation and data analysis. Inquiry-based learning tutorial sessions will be integrated with this demonstrating the integrative nature of physiology. Both oral and written communication skills are emphasized, as well as group learning.

Textbooks
Lauralee Sherwood: Human Physiology: From Cells to Systems 5th edition 2004

PHSI2905
Integrated Physiology A (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Catherine Leamey and Dr Dario Protti **Session:** Semester 1 **Classes:** Five 1 hour lectures, one 3 hour practical and one 3 hour tutorial per fortnight.Advanced students will be exempt from attending some classes to permit meetings with supervisor. **Prerequisites:** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study **Prohibitions:** PHSI2005, PHSI2901, PHSI2001, PHSI2101 **Assessment:** One written exam; group oral and individual written presentations, 1 research essay (research essay will replace some other assessment items from regular course)

Note: Department permission required for enrolment .
Note: Permission from the coordinators is required for entry into this course. It is available only to selected students who have achieved a WAM of 65 (Credit average) or higher in their Junior units of study. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites. The completion of 6 credit points of MBLG units of study is highly recommended for progression to Senior Physiology

This unit of study is an extension of PHSI2005 for talented students with an interest in Physiology and Physiological research. The lecture/practical component of the course is run in conjunction with PHSI2005. This unit of study gives a basic introduction to the functions of the nervous system, including excitable cell (nerve and muscle) physiology, sensory and motor systems and central processing. It also incorporates haematology and cardiovascular physiology. The practical component involves experiments on humans, isolated tissues, and computer simulations, with an emphasis on hypothesis generation and data analysis. Inquiry-based learning tutorial sessions will be integrated with this demonstrating the integrative nature of physiology. Both oral and written communication skills are emphasized, as well as group learning. The advanced stream of the course gives students an opportunity to interact with academics in small groups (or one to one) and to carry out a research project. Students will be allocated a supervisor and a project according to interest and availability. A research project will be determined by the supervisor, and students will carry out a library-based research project and have the opportunity to discuss their progress and understanding of the topic at regular meetings with the supervisor. Students will submit their research assignment as a major component of their assessment for the course. This will replace some other assessable activities from the regular course. Students will also be exempt from attending some of the tutorial and/or practical classes in order to give them time to meet with their supervisor.

Textbooks
Lauralee Sherwood: Human Physiology: From Cells to Systems 5th edition 2004

PHSI2006
Integrated Physiology B

Credit points: 6 **Teacher/Coordinator:** Dr Meloni Muir **Session:** Semester 2 **Classes:** Five one hour lectures, one 3 hour practical and one 3 hour tutorial per fortnight. **Prerequisites:** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study **Prohibitions:** PHSI2906, PHSI2002, PHSI2102, PHSI2902 **Assessment:** One written exam; group and individual written and oral presentations

Note: The completion of Molecular Biology and Genetics A is highly recommended for progression to Senior Physiology. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites.

This unit of study gives a basic introduction to the functions of the remaining body systems: gastrointestinal, respiratory, endocrine, reproductive and renal. The practical component involves experiments on humans, isolated tissues, and computer simulations, with an emphasis on hypothesis generation and data analysis. Inquiry-based learning tutorial sessions will be integrated with this demonstrating the integrative nature of physiology. Both oral and written communication skills are emphasized, as well as group learning.

Textbooks
Lauralee Sherwood: Human Physiology: From Cells to Systems 5th edition 2004

PHSI2906
Integrated Physiology B (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Dario Protti and Dr Catherine Leamey **Session:** Semester 2 **Classes:** Five 1 hour lectures, one 3 hour practical and one 3 hour tutorial per fortnight.Advanced students will be exempt from attending some of these classes to permit meetings with supervisor. **Prerequisites:** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study **Prohibitions:** PHSI2006, PHSI2902, PHSI2002, PHSI2102 **Assessment:** One written exam; group oral and individual written presentations, 1 research essay (research essay will replace some other assessment items from regular course)

Note: Department permission required for enrolment .
Note: Permission from the coordinators is required for entry into this course. It is available only to selected students who have achieved a WAM of 65 (Credit average) or higher in their Junior units of study. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisite.The completion of Molecular Biology and Genetics A is highly recommended for progression to Senior Physiology.

This unit of study is an extension of PHSI2006 for talented students with an interest in Physiology and Physiological research. The lecture/practical component of the course is run in conjunction with PHSI2006. This unit of study gives a basic introduction to the remaining of the body systems: gastrointestinal, respiratory, endocrine, reproductive and renal. The practical component involves simple experiments on humans, isolated tissues, and computer simulations, with an emphasis on hypothesis generation and data analysis. Inquiry-based learning tutorial sessions will be integrated with this

demonstrating the integrative nature of physiology. Both oral and written communication skills are emphasized, as well as group learning. The advanced stream of the course gives students an opportunity to interact with academics in small groups (or one to one) and to carry out a research project. Students will be allocated a supervisor and a project according to interest and availability. A research project will be determined by the supervisor, and students will carry out a library-based research project and have the opportunity to discuss their progress and understanding of the topic at regular meetings with the supervisor. Students will submit their research assignment as a major component of their assessment for the course. This will replace some other assessable activities from the regular course. Students will also be exempt from attending some of the tutorial and/or practical classes in order to give them time to meet with their supervisor.

Textbooks
Lauralee Sherwood: Human Physiology: From Cells to Systems 5th edition 2004

Please note, all NEUR courses are taught and administered jointly by the Disciplines of Physiology and Anatomy& Histology and can form part of a major in Physiology, Anatomy & Histology or Neuroscience. NEUR3001/3901 and 3002/3902 are designed to be taken in conjunction with other. It is also strongly advised that NEUR3003/3903 and 3004/3904 be taken together. For information on NEUR3002 and NEUR3004 refer to page 160.

NEUR3001
Neuroscience: Special Senses

Credit points: 6 **Teacher/Coordinator:** Dr Dario Protti **Session:** Semester 1 **Classes:** Two 1 hour lectures per week; one 3 hour practical per fortnight and one 3 hour tutorial per fortnight. **Prerequisites:** For BMedSc students: BMED(2801 or 2503) and BMED(2806 or 2505) For other students: (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **Prohibitions:** PHSI3001, NEUR3901 **Assumed knowledge:** It is strongly recommended that students also take unit NEUR3002. PHSI2005 and ANAT2010 are assumed knowledge. **Assessment:** Two 1 hour exams, one prac report, tutorial papers, 2000 word essay.

The aim of this course is to provide students with an introduction to the structure and function of the nervous system and to the main concepts of processing of sensory information. Understanding basic sensory transduction mechanisms and the function of the sensory systems is necessary to understand how perceptual processes work in normal and disease conditions and provides a gateway to unravel the complexity of the mind. Basic aspects of low and high level sensory processing in all sense modalities will be covered, with a special emphasis in the auditory and visual systems. The relationship between sensory systems, perception and higher cognitive functions will be addressed.

Textbooks
Principles of Neural Science. Kandel, Schwartz, Jessel. 4th Ed, Elsevier, NY, 2000
or
Neuroscience: Exploring the brain. Bear, Connors, Paradiso. Baltimore: Williams & Wilkins, 2001

NEUR3901
Neuroscience: Special Senses (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Dario Protti **Session:** Semester 1 **Classes:** Two 1 hour lecture per week; one 3 hour practical per fortnight and one 3 hour tutorial per fortnight. Advanced students may be exempt from attending some of these classes to permit meetings with supervisor. **Prerequisites:** For BMedSc students: Credit average in BMED(2801 or 2503) and BMED(2806 or 2505) For other students: Credit average in (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **Prohibitions:** NEUR3001, PHSI3001, PHSI3901 **Assumed knowledge:** PHSI2005 and ANAT2010 **Assessment:** Two 1 hour exams, one prac report, tutorial papers, one research or library essay (research essay will replace some other assessment items from regular course).

Note: Permission from the coordinators is required for entry into this course. It is strongly recommended that students also take unit NEUR3002 or NEUR3902.

This unit of study is an extension of NEUR3001 for talented students with an interest in Neuroscience and research in this field. The lecture/practical component of the course is run in conjunction with NEUR3001. The aim of this course is to provide students with an introduction to the structure and function of the nervous system and to the main concepts of processing of sensory information. Understanding basic sensory transduction mechanisms and the function of the sensory systems is necessary to understand how perceptual processes work in normal and disease conditions and provides a gateway to unravel the complexity of the mind. Basic aspects of low and high level sensory processing in all sense modalities will be covered, with a special emphasis in the auditory and visual systems. The relationship between sensory systems, perception and higher cognitive functions will be addressed.

Textbooks
Principles of Neural Science. Kandel, Schwartz, Jessel. 4th Ed, Elsevier, NY, 2000
or
Neuroscience: Exploring the brain. Bear, Connors, Paradiso. Baltimore: Williams & Wilkins, 2001

NEUR3003
Cellular and Developmental Neuroscience

Credit points: 6 **Teacher/Coordinator:** Dr Kevin Keay and Dr Catherine Leamey **Session:** Semester 2 **Classes:** Three 1 hour lectures plus one 1 hour tutorial or one 2 hour practical per week. **Prerequisites:** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics **Prohibitions:** NEUR3903, PHSI3002, PHSI3902 **Assumed knowledge:** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **Assessment:** One 1 hour exam. Major essay/report.

Note: Enrolment in NEUR3004/3904 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.

This second semester unit is designed to introduce students to "cutting edge" issues in the neurosciences. This course is a combination of small lectures on current issues in cellular and developmental neuroscience and a research-based laboratory or library project. Issues covered in the lecture series will include the role of glial on cerebral blood flow and neural transmission, neurochemistry and psychiatric disorders and development of central and peripheral nervous system.

Textbooks
Kandell, Schwartz and Jessell "Principles of Neural Science" 4th edition.

NEUR3903
Cellular & Developmental Neurosci. (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Kevin Keay and Dr Catherine Leamey **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial or one 2 hour practical per week. **Prerequisites:** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. Plus, students must have a CREDIT (or better) in NEUR3001/3901 and NEUR3002/3902. **Prohibitions:** NEUR3003, PHSI3002, PHSI3902 **Assumed knowledge:** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **Assessment:** One 1 hour exam. Major essay/report. Mini-lecture.

Note: Department permission required for enrolment .
Note: Enrollment in NEUR3004/3904 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other. Students must receive permission from the coordinators for enrollment.

This unit encompasses the material taught in NEUR3003. Advanced students prepare and present a mini-lecture on a current topic in neuroscience research.

Textbooks
Kandell, Schwartz and Jessell "Principles of Neural Science" 4th edition.

For other NEUR units of study, see the entry for the Department of Antomy and Histology.

PHSI3005
Human Cellular Physiology: Theory

Credit points: 6 **Teacher/Coordinator:** Dr William Phillips **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) For BMedSc: BMED (2801 and 2802). **Prohibitions:** PHSI3905, PHSI3004, PHSI3904 **Assumed knowledge:** 6 credit points of MBLG **Assessment:** One 2 hour exam and 4-6 quizzes

Note: It is highly recommended that this unit of study be taken in conjunction with PHSI3006.

The aim of this unit of study is to examine key cellular processes involved in the growth, maintenance and reproduction of human life. Processes to be studied include the regulation of cell division and differentiation in developing and adult tissues, the regulation of body fluids through ion transport across epithelia, mechanisms of hormonal and nervous system signaling. Lectures will relate the molecular underpinnings to physiological functions: our current interpretation of how ion channels, hormone receptors and exocytotic complexes mediate tissue function and human life. The significance of these molecular mechanisms will be highlighted by considering how mutations and other disorders affect key proteins and genes and how this might lead to disease states such as cancer, intestinal and lung transport disorders and osteoporosis.

Textbooks
Molecular Biology of the Cell 4th Edn (Ed. Bruce Alberts, Publ. Garland Science)

PHSI3905
Human Cellular Physiology (Adv): Theory

Credit points: 6 **Teacher/Coordinator:** Dr William D. Phillips **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** Credit average in PHSI(2005 or 2905) and PHS(2006 or 2906) or in BMED (2801 and 2802). Students enroling in this unit should have a SciWAM of at least 68. **Prohibitions:** PHSI3005, PHSI3004, PHSI3904 **Assumed knowledge:** 6 credit points of MBLG **Assessment:** One 2 hour exam, one 2000 word report based on a mentored research project.

Note: Department permission required for enrolment .
Note: It is highly recommended that this unit of study be taken in combination with PHSI3906

The aim of this unit of study is to examine key cellular processes involved in the growth, maintenance and reproduction of human life. Processes to be studied include the regulation of cell division and differentiation in developing and adult tissues, the regulation of body fluids through ion transport across epithelia, mechanisms of hormonal and nervous system signaling and the regulation of muscle contraction. Lectures will relate the molecular underpinnings to physiological functions: our current interpretation of how ion channels, hormone receptors and exocytotic complexes mediate tissue function and human life. The significance of these molecular mechanisms will be highlighted by considering how mutations and other disorders affect key proteins and genes and how this might lead to disease states such as cancer, intestinal and lung transport disorders and osteoporosis. Please see the Physiology website for details of mentored Advanced research topics.

Textbooks
Molecular Biology of the Cell 4th Edn (Ed. Bruce Alberts, Publ. Garland Science)

PHSI3006
Human Cellular Physiology: Research

Credit points: 6 **Teacher/Coordinator:** Dr William D. Phillips **Session:** Semester 1 **Classes:** Two small group PBL and one 1 hour lecture per week; one 3 hour practical in some weeks. **Prerequisites:** Except for BMedSc students: PHSI (2005 or 2905) and PHSI(2006 or 2906) For BMedSc: BMED (2801 and 2802). **Corequisites:** PHSI3005 **Prohibitions:** PHSI3906, PHSI3004, PHSI3904 **Assessment:** One 1.5 hour exam, PBL assessments by oral presentations and paper summaries, prac reports.

This unit of study complements, and should be taken together with PHSI3005. PHSI3006 focuses deeply upon certain areas of cellular physiology that have particular relevance to human health and disease. In the problem-based learning (PBL) sessions groups of students work together with the support of a tutor to develop and communicate an understanding of mechanism underlying the physiology and patho-physiology of disorders such as cystic fibrosis and vitamin D resistance. Each problem runs over three weeks with two small group meetings per week. Reading lists are structured to help address written biomedical problems. Lectures provide an introduction to the biological and clinical features of the problem and advice on how to interpret scientific data of the type found in the research papers. Practical classes will emphasize experimental design and interpretation. Collectively, the PBL, lectures and practical classes aim to begin to develop skills and outlook needed to deal with newly emerging biomedical science.

Textbooks
Molecular Biology of the Cell 4th Edn (Ed. Bruce Alberts, Publ. Garland Science)

PHSI3906
Human Cellular Physiology (Ad): Research

Credit points: 6 **Teacher/Coordinator:** Dr William D. Phillips **Session:** Semester 1 **Classes:** Two small group PBL and one 1 hour lecture per week; one 3 hour practical in some weeks. **Prerequisites:** Credit average in PHSI (2005 or 2905) and PHSI(2006 or 2906) or in BMED (2801 and 2802). Students enroling in this unit should have a SciWAM of at least 68. **Corequisites:** PSYC3905 **Prohibitions:** PHSI3006, PHSI3004, PHSI3904 **Assumed knowledge:** 6 credit points of MBLG **Assessment:** One 1.5 hour exam, four PBL assessments by oral presentations and paper summaries, 1500w research report.

Note: Department permission required for enrolment .

This unit of study complements, and should be taken together with PHSI3005. PHSI3006 focuses deeply upon certain areas of cellular physiology that have particular relevance to human health and disease. In the problem-based learning (PBL) sessions groups of students work together with the support of a tutor to develop and communicate an understanding of mechanism underlying the physiology and patho-physiology of disorders such as cystic fibrosis and vitamin D resistance. Each problem runs over three weeks with two small group meetings per week. Reading lists are structured to help address written biomedical problems. Lectures provide an introduction to the biological and clinical features of the problem and advice on how to interpret scientific data of the type found in the research papers. Practical classes will emphasize experimental design and interpretation. Collectively, the PBL, lectures and practical classes aim to begin to develop skills and outlook needed to deal with newly emerging biomedical science. Please see the Physiology website for details of mentored Advanced research topics.

Textbooks
Molecular Biology of the Cell 4th Edn (Ed. Bruce Alberts, Publ. Garland Science)

PHSI3007
Heart and Circulation: Normal Function

Credit points: 6 **Teacher/Coordinator:** Prof Roger Dampney **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 3 hour practical or one 2 hour tutorial per week. **Prerequisites:** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of Study For BMedSc: BMED (2801 and 2803). **Prohibitions:** PHSI3907, PHSI3003, PHSI3903 **Assumed knowledge:** 6 credit points of MBLG **Assessment:** One 2 hour exam, two 1000w reports, one oral presentation.

Note: It is recommended that students take PHSI3007 ONLY in combination with PHSI3008.

The aim of this unit of study is to examine in depth the structure and function of the cardiovascular system at the organ system, cellular and molecular levels. There is a particular focus on exercise physiology and the way in which the heart, circulation and skeletal muscles contribute to the limits of sporting achievement. The excitability, contractility and energetics of the heart and blood vessels are studied and the regulation of these organs by local (physical and chemical) factors, hormones and the nervous system are discussed, with emphasis on cellular and molecular mechanisms. At the systemic level, short term (neural) mechanisms controlling the blood pressure and how the system behaves during exercise and other stresses is dealt with. Long term (hormonal) mechanisms regulating blood pressure via the renal control of extracellular fluid volume is also discussed. There is an emphasis in this unit of study on recent advances in cellular and molecular aspects of heart and the blood vessels and the regulation of these organs by local (physical and chemical) factors, hormones and the autonomic nervous system. Lectures will be complemented by practical classes and tutorials that reinforce the theory and emphasize experimental design, data interpretation and presentation.

PHSI3907
Heart & Circulation: Normal Function Adv

Credit points: 6 **Teacher/Coordinator:** Prof Roger Dampney **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 3 hour practical or one 2 hour tutorial per week. **Prerequisites:** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of Study For BMedSc: BMED (2801 and 2803). **Prohibitions:** PHSI3007, PHSI3003, PHSI3903 **Assumed knowledge:** 6 credit points of MBLG **Assessment:** One 2 hour exam, 2000w report/essay based on a mentored research project, one oral presentation.

Note: Department permission required for enrolment .
Note: Available to selected students who have achieved an average of at least 75 in their prerequisite units of study. It is highly recommended that this unit of study be taken in combination with PHSI3908.

The aim of this unit of study is to examine in depth the structure and function of the cardiovascular system at the organ system, cellular and molecular levels. There is a particular focus on exercise physiology and the way in which the heart, circulation and skeletal muscles contribute to the limits of sporting achievement. The excitability, contractility and energetics of the heart and blood vessels are studied and the regulation of these organs by local (physical and chemical) factors, hormones and the nervous system are discussed, with emphasis on cellular and molecular mechanisms. At the systemic level, short term (neural) mechanisms controlling the blood pressure and how the system behaves during exercise and other stresses is dealt with. Long term (hormonal) mechanisms regulating blood pressure via the renal control of extracellular fluid volume is also discussed. There is an emphasis in this unit of study on recent advances in cellular and molecular aspects of heart and the blood vessels and the regulation of these organs by local (physical and chemical) factors, hormones and the autonomic nervous system. Lectures will be complemented by practical classes and tutorials that reinforce the theory and emphasize experimental design, data interpretation and presentation. Details of mentored Advanced research projects are available on the Physiology website.

PHSI3008
Heart and Circulation: Dysfunction

Credit points: 6 **Teacher/Coordinator:** Prof Roger Dampney **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour seminar session per week. **Prerequisites:** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of Study For BMedSc: BMED (2801 and 2803) **Prohibitions:** PHSI3908, PHSI3003, PHSI3903 **Assumed knowledge:** 6 credit points of MBLG **Assessment:** One 2 hour exam, seminar presentations, 2000wd essay

Note: It is strongly recommended that students take PHSI3008 ONLY in combination with PHSI3007

This unit of study complements and should be taken together with PHSI3007, which deals with the normal function of the cardiovascular system. This unit of study focuses on cardiovascular disease which is a major cause of death in western society. Lectures provide the background to understanding (a) the disruption of normal physiological processes, (b) recent advances in cellular and molecular aspects, and (c) the physiological basis of modern approaches to treatment. Example of diseases covered include: heart failure, heart attack, cardiac hypertrophy, atheroma and hypertension. In the seminar sessions, students will work in small groups with a tutor to further extend their understanding of cellular and molecular mechanisms underpinning cardiovascular disease. Reading lists are organized into specific topics related to a particular disease. Through analysis and discussion of the readings students develop skills necessary for interpreting and communicating science.

PHSI3908
Heart & Circulation: Dysfunction Adv

Credit points: 6 **Teacher/Coordinator:** Prof Roger Dampney **Session:** Semester 2 **Classes:** Two 1 hour lecture and one 2 hour seminar session per week. **Prerequisites:** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of Study For BMedSc: BMED (2801 and 2803). **Prohibitions:** PHSI3008, PHSI3003, PHSI3903 **Assumed knowledge:** 6 credit points of MBLG **Assessment:** One 2 hour exam, seminar presentations, written assignment on a selected topic

Note: Department permission required for enrolment .
Note: Available to selected students who have achieved an average of at least 75 in their prerequisite units of study. It is highly recommended that this unit of study be taken ONLY in combination with PHSI3907 or PHSI3007.

This unit of study complements and should be taken together with PHSI3007, which deals with the normal function of the cardiovascular system. This unit of study focuses on cardiovascular disease which is a major cause of death in western society. Lectures provide the background to understanding (a) the disruption of normal physiological processes, (b) recent advances in cellular and molecular aspects, and (c) the physiological basis of modern approaches to treatment. Example of diseases covered include: heart failure, heart attack, cardiac hypertrophy, atheroma and hypertension. In the seminar sessions, students will work in small groups with a tutor to further extend their understanding of cellular and molecular mechanisms underpinning cardiovascular disease. Reading lists are organized into specific topics related to a particular disease. Through analysis and discussion of the readings students develop skills necessary for interpreting and communicating science. Details of mentored Advanced research projects are available on the Physiology website.

Physiology Honours

During fourth year, no formal series of lectures is provided but students are given a relevant problem to investigate. This problem usually represents a small facet of one of the major current research projects within the Department, and the students work in collaboration with members of the staff. Students write a thesis embodying the results of their work.

Plant Science

The following units of study form part of the Plant Science program, which has been developed jointly by the Faculty of Agriculture, Food and Natural Resources and the School of Biological Sciences.

Intermediate units of study

PLNT2001
Plant Biochemistry and Molecular Biology

Credit points: 6 **Teacher/Coordinator:** Prof Les Copeland (Coordinator), Dr Rosanne Quinnell **Session:** Semester 1 **Classes:** (2 hr lec, 3 hr prac)/wk **Prerequisites:** 12 credit points of Junior Chemistry and 12 credit points of Junior Biology (or with the Dean's permission BIOL1201 and BIOL1202) **Prohibitions:** PLNT2901, AGCH2001 **Assessment:** Quizzes + theory of prac test (25%), laboratory reports (25%), final examination (50%)

This unit of study explores the fundamentals of plant biochemistry, from what plants are made of to how plants regulate their metabolic processes. The specialised nature of these metabolic processes, which enable plants to respond to different biotic and abiotic environmental influences, is featured as is their relationship to food, feed and fibres. The unit covers basic chemistry and metabolic reactions of the main plant constituents, how storage reserves are mobilized to provide energy and substrates for growth and development, and how metabolic pathways are controlled and respond to influences from the plant environment. Special attention is given to these processes in economic plants, and their relevance to foods and fibres. The unit of study complements intermediate units of study in plant science, molecular and cell biology, genetics and biotechnology, and leads on to senior plant modules offered through the School of Biological Sciences and the Faculty of Agriculture, Food and Natural Resources. Learning in the unit is by lectures and laboratory work, augmented by self-directed learning related to the lecture and practical classes and discussions to provide insights into how molecular and biochemical approaches lead to understanding of plant functions. Students will be expected to access the WebCT site regularly for information

Textbooks
A Study Guide for the unit will be available for purchase from the Copy Centre at a cost of $10 during the first week of Semester

PLNT2901
Plant Biochem & Molecular Biology (Adv)

Credit points: 6 **Teacher/Coordinator:** Prof Les Copeland (Coordinator), Dr Rosanne Quinnell **Session:** Semester 1 **Classes:** (3 lec or tut; 3 prac or sem)/wk **Prerequisites:** A Distinction average in 12 credit points of Junior Chemistry and 12 credit points of Junior Biology (or with the Dean's permission BIOL1201 and BIOL1202) **Prohibitions:** PLNT2001, AGCH2001 **Assessment:** One 2-hr exam (50%), laboratory reports (10%) independent research project presentation and report (25%), self-directed learning exercises (15%)

The content will be based on PLNT2001 but qualified students will participate in alternative components at a more advanced level

Textbooks
A Study Guide for the unit will be available for purchase from the Copy Centre at a cost of $10 during the first week of Semester.

PLNT2002
Aust Flora: Ecology and Conservation

Credit points: 6 **Teacher/Coordinator:** Dr Glenda Wardle & Dr Murray Henwood. **Session:** Semester 1 **Classes:** (2 hrs lec & 3 hrs prac)/wk, audiovisual. **Prerequisites:** 12 credit points from a combination of Junior BIOL or LWSC units of study including two of BIOL (1001, 1901, 1002, 1902, 1003, 1903) LWSC1002, MBLG1001 (or with the Dean's permission BIOL1201 and BIOL1202 may be substituted for the above). **Prohibitions:** PLNT2902, BIOL2004, BIOL2904 **Assumed knowledge:** The contents of BIOL (1002 or 1902) is assumed knowledge. Students wishing to enroll in Intermediate Biology (BIOL) and Plant Science (PLNT) units of study using BIOL (1003 or 1903) will need to do some preparatory reading. **Assessment:** One 2-hr exam (40%), laboratory reports (20%) herbarium (20%), one 2-hr practical exam (20%).

This unit provides a broad understanding of the evolution, classification and diversity of terrestrial plants and the principles of plant ecology in an Australian context. The major types of Australian vegetation are discussed across a range of temporal and spatial scales, and their current distribution related to their environment and origins. Selected contemporary issues in plant conservation from Australian natural and managed systems are explored. There is a strong emphasis on practical skills such as phylogenetic inference, plant identification and the collection and analysis of ecological data. The practical component of the unit of study uses examples taken from the Australian flora (including plants of horticultural significance) and major crop plants. Important elements of this unit are half-day field trips to the Royal National Park (or production systems at Camden), the Royal Botanic Gardens Sydney and the construction of student herbaria. The unit of study complements intermediate units of study in plant science, zoology, molecular and cell biology, genetics and biotechnology, and leads on to advanced plant and ecology modules offered through the School of Biological Sciences and the Faculty of Agriculture, Food and Natural Resources.

Textbooks
A Laboratory Manual for the unit will be available for purchase from the Copy Centre during the first week of Semester.

PLNT2902
Aust Flora: Ecology & Conservation (Adv)

Credit points: 6 **Teacher/Coordinator:** Dr Glenda Wardle, Dr Murray Henwood **Session:** Semester 1 **Classes:** (2 lec & 3 prac)/wk, audiovisual **Prerequisites:** Distinction average in 12 credit points from a combination of Junior BIOL or LWSC units of study including two of BIOL (1001, 1901, 1002, 1902, 1003, 1903) LWSC1002, MBLG1001 (or with the Dean's permission BIOL1201 and BIOL1202).These requirements may be varied and students with lower averages should consult the unit Executive Officer **Prohibitions:** PLNT2002, BIOL2004, BIOL2904 **Assumed knowledge:** The contents of BIOL(1002 or 1902) is assumed knowledge. Students wishing to enroll in Intermediate Biology (BIOL) and Plant Science (PLNT) units of study using BIOL(1003 or 1903) will need to do some preparatory reading **Assessment:** One 2-hr exam (40%), laboratory reports (20%) research project (20%), one 2-hr practical exam (20%)

Qualifed students will participate in alternative components of PLNT2002. The content and nature of these components may vary from year to year. See prerequisites for Senior units of study in Biology

Textbooks
A Laboratory Manual for the unit will be available for purchase from the Copy Centre during the first week of Semester

PLNT2003
Plant Form and Function

Credit points: 6 **Teacher/Coordinator:** A/Prof Bruce Sutton, A/Prof Robyn Overall **Session:** Semester 2 **Classes:** 2 lectures, 1hr tutorial and 1 prac, A/V session (2-3hr) or field trip (6hr) per wk **Prerequisites:** 12 credit points of Junior Biology (or with the Dean's permission), BIOL1201 and BIOL1202 or BIOL1001 and ENVI1002 **Prohibitions:** PLNT2903, BIOL2003, BIOL2903, CROP2001 **Assumed knowledge:** The content of BIOL(1002 or 1902) is assumed knowledge and students entering from BIOL(1003 or 1903) will need to do some preparatory reading **Assessment:** One 2hr theory exam (40%), prac exam (20%), anatomy project (10%), quizzes (5%), physiology report (10%), field report (15%)

This unit of study investigates the structure of cells, tissues and organs of flowering plants and relates them to function. Topics include; how photosynthesis, translocation, water transport and nutrition relate to the structures that carry out these processes. Most of the information on plant structure will be provided in self-instructional audio-visual sessions augmented by small group discussions. This is integrated with experiments carried out in the laboratory or on field excursions to investigate the physiological aspects of plant structures. There is a focus on recent advances in plant molecular biology where they have been critical in enhancing our understanding of the form and function of plants. The physiological and anatomical responses of plants to extreme environments such as drought and salinity will also be addressed. Attention will be paid to the anatomy and physiology of crop, horticultural and Australian native plants. This unit of study complements Applied Plant Biochemistry, Australian Flora: ecology and conservation and Cell Biology and leads onto senior units of study in plant sciences, including Plant Growth and Development. It is essential for those seeking a career in plant molecular biology

Textbooks
Taiz L, Zeiger E (2002) Plant Physiology 3rd ed. Sunderland, Mass Sinauer
Recommended reading:
Atwell B, Kriedemann P, Turnbull C (1999) Plants in Action. Macmillan, South Yarra.
Buchanan BB, Gruissem W, Jones RL (2000) Biochemistry and Molecular Biology of Plants, ASPP, Rockvill, Maryland
A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of Semester.

PLNT2903
Plant Form and Function (Advanced)

Credit points: 6 **Teacher/Coordinator:** A/Prof Bruce Sutton and A/Prof Robyn Overall **Session:** Semester 2 **Classes:** 2 lectures, 1hr tutorial and 1 prac, A/V session (2-3hr) or field trip (6hr) per wk **Prerequisites:** Distinction average in 12 credit points of Junior Biology or BIOL1001 and ENVI1002 (or with the Dean's permission, BIOL1201 and BIOL1202) **Prohibitions:** PLNT2003, BIOL2003, BIOL2903, CROP2001 **Assumed knowledge:** The content of BIOL(1002 or 1902) is assumed knowledge and students entering from BIOL(1003 or 1903) will need to do some preparatory reading **Assessment:** One 2hr theory exam (40%), prac exam (20%), research project oral and written presentation (25%), field report (15%)

The content will be based on PLNT2003 but qualified students will participate in alternative components at a more advanced level. The content and nature of these components may vary from year to year

Textbooks
Taiz L, Zeiger E (2002) Plant Physiology 3rd ed. Sunderland, Mass Sinauer
Recommended reading:
Atwell B, Kriedemann P, Turnbull C (1999) Plants in Action. Macmillan, South Yarra.
Buchanan BB, Gruissem W, Jones RL (2000) Biochemistry and Molecular Biology of Plants, ASPP, Rockvill, Maryland
A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of Semester.

Senior units of study

PLNT3001
Plant, Cell and Environment

Credit points: 6 **Teacher/Coordinator:** Dr Rosanne Quinnell and A/Prof Bruce Sutton **Session:** Semester 2 **Classes:** (2-3 workshops, 2-3 prac)/wk **Prerequisites:** 12 credit points of Intermediate Biology, Plant Science, Molecular Biology and Genetics or equivalent **Prohibitions:** PLNT3901 **Assessment:** One 2hr exam (50%), 2 lab reports (50%)

Plant Cell and Environment comprises discussion and practical sessions that are guided by current research directions in Australian

plant sciences. Several broad themes in Plant Science research will be identified at the start of the semester and these will provide the framework for discussions for the remainder of the semester. Theme areas will consider the Australian flora and areas currently under investigation at the University of Sydney including rising atmospheric carbon dioxide levels, post-harvest physiology, symbiotic systems and advances in plant cell and molecular biology. Students will be required to examine and critique the current published literature and to articulate how newly published findings have informed the field. Students will be required to draw on knowledge from their previous studies in biology, which may include Intermediate Biology, Plant Science, Molecular and Microbial Biology, Agriculture and Horticulture units of study. The practical component of this unit of study has sufficient flexibility for students to design their own group experiments and to answer questions raised during the discussions of the published literature. A range of equipment for student experiments will be available including: pulse amplitude modulated (PAM) fluorometers; oxygen electrodes; Scholander bomb, gel electrophoresis (PAGE).

PLNT3901
Plant, Cell and Environment (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Rosanne Quinnell and A/Prof Bruce Sutton **Session:** Semester 2 **Classes:** (2-3 workshops; 2-3 prac)/wk **Prerequisites:** 12 credit points of Intermediate Biology, Plant Science, Molecular Biology and Genetics or equivalent **Prohibitions:** PLNT3001 **Assessment:** One 2-hr exam (50%), 1 research report (50%)

Note: Department permission required for enrolment .
Note: Entry is restricted and is based on a combination of a high WAM and student motivation

Plant Cell and Environment comprises discussion and practical sessions that are guided by current research directions in Australian plant sciences. Several broad themes in Plant Science research will be identified at the start of the semester and these will provide the framework for discussions for the remainder of the semester. Theme areas will consider the Australian flora and areas currently under investigation at the University of Sydney including rising atmospheric carbon dioxide levels, post-harvest physiology, symbiotic systems and advances in plant cell and molecular biology. Students will be required to examine and critique the current published literature and to articulate how newly published findings have informed the field. Students will be required to draw on knowledge from their previous studies in biology, which may include Intermediate Biology, Plant Science, Molecular and Microbial Biology, Agriculture and Horticulture units of study. The practical component of this unit of study has sufficient flexibility for students to design their own group experiments and to answer questions raised during the discussions of the published literature. A range of equipment for student experiments will be available including: pulse amplitude modulated (PAM) fluorometers; oxygen electrodes; Scholander bomb, gel electrophoresis (PAGE).

PLNT3002
Plant Growth and Development

Credit points: 6 **Teacher/Coordinator:** A/Prof Robyn Overall **Session:** Semester 2 **Classes:** (3 lec, 0-3 hr prac)/wk **Prerequisites:** 12 credit points of intermediate PLNT, BIOL, AGCH or CROP units of study including at least one of PLNT2001, PLNT2901, PLNT2003, PLNT2903, BIOL2016, BIOL2916, BIOL2003, BIOL2903, BIOL2006, BIOL2906, CROP2001, AGCH2002 or equivalent **Prohibitions:** PLNT3902, BIOL3021, BIOL3931 **Assessment:** One 2 hr exam (60%), project presentation and report (20%), laboratory quizzes, report and book (20%)

This unit explores the mechanisms underlying plant growth and development from seed to maturity. It covers the process of building the plant body from embryogenesis, development and operation of meristems, polarity, patterning, controls of flowering and fruit development to programmed cell death and senescence. It includes the role of signals such as plant hormones in coordinating plant growth and development and the molecular and cellular mechanisms underlying plant responses to environmental signals such as gravity and light. There is a focus on recent plant molecular biology that has been critical in enhancing our current understanding of plant growth and development. The unit uses examples from crop, horticultural and native plants as well as the model plant Arabidopsis. Lectures are augmented by experimental work, including and independent research project. The laboratory work will include plant tissue culture, protoplast production and modern cell biological techniques used to study plant development. This unit of study complements other senior units of study in the Plant Science Major and is essential for those seeking a career in plant molecular biology.

Textbooks
Taiz L, Zeiger E (2002) Plant Physiology 3rd ed. Sunderland, Mass Sinauer
Recommended reading:
Atwell B, Kriedemann P, Turnbull C (1999) Plants in Action. Macmillan, South Yarra.
Buchanan BB, Gruissem W, Jones RL (2000) Biochemistry and Molecular Biology of Plants, ASPP, Rockvill, Maryland
A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of Semester.

PLNT3902
Plant Growth and Development (Advanced)

Credit points: 6 **Teacher/Coordinator:** A/Prof Robyn Overall **Session:** Semester 2 **Classes:** (3 lec, 0-3 hr prac)/wk **Prerequisites:** Distinction average in 12 credit points of intermediate PLNT, BIOL, AGCH or CROP units of study including at least one of PLNT2001, PLNT2901, PLNT2003, PLNT2903, BIOL2016, BIOL2916, BIOL2003, BIOL2903, BIOL2006, BIOL2906, CROP2001, AGCH2002 or equivalent. These requirements may be varied and students with lower averages should consult the unit coordinator **Prohibitions:** PLNT3002, BIOL3021, BIOL3931 **Assessment:** One 2 hr exam (60%), project presentation and report (30%), laboratory quizzes and book (10%)

Qualified students will participate in alternative components of PLNT3002 Plant Growth and Development, representing 30% of the total assessment. The students will be exempt from one standard laboratory report and the standard independent group project. Instead, the students will conduct an advanced independent individual practical or theoretical research project under the supervision of a member of the academic staff. The program includes a formal presentation of the results of the project in verbal and written reports

Textbooks
Taiz L, Zeiger E (2002) Plant Physiology 3rd ed. Sunderland, Mass Sinauer
Recommended reading:
Atwell B, Kriedemann P, Turnbull C (1999) Plants in Action. Macmillan, South Yarra.
Buchanan BB, Gruissem W, Jones RL (2000) Biochemistry and Molecular Biology of Plants, ASPP, Rockvill, Maryland
A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of Semester.

PLNT3003
Systematics and Evolution of Plants

Credit points: 6 **Teacher/Coordinator:** Dr Murray Henwood **Session:** Semester 1 **Classes:** 2 lectures, one 3 hour practical per week **Prerequisites:** PLNT (2002 or 2902) or equivalent **Prohibitions:** BIOL3015, BIOL3915, PLNT3903 **Assumed knowledge:** BIOL(1001 or 1101 or 1901 or 1002 or 1902 or 1904) **Assessment:** One 1.5 hr take-home exam (50%), oral presentation (5%), nomenclature exercise (15%), research project (30%)

This unit of study introduces students to the practical aspects of Plant Systematics and evolution. Students will gain a working knowledge of the general techniques and approaches used in Plant Systematics (including an understanding of plant taxonomy, phylogenetics and evolutionary processes). A range of data sources (DNA sequences and morphology) will be used to address questions concerning the evolution, classification and historical biogeography of various plant groups. A two-day field trip will provide tuition in plant identification and an opportunity to acquire skills in field-botany . This unit of study is recommended for students with an interest in the areas of: field biology, bioinformatics, general ecology and evolution.

Textbooks
Plant Systematics: A phylogenetic Approach (2002). W.S. Jud, C.S. Campbell, E.A. Kellog, P.F. Stevens & M.J. Donohuge

PLNT3903
Systematics and Evolution of Plants Adv

Credit points: 6 **Teacher/Coordinator:** Dr Murray Henwood **Session:** Semester 1 **Classes:** 2 lectures & 1 practical per week **Prerequisites:** Distinction in PLNT2002 or PLNT2902 (or equivalent). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibitions:** BIOL3015, BIOL3915, PLNT3003 **Assumed knowledge:** BIOL (1001 or 1101 or 1901 or 1002 or 1902 or 1904) **Assessment:** One 1.5

hr take-home exam (50%), oral presentation (5%), nomenclature exercise (15%), research project (30%)

Qualified students will participate in alternative components of PLNT3003 Systematics and Evolution of Plants. The content and nature of these components may vary from year to year.

Textbooks

Plant Systematics: A phylogenetic Approach (2002). W.S. Jud, C.S. Campbell, E.A. Kellog, P.F. Stevens & M.J. Donohuge

BIOL3009
Terrestrial Field Ecology

Credit points: 6 **Teacher/Coordinator:** Dr Glenda Wardle (UEO), Prof Christopher Dickman, Dr Dieter Hochuli, Dr Clare McArthur **Session:** S2 Intensive **Classes:** One 6 day field trip held in the pre-semester break (Sunday, July 15 - Friday, July 20) and 4 practical classes during weeks 1-4 in semester 2. **Prerequisites:** 12 credit points of intermediate level Biology. **Prohibitions:** BIOL3909, BIOL3041, BIOL3941, BIOL3042, BIOL3942, BIOL3024, BIOL3924 **Assumed knowledge:** Ecological Methods (BIOL3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly recommended. **Assessment:** Discussions and quiz (10%), research project proposal and brief presentation (10%), sampling project report (20%), specimen collection (10%), research project report (50%).

This field course provides practical experience in the experimental analysis of terrestrial populations and assemblages. Students learn a broad range of ecological sampling techniques and develop a detailed understanding of the logical requirements necessary for manipulative ecological field experiments. The field work incorporates survey techniques for plants, small mammals and invertebrates and thus provides a good background for ecological consulting work. Students attend a week-long field course and participate in a large-scale research project as well as conducting their own research project. Invited experts contribute to the lectures and discussions on issues relating to the ecology, conservation and management of Australia's terrestrial flora and fauna.

BIOL3909
Terrestrial Field Ecology (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr Glenda Wardle (UEO), Prof Christopher Dickman, Dr Dieter Hochuli, Dr Clare McArthur **Session:** S2 Intensive **Classes:** 6 day field trip held in the pre-semester break (Sunday, July 15 - Friday, July 20) and 4 practical classes during weeks 1-4 in semester 2. **Prerequisites:** Distinction average in 12 credit points of intermediate level Biology. **Prohibitions:** BIOL3009, BIOL3041, BIOL3941, BIOL3042, BIOL3942, BIOL3024, BIOL3924 **Assumed knowledge:** Ecological Methods (BIOL3006) or Ecological Methods (advanced) BIOL3906. Prior completion of one of these units is very strongly recommended. **Assessment:** Discussions and quiz (10%), research project proposal and brief presentation (10%), sampling project report (20%), specimen collection (10%), research project report (50%).

Note: Students taking this unit of study will complete an individual research project on a topic negotiated with a member of staff. it is expected that much of the data collection will be completed during the field trip but some extra time may be needed during semester 2.

This unit has the same objectives as BIOL3009 Terrestrial Field Ecology, and is suitable for students who wish to pursue certain aspects in greater depth. Entry is restricted, and selection is made from the applicants on the basis of their previous performance. Students taking this unit of study will participate in alternatives to some elements of the standard course and will be required to pursue the objectives by more independent means. Specific details of this unit of study and assessment will be announced in meetings with students at the beginning of the unit. This unit of study may be taken as part of the BSc (Advanced) program.

BIOL3017
Fungi in the Environment

Credit points: 6 **Teacher/Coordinator:** Dr P McGee **Session:** S1 Intensive **Classes:** 40 hours of practicals in a two week intensive program immediately prior to semester one (labs run from 12 February to 23 February 2007), plus the equivalent of 30 hours self-guided study during the semester. **Prerequisites:** 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. **Prohibitions:** BIOL3917 **Assessment:** One 2 hour take home exam, laboratory and written assignments.

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

The unit emphasises use of research techniques in the laboratory to enable deeper understanding of issues in fungal ecology, environmental and rehabilitation biology, biological control and soil microbiology. Benefits provided by fungi in symbiotic interactions with plants, including mycorrhizal fungi and shoot-borne endophytes. Students will be encouraged to develop a deeper understanding of one area of Fungal Biology through independent study. Part of the learning material will be available on the internet.

BIOL3917
Fungi in the Environment (Advanced)

Credit points: 6 **Teacher/Coordinator:** Dr P McGee **Session:** S1 Intensive **Classes:** 40 hours of practical work in a two week intensive program immediately prior to semester one (labs run from 12 February to 23 February 2007), plus the equivalent of 30hrs self-guided study during the semester. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. **Prohibitions:** BIOL3017 **Assessment:** One 2 hour take home exam, laboratory and written assignments.

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

Qualified students will be encouraged to develop a research project under supervision. The content and nature of the research will be agreed on with the executive officer.

PPAT3003
Plant Disease

Credit points: 6 **Teacher/Coordinator:** Prof Lester Burgess and Prof David Guest **Session:** Semester 1 **Classes:** (2 lec, 3 hr prac)/wk **Prerequisites:** Two of PLNT2001, PLNT2901, PLNT2002, PLNT2902, PLNT2003, PLNT2903, MICR2024, MICR2026 or MICR2101 **Assessment:** Written exam 2 hr (60%), 12 quizzes (15%), group project report (25%)

This unit introduces fungi and other microbes as causes of plant disease that limit agricultural and horticultural production. The practical component introduces techniques used in handling and identifying fungi, and in studying plant disease. Emphasis is placed on the design of experiments and interpretation of experimental data. Topics include symptoms and diagnosis of plant disease; the biology, epidemiology and management of fungi and other microbes that cause plant disease; breeding for disease resistance; plant-parasite relationships; and disease resistance in plants

Textbooks

Brown JF and Ogle HJ. 1997. Plant Pathogens and Plant Diseases. Rockvale Publications.
Agrios GN. 2005. Plant Pathology (5th ed). Academic Press, London.

HORT3004
Postharvest Biology and Technology

Credit points: 6 **Teacher/Coordinator:** Dr Robyn McConchie **Session:** Semester 2 **Classes:** (2 lec, 3-4 labs/seminars/workshops)/wk **Prerequisites:** Two of PLNT2001, PLNT2901, PLNT2002, PLNT2902, PLNT2003, PLNT2903. **Assumed knowledge:** HORT1001, HORT1002 and HORT2002. **Assessment:** Exam 2 hr (60%), laboratory reports (25%), assignment (10%), seminar (5%)

The unit develops understanding and skills relevant to the maintenance of quality during the harvesting, handling, storage and marketing of fresh plants and plant parts. The subject integrates the postharvest physiology of products that are handled or marketed in a living state, with the technological and economic challenges associated with delivering them from the field to the consumer. Supply chain analysis of crops will be examined via case study examples, drawn from fruits, vegetables, cut flowers, nursery and foliage crops, turf and edible fungi. Students will study all operations from harvesting to consumer evaluation

Textbooks

Wills, R., McGlasson, B., Graham, D. and Joyce, D. "Postharvest: An Introduction to the Physiology and Handling of Fruit, Vegetables and Ornamentals." UNSW Press 4th Edition

HORT3005
Production Horticulture

Credit points: 6 **Teacher/Coordinator:** Dr Jenny Jobling **Session:** Semester 1 **Classes:** (2 lec, 3 labs/seminars/workshops)/wk **Prerequisites:** Two of PLNT2001, PLNT2901, PLNT2002, PLNT2902, PLNT2003, PLNT2903. **Assumed knowledge:** HORT1001, HORT1002 and HORT2002. **Assessment:**

One 3 hr exam (55%), assignments (45%) ie fruit crops 15%, vegetables 15%, tropical and environmental horticulture 15%.

Emphasis is given to the scientific basis for fruit and winegrape production and to sustainable vegetable crop production and tropical horticultural crops. Concepts underlying the establishment of and management of urban plants and use are addressed. The unit develops skills in the evaluation of technical and environmental status of established orchards, vineyards, vegetable crops and urban plantings

AGRO3002
Agronomy 3

Credit points: 6 **Teacher/Coordinator:** A/Prof Bruce Sutton **Session:** Semester 1 **Classes:** 5 student contact hrs/wk, workshops and discussions (36 hr total), labs (26 hr total) **Prerequisites:** PLNT2003 or PLNT2903 **Assumed knowledge:** CROP1001 or HORT1001 or LWSC1001 **Assessment:** One 2 hour exam, consultancy report, practical reports

Agronomy studies the practices and underlying concepts of sustainable crop and pasture production. The scientific basis of modern practices used in crop production, particularly those relevant to New South Wales, is explored. This knowledge is used to appreciate the scale of future problems such as climate change, soil degradation and increased costs of petrochemical-based inputs like fuel and fertilizer. Possible responses to these problems that will help maintain productivity will be examined. The relationship between agricultural production and natural resource management is also considered as part of a modern production environment, with the impact of recent legislation supporting Ecologically Sustainable Development on agriculture and the agricultural response to it as the focus of discussion. The practical classes will develop key skills appropriate to precision agriculture and use of current decision support systems

Psychology

Psychology is the study of behaviour and it is approached on a scientific basis, with provision for professional training at the postgraduate level. The research activities of the School cover almost all of the main branches of the subject. Extensive information about the subject and the School is available on the School web-site: www.psych.usyd.edu.au. A normal three year sequence required for a major in Psychology is: PSYC1001, 1002, 2011, 2012, 2013, 2014, and at least four Senior units of study selected from PSYC3010*, 3011, 3012, 3013, 3014, 3015, 3016, 3017, 3018, 3019, and HPSC3023 . Mid-year entry is possible and involves modification of this sequence. (*Required for entry to Fourth Year).

Registration and noticeboards

Students in all years must register during the orientation period. PSYC1001 students register by going to the Carslaw Building during orientation and collecting a personalised computer generated timetable, or by obtaining their timetables through MyUni, which will indicate the lecture times and the tutorial group to which they have been allocated. Further information will be posted at the Enrolment Centre and on the Junior Psychology noticeboard on the 4th floor of the Old Teachers College building.

Enquiries

The main enquiry office of the School is Room 325, Level 3 Brennan MacCallum Building, A18 (tel. 9351 2872). Staff members available to discuss particular courses may be contacted directly or through this office.

Honours

In order to be eligible to enter Psychology Honours, it is necessary (except as provided in the by-laws or resolutions) to gain a year average of at least Pass with Credit in Intermediate and in Senior Psychology units of study constituting a major in Psychology, and must include PSYC3010. Students wishing to graduate with Honours in Psychology are urged to discuss their choice of other subjects with a Faculty adviser as soon as practicable. There is currently a quota on entry to Psychology Honours.

Examinations

Undergraduate units of study are examined at the end of each semester and include classwork by way of essays, reports or practical/laboratory work. At the beginning of each unit of study students are advised of the contributions of exam and classwork for assessment purposes.

Summer School: January-February

PSYC1001 and PSYC1002 are offered in the Sydney Summer School. Consult the Sydney Summer School website for more information: http://www.summer.usyd.edu.au/.

PSYC1001
Psychology 1001

Credit points: 6 **Session:** Semester 1, Summer Main **Classes:** Three 1 hour lectures and one 1 hour tutorial per week, plus 1 hour per week of additional web-based (self-paced) material related to the tutorial. **Assessment:** One 2.5hr exam, one 1000w essay, multiple tutorial tests, experimental participation.

Psychology 1001 is a general introduction to the main topics and methods of psychology, and is the basis for advanced work as well as being of use to those not proceeding with the subject. Psychology 1001 covers the following areas: subject matter and methods of psychology; basic statistics and measurement; behavioural neuroscience; applied psychology; social psychology; personality theory. This unit is offered in the Sydney Summer School. Consult the web site: http://www.usyd.edu.au/summerschool/ for more information.

Textbooks
Psychology 1001 Handbook,
Texts under review - See School website

PSYC1002
Psychology 1002

Credit points: 6 **Session:** Semester 2, Summer Main **Classes:** Three 1 hour lectures and one 1 hour tutorial per week, plus 1 hour per week of additional web-based (self-paced) material related to the tutorial. **Assessment:** One 2.5 hour exam, one 1250 word research report, multiple tutorial tests, experimental participation.

Psychology 1002 is a further general introduction to the main topics and methods of psychology, and it is the basis for advanced work as well as being of use to those not proceeding with the subject. Psychology 1002 covers the following areas: human development; human mental abilities; learning, motivation and emotion; visual perception; cognitive processes. This unit is offered in the Sydney Summer School. Consult the web site: http://www.usyd.edu.au/summerschool/ for more information.

Textbooks
Psychology 1002 Handbook
Texts under review - See School website

Intermediate units of study

PSYC2011
Brain and Behaviour

Credit points: 6 **Teacher/Coordinator:** Dr Ian Johnston **Session:** Semester 1 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** PSYC (1001 and 1002). **Prohibitions:** PSYC2111 **Assessment:** One 2 hour exam, one 1500 word practical report, one 1000 word essay and six fortnightly quizzes

This unit of study examines a range of phenomena and principles in learning and perception and their relations to underlying neural substrates. The emphasis in learning is on instrumental conditioning and the principle of reinforcement, ranging from applications of this principle to its neural substrates. Also covered are analyses of aversive-based learning, such as punishment and avoidance, and anxiety, together with related neurochemical mechanisms and the effects of various psychopharmacological agents on these processes. A number of perceptual phenomena will be studied (e.g., motion detection, recognition of faces, identification of emotion). A series of practical classes and demonstrations allow students to gain hands-on

experience of how some of these principles and phenomena may be studied experimentally.

Textbooks
See school website

PSYC2012
Statistics & Research Methods for Psych

Credit points: 6 **Teacher/Coordinator:** Dr Margaret Charles **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 1 hour tutorial per week, plus one 1 hour lecture and one 1 hour tutorial per fortnight. **Prerequisites:** PSYC (1001 and 1002). **Prohibitions:** PSYC2112 **Assumed knowledge:** Recommended: HSC Mathematics, any level **Assessment:** One 2 hour exam, three class tests, one 1000 word group project, one 1 hour mid-semester exam.

The aim is to introduce students to fundamental concepts in statistics as applied to psychological research. These include summary descriptive statistics, an introduction to the principles and practice of research design, and the use of inferential statistics. Building upon this framework, the unit of study aims to develop each student's expertise in understanding the rationale for, and application of, a variety of statistical tests to the sorts of data typically obtained in psychological research.

Textbooks
See school website

PSYC2013
Cognitive and Social Psychology

Credit points: 6 **Teacher/Coordinator:** Dr Karen Croot **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** PSYC (1001 and 1002). **Prohibitions:** PSYC2113 **Assessment:** One 2 hour exam, one 1500-2000 word essay/report, one 1000-1500 word written practical exercise.

This unit expands the depth and range of topics introduced in the first year lectures on Cognitive Processes, Developmental Psychology and Social Psychology. Following an introductory lecture, the first section (16 lectures) on Cognitive Processes focuses on current theories of memory, attention and reasoning and discusses the methods and issues involved in investigating these processes in both healthy individuals and people with cognitive dysfunctions. The second section (6 lectures) on Developmental Psychology presents and evaluates evidence about the early influences on children's social and cognitive development. The final section (16 lectures) on Social Psychology continues an examination of social development across the lifespan from adolescence to late adulthood, followed by an examination of salient social constructs such as prejudice, group processes, altruism, affiliation and attraction.

Textbooks
Cognitive: See School website
Social: White, Hayes & Livesey (2005). Developmental Psychology from Infancy to Adulthood.

PSYC2014
Personality and Differential Psychology

Credit points: 6 **Teacher/Coordinator:** Dr Fiona White **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour tutorial per week. **Prerequisites:** PSYC (1001 and 1002) **Prohibitions:** PSYC2114 **Assessment:** One 2 hour exam, one 1500 word essay, one 1500 word report.

PSYC2014 is made up of two components: Theories of Personality and Differential Psychology (Individual Differences). The aim of the Personality component is to introduce students to a number of influential theories of personality. Students will be exposed to some conceptual analysis and expected to examine critically the various theories covered. The aim of the Differential Psychology component is to introduce key topics in the study and assessment of individual differences in various psychological attributes. Students are expected to gain an understanding about the major theories of intelligence, associated research methods, and the traditional areas of group differences.

Textbooks
Theories of personality component:
Sollard C. F., & Monte, R. N. (2006). Beneath the mask (8th Ed). NJ: John Wiley & Sons.
Differential Psychology component:
See School website

Senior units of study

PSYC3010
Advanced Statistics for Psychology

Credit points: 6 **Teacher/Coordinator:** Dr Sabina Kleitman **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour tutorial per week. **Prerequisites:** PSYC (2012 or 2112) plus at least one other Intermediate Psychology Unit of Study from PSYC (2011 or 2111), PSYC (2013 or 2113), PSYC (2014 or 2114). **Prohibitions:** PSYC3201 **Assessment:** One 2 hour exam, class test, 1500 word assignment, practical exercises.

This unit of study expands upon students' knowledge of the general linear model and its applications in the analysis of data from psychological research. The first half of the course is focused on research for which analysis of variance would be appropriate, and develops students' ability to test more focused questions than can be answered by omnibus F tests. Issues that arise in testing contrasts, such as inflation of Type I error, will also be considered. In the second half of the course, students will further their understanding of multivariate techniques, such as multiple regression analysis.

Textbooks
See School web site

PSYC3011
Learning and Behaviour

Credit points: 6 **Teacher/Coordinator:** Dr Justin Harris **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour tutorial per week. **Prerequisites:** PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114). **Prohibitions:** PSYC3209 **Assumed knowledge:** PSYC (2012 or 2112) **Assessment:** One 2 hour exam, one 2000 word prac report, tutorial assessment.

This unit addresses the fundamental concepts and more important research findings related to contemporary theories of associative learning in animals and humans. It examines the application of such fundamental research to issues such as drug use, food choice, and learned helplessness. It is designed to foster skills in reading primary sources in this area, and provide the opportunity for hands-on experience in carrying out a research project.

Textbooks
See School webpage

PSYC3012
Cognition, Language and Thought

Credit points: 6 **Teacher/Coordinator:** Dr Bruce Burns **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour practical per week. **Prerequisites:** PSYC (2013 or 2113) and at least one other Intermediate Psychology unit from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2014 or 2114). **Prohibitions:** PSYC3205 **Assumed knowledge:** PSYC (2012 or 2112) **Assessment:** One 2 hour exam, 2000 word prac report, practical exercise(s).

This unit extends the theories and methods of investigating memory and attentional processes discussed in PSYC2013 to consider a number of domains of higher cognitive processing. One strand of the course will focus on language processing and consider how children learn language, the processes involved in speech perception and production, language comprehension and reading. The remainder of the course will deal with the cognitive processes involved in reasoning and decision-making. The practical program will expose students to a variety of the research methods used to investigate higher cognitive processes, develop their understanding of how these methods can be used to investigate hypotheses about mental processes and consider applications of cognitive research to real-world problems and issues.

Textbooks
See School website

PSYC3013
Perceptual Systems

Credit points: 6 **Teacher/Coordinator:** Assoc Prof Colin Clifford Dr Alex Holcombe **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour tutorial per week. **Prerequisites:** PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113),

PSYC (2014 or 2114) or ANAT2010 **Prohibitions:** PSYC3210 **Assumed knowledge:** PSYC2012 **Assessment:** One 2 hour exam, one 1500 word report, tutorial quiz, group presentation.

The unit covers at an advanced level selected topics in perception from the psychophysical, physiological and neuropsychological perspectives. Students are expected to gain an understanding of some of the major theoretical issues motivating current perceptual research, to appreciate the significance of basic perceptual research for understanding normal perceptual functioning, and to be able to evaluate the empirical and conceptual worth of research contributions.

Textbooks
See School website

PSYC3014
Behavioural and Cognitive Neuroscience

Credit points: 6 **Teacher/Coordinator:** Prof Iain McGregor Dr Karen Croot **Session:** Semester 2 **Classes:** Three 1 hour lectures and one 1 hour practical per week. **Prerequisites:** (PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114)) OR (ANAT2010 plus PCOL2011) **Prohibitions:** PSYC3204, PSYC3215 **Assumed knowledge:** PSYC (2113 or 2013) **Assessment:** One 2 hour exam, one major essay/report 2000-2500 words, one 1000-1500 word written practical exercise.

This unit of study will focus on approaches to studying neurosciences incorporating molecular, pre-clinical and clinical models of brain function. These biological models of brain function will be linked with behavioural, affective and cognitive function and dysfunction. The implications of focal cognitive deficits in neurological patients for models of normal cognitive function will also be explored. Specific topics to be covered will be selected from the following areas: psychopharmacology, addiction, molecular neuroscience, sensorimotor integration, and the neural basis of learning and memory, language, visual cognition and praxis. In addition to lectures, a practical component will cover basic neuroanatomy, histology and neuropharmacology, and will introduce students to experimental and case-study approaches to studying neurosciences.

Textbooks
See School website

PSYC3015
Intelligence and Human Reasoning

Credit points: 6 **Teacher/Coordinator:** Dr. Jens Beckmann **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour tutorial per week. **Prerequisites:** PSYC(2014 or 2114) and PSYC(2013 or 2113). **Assumed knowledge:** PSYC(2012 or 2112). **Assessment:** One 2 hour exam; one 2000 word essay; tutorial quizzes.

The aim of this unit of study is to provide an overview of recent studies of human cognitive abilities and intelligence, and to build a critical platform from which both empirical evidence and theoretical propositions can be evaluated. Two broad methodological approaches will be considered, compared, and contrasted. (a) The individual differences approach which serves as the basis of much of contemporary psychological assessment in clinical, educational and organizational settings and (b) the experimental approach to cognitive abilities which use experimental methods to study the information-processing components that underlie intellectual performance (e.g., working-memory theories).

Textbooks
See school website.

PSYC3016
Developmental Psychology

Credit points: 6 **Teacher/Coordinator:** Dr David Livesey **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour tutorial per week. **Prerequisites:** PSYC (2013 or 2113) and at least one other Intermediate Psychology unit from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2014 or 2114). **Prohibitions:** PSYC3206 **Assessment:** One 2 hour exam, one 2000 word report.

This unit examines various theoretical approaches to human development and selected issues within Developmental Psychology. The major issues/controversies in developmental theory are examined in relation to a number of the more influential theoretical approaches. Students are expected to gain an understanding of the main theoretical influences upon current developmental research and to be able to compare and contrast theories of development. The second part of the unit introduces students to a range of issues in selected areas of contemporary Developmental Psychology. Students are expected to gain knowledge of these areas, and to develop a critical approach to the analysis of current research and theoretical issues. They are also expected to apply their knowledge in practical exercises involving observations of children.

Textbooks
White, Hayes & Livesey (2005) Developmental Psychology. Pearson Edn.

PSYC3017
Social Psychology

Credit points: 6 **Teacher/Coordinator:** Dr Alan Craddock **Session:** Semester 1 **Classes:** Two 1 hour lectures and one 2 hour tutorial per week. **Prerequisites:** PSYC (2013 or 2113) and at least one other Intermediate Psychology Unit of Study from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2014 or 2114). **Prohibitions:** PSYC3212 **Assumed knowledge:** PSYC (2012 or 2112). **Assessment:** One 2 hour exam, one 2500 word research report, tutorial presentation.

PSYC3017 continues the coverage of topics in Social Psychology begun in PSYC1001 and PSYC2013. The unit is divided into topic areas, where the emphasis is on evaluating theories and the relevant evidence. Topics areas include social relationships, antisocial behaviours, applied social psychology (effects of the physical environment on social behaviour; jury decision making), social cognition, leadership, and cross cultural psychology. Tutorials provide first hand experience of research by involving students in a range of research projects on the topics covered in the lectures. The tutorials also provide an opportunity for discussion of issues associated with these topics.

Textbooks
See School website.

PSYC3018
Abnormal Psychology

Credit points: 6 **Teacher/Coordinator:** Dr Marianna Szabo **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour tutorial per week. **Prerequisites:** PSYC (2014 or 2114) and at least one other Intermediate Psychology unit of study from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2013 or 2113). **Prohibitions:** PSYC3203 **Assumed knowledge:** PSYC2012 **Assessment:** One 2 hour exam, one 2000 word essay, tutorial presentation.

This unit of study critically examines core issues in Abnormal Psychology, concerning the description, explanation and treatment of psychological disorders. The unit of study will include topics such as: (a) Adult abnormal psychology: Anxiety disorders (specific phobias, panic disorder, agoraphobia, OCD); Addictive disorders (drug, alcohol, gambling); Eating disorders (anorexia nervosa, bulimia nervosa); Mood disorders (dysthymia, major depressive disorder, cyclothymia, bipolar disorder); Schizophrenia, Personality disorders. (b) Child abnormal psychology: Learning disabilities, Mental retardation, Pervasive developmental disorders, Attention Deficit Hyperactivity disorder; Conduct disorder; Anxiety disorders, Depression.

Textbooks
See School website.

PSYC3019
Communication and Counselling

Credit points: 6 **Teacher/Coordinator:** Dr Alan Craddock **Session:** Semester 2 **Classes:** Two 1 hour lectures and one 2 hour tutorial per week. **Prerequisites:** PSYC2013 and one other Intermediate Psychology unit of study from PSYC (2011 or 2111), PSYC (2012 or 2112) and PSYC (2014 or 2114). **Prohibitions:** PSYC3214 **Assumed knowledge:** PSYC (2012 or 2112). **Assessment:** One 2 hour exam, one 2500 word report, quiz.

Communication: This part of the unit is concerned with understanding how interpersonal communication occurs in a face to face context. The emphasis will be on the structure of language and non-language components that compose the message and the extent to which that message is correctly decoded. Counselling: This part of the unit of study aims to provide an introduction to counselling psychology, to

critically examine the theoretical foundations of counselling processes and to consider relevant empirical research.

Textbooks
See School website.

Psychology Honours

Prerequisites for admission

A Major in Psychology with Credit average or better across both the Intermediate and Senior Psychology* Units of Study comprising the 48 credit points of Intermediate and Senior Psychology Units that constitute the minimum required for the major. PSYC (3010 or 3201) must be included in the Senior Units. BPsych students should consult resolutions in chapter 6. School permission required. Due to restricted resources for research supervision, the intake to Psychology Honours will be limited to approximately 80 students and will be determined by academic merit in Intermediate and Senior Psychology.

Assessment

Formal exams in Ethics and Issues in Psychology and in Research Methods; report of empirical research project; theoretical thesis or assessment in three Special Fields modules. Students are required to (a) devise, conduct and report upon an empirical research project (research area dependent on interests and specialities of staff members); (b) write a theoretical thesis or attend two Special Fields seminars and complete required assessment tasks; and (c) attend one lecture series in Ethics and Issues in Psychology and two series of lectures in Research Methods.

HPSC3023 Psychology & Psychiatry History & Phil

HPSC3023 Psychology & Psychiatry History & Phil can be counted towards a Psychology Major. Successful completion of this unit of study is essential for students intending to take the Theoretical Thesis option in Psychology Honours.

Virology

Details for Virology units can be found under the Microbiology entry.

11. Talented Student Program

Overview

The Talented Student Program is a special program of study intended for students 'of exceptional merit' who are enrolled in degrees administered by the Faculty of Science (BSc, BMedSc, BIT, BCST, BPsych and their specialist streams or combined degrees). It is also available for the science component of the BLibStud. If other Faculties grant permission, TSP options may be taken for science components that are part of other degree programs. The aim of the program is to offer students of exceptional merit additional challenging material to enable them to maximise their intellectual growth and potential.

A major benefit of participation in the Talented Student Program is that students receive special supervision by academic staff and often engage in studies with small numbers of fellow students, all of whom have particular interest in the subject. In general, the TSP caters for students whose talent is broad-based across science. There are two main aspects of a student's involvement in the TSP. Students can have greater flexibility in their choice of study (beyond that normally allowed by degree rules), and they have a mentor, a member of the academic staff who assists them in choosing from the great range of possibilities. Participation in the Talented Student Program is recorded separately on the student's academic transcript, as are TSP units of study, so that all potential employers are aware that the student has completed challenging courses of study. Further information on the operation of the Talented Student Program may be obtained from the Departmental coordinators listed below or from the Undergraduate Adviser, Faculty of Science.

Selection

Entry to the Talented Student Program is by invitation from the Dean. Invitations to participate in the TSP are made each year for that year. The following guidelines apply generally, although Departments may have additional (and more stringent) requirements for entry to the activities they offer in the program:

- to be considered for the program in their first year, students should normally have a UAI (or equivalent) of 99.00 or higher and a result in band 6 in at least one HSC science subject area and/or a mark of 95 or better in HSC Mathematics Extension 2. The Dean may consider slight variations to these requirements where a student has demonstrated exceptional performance in scientific study (eg, at the level of membership of a team which represents Australia in an International Science or Mathematics Olympiad).
- to be considered for entry into the program in their second and third years, students should normally have WAMs of 85 or over and a high distinction grade in an appropriate Science subject area. Intermediate level entry to TSP is available only to students who have been enrolled full-time in units of study totaling at least 48 credit points.

Students who feel that they satisfy these criteria, but who have not received an invitation to participate in the TSP that year, should contact the Dean.

Range of TSP structures

The relevant Faculty Resolutions (eg Section 2.2 of the BSc degree authorises the Dean to give approval for students of exceptional merit to enrol in units of study or in combinations of units of study not normally available within the degree. In very exceptional cases, particularly for students who have excelled in Olympiad programs, application of these Resolutions may permit accelerated progress toward the completion of the BSc degree.Faculty policy in relation to the Talented Student Program is described in this chapter.

Students will arrange a suitable pattern of study for the year, in consultation with their mentor (who will also consider the entire degree program). For some students, the TSP activities will be in a single discipline, for others there will be separate TSP activities in several disciplines. Still others will choose interdisciplinary activities that relate several fields to one another. Some students choose TSP activities that involve additional work beyond the normal amount for a student in the degree; for others, the TSP activities replace prescribed work, giving a normal total credit point load. Many disciplines have an organised activity for a whole group of TSP students studying that field, such as a weekly seminar or group project. In other disciplines, TSP activity involves participation by each TSP student in a research group of staff and postgraduates. Every student is treated individually; however, there are some common patterns that we describe below.

For many TSP students who are interested in several fields, (especially if they aren't really sure about their eventual direction), a suitable arrangement might be for them to join in separate TSP activities of each discipline. Students might elect to study a broader range of fields than usual, by studying more than the normal load of 24 credit points per semester. Another pattern is to accelerate a student who (say through Olympiad participation) has already learnt most of the topics in the usual first-year units in a discipline. Such a student can go directly to second year study in that field and in related fields, when they begin their degree. By studying more than the usual workload each semester, they may be able to complete their Honours degree in less than 4 years full-time. Some students have particular interests that can best be served by specially planned activities combining different disciplines.

Constraints on TSP structure

When a TSP activity replaces normal activity within a unit of study, the student will enrol in that unit, but the transcript will be annotated to reflect the TSP activity. When a TSP activity differs from the normal workload, the student will be enrolled in specially designated TSP units. The maximum number of credit points from TSP activities that can be credited towards the degree is normally 40 credit points designated as TSP units of study that are not listed in the Faculty handbook. This 40-credit point total covers all three years of study, and perhaps several different disciplines, so it is important to plan carefully to leave enough TSP possibilities in later years. It is also important that the student meets all the usual degree requirements, involving numbers of credit points at various levels and in a range of disciplines. Each TSP activity is assigned a number of credit points, a level (Junior, Intermediate or Senior) and a Discipline area, so it can contribute to meeting the degree requirements.

The TSP process

At the start of each year, the Dean chooses students to be invited to participate in the TSP. A welcome is held in Orientation week, and at that time, each student who is new to the TSP will meet briefly with the Faculty TSP coordinator, who assigns a mentor for the student. The mentor is usually a departmental TSP coordinator, from a department closest to the student's interest(s). The mentor and the student then plan special activities for the year, covering all fields (this may involve discussions with coordinators from other departments). A proposal is put to the Dean, who can approve enrolment in special TSP units of study. During the year the student will meet several times with the mentor, to make sure that everything is going well. Whatever TSP activities have been arranged will be carried out by the student with others (staff and possibly students too). Assessment will be

through the mentor and the staff involved in the activities. At the end of the semester the mentor will report results.

TSP coordinators

Faculty of Science

Coordinator: A/Prof Anthony Masters

Senior Agricultural Chemistry

Coordinator: Professor Les Copeland
Students may undertake, in addition to normal coursework, a special research project directly supervised by a member of the academic staff.

Anatomy and Histology

Coordinator: Dr Vladimir Balcar
The Department of Anatomy and Histology offers individual projects related to research in the Department (for example Neuroscience, Developmental Biology, Forensic Anatomy, Structure and Function of Muscle Tissue) as well as more structured programme in cooperation with other departments in the School of Medical Sciences.

Biochemistry

See Molecular and Microbial Biosciences

Biology

Coordinator: Dr Jan Marc
Students may undertake additional seminars and/or special project work.

Chemistry

Coordinator: Dr Lou Rendina
The Chemistry School offers Junior TSP students a challenging program based on the 'Chemistry 1 (Special Studies Program)'. The program comprises the Junior Chemistry (Advanced) lecture series, special tutorials, and special project-based laboratory exercises. Admission to Chemistry 1 (SSP) is by invitation only, and is limited to 40 students each year. Intermediate and senior Chemistry students may undertake a special research project. The possibility of intermediate students taking senior units also exists. Students should discuss options with Dr Rendina.

Geosciences

Intermediate Geography
Coordinator: A/Prof Phil Hirsch
In lieu of some of the normal coursework students may undertake special project work on an environmental problem. Particular emphasis will be given to the enhancement of student capabilities in the areas of problem identification, problem formulation, data gathering, and analysis and reporting.
Geology and Geophysics
Coordinator: Dr Derek Wyman
Students will be offered extra seminars and/or special project work.

History and Philosophy of Science

Coordinator: Dr Ofer Gal
The unit will make special arrangements for individual students throughout their studies. Interested students should contact the TSP coordinator as soon as possible. Topics offered include History, Philosophy, and Sociology of Science; Science and Ethics; and Public Communication/Understanding of Science.

Immunology

Coordinator: A/Prof Helen Briscoe
Students may undertake a special research project.

Information Technologies

Coordinator: Dr James Curran
The Department will make special arrangements for individual students throughout their studies. Interested students should contact the TSP coordinator as soon as possible.

Mathematics and Statistics

Coordinators: Dr Daniel Daners
Students admitted to the program have the following options available to them:

- First Year students in the Faculty Talented Student Program are invited to apply for entry to the Mathematics Special Studies Program. In addition to covering standard material, students in the Special Studies Program will participate in their own seminars on specially chosen advanced topics. Second and third year students are encouraged to tailor their own programs, in consultation with the coordinators.
- Students in the Faculty Talented Student Program have access to Mathematics units of study in higher years. For example, a First Year student may take selected second or even third year units.
- Second and third year students have access to special projects, which can be inter-disciplinary, according to the interests of the individual student. Second and third year students are encouraged to tailor their own programs, in consultation with the coordinators.

Medical Science

Coordinator: Dr Margot Day

Molecular and Microbial Bioscience

(for Biochemistry, Molecular Biology and Genetics, Molecular Biotechnology and Microbiology)
Coordinator: Dr Andrew Holmes
A special program of study will be developed for individual students enrolled in Intermediate and Senior Biochemistry, Molecular Biology and Genetics, Molecular Biotechnology and Microbiology.

Pathology

Coordinator: Dr Bob Bao

Pharmacology

Coordinator: Dr Brent McParland
The Department will make special arrangements for individual students throughout their studies.

Physics

Coordinators: Prof Dick Hunstead and Prof David McKenzie
Junior students may take extra seminars and special project work in addition to, or in lieu of, parts of Physics (Advanced) units of study. Intermediate students may take extra seminars and special project work in addition to, or in lieu of, parts of Intermediate Physics units of study. Senior students may take extra seminars and special research project work in addition to, or in lieu of, parts of Senior Physics units of study. An excursion to visit research facilities outside Sydney is offered in the mid-semester break in the July semester.

Physiology

Coordinator: Dr Margot Day
Students may undertake, in addition to normal coursework, a special research project.

Psychology

Coordinator: Dr Irina Harris
The program is available in Intermediate and Senior Psychology. Students admitted to the program have the following options, or various combinations of these options, available to them:

- additional options in Psychology either in lieu of, or in addition to, other units of study in Science
- a combination of additional Psychology options combined with special studies in another science discipline (eg, Biochemistry, Computer Science, Mathematics and Statistics)
- a special research project in lieu of, or in addition to, normal practical or classwork components

Senior Soil Science

Coordinator: Dr Balwant Singh
Students may undertake, in addition to normal coursework, a special research project.

12. Honours in the Faculty of Science

This chapter is intended to give enrolment advice to undergraduate students in the Faculty of Science.

Honours in the Faculty of Science

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

Admission

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

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

You should also note the following:

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

Honours in the BIT

Admission

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

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

To qualify for the award of the Bachelor of Information Technology (Honours) degree, students shall complete 192 credit points as outlined in Section 4 of the Resolutions, including at least 42 credit points from honours-level units, including INFO4990, INFO4991, INFO4992 and INFO4999, with a result of at least 65 in INFO4999. However, students who fail to meet the requirements for the award of honours and who have satisfied the requirements of the BIT will graduate with a pass BIT degree.

You should also note the following:

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

Honours in the BPsych

Admission

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

You should also note the following:

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

Honours in the BScMediaCommun and BLibStud

Admission

To qualify to enrol in the honours course, students shall

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

You should also note the following:

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

courses may either complete the honours courses in the two subject areas separately and in succession, or complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.
- An interdisciplinary honours course shall comprise such parts as determined by the Coordinating Committee for the interdisciplinary course

Grades of honours for all degrees

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

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

The Faculty is aware that, because the honours units of study in some Departments are wholly or predominantly formal course work and in others a research project, and because some subjects are not taught until well into the undergraduate program, the way in which Departments take cognisance of performance in the honours year in arriving at a recommendation for a grade of honours must be left to their discretion. However the Faculty has established a set of guidelines for Departments to use in determining their recommendations.

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

95–100

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

90–94

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

80–89

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

75–79

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

70–74

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

65–69

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

SCIWAM for all degrees

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

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

$$\text{SCIWAM} = \frac{\text{sum}(Wc \times Mc)}{\text{sum}(Wc)}$$

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

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

Ranking for postgraduate scholarships

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

Honours units of study

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

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

Important policies relating to undergraduate candidature

Restrictions (general)

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

Time limits

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

Suspension

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

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

Satisfactory progress

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

Faculty of Science attendance policy

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

Credit

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

Examinations and assessment

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

Results

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

HD	High Distinction	85–100
D	Distinction	75–84
CR	Credit	65–74
P	Pass	50–64
PCON	Pass (Concessional)* Junior units of study only. PCON (Pass Concessional) will no longer be awarded in any degree in the Faculty of Science from 2004	46–49
F	Fail	Below 46 or 50
AF	Absent Fail	
DF	Discontinued – Fail	
DNF	Discontinued – not to count as failure	

**A maximum of 18 credit points from Junior units of study with the grade of PCON may be counted for all degrees, except BScMediaCommun where the maximum is 12 credit points and BIT and BMedSc where no units with the grade of PCON may be credited.*

Note: PCON (Pass Concessional) will no longer be awarded in any degree in the Faculty of Science from 2004.

Honours

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

H1	Honours Class I	80+
H21	Honours Class II (Division 1)	75–79
H22	Honours Class II (Division 2)	70–74
H3	Honours Class III	65–69
F	Fail*	below 65
AF	Absent Fail	

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

Other important policies

See chapter 1 for important policy information.

Honours units of study

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Agricultural Chemistry Honours			
AGCH4021 **Agricultural Chemistry Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
AGCH4022 **Agricultural Chemistry Honours B**	12	**C** AGCH4021	Semester 1 Semester 2
AGCH4023 **Agricultural Chemistry Honours C**	12	**C** AGCH4022	Semester 1 Semester 2
AGCH4024 **Agricultural Chemistry Honours D**	12	**C** AGCH4023	Semester 1 Semester 2
Anatomy and Histology Honours			
ANAT4011 **Anatomy Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
ANAT4012 **Anatomy Honours B**	12	**C** ANAT 4011	Semester 1 Semester 2
ANAT4013 **Anatomy Honours C**	12	**C** ANAT 4012	Semester 1 Semester 2
ANAT4014 **Anatomy Honours D**	12	**C** ANAT 4013	Semester 1 Semester 2
Biochemistry Honours			
BCHM4011 **Biochemistry Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
BCHM4012 **Biochemistry Honours B**	12	**C** BCHM4011	Semester 1 Semester 2
BCHM4013 **Biochemistry Honours C**	12	**C** BCHM4012	Semester 1 Semester 2
BCHM4014 **Biochemistry Honours D**	12	**C** BCHM4013	Semester 1 Semester 2
Biology Honours			
BIOL4009 **Communicating Research in Biology**	6	**C** BIOL4011 *Note: Department permission required for enrolment* *This unit is compulsory for students admitted to Honours (Biological Sciences). Other students may enrol by special permission.*	Semester 1 Semester 2
BIOL4010 **Experiment Design & Analysis (Biology)**	6	**P** Students are to be undertaking an experimental research project. *Note: Department permission required for enrolment*	Semester 1 Semester 2
BIOL4011 **Biology Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
BIOL4012 **Biology Honours B**	12	**C** BIOL4011	Semester 1 Semester 2
BIOL4013 **Biology Honours C**	12	**C** BIOL4012	Semester 1 Semester 2
Chemistry Honours			
CHEM4011 **Chemistry Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
CHEM4012 **Chemistry Honours B**	12	**C** CHEM4011	Semester 1 Semester 2
CHEM4013 **Chemistry Honours C**	12	**C** CHEM4012	Semester 1 Semester 2
CHEM4014 **Chemistry Honours D**	12	**C** CHEM4013	Semester 1 Semester 2
Computational Science Honours			
COSC4001 **Computational Science Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
COSC4002 **Computational Science Honours B**	12	**C** COSC4001	Semester 1 Semester 2
COSC4003 **Computational Science Honours C**	12	**C** COSC4002	Semester 1 Semester 2
COSC4004 **Computational Science Honours D**	12	**C** COSC4003	Semester 1 Semester 2
Computer Science Honours			
COMP4045 **Computational Geometry**	6	**A** Data structures, analysis of algorithms	Semester 1
COMP4046 **Statistical Natural Language Processing**	6	**A** Concepts of linguistics, elementary statistics, AI techniques	Semester 1
COMP4048 **Information Visualisation**	6	**A** Discrete mathematics	Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
COMP5318 **Knowledge, Discovery and Data Mining**	6	**A** COMP5138 Relational Database Management Systems.	Semester 1 Semester 2
COMP5338 **Advanced Data Models**	6	**A** COMP5138 Relational Database Management Systems **N** COMP5306	Semester 1 Semester 2
COMP5347 **e-Commerce Technology**	6	**A** COMP5028 Object Oriented Analysis and Design	Semester 1
COMP5348 **Enterprise Scale Software Development**	6	**A** COMP5028 Object Oriented Analysis and Design	Semester 1
COMP5416 **Advanced Network Technologies**	6	**A** COMP5116 Internet Protocols and COMP5126 Distributed Systems Programming	Semester 2
COMP5424 **Information Technology in Biomedicine**	6		Semester 1
COMP5425 **Multimedia Storage, Retrieval & Delivery**	6	**A** COMP 5122 Multimedia Human Computer Interaction	Semester 1
COMP5426 **Network Based High Performance Computing**	6	**A** COMP5126 Distributed Systems Programming	Semester 1
INFO4010 **IT Advanced Topic A**	6	**P** Permission of Head of School *Note: Department permission required for enrolment*	Semester 1
INFO4011 **IT Advanced Topic B**	6	**P** Permission of Head of School *Note: Department permission required for enrolment*	Semester 2
INFO4990 **IT Research Methods**	6	**A** Elementary statistics *Note: Department permission required for enrolment*	Semester 1 Semester 2
INFO4991 **IT Research Thesis A**	6	**C** INFO4990 and INFO4992	Semester 1 Semester 2
INFO4992 **IT Research Thesis B**	12	**C** INFO4990 and INFO4991	Semester 1 Semester 2
INFO4999 **Computer Science Honours Result**		**P** Permission of the Head of Department *Note: Department permission required for enrolment*	Semester 1 Semester 2
ISYS4050 **Knowledge Management Systems**	6	**A** Information systems concepts, database concepts	Semester 1
NETS4047 **Pervasive Computing**	6	**A** Networking concepts, operating system concepts, programming expertise	Semester 2
Cell Pathology Honours			
CPAT4011 **Cell Pathology Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
CPAT4012 **Cell Pathology Honours B**	12	**C** CPAT 4011	Semester 1 Semester 2
CPAT4013 **Cell Pathology Honours C**	12	**C** CPAT 4012	Semester 1 Semester 2
CPAT4014 **Cell Pathology Honours D**	12	**C** CPAT 4013	Semester 1 Semester 2
Environmental Studies Honours			
Not available in 2006. This Honours area will be available from 2007.			
Geography Honours			
GEOG4011 **Geography Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
GEOG4012 **Geography Honours B**	12	**C** GEOG 4011	Semester 1 Semester 2
GEOG4013 **Geography Honours C**	12	**C** GEOG 4012	Semester 1 Semester 2
GEOG4014 **Geography Honours D**	12	**C** GEOG 4013	Semester 1 Semester 2
Geology Honours			
GEOL4011 **Geology Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
GEOL4012 **Geology Honours B**	12	**C** GEOL4011	Semester 1 Semester 2
GEOL4013 **Geology Honours C**	12	**C** GEOL4012	Semester 1 Semester 2
GEOL4014 **Geology Honours D**	12	**C** GEOL4013	Semester 1 Semester 2
Geophysics Honours			
GEOP4011 **Geophysics Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
GEOP4012 **Geophysics Honours B**	12	**C** GEOP 4011	Semester 1 Semester 2

Unit of study	Credit points	A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition	Session
GEOP4013 **Geophysics Honours C**	12	**C** GEOP 4012	Semester 1 Semester 2
GEOP4014 **Geophysics Honours D**	12	**C** GEOP 4013	Semester 1 Semester 2
History and Philosophy of Science Honours			
All students must enrol in HPSC4999. Honours students must complete 48 credit points from the following units:			
HPSC4101 **Philosophy of Science**	6	**P** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. *Note: Department permission required for enrolment*	Semester 1
HPSC4102 **History of Science**	6	**P** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. *Note: Department permission required for enrolment*	Semester 1 Semester 2
HPSC4103 **Sociology of Science**	6	**P** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. *Note: Department permission required for enrolment*	Semester 2
HPSC4104 **Recent Topics in HPS**	6	**P** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. *Note: Department permission required for enrolment*	Semester 1 Semester 2
HPSC4105 **HPS Research Methods**	6	**P** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. *Note: Department permission required for enrolment*	Semester 1 Semester 2
HPSC4108 **Core topics: History & Philosophy of Sci**	6	**P** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission **N** Not available to students who have completed a major in History and Philosophy of Science or an equivalent program of study at another institution. *Note: Department permission required for enrolment*	Semester 1 Semester 2
HPSC4201 **HPS Research Project 1**	6	**A** HPSC (2001 and 2002) or HPSC (2100 and 2101) **P** Available only to students admitted to HPS Honours and Graduate Diploma or Certificate in Science (History and Philosophy of Science). **N** HPSC4106, HPSC4107 *Note: Department permission required for enrolment*	Semester 1 Semester 2
HPSC4202 **HPS Research Project 2**	6	**A** HPSC (2001 and 2002) or HPSC (2100 and 2101) **P** Available only to students admitted to HPS Honours and Graduate Diploma or Certificate in Science (History and Philosophy of Science). **N** HPSC4106 and HPSC4107 *Note: Department permission required for enrolment*	Semester 1 Semester 2
HPSC4203 **HPS Research Project 3**	6	**A** HPSC (2001 and 2002) or HPSC (2100 and 2101) **P** Available only to students admitted to HPS Honours and Graduate Diploma or Certificate in Science (History and Philosophy of Science). **N** HPSC4106, HPSC4107 *Note: Department permission required for enrolment*	Semester 1 Semester 2
HPSC4204 **HPS Research Project 4**	6	**A** HPSC (2001 and 2002) or HPSC (2100 and 2101) **P** Available only to students admitted to HPS Honours and Graduate Diploma or Certificate in Science (History and Philosophy of Science). **N** HPSC4106, HPSC4107 *Note: Department permission required for enrolment*	Semester 1 Semester 2
HPSC4999 **History & Philosophy of Science Honours**		**P** Available only to students admitted to HPS Honours. *Note: Department permission required for enrolment*	Semester 1 Semester 2
Immunology Honours			
IMMU4011 **Immunology Honours A**	12	**N** BMED4011 *Note: Department permission required for enrolment*	Semester 1 Semester 2
IMMU4012 **Immunology Honours B**	12	**C** IMMU4011 **N** BMED4012	Semester 1 Semester 2
IMMU4013 **Immunology Honours C**	12	**C** IMMU4012 **N** BMED4013	Semester 1 Semester 2
IMMU4014 **Immunology Honours D**	12	**C** IMMU4013 **N** BMED4014	Semester 1 Semester 2
Information Systems Honours			
ISYS4301 **Information Systems Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
ISYS4302 **Information Systems Honours B**	12	**C** ISYS4301	Semester 1 Semester 2
ISYS4303 **Information Systems Honours C**	12	**C** ISYS4302	Semester 1 Semester 2
ISYS4304 **Information Systems Honours D**	12	**C** ISYS4303	Semester 1 Semester 2
Marine Sciences Honours			
MARS4011 **Marine Sciences Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
MARS4012 **Marine Sciences Honours B**	12	**C** MARS4011	Semester 1 Semester 2
MARS4013 **Marine Sciences Honours C**	12	**C** MARS4012	Semester 1 Semester 2
MARS4014 **Marine Sciences Honours D**	12	**C** MARS4013	Semester 1 Semester 2
Pure Mathematics Honours			
MATH4301 **Pure Mathematics Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
MATH4302 **Pure Mathematics Honours B**	12	**C** MATH4301	Semester 1 Semester 2
MATH4303 **Pure Mathematics Honours C**	12	**C** MATH4302	Semester 1 Semester 2
MATH4304 **Pure Mathematics Honours D**	12	**C** MATH4303	Semester 1 Semester 2
Applied Mathematics Honours			
MATH4401 **Applied Mathematics Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
MATH4402 **Applied Mathematics Honours B**	12	**C** MATH4401	Semester 1 Semester 2
MATH4403 **Applied Mathematics Honours C**	12	**C** MATH4402	Semester 1 Semester 2
MATH4404 **Applied Mathematics Honours D**	12	**C** MATH4403	Semester 1 Semester 2
Microbiology Honours			
MICR4011 **Microbiology Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
MICR4012 **Microbiology Honours B**	12	**C** MICR4011	Semester 1 Semester 2
MICR4013 **Microbiology Honours C**	12	**C** MICR4012	Semester 1 Semester 2
MICR4014 **Microbiology Honours D**	12	**C** MICR4013	Semester 1 Semester 2
Molecular Biotechnology Honours			
MOBT units to be undertaken depend of the area of study.			
Pharmacology Honours			
PCOL4011 **Pharmacology Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
PCOL4012 **Pharmacology Honours B**	12	**C** PCOL4011	Semester 1 Semester 2
PCOL4013 **Pharmacology Honours C**	12	**C** PCOL4012	Semester 1 Semester 2
PCOL4014 **Pharmacology Honours D**	12	**C** PCOL4013	Semester 1 Semester 2
Physiology Honours			
PHSI4011 **Physiology Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
PHSI4012 **Physiology Honours B**	12	**C** PHSI4011	Semester 1 Semester 2
PHSI4013 **Physiology Honours C**	12	**C** PHSI4012	Semester 1 Semester 2
PHSI4014 **Physiology Honours D**	12	**C** PHSI4013	Semester 1 Semester 2
Physics Honours			
PHYS4011 **Physics Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
PHYS4012 **Physics Honours B**	12	**C** PHYS4011	Semester 1 Semester 2
PHYS4013 **Physics Honours C**	12	**C** PHYS4012	Semester 1 Semester 2
PHYS4014 **Physics Honours D**	12	**C** PHYS4013	Semester 1 Semester 2
Psychology Honours			
PSYC4011 **Psychology Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
PSYC4012 **Psychology Honours B**	12	**C** PSYC4011	Semester 1 Semester 2
PSYC4013 **Psychology Honours C**	12	**C** PSYC4012	Semester 1 Semester 2
PSYC4014 **Psychology Honours D**	12	**C** PSYC4013	Semester 1 Semester 2
Soil Science Honours			
SOIL4021 **Soil Science Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
SOIL4022 **Soil Science Honours B**	12	**C** SOIL4021	Semester 1 Semester 2
SOIL4023 **Soil Science Honours C**	12	**C** SOIL4022	Semester 1 Semester 2
SOIL4024 **Soil Science Honours D**	12	**C** SOIL4023	Semester 1 Semester 2
Mathematical Statistics Honours			
STAT4201 **Mathematical Statistics Honours A**	12	*Note: Department permission required for enrolment*	Semester 1 Semester 2
STAT4202 **Mathematical Statistics Honours B**	12	**C** STAT 4201	Semester 1 Semester 2
STAT4203 **Mathematical Statistics Honours C**	12	**C** STAT 4202	Semester 1 Semester 2
STAT4204 **Mathematical Statistics Honours D**	12	**C** STAT 4203	Semester 1 Semester 2

13. Information for students on Outbound Exchange

This chapter is intended for students in the Faculty of Science who wish to take up the opportunity to study overseas at an exchange-partner institution for part of their University of Sydney degree.

The University of Sydney has exchange agreements with Universities throughout the United States, Canada, Europe and Asia. Each year a number of students in the Faculty of Science choose to participate in Exchange programs and have found them to be an exciting and challenging way of globalising their academic experience and enriching their personal experience in different environments and cultures.

When a student is on exchange they are enrolled full-time at the University of Sydney and pay all relevant fees to the University of Sydney (i.e. Commonwealth Supported or Full-Fee). Students from Sydney may be required to pay some minor administrative charges and health insurance; however they are not required to pay any other fees to the host institution.

Eligibility

All students should check with the Faculty of Science to ensure there are no restrictions on their program of study before applying for the exchange. If there are none, the following eligibility criteria normally apply for the University-wide student exchange programs:

- Undergraduate students must have completed 48 credit points at the University of Sydney at the time of application (you can apply in the second semester of first year to depart in the second semester of second year). Students who have transferred from another university and received credit for previous study must have completed at least one semester of full-time (24credit points) study at the University of Sydney before they can apply for the exchange program.
- Postgraduate coursework students will usually need to have completed one semester of full-time postgraduate study at the University of Sydney at the time of application.
- Postgraduate research students must have completed one semester of full-time postgraduate study before they can go on exchange.
- You must have achieved at least a credit average (65 per cent or higher) over your academic record at the University of Sydney and should have passed all subjects. A failure may be overlooked if you can demonstrate extenuating circumstances.
- You must be enrolled as a full-time student at the University of Sydney while away on exchange taking classes that will count as credit towards your normal Sydney enrolment i.e. you cannot study classes overseas for recreation or personal interest.
- You must have sufficient funding for the exchange period.
- Exchange programs are not available to honours students.

The application deadlines are 31 May for programs commencing in the first half of the following year and 15 October for programs commencing in the second half of the following year.

Please note that the application is quite complex and it is essential that you plan to commence the process 4 to 6 weeks before the deadline. Details on the application process can be obtained from the International Study Abroad and Exchange Office at the University of Sydney or on the University of Sydney website.

Students are required to obtain the following information prior to lodging the application at the Study Abroad and Exchange Office:

- Sydney University unit of study equivalences for all of the possible subjects of choice at the overseas institutions of interest. This is obtained by contacting the nominated Exchange Unit of Study coordinator in each School of interest. You will need to provide course outlines from the overseas institution. This approval needs to be recorded on the academic approval study plan provided by the International Study Abroad and Exchange Office
- *Faculty Permission*. This approval needs to be recorded on the academic approval study plan provided by the International Study Abroad and Exchange Office

Students need to ensure that a copy of the final approval is lodged at the Faculty of Science prior to departure.

In many instances the unit of study availability at the overseas institution can vary. Students need to ensure that the University of Sydney enrolment correctly reflects the enrolment at the overseas institution. If units of study at the overseas institution become unavailable, students are required to obtain written equivalencies and Faculty approval for any subsequent changes prior to the HECS census dates each semester.

Results

After completion of the exchange semester(s), your original transcript will be forwarded to the Faculty of Science Office (via the International Study Abroad and Exchange Office). Exchange results appear on your University of Sydney transcript on a pass/fail basis.

Postgraduate degrees

Postgraduate degrees, graduate diplomas and graduate certificates

The postgraduate degrees in the Faculty of Science are:

1. Degrees of Doctor

1.1 Doctor of Philosophy (PhD)
1.2 Doctor of Science (DSc)
1.3 Doctor of Clinical Psychology/Master of Science DCP/MSc
1.4 Doctor of Clinical Neuropsychology/Master of Science (DCN/MSc)

2. Degrees of Master

2.1 Master of Science (MSc)
2.2 Master of Science (Environmental Science) (MSc(EnvironSc))
2.3 Master of Environmental Science and Law (MEnvSciLaw)
2.4 Master of Medical Physics (MMedPhys)
2.5 Master of Science (Microscopy and Microanalysis) (MSc(Micro&An))
2.6 Master of Nutrition and Dietetics (MNutrDiet)
2.7 Master of Nutritional Science (MNutrSc) (Not available to new students in 2007)
2.8 Master of Psychology (MPsych)
2.9 Master of Information Technology (MInfTech)
2.10 Master of Information Technology Management (MInfTechMan)
2.11 Master of Bioethics (MBEth)
2.12 Master of Bioethics (Honours) (MBEthHon)
2.13 Master of Applied Information Technology (MAppIT) (Not available to new students in 2007)
2.14 Master of Applied Science (MApplSc), which shall also incorporate the streams:
2.14.1 Master of Applied Science (Bioinformatics) (MApplSc(Bioinf))
2.14.2 Master of Applied Science (Coastal Management) (MApplSc(CoastalMgt))
2.14.3 Master of Applied Science (Environmental Science) (MApplSc(EnvSc))
2.14.4 Master of Applied Science (Health Psychology) (MApplSc(HlthPsych)
2.14.5 Master of Applied Science (Microscopy and Microanalysis) (MApplSc (Microsc & Micronal))
2.14.6 Master of Applied Science (Molecular Biotechnology) (MAppSc(MBT))
2.14.7 Master of Applied Science (Neuroscience) (MAppSc(NeuroSc)) (Not available to new students in 2007)
2.14.8 Master of Applied Science (Nutrition and Dietetics) (MApplSc(NutrDiet) (Not available to new students in 2007)
2.14.9 Master of Applied Science (Psychology of Coaching) (MApplSc(PsychCoach)
2.14.10 Master of Applied Science (Wildlife Health and Population Management) (MAppSc(Wild Hlth Pop Man))

3. Graduate Diplomas

The diplomas in the Faculty of Science shall be:

3.1 Graduate Diploma in Science (GradDipSc)
3.2 Graduate Diploma in Science (Psychology) (GradDipSc(Psych)) (Not available to new students in 2007)
3.3 Graduate Diploma in Psychology (GradDipPsych)
3.4 Graduate Diploma in Science (Microscopy and Microanalysis) (GradDipSc(Micr&An))
3.5 Graduate Diploma in Information Technology (GradDipIT)
3.6 Graduate Diploma in Information Technology Management (GradDipITMan)
3.7 Graduate Diploma in Applied Information Technology (GradDipAppIT) (Not available to new students in 2007)
3.8 Graduate Diploma in Medical Physics (GradDipMedPhys)
3.9 Graduate Diploma in Computing (GradDipComp)
3.10 Graduate Diploma in Bioethics (GradDipBEth)
3.11 Graduate Diploma in Applied Science (GradDipApplSc), which shall also incorporate the streams:
3.11.1 Graduate Diploma in Applied Science (Bioinformatics) (MApplSc(Bioinf))
3.11.2 Graduate Diploma in Applied Science (Coastal Management) (MApplSc(CoastalMgt))
3.11.3 Graduate Diploma in Applied Science (Environmental Science) (MApplSc(EnvSc))
3.11.4 Graduate Diploma in Applied Science (Health Psychology) (MApplSc(HlthPsych)
3.11.5 Graduate Diploma inApplied Science (Microscopy and Microanalysis) (MApplSc (Microsc & Micronal))
3.11.6 Graduate Diploma in Applied Science (Molecular Biotechnology) (MAppSc(MBT))
3.11.7 Graduate Diploma in Applied Science (Neuroscience) (MAppSc(NeuroSc)) (Not available to new students in 2007)
3.11.8 Graduate Diploma in Applied Science (Nutrition and Dietetics) (MApplSc(NutrDiet) (Not available to new students in 2007)
3.11.9 Graduate Diploma in Applied Science (Psychology of Coaching) (MApplSc(PsychCoach)
3.11.10 Graduate Diploma in Applied Science (Wildlife Health and Population Management)

4. Graduate Certificates

The certificates in the Faculty of Science shall be:

4.1 Graduate Certificate in Science (History and Philosophy in Science) (GradCert(HPS))
4.2 Graduate Certificate in Science (Microscopy & Microanalysis) (GradCertSC(Micr&An))
4.3 Graduate Certificate in Information Technology (GradCertIT)
4.4 Graduate Certificate in Information Technology Management (GradCertITMan)
4.5 Graduate Certificate in Applied Information Technology (GradCertAppIT) (Not available to new students in 2007)
4.6 Graduate Certificate in Applied Science (GradCertApplSc), which shall also incorporate the streams:
4.6.1 Graduate Certificate in Applied Science (Bioinformatics) (MApplSc(Bioinf))
4.6.2 Graduate Certificate in Applied Science (Coastal Management) (MApplSc(CoastalMgt))
4.6.3 Graduate Certificate in Applied Science (Environmental Science) (MApplSc(EnvSc))
4.6.4 Graduate Certificate in Applied Science (Health Psychology) (MApplSc(HlthPsych)
4.6.5 Graduate Certificate in Applied Science (Microscopy and Microanalysis) (MApplSc (Microsc & Micronal))
4.6.6 Graduate Certificate in Applied Science (Molecular Biotechnology) (MAppSc(MBT))
4.6.7 Graduate Certificate in Applied Science (Neuroscience) (MAppSc(NeuroSc)) (Not available to new students in 2007)
4.6.8 Graduate Certificate in Applied Science (Nutrition and Dietetics) (MApplSc(NutrDiet) (Not available to new students in 2007)
4.6.9 Graduate Certificate in Applied Science (Spatial Information Science) (GradCertApplSc (SIS))
4.6.10 Graduate Certificate in Applied Science (Psychology of Coaching) (MApplSc(PsychCoach)
4.6.11 Graduate Certificate in Applied Science (Wildlife Health and Population Management)
4.7 Graduate Certificate in Bioethics (GradCertBEth), which shall also incorporate the streams:
4.7.1 Graduate Certificate in Bioethics (Biotechnology) (GradCertBEthBTech)

4.7.2 Graduate Certificate in Bioethics (Clinical Ethics) (GradCertBEthClinEth)

Prospective candidates for these awards should consult with the appropriate postgraduate adviser (see chapter 2) or Head of Department most closely concerned, as early as possible.

Candidates who have commenced qualifications in the past that are no longer offered by the Faculty should make reference to the regulations applicable in their first year of enrolment and consult with the advisers in the Faculty Office.

University of Sydney (Coursework) Rule 2000 (as amended)

See the *University of Sydney (Coursework) Rule 2000 (as amended)* at the end of the Handbook.

The Resolutions in the postgraduate section of the Handbook must be read in conjunction with the *University of Sydney (Coursework) Rule 2000 (as amended)*, which sets out the requirements for all coursework courses, and the relevant Senate Resolutions, which are available in the University Calendar. The Calendar can also be viewed on the Web
at www.usyd.edu.au/publications/calendar/

14. Doctorates in the Faculty of Science

This chapter sets out the requirements for research postgraduate degrees offered in the Faculty of Science. Following is a brief description of the research degrees, notes on the presentation of theses and a description of coursework/research degrees.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously at the end of the degree descriptions, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/

Research doctorate degrees

Research degrees offered by the Faculty are listed in this chapter in the following order:

- Doctor of Science (DSc)
- Doctor of Philosophy (PhD)
- Doctor of Clinical Psychology/ Master of Science (DCP/MSc)
- Doctor of Clinical Neuropsychology/ Master of Science (DCN/MSc)

The resolutions of the Senate, Academic Board and Faculty relating to these degrees may be found below and in the Calendar. Additional valuable resources for intending and current research students are the Postgraduate Research Studies Handbook, published by the University of Sydney and the Thesis Guide and Survival Manual published by SUPRA (Sydney University Postgraduate Representative Association). These publications are available from the Faculty Office. The Postgraduate Research Studies Handbook is also on the Web at www.usyd.edu.au/study/postgrad.shtml.

Doctor of Science (DSc)

The degree of Doctor of Science is awarded for published work which has been generally recognised by scholars in the field concerned as a distinguished contribution to knowledge. To be eligible applicants must be graduates of the University of Sydney. Alternatively they may be graduates of another university or be accepted as having standing equivalent to that required of a graduate of the university and have been either a full-time member of the academic staff of the University of Sydney for at least three years or have had a significant involvement with the teaching or research of the University.

Admission to candidature is subject to a preliminary assessment by the Faculty of the applicant's case. If this is favourable an applicant is required to submit a list of published work, together with a description of the theme of the published work. At least three examiners, of whom at least two are external, are appointed to assess the application and make recommendations.

Faculty resolutions: see end of this chapter.
Resolutions of the Senate: see the University of Sydney Calendar.

Doctor of Philosophy (PhD)

The degree of Doctor of Philosophy is a research degree awarded for a thesis considered to be a substantially original contribution to the subject concerned. Some coursework may be required (mainly in the form of seminars) but in no case is it a major component. The Resolutions of the Senate and Academic Board relating to the degree of Doctor of Philosophy are printed in University of Sydney Calendar.

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

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

In the case of full-time candidates, the minimum period of candidature can, with the permission of the Faculty, be two years for candidates holding an MSc degree or equivalent, or shall be three years in the case of candidates holding a bachelors degree with first class or second class honours; the maximum period of candidature is normally four years.

Part-time candidature may be approved for applicants who can demonstrate that they are engaged in an occupation or other activity, which leaves them substantially free to pursue their candidature for the degree. Normally the minimum period of candidature will be determined on the recommendation of the Faculty but in any case will be not less than three years; the maximum period of part-time candidature is normally eight years.

Doctor of Philosophy Resolutions: see the University of Sydney Calendar.

Doctor of Clinical Psychology/Master of Science (DCP/MSc)

The School of Psychology offers a combined course which trains psychology graduates in the professional specialisation of clinical psychology: the Doctor of Clinical Psychology/Master of Science course.

The Doctor of Clinical Psychology is recognised, in principle, by the New South Wales Department of Health as qualifying the holder for progression to the grade of Clinical Psychologist. The course is accredited by the Australian Psychological Society as a 5th, 6th and 7th year of training, and as an approved qualification for Associate Membership of the APS College of Clinical Psychologists. The NSW Psychologists Registration Board also accredits the course for the purposes of registration.

The Doctor of Clinical Psychology (DCP) involves 3 years of full-time study and includes three components: academic course work, supervised clinical internships and research.

The academic coursework involves lectures, workshops, forums and seminars by the University academic staff. Qualified Clinical Psychologists who work in a variety of teaching hospitals and clinics in the Sydney area provide supervised clinical practice. In some circumstances, Internships may also be available in rural and remote areas including Bathurst, Bourke and Lismore. The research component requires students to produce, by the end of the second semester of their third year, a Research Thesis that incorporates 1 or 2 journal publications and a comprehensive literature review.

All students enrol in the DCP degree and in their second year enrol in a MSc degree as well. On completion of all the course requirements at the end of the third year, students will graduate with a DCP and MSc degree.

Students who have made excellent progress and whose projects are of sufficient scope may then apply for transfer to a PhD degree. Transfer to a PhD is also subject to the satisfactory production of a thesis proposal which on completion, will make a contribution to knowledge in a specialist area of study.

Admission requirements

Essential requirements

- Completion of a four year honours degree in Psychology, gaining at least an upper second class (2.1) Honours, or its equivalent eg. (BPsych, BA(Hons), BSc(Hons), BEc(SocSci)(Hons) or BLibStudies(Hons), GradDipSc(Psych)*, in Psychology).
- *An overall result of 80% or above is required for GradDipSc(Psych) to be deemed equivalent
- Completion of an individually conducted research project and thesis within the degree
- Satisfactory referee reports (academic referee, work experience referee)

Only candidates who fulfil the essential requirements will be considered for the selection interview. The selection interview is also an essential part of the selection procedure.

Desirable requirements

- Completion of relevant work experience (relevant paid, voluntary or research work)

Applicants are encouraged to have gained some previous relevant work experience. The benefit of work experience is that it is likely to enhance the understanding of clinical issues and allow a prospective student to determine whether they would like to pursue working with a clinical population. Should an applicant be invited to interview, they will be advantaged if able to draw upon previous work experiences, particularly in regard to answering questions that specifically assess understanding of clinical issues and potential difficulties of work in clinical contexts.

Clinical Relevance for Application

Students applying for the DCP are not required to have completed an empirical research project in the area of Abnormal Psychology, Health Psychology, Clinical Psychology or Neuropsychology. The selection process aims to identify students with a demonstrated interest in abnormal, clinical psychology or clinical neuropsychology, an awareness of clinical issues, and experience related to the area. This can be demonstrated in a number of ways, for example relevant work experience or a relevant empirical project. Note also that clinical relevance can be discussed on the basis of projects in many areas of Psychology, for example cognitive psychology, developmental psychology, individual differences, human learning, neuroscience, social psychology.

Selection

Applicants are selected following the evaluation of application forms, supporting documentation and a selection interview. Offers of places are dependent upon the ranking of applicants and competition for places.

Application submission

Applications are to be sent to the Postgraduate Assistant, Faculty of Science, Carslaw Building (F07), University of Sydney NSW 2006. International applicants should apply in writing to the International Office, Services Building (G12), University of Sydney NSW 2006, Australia.

Conditional Registration

All intending candidates are required to apply for and gain provisional registration with the NSW Psychologists Registration Board immediately before commencing their candidature, or if applicable, full registration.

PO Box K599 Haymarket NSW 1238; Phone 02 9219 0211; Fax 02 9281 2030.

Course structure

This program is based on a scientist-practitioner model with a cognitive-behavioural emphasis. It aims to provide students with a high level of expertise in practical, academic and research areas which will enable them to work successfully as professional clinical psychologists in a variety of academic, clinical and community settings. Our graduates will have a highly developed knowledge base and strong clinical skills necessary for both the practice of professional psychology on the one hand and conducting psychological research on the other.

Course resolutions

See the end of this chapter.

Unit of study descriptions

Doctor of Clinical Psychology/ Master of Science units of study

PSYC6065
Psychological Assessment

Credit points: 6 **Teacher/Coordinator:** Dr David Horry and Dr Suncica Sunny Lah **Session:** Semester 1 **Classes:** One 3-hr lec/wk **Assessment:** One practical report, two clinical skills assessments

This course introduces students to the basic theory and the general practice of neuropsychological assessment for adults and children. The course will focus on the components of cognition including intelligence, memory, attention executive abilities and achievement. Students will be taught how to administer, score and interpret a variety of tests in these areas; and how to report the results in written form. Students will also be familiarised with normal development stages, and a systematic/developmental approach to assessment.

PSYC6003
Clinical Internship 1

Credit points: 3 **Teacher/Coordinator:** Dr Louise Sharpe **Session:** Semester 1 **Classes:** 2 three hour and 4 four hours of core clinical skills training; 13 four hours clinical observation per semester. **Assessment:** Attendance; Observation report; Clinical log

This unit of study is designed to introduce students to the work of clinical psychologists through observation in the Psychology Clinic. The internship will strengthen theory-practice links, by exposing students to a range of mental health problems faced in clinical settings. In addition, core clinical skills will be developed. Skills in micro-counselling and cognitive-behavioural interviewing are reviewed and practiced. Diagnostic assessment, mental status examination and cognitive behavioural case formulation are taught with a view to developing individual treatment plans.

PSYC6004
Ethics and Professional Practice

Credit points: 3 **Teacher/Coordinator:** Prof Stephen Touyz **Session:** Semester 1 **Classes:** 7 three hour lectures and 1 seven hour workshop per semester. **Assessment:** Child protection assignment; clinical viva.

This unit of study will introduce students to the highest standards of ethical and clinical practice and familiarise them with relevant legislation pertaining to contemporary practice in clinical psychology.

PSYC6005
Research 1

Credit points: 3 **Teacher/Coordinator:** Dr Louise Sharpe **Session:** Semester 1

This unit of study provides an introduction to issues in psychological research. Students will attend a weekly research forum in the Clinical Psychology Unit and the School Colloquium in fulfillment of requirements for this unit of study.

PSYC6029
Case Seminars 1

Credit points: 3 **Teacher/Coordinator:** Prof Stephen Touyz **Session:** Semester 1 **Classes:** 13 one hour seminars per semester. **Assessment:** Attendance

Attendance at the case seminars introduces students to history taking, conducting a mental status examination, formulation, diagnosis and

treatment. These clinical case conferences will allow students to recognise a wide range of psychiatric diagnoses, the interrelationships between medical illness and psychiatric/psychological symptomatology as well as working within a multidisciplinary framework.

PSYC6051
Adult Psychological Disorders

Credit points: 6 **Teacher/Coordinator:** Dr Maree Abbott **Session:** Semester 1 **Classes:** 13 one hour lectures and 13 four hour practicals per semester. **Assessment:** Formal examination; clinica viva

This unit of study is designed to introduce students to the nature of therapeutic work with common psychological problems of adulthood, through a series of lectures and practical skills based sessions. Strategies for cognitive behavioural interviewing within a diagnostic framework (DSMIV) are reviewed and practiced. Emphasis is placed upon the learning of strong practical skills in the application of evidence-based therapies to the common psychological disorders encountered in adulthood, such as anxiety disorders, mood disorders and eating disorders.

PSYC6055
Advanced Adult Psychological Disorders

Credit points: 6 **Teacher/Coordinator:** Dr Maree Abbott **Session:** Semester 2 **Classes:** 6 six hour lectures per semester. **Prerequisites:** PSYC6051 **Assessment:** Formal examination; attendance at mental health tribunal.

This course is designed to introduce interns to the nature of therapeutic work with more complex psychological disorders. The course will include mental health problems such as schizophrenia, bipolar disorder, drug and alcohol problems, and personality disorders. The course will also introduce students to clinical psychology work in specialist contexts: working with clients from different cultural backgrounds, clients in forensic settings, and older adults.

PSYC6067
Clinical Internship 2

Credit points: 6 **Teacher/Coordinator:** Dr Louise Sharpe **Session:** Semester 2 **Classes:** 24 fourteen hour practicals per semester. **Prerequisites:** PSYC6065, PSYC6051, PSYC6003 **Assessment:** Attendance, practical; contract; mid-internship review, end of internship review.

This unit of study is designed to introduce students to therapy and psychological assessment skills for working specifically with adults. Students will be allocated to a supervisor who will oversee their clinical practice closely. This internship will expose students to clients with psychological problems in mild to moderate clinical range. The internship builds student's confidence in working with clients of adult ages. It will allow students to develop skills in the identification of clinical problem, the communication of a formulation and treatment plan and the conduct of the plan.

PSYC6009
Case Seminars 2

Credit points: 3 **Teacher/Coordinator:** Prof Stephen Touyz **Session:** Semester 2 **Classes:** 13 one hour seminars per semester. **Prerequisites:** PSYC6029 **Assessment:** Attendance

This unit of study will continue the seminars introduced in PSYC6029 Case Seminars 1. This unit of study will comprise formal weekly presentations of cases seen in the course of Clinical Internships by Year 3 students. All students are required to attend throughout the semester.

PSYC6010
Research 2

Credit points: 3 **Teacher/Coordinator:** Dr Louise Sharpe **Session:** Semester 2 **Classes:** 13 one hour seminars per semester. **Prerequisites:** PSYC6005 **Assessment:** Attendance; research proposal.

Within this Unit of Study students will consolidate their research plan and develop a written proposal for their research project. The Research Forum will also feature the presentation of special topics including research design, statistics and power considerations. Students will also be guided through the process of submitting an Application for Ethical Approval. Students will be expected to attend the School of Psychology Colloquium.

PSYC6049
Child Psychological Disorders

Credit points: 6 **Teacher/Coordinator:** Dr Deborah Finney **Session:** Semester 2 **Classes:** 13 four hour lectures per semester **Prerequisites:** PSYC6051 **Assessment:** Case study; formal evaluation

This course introduces the nature, assessment and treatment of psychological disorders in children and adolescents. Students will examine the diagnostic classification, epidemiology, aetiology, developmental course, context and outcomes of common psychological problems evidenced in childhood and adolescence (e.g., anxiety, depression, conduct disorders, ODD, ADHD, eating problems, OCD). Prevention issues will also be addressed. Cognitive and behavioural intervention strategies will be discussed along with a number of other conceptual and practical issues in child clinical psychology. Skills training will include interviewing, measurement tools and application of interventions.

PSYC6068
Clinical Internship 3

Credit points: 6 **Teacher/Coordinator:** Dr Louise Sharpe **Session:** Semester 1 **Classes:** 24 fourteen hour practicals per semester. **Prerequisites:** PSYC6065, PSYC6049, PSYC6008 **Assessment:** Attendance, practical; contract; mid-internship review, end of internship review.

This unit of study is designed to introduce students to therapy and psychological assessment skills for working specifically with young people and their families. Students will be allocated to a supervisor who will oversee their clinical practice closely. This internship will expose students to clients with psychological problems in mild to moderate clinical range. The internship builds student's confidence in working with young clients of school age. In addition, this unit will allow students to build on their previous work with adults. Specifically, students will continue to work half a day per week with adult clients in the internal clinic. Interns will be able to work more independently at this stage of their training.

PSYC6014
Case Seminars 3

Credit points: 3 **Teacher/Coordinator:** Prof Stephen Touyz **Session:** Semester 1 **Prerequisites:** PSYC6009

This unit of study builds upon previous semesters where second year students will present a clinical case for discussion. Assessment of this unit of study is by detailed case reports.

PSYC6015
Research 3

Credit points: 3 **Teacher/Coordinator:** Dr Louise Sharpe **Session:** Semester 1 **Prerequisites:** PSYC6010

Students will attend the Research Forum and will present the rationale, aims, hypotheses, and plan of their proposed research project to the group, which will include staff of the CPU and School of Psychology. Students will also attend the School Colloquium in fulfilment of requirements for this unit of study.

PSYC6032
Adult Health Psychology

Credit points: 6 **Teacher/Coordinator:** Dr Louise Sharpe **Session:** Semester 1 **Classes:** 6 six hour lectures per semester. **Prerequisites:** PSYC6051 **Assessment:** Attendance; presentation

This course aims to understand the relationships between psychological and physical functioning across a wide range of medical disorders, including their effect on cognitive function, and the way in which cognitive and behavioural factors influence psychological and physical functioning of those with health related problems. A variety of medical problems will be studied in relation to their impact on function, as well as issues such as preventative medicine (eg. HIV), adjusting to and living with chronic illness (eg. chronic pain), issues

relating to terminal illness (eg. psychooncology) and issues relating to compliance (eg. diabetes). The course will be concerned with theories and interventions that promote health related behaviours and improve quality of life for people with medical problems.

PSYC6064
Paediatric and Developmental Disorders

Credit points: 6 **Teacher/Coordinator:** Dr Suncica Sunny Lah **Session:** Semester 1 **Classes:** One 3hr lec/wk **Prerequisites:** PSYC6049 **Assessment:** One 2500 word essay, critical review of paper

This unit of study will provide students with advanced learning in child psychological disorders and will contain two major sections: (1) paediatric child psychology and (2) developmental disorders. The paediatric child psychology section will cover acute and chronic illnesses, psychological treatments, treatment adherence, and rehabilitation. The developmental disorders section will focus on current theories and models of developmental disorders that occur in childhood, as well as cover interventions currently used for remediation of these disorders.

PSYC6066
Clinical Internship and Case Seminars 4

Teacher/Coordinator: Prof Stephen Touyz **Session:** Semester 2 **Classes:** External internship 2 days per week; case seminar 1 hour per week. **Corequisites:** PSYC6013 **Assessment:** Case presentation; two written case reports; internship evaluation

Students are introduced to a range of experiences in hospitals and community settings in accordance with their clinical and research interests. One of the three internships will be specifically tied to the student's research project to allow them to specifically develop skills relevant to research with that particular clinical population. One of the three internships should also be with a client group with general psychiatric problems. The specific nature of learning outcomes will depend upon the setting for the internship, the client group and the nature of the clinical work. Choices for internships will be made in collaboration with the unit coordinator, who will work with students to develop individually tailored training plans. Students will also present a clinical case for discussion at the case seminar.

PSYC6031
Family Therapy

Credit points: 3 **Teacher/Coordinator:** Dr Caroline Hunt **Session:** Semester 2 **Classes:** 4 six hour seminars per semester. **Prerequisites:** PSYC6049 **Assessment:** Assignment

This course introduces students to issues that may be a focus of clinical attention during childhood but are not defined as mental disorders such as relationship problems in the family system, parenting capacity, and problems related to abuse and/or neglect. Students will be introduced to family therapy as an approach to treating such problems.

PSYC6056
Advanced Seminars

Credit points: 6 **Teacher/Coordinator:** Dr Caroline Hunt **Session:** Semester 2 **Classes:** 4 six hour lectures per semester. **Prerequisites:** PSYC6051 **Assessment:** Attendance; presentation; written assignment; clinica viva

This course is designed to provide interns with advanced level training in psychotherapeutic approaches. The advanced level seminars will include Schema Therapy, Integrated Approaches to Psychotherapy and may include from time to time, seminars by visiting clinical academics with expertise in specific therapeutic approaches.

PSYC6054
Neuropsychopathology

Credit points: 3 **Teacher/Coordinator:** Dr David Horry and Dr Suncica Sunny Lah **Session:** Semester 2 **Classes:** 13 one hour lectures per semester. **Assessment:** Essay; formal examination

This course introduces students to the cognitive correlates of a range of neurological and medical conditions in adults and children. These conditions include cerebral anoxia, epilepsy, traumatic brain injury, diabetes, HIV/AIDS, multiple sclerosis, etc. Students will be able to recognise the cognitive profiles associated with a variety of neurological and medical conditions; understand the neurological basis for these profiles; know how to assess patients with these disorders.

PSYC6061
Clinical Internship and Case Seminars 5

Teacher/Coordinator: Prof Stephen Touyz **Session:** Semester 1 **Classes:** 13 one hour seminars, 24 fourteen hour practicals per semester. **Assessment:** Attendance, practical; case report; contract; mid-internship review, end of internship review.

This course provides students with a range of therapy and assessment experiences in accordance with their clinical and research interests. The specific nature of learning outcomes will depend upon the setting for the internship, the client group and the nature of the clinical work. Students will also attend the clinical case seminars and present complex clinical cases for discussion which pose either diagnostic dilemmas or difficulties in treatment.

PSYC6058
Clinical Internship and Case Seminars 6

Teacher/Coordinator: Prof Stephen Touyz **Session:** Semester 2 **Classes:** 13 one hour seminars, 24 fourteen hour practicals per semester. **Assessment:** Attendance, practical; case report; contract; mid-internship review, end of internship review

This course provides students with a range of therapy and assessment experiences in accordance with their clinical and research interests. The specific nature of learning outcomes will depend upon the setting for the internship, the client group and the nature of the clinical work. Students will also attend the clinical case seminars and present for discussion complex clinical cases which pose either diagnostic dilemmas or difficulties in treatment.

Doctor of Clinical Neuropsychology/Master of Science (DCN/MSc)

This degree is not available to new students in 2007

For information and course resolutions: see 2006 Faculty of Science Handbook.

Presentation of theses – for research degrees

The following information is presented for the guidance of candidates. It should be regarded as a summary only. Candidates should also consult the University's Calendar, the Postgraduate Research Studies Handbook and the Faculty of Science for the most current and detailed advice. The Postgraduate Research Studies Handbook is available on the Web at www.usyd.edu.au/ su/ab/committees/committees.html.

Formal requirements

Number of copies to be submitted:
Doctor of Philosophy 4

The four copies of theses submitted for examination for the degree of Doctor of Philosophy and the three copies of theses submitted for examination for the degree of Master of Science may be bound in either a temporary or a permanent form. Theses submitted in temporary binding should be strong enough to withstand ordinary handling and postage. Full details of requirements for the Master of Science (Research) may be found in the following chapter.

The degree shall not be awarded until the candidate has submitted a permanently bound copy of the thesis (containing any corrections or amendments that may be required) and printed on acid-free or permanent paper.

The thesis shall be accompanied by a certificate from the supervisor stating whether in the supervisor's opinion the form of presentation of the thesis is satisfactory.

Theses in permanent form shall normally be on International Standard A4 size paper sewn and bound in boards covered with bookcloth or buckram or other binding fabric. The title of the thesis, the candidate's initials and surname, the title of the degree, the year of submission and the name of the University of Sydney should appear in lettering on the front cover or on the title page. The lettering on the spine, reading from top to bottom, should conform as far as possible to the above except that the name of the University of Sydney may be omitted and the thesis title abbreviated. Supporting material should be bound in the back of the thesis as an appendix or in a separate sheet of covers.

Additional information

At the request of the Academic Board, the Science Faculty has resolved that a thesis should not normally exceed 80,000 words. With the permission of the Chair of the Faculty of Science's Postgraduate Studies Committee, a thesis may have an absolute upper limit of 100,000 words.

Amendments do not have to involve rekeying if a black ink/biro amendment is clear. Amendments can also be made by way of an appendix to the thesis.

Candidates are advised to consult the SUPRA publication, Practical Aspects of Producing a Thesis at the University of Sydney, for other guidelines and suggestions in addition to the formal requirements above.

Summary

Within the Faculty of Science, there are no formal requirements/ guidelines other than those listed above. There are no requirements for single/double spacing or single/double sided presentation, nor font size, figure presentation, format of bibliographic citations, etc. Candidates should however, be aware that, if the degree is awarded, the thesis becomes a public document, the quality of which reflects on the ability of the candidate. Moreover, utilising a format that will make the examiners' tasks easier is obviously sensible.

Resolutions

Doctor of Science (DSc)

The Resolutions of the Senate relating to the degree of Doctor of Science are printed in the University of Sydney Calendar, the following Resolutions of the Faculty also apply.

1.1 Published work which a candidate for the degree of Doctor of Science submits for examination must, in addition to satisfying the requirements of the resolutions of the Senate relating to the degree, be in a field with which the Faculty is concerned.

1.2 A candidate for the degree is required, by way of an introduction, to describe the theme of the published work submitted and, where there is a large number of publications whose dates range over a period of time and which contain some range of subject matter, to state how these are related to one another and to the theme.

1.3 If a prospective candidate, as a first step, tenders the introduction called for in 1.2 above, together with a list of the published work which it is proposed to submit for examination, the Faculty will endeavour to make an assessment as to whether the published work is in a field with which the Faculty is concerned and, if so, an assessment also of the prima-facie worthiness for examination of the published work.

1.4 A prospective candidate who tenders the introduction together with the list of published work shall not be debarred from subsequently submitting the published work for examination.

Doctor of Philosophy

The Resolutions of the Senate and Academic Board relating to the degree of Doctor of Philosophy are printed in the University of Sydney Calendar.

Doctor of Clinical Psychology/Master of Science

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature:

1.1.1 graduates of the University of Sydney with a result of Honours 2.1 or better in Psychology holding the degree of Bachelor of Psychology, Bachelor of Science (Honours), Bachelor of Arts (Honours), Bachelor of Economics (Social Sciences) (Honours), or Bachelor of Liberal Studies (Honours) or any other equivalent award of the University of Sydney and who have satisfied the Department of their personal suitability for the practice of clinical psychology determined by personal interview and by analysis of units of study completed; or

1.1.2 graduates of other universities who have qualifications equivalent to those specified in subsection 1.1.1; and who have satisfied the Department of their personal suitability for the practice of clinical psychology determined by personal interview and by analysis of units of study completed.

2. **Units of study**

2.1 The units of study for the combined Doctor of Clinical Psychology/Master of Science, together with

2.1.1 credit point value;

2.1.2 assumed knowledge;

2.1.3 corequisites/prerequisites/assumed learning/assumed knowledge; and

2.1.4 any special conditions;

2.2 are listed in the *Table of units of study* in subsection 5.1.

3. **Requirements for the Doctor of Clinical Psychology/Master of Science**

3.1 Candidates for the Doctor of Clinical Psychology/Master of Science are required to:

3.1.1 complete satisfactorily all units of study listed in the table of units of study in subsection 5.1. A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed. In these resolutions, 'to complete a unit of study' or any derivative expression means:

3.1.1.1 to attend all the lectures and the meetings, if any, for seminars or tutorial instruction;

3.1.1.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

3.1.1.3 to pass any other examination of the unit of study that may apply;

3.1.2 pursue a course of advanced study and research leading to the submission of a thesis in an area of clinical research;

3.1.3 complete satisfactorily clinical internships in accordance with subsections 6 and 4.1.

4. **Method of progression**

4.1 A candidate for the Doctor of Clinical Psychology/Master of Science shall proceed by completing units of study, clinical internships, research and thesis in accordance with subsections 7 and 8.

[Section 2]

5. **Details of units of study**

5.1 The structure of the course is arranged to cover areas from five key topics, namely: Therapy Knowledge and Skills, Assessment Knowledge and Skills, Clinical Internships, Ethics and Professional Practice and Research arranged as shown in the following table:

Unit of study		CP
Year 1, Semester 1		
PSYC6065	Psychological Assessment	6
PSYC6003	Clinical Internship 1	3
PSYC6004	Ethics and Professional Practice	3
PSYC6005	Research 1	3
PSYC6029	Case Seminars 1	3
PSYC6051	Adult Psychological Disorders	6
Year 1, Semester 2		
PSYC6055	Advanced Adult Psychological Disorders	6
PSYC6067	Clinical Internship 2	6

Unit of study		CP
PSYC6009	Case Seminars 2	3
PSYC6010	Research 2	3
PSYC6049	Child Psychological Disorders	6
Year 2, Semester 1		
PSYC6068	Clinical Internship 3	6
PSYC6014	Case Seminars 3	3
PSYC6015	Research 3	3
PSYC6032	Adult Health Psychology	6
PSYC6064	Paediatric and Developmental Disorders	6
Year 2, Semester 2		
PSYC6066	Clinical Internship and Case Seminars 4	0
PSYC6031	Family Therapy	3
PSYC6056	Advanced Seminars	6
PSYC6054	Neuropsychopathology	3
Year 3, Semester 1		
PSYC6061	Clinical Internship and Case Seminars 5	0
Year 3, Semester 2		
PSYC6058	Clinical Internship and Case Seminars 6	0

6. **Enrolment in more/less than minimum load**

6.1 A candidate may proceed on either a part-time or full-time basis.

7. **Cross-institutional study**

7.1 Cross-institutional study shall not be available to students enrolled in the Doctor of Clinical Psychology/Master of Science course, except where the University of Sydney has a formal Cooperation Agreement with another University.

8. **Restrictions on enrolment**

8.1 Admission to candidature may be limited by a quota. In determining the quota, the University will take into account:

8.1.1 availability of resources including space, laboratory and computing facilities; and

8.1.2 availability of adequate and appropriate supervision.

8.2 In considering an application for admission to candidature, the Head of Department, the Director of Clinical Training and the Dean shall take account of the quota and shall select, in preference, applicants who are most meritorious in terms of subsection 1 above.

9. **Discontinuation of enrolment**

9.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the combined course. Students who have discontinued from the combined course will be required to apply for admission to the combined course and be subject to admission requirements pertaining at that time.

10. **Suspension of candidature**

10.1 A student may seek written permission from the Dean to suspend candidature in the combined course. The Dean of the Faculty of Science in consultation with the Director of Clinical Training shall approve any period of absence. Suspension may be granted for a maximum of one year on any one application.

11. **Re-enrolment after an absence**

11.1 A student who plans to reenrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

12. **Satisfactory progress**

12.1 The Dean may:

12.1.1 call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards the completion of the combined award course; and

12.1.2 terminate the candidature where the candidate does not show good cause.

12.2 Satisfactory progress is prescribed as follows:

12.2.1 a candidate for the combined award course must complete satisfactorily (at a pass level) all units of study;

12.2.2 if a candidate fails to complete satisfactorily a unit of study at the first attempt, they can make a second attempt at completing that unit of study. They may not begin the next unit of study within the same key topic area until the previous unit of study has been satisfactorily completed;

12.2.3 any candidate who fails to complete satisfactorily a unit of study at the second attempt will normally be deemed to have failed to complete the course requirements and their candidature will be terminated by the Dean; and

12.2.4 if a candidate fails to complete satisfactorily two units of study within the same key topic area at the first attempt, they will normally be deemed to have failed to complete the course requirements and their candidature will be terminated by the Dean.

13. **Time limit**

13.1 A candidate shall complete the requirements for the Doctor of Clinical Psychology/Master of Science in a minimum enrolment of six semesters and a maximum enrolment of twelve semesters, and except with permission of the Dean within nine calendar years of admission to candidature.

14. **Assessment policy**

14.1 The procedures for the examination and award of the Master of Science shall be prescribed in the Resolutions of the Senate and Faculty relating to that degree.

14.2 On completion of the requirements for the combined award course, the Faculty, on the recommendation of the Head of Department and the Director of Clinical Training, shall determine the results of the candidature.

15. **Credit transfer policy**

15.1 A candidate who, before admission to candidature, has spent time in graduate study and, within the previous three years, has completed coursework considered by the Dean to be equivalent to units of study prescribed for the combined award course, may receive credit of up to 48 credit points towards the requirements for the Doctor of Clinical Psychology provided that the completed work was not counted toward the requirements of another degree.

16. **Transfer to and from Doctor of Philosophy Candidature**

16.1 The Director of Clinical Training in consultation with the Head of Department may recommend to the Dean of the Faculty of Science that a candidate withdraw from candidature for the combined award course and complete requirements for the degree of Doctor of Philosophy under such conditions as the University may determine.

16.2 The Dean of the Faculty may readmit to candidature a candidate who has previously withdrawn from the combined award course as provided for in subsection 1 above and who has completed the requirements for the award of the degree of Doctor of Philosophy. Such a candidate shall complete the requirements for the degree of Doctor of Clinical Psychology under such conditions as the Dean may determine but shall not be permitted to continue candidature for the award of the degree of Master of Science.

16.3 The Dean of the Faculty may readmit to candidature a candidate who has previously withdrawn from the combined award course as provided for in subsection 16.1 above and who has not completed the requirements for the award of the degree of Doctor of Philosophy. Such a candidate will complete the requirements for the combined award course under such conditions as the Dean may determine.

16.4 Except in exceptional circumstances, and with the permission of the Dean, readmission to candidature under subsections 17.2 and 17.3 above shall occur within 14 semesters of withdrawal under subsection 17.1 above and within a maximum of nine years from commencement of candidature for the DCP/MSc course.

15. Master's research degrees

This chapter sets out the requirements for Master's level research postgraduate degrees offered in the Faculty of Science. Following is a brief description of the research degrees, notes on the presentation of theses and a description of the masters level research degrees.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected at the end of this chapter or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/

Research degrees

Research master's degrees offered by the Faculty are listed in this chapter in the following order:

- Master of Science (MSc)
  Master of Science (Environmental Science)

The resolutions of the Senate, Academic Board and Faculty relating to these degrees may be found this chapter and the Calendar. Additional valuable resources for intending and current research students are the Postgraduate Research Studies Handbook, published by the University of Sydney, the Thesis Guide and the Survival Manual published by SUPRA (Sydney University Postgraduate Representative Association). These publications are available from the Faculty Office. The Postgraduate Research Studies Handbook is also on the Web at www.usyd.edu.au/study/postgrad.shtml.

Master of Science (MSc)

Graduates of the University of Sydney with first or second class honours and candidates in the final year of an approved honours course in the BSc degree or who have an equivalent qualification from another institution or an equivalent standard of knowledge, may apply for admission to candidature for the MSc degree. Once admitted, candidates proceed full-time or part-time, by supervised research and thesis, or in some cases by coursework and essay.

An application should be lodged with the Faculty. It must be supported by the Head of the Department concerned and approved by the Faculty. If qualifications have been obtained in another university or institution then an application must also be approved by the Academic Board. If an applicant has the prerequisite qualifications, admission to candidature may be approved provided the necessary staff and facilities are available, including adequate accommodation and any special equipment. Some candidates must satisfy a preliminary examination before being admitted to full candidature.

Full-time candidates
Minimum period of candidature: 1 year
Maximum period of candidature: 2 years

Part-time candidates
Minimum period of candidature: 1 year
Maximum period of candidature: 4 years

Master of Science Resolutions: see end of this chapter.

Master of Science (Environmental Science)

The MSc (Environmental Science) is a research degree requiring a minimum of three semesters of full-time study (or equivalent part-time study). This degree is designed to extend the students knowledge base in environmental matters by providing the student with further training and research experience.

Candidates are required to show proof of a breadth of knowledge in environmental issues, as determined by the Director of Environmental Science. Consequently, as well as the submission of a research thesis, candidates may be required to satisfactorily complete up to a maximum of 24 credit points of coursework study. Prior to the beginning of studies, students must discuss their enrolment details and candidature with the Director of Environmental Science and agree a program guaranteeing breadth of study and ensuring that all units of coursework cover material new to the student. Such details may only be approved or modified by the Director.

Graduates of the University of Sydney with first or second class honours, or who have completed a Graduate Diploma in Applied Science (with or without an emphasis in Environmental Science) with a grade of credit or above, or who have an equivalent qualification from another institution or an equivalent standard of knowledge, may apply for admission to candidature for the Master of Science (Environmental Science) degree.

An application should be lodged with the Faculty of Science and must include a project proposal and the signature(s) of the prospective supervisor(s). It should also be supported by the Director of Environmental Science. If an applicant has the prerequisite qualifications, admission to candidature may be approved if the necessary staff and facilities are available, including adequate accommodation and any special equipment. Some candidates may need to satisfy a preliminary examination before being admitted to full candidature.

Master of Science (Environmental Science) Resolutions: see end of this chapter.

Presentation of theses
The following information is presented for the guidance of candidates. It should be regarded as a summary only. Candidates should also consult the Universitys Calendar, the Postgraduate Research Studies Handbook and the Faculty of Science for the most current and detailed advice. The Postgraduate Research Studies Handbook is available on the Web at www.usyd.edu.au/ su/ab/committees/committees.html.

Formal requirements
Number of copies to be submitted:
Master of Science 3

The three copies of theses submitted for examination for the degree of Master of Science or Master of Science (Environmental Science) may be bound in either a temporary or a permanent form. Theses submitted in temporary binding should be strong enough to withstand ordinary handling and postage.

The degree shall not be awarded until the candidate has submitted a permanently bound copy of the thesis (containing any corrections or amendments that may be required) and printed on acid-free or permanent paper.

The thesis shall be accompanied by a certificate from the supervisor stating whether in the supervisors opinion the form of presentation of the thesis is satisfactory.

Theses in permanent form shall normally be on International Standard A4 size paper sewn and bound in boards covered with bookcloth or buckram or other binding fabric. The title of the thesis, the candidates

initials and surname, the title of the degree, the year of submission and the name of the University of Sydney should appear in lettering on the front cover or on the title page. The lettering on the spine, reading from top to bottom, should conform as far as possible to the above except that the name of the University of Sydney may be omitted and the thesis title abbreviated. Supporting material should be bound in the back of the thesis as an appendix or in a separate sheet of covers.

Similar formal requirements exist for the presentation of MSc theses.

Additional information
At the request of the Academic Board, the Science Faculty has resolved that a thesis should not normally exceed 80,000 words. With the permission of the Chair of the Faculty of Sciences Post-graduate Studies Committee, a thesis may have an absolute upper limit of 100,000 words.

Amendments do not have to involve rekeying if a black ink/biro amendment is clear. Amendments can also be made by way of an appendix to the thesis.

Candidates are advised to consult the SUPRA publication, Practical Aspects of Producing a Thesis at the University of Sydney, for other guidelines and suggestions in addition to the formal requirements above.

Summary
Within the Faculty of Science, there are no formal requirements/ guidelines other than those listed above. There are no requirements for single/double spacing or single/doubled sided presentation, nor point size, figure pesentation, format of bibliographic citations, etc. Candidates should however, be aware that, if the degree is awarded, the thesis becomes a public document, the quality of which reflects on the ability of the candidate. Moreover, utilising a format that will make the examiners tasks easier is obviously sensible.

Resolutions

Master of Science (MSc)

1. **Admission**

1.1 The Faculty of Science may, on the recommendation of the Head of the Department concerned, admit to candidature for the degree of Master of Science an applicant who:

1.1.1 is a graduate of the University of Sydney; and

1.1.2 has, in the opinion of the Faculty, reached a first or second class honours standard:

1.1.2.1 in the final year of an honours program for the degree of Bachelor of Science, or

1.1.2.2 in a program considered by the Faculty to be equivalent to a unit of study referred to in subsection 1.1.2.1, or has, in some other manner, acquired a standard of knowledge considered by the Faculty to be equivalent to a first or second class honours standard in a unit of study referred to in subsection 1.1.2.1.

1.2 Notwithstanding subsection 1, the Academic Board may admit a person to candidature for the degree in accordance with the provisions of Part 9 of the University of Sydney (Amendment Act) Rule 1999.

2. **Enrolment in more/less than minimum load**

2.1 Subject to the approval of the Head of the Department, a candidate for the degree shall elect to proceed:

2.1.1 either as a full-time or as a part-time candidate;

2.1.2 either by research and thesis in accordance with subsections 7.1-7.8 or by coursework and essay in accordance with subsection 7.9-7.12; and

2.1.3 except in the case of a candidate proceeding in accordance with Part 9 of the University of Sydney (Amendment Act) Rule, either within The University of Sydney or elsewhere.

3. **Restrictions on enrolment**

3.1 A candidate to be full-time shall not keep the normal semesters but shall pursue candidature continuously throughout the year, except for a period of recreation leave and shall not have any substantial employment during the day.

3.2 A candidate who does not comply with subsection 3.1 shall be regarded as a part-time candidate.

4. **Time Limits**

4.1 A candidate shall not present for examination for the degree earlier than one year after commencement of candidature.

4.2 Except with the permission of the Faculty, a full-time candidate proceeding by research and thesis or any candidate proceeding by coursework and essay shall complete the requirements for the degree not later than two years after the commencement of candidature.

4.3 Except with the permission of the Faculty, a part-time candidate proceeding by research and thesis shall complete the requirements for the degree not later than four years after the commencement of candidature.

4.4 Time spent by a candidate in advanced study in The University of Sydney before admission to candidature may be deemed by the Faculty to be time spent after such admission.

5. **Supervision**

5.1 The Dean of the Faculty, on the recommendation of the Head of the Department concerned, shall appoint a full-time member of the academic staff or research staff of the University to act as supervisor of each candidate.

5.2 Where the supervisor is a member of the research staff, the Dean of the Faculty, on the recommendation of the Head of the Department concerned, shall also appoint a member of the full-time academic staff as associate supervisor. Any personso appointed as associate supervisor must be capable of acting as supervisor in the event that the supervisor is no longer able to act.

5.3 The Dean of the Faculty, on the recommendation of the Head of the Department concerned, may appoint a full-time member of the academic staff of the University or other appropriately qualified person to act as associate supervisor.

5.4 The supervisor shall report annually to the Faculty, through the Head of Department, on the progress towards completion of the requirements for the degree of each candidate under his or her supervision.

6. **Satisfactory Progress**

6.1 The Faculty, on the recommendation of the Head of the Department concerned, may terminate the candidature of any candidate who has not shown evidence of sufficient progress, in the opinion of the Faculty.

7. **Assessment and Examination**

7.1 A candidate proceeding by research and thesis shall:

7.1.1 carry out an original investigation on a topic approved by the Head of the Department concerned;

7.1.2 write a thesis embodying the results of this investigation, and

7.1.3 state in the thesis generally in a preface and specifically in notes, the sources from which the information was taken, the extent to which the work of others has been used, and the proportion of the thesis claimed as original;

7.2 lodge with the Registrar three copies of the thesis, typewritten and bound; and

7.3 if required by the examiners, sit for an examination in the branch or branches of science to which the thesis relates.

7.4 The thesis shall be accompanied by a certificate from the supervisor stating whether in the supervisor's opinion the form of presentation of the thesis is satisfactory.

7.5 The Dean of the Faculty of Science on the recommendation of the head of department concerned, shall appoint two, or where the Dean considers it appropriate, more than two examiners of whom at least one shall be external to the University, i.e. not being a member of the staff of the University or holding a clinical academic title, and of whom one may be the person appointed to act as supervisor of the candidate.

7.6 The examiners shall report to the Faculty which shall determine the result of the examination.

7.7 A candidate may not present as the thesis any work which has been presented for a degree or diploma at this or another tertiary institution, but the candidate shall not be precluded from incorporating such work in the thesis, provided that in presenting the thesis the candidate indicates the part of the work which has been so incorporated.

7.8 The Registrar shall lodge one copy of the thesis with the Librarian if the degree is awarded.

7.9 A candidate proceeding by course work and essay shall:

7.9.1 attend such course of study and pass such examinations in each unit of study as the Faculty, on the recommendation of the Department concerned, shall by resolution prescribe;

7.9.2 write a substantial essay on a topic approved by the Head of the Department concerned and state in the essay, generally in a preface and specifically in notes, the sources from which the information was taken and the extent to which the work of others has been used; and

7.9.3 lodge with the Registrar two typewritten copies of the essay.

7.10 The Dean of the Faculty, on the recommendation of the Head of the Department concerned, shall appoint two examiners to examine the essay. One may be the person appointed to act as supervisor of the candidate.

7.11 The examiners shall report to the Faculty which shall determine the result of the examination.

7.12 The candidate may not present as the essay any work which has been presented for an award course at this or another tertiary institution, but the candidate will not be precluded from incorporating such in the essay, provided that in presenting the essay the candidate indicates the part of work which has been so incorporated.

Master of Science (Environmental Science)

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature:

1.1.1 graduates who have completed an Honours degree majoring in a Science discipline that has a significant environmental emphasis, or in Environmental Science, or equivalent; or

1.1.2 graduates who have completed the requirements for a Graduate Diploma majoring in a Science discipline that has a significant environmental emphasis, or in Environmental Science, or equivalent as provided for by Subsection 1.2; or

1.1.3 graduates who have completed prior postgraduate study in a Science discipline that has a significant environmental emphasis, or in Environmental Science.

1.2 A candidate may seek admission into the MSc (Environmental Science) from any of the Graduate Diploma of Science programs, including those of Applied Science and Environmental Science, as follows:

1.2.1 A candidate who has fully completed the requirements for a Graduate Diploma of Science or Applied Science is eligible to apply for admission into the MSc (Environmental Science). Candidates who are considered not to have the required breadth of knowledge in environmental issues may need to complete some further coursework as provided for by section 4.

1.2.2 A candidate who has completed 24 credit points of Environmental Science coursework at Credit grade or above towards the requirements for a postgraduate qualification in Science or Applied Science may apply for admission into the MSc (Environmental Science). Candidates who gain admission in this manner may still need to complete some further coursework as provided for by section 2.

2. **Requirements for the Master of Science (Environmental Science)**

2.1 A candidate for the degree is required to:

2.1.1 carry out an original investigation on a topic approved by the Chair of the Program Committee for Environmental Science; and

2.1.2 write a thesis embodying the results of this investigation, stating in the thesis the sources from which the information was taken, the extent to which the work of others has been used, and the proportional of the thesis claimed as original work.

2.2 Candidates for the degree must prove to the satisfaction of the Program Committee for Environmental Science a breadth of knowledge in environmental issues.

2.3 Candidates for the degree must satisfactorily complete any coursework requirements prescribed by the Chair of the Program Committee for Environmental Science. This can include up to 24 credit points of coursework covering material new to the candidate and selected from units of study approved from time to time by the Faculty.

[Section 2]

3. **Enrolment in more/less than minimum load**

3.1 A candidate may proceed on either a full-time or a part-time basis.

4. **Cross-institutional study**

4.1 Cross-institutional study shall not be available to students enrolled in the Master of Science (Environmental Science) course, except where the University of Sydney has a formal Cooperation Agreement with another University.

5. **Restrictions on enrolment**

5.1 Admission to candidature may be limited by a quota. In determining the quota the University will take into account:

5.1.1 availability of resources including space, laboratory and computing facilities; and

5.1.2 availability of adequate and appropriate supervision.

5.2 In considering an application for admission to candidature the Program Committee for Environmental Science and the Faculty shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 1 above.

6. **Discontinuation of enrolment**

6.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued candidature for the degree. Students who have discontinued candidature will be required to apply for admission to the candidature and be subject to admission requirements pertaining at that time.

7. **Suspension of candidature**

7.1 A student may seek written permission from the Dean to suspend candidature for the degree.

7.2 Suspension may be granted for a maximum of one year.

8. **Re-enrolment after an absence**

8.1 A student who plans to reenrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

9. **Satisfactory progress**

9.1 The Faculty may:

9.1.1 call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the degree; and

9.1.2 terminate the candidature where the candidate does not show good cause.

10. **Time limit**

10.1 A full-time candidate shall complete the requirements for the degree not earlier than the end of the third semester and not later than the end of the fourth semester of candidature, except as described in subsection 1 or unless otherwise determined by the Faculty. A full-time candidate shall not keep the normal semesters but shall pursue candidature continuously throughout the year, except for periods of leave approved by the candidate's supervisor, and shall not have any substantial employment during the day.

10.2 A part-time candidate shall complete the requirements for the degree not earlier than the end of the third semester and not later than the end of the eighth semester of candidature, except as described in subsection 8.1 or unless otherwise determined by the Faculty.

10.3 Any candidate who does not comply with subsection 1 shall be deemed to be a part-time candidate.

10.4 For a candidate who gains admission into the MSc (Environmental Science) from a Graduate Diploma of Science or Applied Science, the duration of candidature is as follows:

10.4.1 Where a full-time candidate has completed the requirements for a Graduate Diploma of Science or Applied Science immediately prior to admission into the MSc (Environmental Science), the minimum duration for completion of the requirements of the MSc (Environmental Science) is two semesters.

10.4.2 Where a part-time candidate has completed the requirements for the Graduate Diploma of Science or Applied Science immediately prior to admission into the MSc (Environmental Science), the minimum duration for completion of the requirements of the MSc (Environmental Science) is three semesters.

10.4.3 In these resolutions, the term 'immediately' means that the Graduate Diploma requirements were completed in the previous semester.

11. **Assessment policy**

11.1 A candidate shall:

11.1.1 attend such course of study and pass such examinations in each unit of study as prescribed under subsection 3.3.

11.1.2 carry out an original investigation on a topic approved by Chair of the Program Committee - Environmental Science;
11.1.3 write a thesis embodying the results of this investigation and state in the thesis generally in a preface and specifically in notes, the sources from which the information was taken, the extent to which the work of others has been used, and the proportion of the thesis claimed as original;
11.1.4 lodge with the Registrar three copies of the thesis, typewritten and bound; and
11.1.5 if required by the examiners, sit for an examination in the branch or branches of science to which the thesis relates.
11.2 The thesis shall be accompanied by a certificate from the supervisor stating whether in the supervisor's opinion the form of presentation of the thesis is satisfactory.
11.3 The Dean of the Faculty of Science on the recommendation of the head of department concerned, shall appoint two, or where the Dean considers it appropriate, more than two examiners of whom at least one shall be external to the University - ie, not being a member of the staff of the University or holding a clinical academic title, and of whom one may be the person appointed to act as supervisor of the candidate.
11.4 The examiners shall report to the Faculty which shall determine the result of the examination
11.5 A candidate may not present as the thesis any work which has been presented for a degree or diploma at this or any another tertiary institution, but the candidate shall not be precluded from incorporating such work in the thesis, provided that in presenting the thesis the candidate indicates the part of the work which has been so incorporated.
12.6 The Registrar shall lodge one copy of the thesis with the Librarian if the degree is awarded.

12. **Credit transfer policy**

12.1 A candidate who, before admission to candidature, has spent time in graduate study and, within the previous three years, has completed coursework considered by the Dean to be equivalent to units of study prescribed for the combined award course, may receive credit of up to 6 credit points towards the requirements for the Master of Science (Environmental Science) provided that the completed work was not counted toward the requirements of another degree.

16. Postgraduate coursework: Graduate Diploma in Science

This chapter sets out the requirements for the Graduate Diploma in Science coursework degree.

Admission requirements

Graduates of the University of Sydney who are holders of a Bachelor of Science, Bachelor of Computer Science and Technology, Bachelor of Liberal Studies, Bachelor of Medical Science or Bachelor of Psychology, or graduates from other universities with an equivalent degree, may apply for admission to candidature for the degree Graduate Diploma in Science.

Relationship of Graduate Diploma to research degrees

The Graduate Diploma in Science serves as an entry qualification for the degrees of Master of Science or Doctor of Philosophy. It consists of equivalent work to that carried out by candidates enrolled in the fourth year honours courses, and is normally available to candidates who may not be eligible to enrol in those courses. The normal duration of the degree is one year full-time or two years part-time.

Course requirements

Intending students should consult the table of honours units of study in chapter 12 for the range of disciplines offered. After discussion of your interests with a relevant member of academic staff, an application should be lodged with the Faculty of Science. Entry to the Graduate Diploma is subject to approval by the relevant head of department, the Faculty, and confirmation that requirements for the award of a relevant bachelor's degree have been met.

Resolutions

Graduate Diploma in Science (GradDipSc)

[Section 1]

1. **Admission**

1.1 The Faculty may, on the recommendation of the Head of the Department concerned, admit to candidature for the Graduate Diploma in Science, an applicant who is a holder of a bachelor's degree from the Faculty of Science, from the University of Sydney.

1.2 The Academic Board, in accordance with the provisions of Part 9 of the University of Sydney (Amendment Act) Rule 1999, on the recommendation of the relevant Head of Department and of the Faculty, may admit to candidature of the graduate diploma, graduates who have qualifications equivalent, in the opinion of the Academic Board, to those specified in subsection 1.1.

1.3 Admission to the graduate diploma may be limited by quota.

1.3.1 In determining the quota, the University will take into account:

1.3.1.1 availability of resources including space, library, equipment, laboratory and computing facilities; and

1.3.1.2 availability of adequate and appropriate supervision.

1.4 In considering an application for admission to candidature, the Head of Department and the Faculty shall take account of the quota and will select in preference applicants who are most meritorious in terms of subsection 1.1 above.

[Section 2]

2. **Method of progression and time limits**

2.1 A candidate shall engage in a program of work equivalent to that required for completion of the relevant fourth year of a bachelor's degree in the Faculty of Science by completing the honours units of study offered by the department concerned either as a full-time student for a period of one year or, with the approval of the Head of Department concerned, as a part-time student for a period of two years.

3. **Assessment**

3.1 The award of the graduate diploma shall be subject to the completion of the program of work and examinations to the satisfaction of the Faculty.

4. **Progress**

4.1 The Faculty may call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the graduate diploma and where, in the opinion of the Faculty, the candidate does not show good cause, terminate the candidature.

17. Postgraduate coursework: Applied Science degrees

This chapter sets out the requirements for the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science.

Graduate Certificate in Applied Science

Graduate Diploma in Applied Science

Master of Applied Science

The Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science are articulated coursework programs available over a number of different subject areas offered by the Faculty, or in the following subject areas:

- Bioinformatics
- Coastal Management
- Environmental Science
- Health Psychology
- Microscopy and Microanalysis
- Molecular Biotechnology
- Nutrition and Dietetics (not available to new students in 2007)
- Neuroscience (not available to new students in 2007)
- Psychology of Coaching
- Spatial Information Science (Graduate Certificate only)
- Wildlife Health and Population Management

Course outcomes

Upon completion of the graduate certificate, graduates will possess a practical and theoretical background in some aspects of the field of study: this will be extended upon completion of the graduate diploma and further extended to include research and practical skills upon completion of the master's program.

Resolutions

Graduate Certificate in Applied Science

Graduate Diploma in Applied Science

Master of Applied Science

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for:

1.1.1 *the Graduate Certificate in Applied Science:*

1.1.1.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.1.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.1.1; or

1.1.1.3 persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;

1.1.2 *the Graduate Diploma in Applied Science:*

1.1.2.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.2.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.2.1; or

1.1.2.3 persons who have completed requirements for the Graduate Certificate in Applied Science, or equivalent;

1.1.3 *the Master of Applied Science:*

1.1.3.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.3.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.3.1; or

1.1.3.3 persons who have completed requirements for the Graduate Diploma in Applied Science, or equivalent.

1.2 In relation to particular subject areas the Dean may require applicants to satisfy additional specific requirements relating to that subject area.

1.3 The additional requirements are as follows.

1.3.1 *Health Psychology*

1.3.1.1 Students must have either a four-year Psychology degree or a three-year degree in a cognate discipline with at least two years relevant employment experience. Students can articulate from Certificate to Master's by obtaining Distinction level results at the Certificate level. To obtain entry into the Research stream, students will need to have either a four-year Psychology degree on entry or obtain distinction or better at the Certificate level.

1.3.2 *Molecular Biotechnology*

1.3.2.1 Applicants for the Graduate Certificate in Applied Science (Molecular Biotechnology) should hold a Bachelors degree with credit average results in substantial study in areas of relevance to Molecular Biotechnology, such as biochemistry, biology, chemistry, genetics or molecular biology, or previous experience in a relevant area that is considered to demonstrate the knowledge and aptitude required to undertake this award course.

1.3.2.2 Applicants for the Graduate Diploma in Applied Science (Molecular Biotechnology) should hold a Bachelors degree with credit average results in substantial study in areas of relevance to Molecular Biotechnology, such as biochemistry, biology, chemistry, genetics or molecular biology, or have completed the Graduate Certificate in Applied Science (Molecular Biotechnology) at the University of Sydney, without failing any units of study.

1.3.2.3 Applicants for a Master of Applied Science (Molecular Biotechnology) should hold a Bachelors degree with credit average results in substantial study in areas of relevance to Molecular Biotechnology, such as biochemistry, biology, chemistry, genetics or molecular biology; or have completed the Graduate Certificate in Applied Science (Molecular Biotechnology) at the University of Sydney, without failing any units of study; or have completed the Graduate Diploma in Applied Science (Molecular Biotechnology) at the University of Sydney without failing more than 6 credit points of study.

1.3.3 *Nutrition and Dietetics (Note: Not available to new students in 2007)*

1.3.3.1 Applicants for the Graduate Certificate in Applied Science (Nutrition and Dietetics), Graduate Diploma in Applied Science (Nutrition and Dietetics), Master of Applied Science (Nutrition and Dietetics) should:

1.3.3.2 be eligible for FULL membership of the Dietitians Association of Australia; and

1.3.3.3 have at least three years experience as a professional dietitian.

1.3.4 *Psychology of Coaching*

1.3.4.1 An applicant for admission to the Graduate Certificate in Applied Science (Psychology of Coaching), Graduate Diploma in Applied Science (Psychology of Coaching) or Master of Applied Science (Psychology of Coaching) should:

1.3.4.2 have a minimum 3 year sequence in Psychology; and

1.3.4.3 relevant work experience. Relevant work experience may include counselling, experience in organisational learning and development, management experience, employment in applied psychology settings, professional coaching or other areas directly related to coaching.

2. **Units of study**

2.1 The units of study for the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science are listed in subsection 3.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in Tables 1 to 11 of these resolutions.

3. **Requirements for the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science**

3.1 Candidates for the Graduate Certificate in Applied Science are required to complete satisfactorily units of study granting a minimum of 24 credit points selected from units of study as listed in subsection 3.

3.1.1 Candidates for the Graduate Diploma in Applied Science are required to complete satisfactorily units of study granting a minimum of 36 credit points selected from units of study as listed in subsection 3.

3.1.2 Candidates for the Master of Applied Science are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from units of study as listed in subsection 3.

3.1.3 Candidates for the Master of Applied Science may enrol in 12-credit point project units of study only after successful completion of at least 24 credit points of study, with credit average and above, subject to the approval of the Program Coordinator.

3.1.4 Except as provided in subsection 4.6, candidates may not enrol in units of study that are not included in the tables associated with these resolutions.

3.2 *Graduate Certificate in Applied Science (Bioinformatics) (GradCertApplSc(Bioinf)); Graduate Diploma in Applied Science (Bioinformatics) (GradDipApplSc(Bioinf)); Master of Applied Science (Bioinformatics) (MApplSc(Bioinf))*

3.2.1 Candidates for the Graduate Certificate in Applied Science (Bioinformatics) Stream A are required to complete satisfactorily four core units of study (BIOL5001, BIOL5002, MOBT5201, STAT5001).

3.2.2 Candidates for the Graduate Certificate in Applied Science (Bioinformatics) Stream B are required to complete satisfactorily four core units of study (BIOL5002, MOBT5201, STAT5001, COMP5213).

3.2.3 Candidates for the Graduate Diploma in Applied Science (Bioinformatics) Stream A are required to complete satisfactorily four core units of study (BIOL5001, BIOL5002, MOBT5201, STAT5001) and 12 credit points from optional units of study.

3.2.4 Candidates for the Graduate Diploma in Applied Science (Bioinformatics) Stream B are required to complete satisfactorily five core units of study (BIOL5002, MOBT5201, STAT5001, COMP5213, COMP5214) and 6 credit points from optional units of study.

3.2.5 Candidates for the Master of Applied Science (Bioinformatics) Stream A are required to complete satisfactorily four core units of study (BIOL5001, BIOL5002, MOBT5201, STAT5001) and 24 credit points from optional units of study.

3.2.6 Candidates for the Master of Applied Science (Bioinformatics) Stream B are required to complete satisfactorily five core units of study (BIOL5002, MOBT5201, STAT5001, COMP5213, COMP5214) and 18 credit points from optional units of study.

Table 1 Bioinformatics

Unit of study		Core/ Option
Unless otherwise indicated, all units are worth 6 credit points		
Stream A (Information Technology Background)		
BIOL5001	Molecular Genetics & Inheritance	C*
BIOL5002	Bioinformatics: Sequences & Genomes	C*
MOBT5201	Molecular Biotechnology A (Theory)	C*
STAT5001	Applied Statistics for Bioinformatics	C*
BINF5002	Bioinformatics Research Project A	O
BINF5003	Bioinformatics Research Project B	O
COMP5028	Object Oriented Analysis and Design	O
COMP5318	Knowledge Discovery and Data Mining	O
COMP5426	Network Based High Performance Computing	O
MCAN5104	Image Analysis	O
Stream B (Life Science Background)		
BIOL5002	Bioinformatics: Sequences & Genomes	C*
COMP5213	Computer & Network Organisation	C*
MOBT5201	Molecular Biotechnology A (Theory)	C*
STAT5001	Applied Statistics for Bioinformatics	C*
COMP5214	Software Development in Java	C
BINF5002	Bioinformatics Research Project A	O
BINF5003	Bioinformatics Research Project B	O
COMP5206	Introduction to Information Systems	O
COMP5211	Algorithms	O
MCAN5104	Image Analysis	O
* Core units for Graduate certificate		

3.3 *Graduate Certificate in Applied Science (Coastal Management) (GradCertApplSc(Coastal Mgt)); Graduate Diploma in Applied Science (Coastal Management) (GradDiplApplSc(Coastal Mgt)); Master of Applied Science (Coastal Management) (MApplSc(Coastal Mgt)) (Note: Not available to new students from Semester 2, 2007)*

3.3.1 Candidates for the Graduate Certificate in Applied Science (Coastal Management) are required to complete satisfactorily at least two core units of study from: MARS5001, MARS5002, MARS5003, GEOG5001, and 12 credit points from the following optional units of study: MARS5001, MARS5002, MARS5003, GEOG5001, CHEM5001, ENVI5705, ENVI5803, ENVI5808, ENVI5809.

3.3.2 Candidates for the Graduate Diploma in Applied Science (Coastal Management) are required to complete satisfactorily four core units of study (MARS5001, MARS5002, MARS5003, GEOG5001) and 12 credit points from the following optional units of study: MARS5004, CHEM5001, ENVI5705, ENVI5803, ENVI5808, ENVI5809.

3.3.3 Candidates for the Master of Applied Science (Coastal Management) are required to complete satisfactorily four core units of study (MARS5001, MARS5002, MARS5003, GEOG5001) and 24 credit points from the following optional units of study: MARS5004, MARS5005, CHEM5001, ENVI5705, ENVI5803, ENVI5808, ENVI5809.

Table 2 Coastal Management

Unit of study	
Unless otherwise indicated, all unts are worth 6 credit points	
MARS5001	Coastal Processes and Systems
NTMP5005	Tropical Coastal Management
MARS5006	Coral Reefs, Science & Management
MARS5007	Coral Reefs, Energy and Climate
GEOG5001	Geographic Information Science A
GEOG5002	Geographic Information Science B
ENVI5708	Introduction to Environmental Chemistry
ENVI5809	Computer Modelling & Resource Management
ENVI5803	Law and the Environment
ENVI5903	Sustainable Development
ENVI5905	Management of Parks
ENVI5904	Understanding Environmental Uncertainty

Unit of study	
MARS5005	Coastal Management Project (12cp) (Master's students only)

3.4 *Graduate Certificate in Applied Science (Environmental Science) (GradCertApplSc(EnvSc)); Graduate Diploma in Applied Science (Environmental Science) (GradDipApplSc(EnvSc)); Master of Applied Science (Environmental Science) (MApplSc(EnvSc))*

3.4.1 Candidates for the Graduate Certificate in Applied Science (Environmental Science) are required to satisfactorily complete 24 credit points of units of study including one ENVI core unit of study (ENVI5708 or ENVI5808) and 18 credit points from the optional units of study.

3.4.2 Candidates for the Graduate Diploma in Applied Science (Environmental Science) are required to satisfactorily complete three core units of study (ENVI5705 and ENVI5808 and either ENVI5708 or ENVI5904), and 18 credit points from optional units of study.

3.4.3 Candidates for the Master of Applied Science (Environmental Science) are required to satisfactorily complete three core units of study (ENVI5705 and ENVI5808 and either ENVI5708 or ENVI5904), and 30 credit points from optional units of study.

Table 3 Environmental Science

Unit of study	
Unless otherwise indicated, all units are worth 6 credit points	
MARS5001	Coastal Processes and Systems
NTMP5005	Tropical Coastal Management
MARS5006	Croal Reefs, Science & Management
MARS5007	Coral Reefs, Energy and Climate
GEOG5001	Geographic Information Science A
GEOG5002	Geographic Information Science B
ENVI5708	Introduction to Environmental Chemistry
ENVI5809	Computer Modelling & Resource Management
ENVI5803	Law and the Environment
ENVI5903	Sustainable Development
ENVI5905	Management of Parks
ENVI5904	Understanding Environmental Uncertainty
	For Master's students only:
ENVI5501	Environmental Research Project (12cp)
MARS5005	Coastal Management Project (12cp)

3.5 *Graduate Certificate in Applied Science (Health Psychology) (GradCertAppSc (HlthPsych)); Graduate Diploma in Applied Science (Health Psychology) (GradDipApplSc HlthPsych)); Master of Applied Science (Health Psychology) (MApplSc (HlthPsych))*

3.5.1 Candidates for the Graduate Certificate in Applied Science (Health Psychology) are required to complete satisfactorily the following core units of study: PSYC5010, PSYC5011, PUBH5018, and one elective unit of study from the following: PSYC5013, PSYC5012, BACH5180.

3.5.2 Candidates for the Graduate Diploma in Applied Science (Health Psychology) are required to complete satisfactorily the following core units of study: PSYC5010, PSYC5011, PUBH5018; one elective unit of study from PSYC5013, PSYC5012, BACH5180; one elective unit of study from PSYC5013, PSYC5012, BACH5180, and BACH5268.

3.5.3 Candidates for the Master of Applied Science ((Health Psychology) are required to complete satisfactorily the following core units of study: PSYC5010, PSYC5011 and PUBH5018; one elective unit of study from PSYC5013, PSYC5012, and BACH5180; one elective unit of study from PSYC5013, PSYC5012, BACH5180 and BACH5268; one elective unit of study and one research elective unit of study.

3.5.4 Candidates for the Master of Applied Science (Health Psychology) may be admitted to the Research stream in their second semester of enrolment, upon completion of at least 24 credit points with a distinction average.

3.5.4.1 Candidates in the Research stream of the Master of Applied Science (Health Psychology) are required to complete satisfactorily the following units of study: PSYC5010, PSYC5011, PUBH5018; one elective unit of study from PSYC5013, PSYC5012, BACH5180; one elective unit of study from PSYC5013, PSYC5012, BACH5180; BACH5268 and PSYC5015.

3.5.4 The units of study associated with the proposed award course are in Table 4, as follows. Other electives will be available to students where appropriate and with agreement with the programs' coordinator and Head of School and with agreement from the Faculty involved.

3.5.5 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

Table 4 Health Psychology

Unless otherwise indicated, all units are worth 6 credit points.

Unit of study		Core /Option
PSYC5010	Health Psychology in Clinical Practice	C
PSYC5011	Applying Models of Health Behaviour	C
PUBH5018	Introductory Biostatistics	C
PSYC5015	Research project in Health Psychology (Research stream only) 12 cp	C
BACH5268	Developing a Research Project (for Research stream)	C
PSYC5013	Coping and adjustment to illness	O
PSYC5012	Advanced Communication Skills	O
BACH5180	Stress and illness	O
PSYC5014	Developments in Health Psychology	O
HPSC1000	Bio ethics	O
PUBH5010	Epidemiology Methods and Uses	O
NURS6010	Clinical Qualitative Research	O
NURS5024	Cancer nursing practice	O
NURS5025	Understanding cancer causes and therapies	O
NURS5026	Health promotion in cancer recovery	O
BACH5061	Statistical Analysis with SPSS	O
BACH5300	Action Research	O

3.6 *Graduate Certificate in Applied Science (Microscopy and Microanalysis) (GradCertAppSc (Microsc and Microanal)); Graduate Diploma in Applied Science (Microscopy and Microanalysis) (GradDipApplSc (Microsc and Microanal)); Master of Applied Science (Microscopy and Microanalysis) (MApplSc (Microsc and Microanal))*

3.6.1 Candidates for the Graduate Certificate in Applied Science (Microscopy and Microanalysis) are required to complete satisfactorily 12 credit points from core units of study and 12 credit points from optional units of study.

3.6.2 Candidates for the Graduate Diploma in Applied Science (Microscopy and Microanalysis) are required to complete satisfactorily 12 credit points from core units of study and a further 24 credit points from optional units of study.

3.6.3 Candidates for the Master of Applied Science (Microscopy and Microanalysis) are required to complete satisfactorily 12 credit points from core units of study, a further 24 credit points from optional units of study, and 12 credit points of additional core project and report units of study.

Table 5 Microscopy and Microanalysis

Unit of study	Core /Option
All units are worth 6 credit points. There are no prerequisites, corequisites or other special conditions for enrolment in these units of study except that 24 credit points of units of study must be completed successfully before a candidate may enrol in MCAN5201, MCAN5202 or MCAN5203.	
Graduate Certificate, Graduate Diploma and Master's core units	

Unit of study		Core /Option
MCAN5005	Introductory Microscopy & Microanalysis	C
MCAN5006	Electron Microscopy	C
Graduate Certificate, Graduate Diploma and Masters Optional units		
MCAN5101	Confocal & Fluorescence Microscopy	O
MCAN5102	Biological Specimen Preparation	O
MCAN5103	Materials Preparation and Microscopy	O
MCAN5104	Image Analysis	O
MCAN5110	Nanostructural Analysis of Materials	O
MCAN5111	Microscopy of Biomolecular Processes	O
MCAN5112	Advances in Modern Microscopy	O
MCAN5210	Research Methodology	O
Master's additional core units		
MCAN5201	Project and Report A	C
MCAN5202	Project and Report B	C
Masters, Research path, Additional Core units		
MCAN5203	Project and Report Part C	C
MCAN5210	Research Methodology	C

3.7 *Graduate Certificate in Applied Science (Molecular Biotechnology) (GradCertApplSc(MBT)); Graduate Diploma in Applied Science (Molecular Biotechnology) (GradDipApplSc(MBT)); Master of Applied Science (Molecular Biotechnology) (MApplSc(MBT))*

3.7.1 Candidates for the Graduate Certificate in Applied Science (Molecular Biotechnology) are required to complete satisfactorily two core units of study (MOBT5101 and MOBT5102).

3.7.2 Candidates for the Graduate Diploma in Applied Science (Molecular Biotechnology) are required to complete satisfactorily two core units of study (MOBT5101 and MOBT5102) and 12 credit points from optional units of study.

3.7.3 Candidates for the Master of Applied Science (Molecular Biotechnology) are required to complete satisfactorily four core units of study (MOBT5101, MOBT5102 or BETH5201, and MOBT5303) and 12 credit points from optional units of study.

Table 6 Molecular Biotechnology

Unit of study		Core /Option
Unless otherwise indicated, all units are worth 6 credit points. To enrol in these units of study, candidates must satisfy the specific requirements relating to the subject area as detailed in subsection 4.6 of the Resolutions.		
Core units all degrees		
MOBT5101	Applied Molecular Biotechnology A (12 credit points)	C
MOBT5102	Applied Molecular Biotechnology B (12 credit points)	C
Core units Master's only		
BETH5201	Ethics and Biotechnology (Genes and Stem Cells)	C/O
MOBT5303	Applied Molecular Biotech C (Project)	C/O
Optional units Master's only 12 credit points of units of study selected with the permission of the program coordinator.		

3.8 *Graduate Certificate in Applied Science (Neuroscience) (GradCertApplSc(NeuroSc)); Graduate Diploma in Applied Science (Neuroscience) (GradDipApplSc(NeuroSc)); Master of Applied Science (Neuroscience) (MApplSc(NeuroSc))*

Note: Not available to new students in 2007

3.8.1 Candidates for the Graduate Certificate in Applied Science (Neuroscience) are required to complete satisfactorily four units of study selected from NEUR5101, NEUR5102, NEUR5103, NEUR5104, NEUR5105, NEUR5106, NEUR5107 or NEUR5108.

3.8.2 Candidates for the Graduate Diploma in Applied Science (Neuroscience) are required to complete satisfactorily five units of study selected from NEUR5101, NEUR5102, NEUR5103, NEUR5104, NEUR5105, NEUR5106, NEUR5107 or NEUR5108 and either NEUR5001 or NEUR5002.

3.8.3 Candidates for the Master of Applied Science (Neuroscience) are required to complete satisfactorily five units of study selected from NEUR5101, NEUR5102, NEUR5103, NEUR5104, NEUR5105, NEUR5106, NEUR5107 or NEUR5108 and three units of study selected from NEUR5001, NEUR5002, NEUR5003, NEUR5004.

Table 7 Neuroscience

Unit of study	
All units are worth 6 credit points. There are no prerequisites, corequisites or other special conditions for enrolment in these units of study.	
Optional units all degrees	
NEUR5101	Neurobiology of Addiction
NEUR5102	Neuroscience of Aging
NEUR5103	Brain Development
NEUR5104	Psychobiology of Learning and Memory
NEUR5105	Movement and Motor Control
NEUR5106	Pain
NEUR5107	Neurobiology of Psychoses
NEUR5108	Visual Neuroscience
Project units Graduate Diploma and Master's only	
NEUR5001	Neuroscience Library Project
NEUR5002	Neuroscience Laboratory Project A
NEUR5003	Neuroscience Laboratory Project B
NEUR5004	Neuroscience Laboratory Project C

3.9 *Graduate Certificate in Applied Science (Nutrition and Dietetics) (GradCertApplSc(NutrDiet)); Graduate Diploma in Applied Science (Nutrition and Dietetics) (GradDipApplSc(NutrDiet)); Master of Applied Science (Nutrition and Dietetics) (MApplSc(NutrDiet))*

Note: Not available to new students in 2007

3.9.1 Candidates for the Graduate Certificate in Applied Science (Nutrition and Dietetics) are required to satisfactorily complete two core units of study (NTDT6001 and NTDT6011) and 12 credit points from optional units of study.

3.9.2 Candidates for the Graduate Diploma in Applied Science (Nutrition and Dietetics) are required to satisfactorily complete two core units of study (NTDT6001 and NTDT6011) and 24 credit points from optional units of study.

3.9.3 Candidates for the Masters of Applied Science (Nutrition and Dietetics) are required to satisfactorily complete two core units of study (NTDT6001 and NTDT6011), and 36 credit points from optional units of study.

Table 8 Nutrition and Dietetics

Unit of study		Core /Option
Unless otherwise indicated, all units are worth 6 credit points. To enrol in these units of study, candidates must satisfy the specific requirements detailed in subsection 4.8 of the Resolutions.		
Core units all degrees		
NTDT6001	Advanced Nutritional Support (Theory)	C
NTDT6011	Advanced Nutritional Support (Clinical)	C
Elective units all degrees		
NTDT6002	Nutrition Support in Critical Care	O
NTDT6012	Critical Care Nutritional Support	O
NTDT6003	Medical Gastroenterology (Theory)	O
NTDT6013	Medical Gastroenterology (Clinical)	O
NTDT6004	Surgical Gastroenterology (Theory)	O

Unit of study		Core /Option
NTDT6014	Surgical Gastroenterology (Clinical)	O

3.10 *Graduate Certificate in Applied Science (Psychology of Coaching) (GradCertApplSc(PsychCoach)); Graduate Diploma in Applied Science (Psychology of Coaching) (GradDipAppSc (PsychCoach)); Master of Applied Science(Psychology of Coaching) (MApplSc(PsychCoach))*

3.10.1 Candidates for the Graduate Certificate in Applied Science (Psychology of Coaching) are required to satisfactorily complete three core units of study PSYC4721, PSYC4722 and PSYC4724 and 6 credit points from elective units.

3.10.2 Candidates for the Graduate Diploma in Applied Science (Psychology of Coaching) are required to satisfactorily complete three core units of study PSYC4721, PSYC4722 and PSYC4724 and 18 credit points from elective units.

3.10.3 Candidates for the Master of Applied Science (Psychology of Coaching) are required to complete satisfactorily three core units of study PSYC4721, PSYC4722 and PSYC4724 and a further 30 credit points from elective units of study.

Table 9 Psychology of Coaching

Unit of study		Core /Option
All units are worth 6 credit points. To enrol in these units of study, candidates must satisfy the specific requirements detailed in subsection 3.10 of the Resolutions.		
Core units all degrees		
PSYC4721	Theories & Techniques of Coaching Psych	C
PSYC4722	Fundamentals of Coaching Practice	C
PSYC4724	Coaching Practice: Co-coaching & Groups	C
PSYC4723	Socio-cognitive Issues in Coaching Psych	O
PSYC4725	Assessment and Selection	O
PSYC4727	Coaching in Organisations	O
PSYC4729	Groups, Teams and Systems	O
PSYC4730	Personal and Work/Life Coaching	O

3.11 *Graduate Certificate in Applied Science (Spatial Information Science) (GradCertApplSc (SIS))*

3.11.1 Candidates for the Graduate Certificate in Applied Science (Spatial Information Science) are required to complete satisfactorily two core units of study (GEOG5001 and GEOG5002) and 12 credit points from optional units of study.

Table 10 Spatial Information Science

Unit of study		Core /Option
Unless otherwise indicated, all units are worth 6 credit points.		
GEOG5001	Geographic Information Science A	C
GEOG5002	Geographic Information Science B	C
GEOG5003	Environmental Remote Sensing	O
GEOG5004	Environmental Mapping and Monitoring	O
COMP5338	Advanced Data Models	O
ENVI5809	Computer Modelling & Resource Management	O
AFNR5502	Remote Sensing, GIS & Land Management	O

3.12 *Graduate Certificate in Applied Science (Wildlife Health and Population Management) (GradCertApplSc(WildHlthPopMan)); Graduate Diploma in Applied Science (Wildlife Health and Population Management) (GradDipApplSc(WildHlthPopMan)); Master of Applied Science (Wildlife Health and Population Management) (MApplSc(WildHlthPopMan))*

3.12.1 Candidates for the Graduate Certificate in Applied Science (Wildlife Health and Population Management) are required to complete satisfactorily two core units of study (WILD5001 and WILD5002) and 12 credit points from optional units of study.

3.12.2 Candidates for the Graduate Diploma in Applied Science (Wildlife Health and Population Management) are required to complete satisfactorily two core units of study (WILD5001 and WILD5002) and 24 credit points from optional units of study.

3.12.3 Candidates for the Master of Applied Science (Wildlife Health and Population Management) are required to complete satisfactorily three core units of study (WILD5001, WILD5002 and WILD5009) and 24 credit points from optional units of study.

Table 11 Wildlife Health and Population Management

Unless otherwise indicated, all units are worth 6 credit points. There are no prerequisites, corequisites or other special conditions for enrolment in these units of study except that 24 credit points of units of study must be completed successfully before a candidate may enrol in WILD5009.

Core units all degrees		
WILD5001	Australasian Wildlife: Introduction	C
WILD5002	Australasian Wildlife: Field Studies	C
Additional core unit Master's		
WILD5009	Research Project (12cp)	C
Optional units		
WILD5003	Wildlife Health	O
WILD5004	Vertebrate Pest Management	O
WILD5005	In Situ Wildlife Management	O
WILD5006	Ex Situ Wildlife Management	O
WILD5007	Sustainable Wildlife Use & Stewardship	O

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science are listed in tables 1 to 11 of these resolutions, in subsection 3.

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

4.4.3 to pass any other examination of the unit of study that may apply.

4.5 All units of study for a particular subject area may not be available every semester.

4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**

5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**

6.1 Cross institutional study shall not be available to students enrolled in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science courses, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**

7.1 Admission to candidature may be limited by a quota.

7.2 In determining the quota, the University will take into account:

7.2.1 availability of resources including space, laboratory and computing facilities; and

7.2.2 availability of adequate and appropriate supervision.

7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 2 above.

8. **Discontinuation of enrolment**

8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**

9.1 A student may seek written permission from the Dean to suspend candidature in the course.

9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**

10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**

11.1 Candidates for the Master of Applied Science, the Graduate Diploma in Applied Science, and the Graduate Certificate in Applied Science, shall be governed by the rules as follows:

11.1.1 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Applied Science will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Applied Science;

11.1.2 A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Applied Science and/or the Graduate Diploma in Applied Science will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Applied Science;

11.1.3 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Graduate Certificate in Applied Science will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.

11.2 A student who has failed a cumulative total of more than 18 credit points in the Master of Applied Science and/or the Graduate Diploma in Applied Science and/or the Graduate Certificate in Applied Science will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.

11.3.1 A student who has failed a core unit at the second attempt in the Master of Applied Science and/or the Graduate Diploma in Applied Science and/or the Graduate Certificate in Applied Science will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol.

11.3.2 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**

12.1 A candidate for the Graduate Certificate in Applied Science shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.

12.2 A candidate for the Graduate Diploma in Applied Science shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of six semesters.

12.3 A candidate for the Master of Applied Science shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters.

13. **Assessment policy**

13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**

14.1 Credit is not available in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science for postgraduate study which has not been undertaken in these award courses within the previous three years.

14.2 A candidate who has qualified for the award of the Graduate Certificate in Applied Science may transfer, within three years, to the Graduate Diploma in Applied Science and receive credit for up to 24 credit points from the Graduate Certificate in Applied Science.

14.3 A candidate who has qualified for the award of the Graduate Diploma in Applied Science may transfer, within three years, to the Master of Applied Science and receive credit for up to 36 credit points from the Graduate Diploma in Applied Science.

14.4 A candidate who has completed units of study in the Applied Science program within the previous three years, but has not qualified for an award, may transfer to another award course within the same Applied Science program and receive credit for the units of study completed.

18. Postgraduate coursework: Bioethics degrees

Graduate Certificate in Bioethics (GradCertBEth)

Graduate Certificate in Bioethics (Biotechnology) (GradCertBEthBTech)

Graduate Certificate in Bioethics (Clinical Ethics) (GradCertBEthClinEth)

Graduate Diploma in Bioethics (GradDipBEth)

Master of Bioethics (MBEth)

Master of Bioethics (Honours) (MBEthHon)

This chapter sets out the requirements for postgraduate degrees offered in the Faculty of Science in the area of Bioethics. A comprehensive guide to the requirements and units of study of the coursework degrees is listed.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously in this chapter, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at:

www.usyd.edu.au/publications/calendar/

Course Overview

The University of Sydney offers several postgraduate degree courses in Bioethics. Increasing levels of expertise are provided through completion of the Graduate Certificate in Bioethics, Graduate Certificate in Bioethics (Biotechnology), Graduate Certificate in Bioethics (Clinical Ethics), Graduate Diploma in Bioethics, Master of Bioethics, and the Master of Bioethics (Honours).

These courses are designed to meet the widely recognised growing need for ethics education for scientists, researchers, and professionals working in medicine, nursing, public health, health law, health policy/administration, public policy, and science communication. They will also be attractive to students with general interests in relationships between science and society or relevant social science disciplines.

Particular individual units of study (such as Core Concepts in Bioethics (BETH5000), Human and Animal Research Ethics (BETH5202), Ethics and Biotechnology (BETH5201), and Ethics and Public Health (BETH5203)) offered through the Postgraduate Program in Bioethics will be popular with postgraduate students pursuing degrees in other fields-such as medical humanities, law, biology, health sciences, biomedical sciences, public health, and/or any disciplines involving human or animal experimentation.

The discipline of bioethics is concerned with ethical questions arising in contexts of biological and medical science. Social concern about such issues has grown with advances in biomedical technology, as illustrated by contemporary debate over reproductive technologies, genetic engineering, cloning, and stem cell research. Traditional topics in bioethics include abortion, euthanasia, relationships between health care providers and patients, research involving humans and animals, and justice in the distribution of medical resources. Emerging topics include ethical issues related to global public health.

Falling at the intersections of ethics, policy, and biomedical science, bioethics is an inherently interdisciplinary field. The University of Sydney's Postgraduate Program in Bioethics uniquely addresses this interdisciplinarity head-on.

In addition to the Core unit of study (BETH5000), which provides a broad survey of the field of bioethics, our Foundational units provide interdisciplinary grounding in ethical philosophy (BETH5101), philosophy of science/medicine (BETH5102), interdisciplinary approaches to the study of medicine and society (BETH5103), and bioethics law (BETH5104).

Specialisation in areas of particular interest is provided via Elective units with focus on biotechnology (BETH5201), research ethics (BETH5202), public health (BETH5203), and clinical ethics (BETH5204). All of these units of study include historical components.

Qualified students admitted to the Master of Bioethics (Honours) degree will obtain further expertise in an area of special interest, and experience necessary for further postgraduate study (i.e. Ph.D), through completion of a research project (BETH5301 and 5302).

The Master of Bioethics degree can be completed in one year by full-time students or over two years by part-time students. Further details on duration of study are provided below.

Course Outcomes

The University of Sydney Postgraduate Bioethics degree courses provide breadth and depth of coverage of both traditional and alternative/emerging issues in, and approaches to, bioethics. Our students will gain advanced understanding of the bearing of ethical philosophy, epistemology, law, sociology, linguistics, and history on issues in bioethics. They will develop interdisciplinary appreciation of relationships between values, science, and society. They will become familiar with both the historical and philosophical bases of local and international legislation and regulatory guidelines regarding the ethics of health care and research. They will develop, and be able to defend, their own reasoned judgments about how ethical issues arising in health care, research, and public policy contexts should be resolved; and they will be able to recognise novel, or previously unappreciated, ethical issues arising in the professional workplace or in social policy contexts.

Our degrees contribute to the professional development of those working in health care and they offer the skills and knowledge base necessary for critical analysis in health policy making or in relevant areas of social science disciplines. All of our degrees contribute to development of general skills in research, reading, writing, and oral expression. Expertise will vary with level of degree completed.

The program has been designed to enable progression from Graduate Certificate to Graduate Diploma, Masters, and Masters (Honours). The Graduate Certificate (Biotechnology) is specifically designed to provide ethical training for those working in the fields of, or those concerned with recent developments in, genetics and stem cell research. The Graduate Certificate (Clinical Ethics) is designed to provide training in ethics and associated issues for those engaged in clinical practice in a range of health professions. The Master of Bioethics (Honours) degree provides opportunity for in-depth learning in an area of special interest and research experience necessary for further postgraduate study.

Bioethics units of study 2007

Core unit of study

BETH5000
Core Concepts in Bioethics

Credit points: 6 **Session:** Semester 1 **Classes:** The equivalent of two hours of seminars per week and up to 4 hours per week spent on online learning tasks, small group sessions, project work, and consultation with lecturers. **Assumed knowledge:** A three-year undergraduate degree in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field, or by special permission. A limited number of students may be granted permission to take this unit during their honours year. **Assessment:** Essays; short written assignments; research project/presentation.

Note: A limited number of students may be granted permission to take this unit during their honours year.

This unit of study provides a broad overview of the primary issues in, and theoretical approaches to, bioethics. Following an introduction to the history of bioethics and review of the major theoretical approaches to applied ethics, central debates in bioethics surrounding doctor-patient relationships, informed consent, privacy/confidentiality, research ethics, abortion, euthanasia, genetics, cloning, stem cell research, justice and distribution of health care resources, etc., are examined. In addition to classical cases and traditional theoretical perspectives, emerging topics and alternative perspectives are explored. The unit concludes with the topic of global public health and socio-political critique(s) of the discipline of bioethics itself. Learning activities will include seminars, small group sessions, and project work. It is recommended, but not required, that BETH5000 is taken during students' first semester in the program.

Foundational units of study

BETH5101
Introduction to Ethical Reasoning

Credit points: 6 **Session:** Semester 1 **Classes:** The equivalent of two hours of seminar/week and up to 4 hours per week spent on online learning tasks, small group sessions, project work, and consultation with lecturers **Assumed knowledge:** A three-year undergraduate degree in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field, or by special permission. **Assessment:** Essays; short written assignments; research project/presentation.

Note: A limited number of students may be granted permission to take this unit during their honours year.

This unit prepares students for advanced analysis of issues in bioethics by laying foundations in both critical thinking and ethical theory. Following an introduction to the construction and assessment of arguments, central issues of debate in meta-ethics, normative ethics, and political philosophy are examined. Major traditional (historical, consequential, deontological, contractarian/egalitarian, and communitarian) theoretical frameworks as well as postmodern/continental perspectives are introduced and critically evaluated. The unit concludes with an introduction to applied and professional ethics. It is recommended, but not required, that BETH5101 is taken during students' first semester in the program.

BETH5102
Philosophy of Medicine

Credit points: 6 **Session:** Semester 1 **Classes:** One 2-hour seminar per week with up to 4 hours per week spent on online learning tasks, small group sessions, project work, and consultation with lecturers. **Assumed knowledge:** A three-year degree in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field - or by special permission. **Assessment:** Essays, short written assignments, research project/presentation.

Note: A limited number of students may be granted permission to take this unit during their honours year.

This unit of study introduces students to the broader philosophical issues and epistemological structures that underlie medicine and the biomedical sciences. The unit will begin by introducing students to the philosophy of science and medicine, epistemology and the concepts of health, illness and disease. The second part of the unit will review debates regarding disease causation and the social construction of disease. Students will then consider issues relating to the generation and use of knowledge and evidence, and the differences between conventional and alternative/non-Western approaches to illness and healing. The final part of the unit will focus on diagnosis, nosology and classification of disease, with particular reference to mental illness.

BETH5103
Biomedicine and Society

Credit points: 6 **Session:** Semester 2 **Classes:** The equivalent of one 2-hour seminar per week with up to 4 hours per week spent on online learning tasks, small group sessions, project work and consultation with lecturers. **Assumed knowledge:** A three-year undergraduate degree in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field, or by special permission. **Assessment:** Essays, short written assignments, presentation/project.

Note: A limited number of students may be granted permission to take this unit during their honours year.

This unit introduces students to the complex relationships between biomedicine and society utilizing several disciplines including philosophy, ethics, sociology, anthropology and linguistics. Students will consider issues such as power in the biomedical professions and industries; the illness experience; the role of the healer; biomedicine and indigenous cultures and non-western notions of illness and care.

BETH5104
Bioethics, Law and Society

Credit points: 6 **Session:** Semester 1 **Classes:** The equivalent of one 2-hour seminar per week with up to four hours per week spent on online learning tasks, small group sessions and consultation with lecturers. **Assumed knowledge:** A three-year undergraduate degree in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field, or by special permission **Assessment:** Essays, short written assignments.

The unit of study will begin by introducing students to interrelationships between health care, ethics and the law. In particular students will explore the moral basis of law and the means by which law influences moral norms, clinical practice and health policy. Students will be shown how to critically read and analyse primary sources of law relevant to bioethics. Students will then examine a number of areas of law that have particular significance for bioethics and society including the law of tort (consent and standards of care), contract (confidentiality), criminal law (euthanasia and abortion), public health law, administrative law and law reform.

Elective units

BETH5201
Ethics and Biotech: Genes and Stem Cells

Credit points: 6 **Session:** Semester 2 **Classes:** The equivalent of one 2-hour seminar per week will be presented in an intensive format. In addition, students will spend up to four hours per week on online learing tasks, small group sessions, project work and consultation with lecturers over the course **Assumed knowledge:** A three-year undergraduate degree in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field, or by special permission. **Assessment:** Essays, short written assignments, one project.

Note: A limited number of students may be granted permission to take this unit during their honours year.

This unit introduces students to the broader social/political, ethical/philosophical and legal/regulatory issues that underlie genetics, stem cell research and the emerging biotechnologies. The unit will provide a brief overview of the relevant science before considering scientific, cultural and religious understandings of life and human identity. The second part of the unit will review the political, regulatory and commercial context of biotechnology and the control of information. Students will then review the history of genetics and eugenics and the ethical issues that arise in clinical and population genetics, stem cell research and cloning. The final part of the unit will explore the boundaries of research and knowledge and the issues raised by emerging biotechnologies, such as nanotechnology and proteomics. Learning activities will include an intensive seminar program, small group sessions and reading. Students will be able to concentrate on stem cell research, clinical or molecular genetics or other biotechnologies according to their clinical and scientific interests and experience.

BETH5202
Human and Animal Research Ethics

Credit points: 6 **Session:** Semester 2 **Classes:** The equivalent of one 2-hour seminar per week will be presented in an intensive format. In addition, students will spend up to four hours per week on onlinelearing tasks, small group sessions, project work and consultation with lecturers over the course o **Assumed knowledge:** A three-year undergraduate degree in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field, or by special permission. **Assessment:** Essays, short written assignments, projects.

Note: A limited number of students may be granted permission to take this unit during their honours year.

This unit introduces students to research ethics in its social context. Students will first analyse the philosophical underpinnings of the research endeavour, including the justifications for engaging in research, research priorities and research integrity. The unit will then review the history of research and research abuses, the evolution of research ethics and the regulation of research in Australia. The second part of the unit will focus on issues arising in the conduct of research including; the protection of research subjects (both human and animal), consent, confidentiality and risk/benefit analysis.

BETH5203
Ethics and Public Health

Credit points: 6 **Session:** Semester 2 **Classes:** The equivalent of one 2-hour seminar per week will be presented in an intensive format. In addition, students will spend up to four hours per week on onlinelearing tasks, small group sessions, project work and consultation with lecturers over the course o **Assumed knowledge:** A three-year undergraduate degree in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field, or by special permission. **Assessment:** Essays, short written assignments.

Note: A limited number of students may be granted permission to take this unit during their honours year.

This unit will provide students with an overview of the broader philosophical, ethical, sociopolitical and cultural issues that underlie public health and public health research. Students will first review the history of public health and examine the values that underpin health promotion and disease prevention. The second part of the unit will critique the place of facts and values in public health and the construction and use of information, with particular reference to evidence-based-medicine. The third part of the unit will examine the cultural, moral and social context of public health including the social determinants of health, the construction of health services, the determination of research priorities and issues relating to human rights and global health. Learning activities will include 2-hour weekly seminars and readings. Assessment tasks will consist of essays and a presentation/project.

BETH5204
Clinical Ethics

Credit points: 6 **Session:** Semester 1 **Classes:** The equivalent of one 2-hour seminar/week will be presented in an intensive format (in weeks 5-6). In addition, students will spend up to four hours per week spent on small group sessions, project work, portfolio development and discussion, and consultat **Assumed knowledge:** Honours or equivalent degree, or other appropriate terminal undergraduate degree (such as a three-year nursing degree) in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field-or by special permission. **Assessment:** Two essays (2 x 1000 words worth 15% each, total 30%); reflective portfolio/journal via WebCT (worth 30%); and a project/presentation on the analysis of a case (worth 40%).

Note: A limited number of students may be granted permission to take this unit during their honours year.

This unit will provide students with an overview of the broader philosophical, ethical, sociopolitical, and cultural issues that underlie the delivery of healthcare. Students will first explore major conceptual models for ethical reasoning in the clinical context; the design and delivery of clinical ethics consultation; and issues relating to the role of the professions. The second part of the unit will examine the foundations of clinical practice, including consent, competence, veracity, confidentiality, and decision-making. The third part of the unit will consider specific issues and populations within clinical practice, such as the care of vulnerable populations, mental health, and chronic illness. The next part of the unit will focus on skills associated with clinical ethics including analytic and mediation skills. The unit will conclude with reflections on current debates in the Australian healthcare context, particularly issues associated with healthcare rationing. Learning activities will include lectures (in an intensive format), facilitated discussion, case study presentations, and readings. Assessment tasks will consist of essays, a portfolio/journal, and a presentation/project.

Research project units

BETH5301
Research Project A

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** Weekly consultation with supervisor(s). **Prerequisites:** Distinction average (or higher) in 24 credit points of BETH units of study. **Assessment:** Research tasks, 15,000 word thesis (in conjunction with BETH 5302).

Note: Only available to students admitted to the Master of Bioethics (Honours) degree. BETH5301 must be taken in conjunction with BETH5302. It is recommended, but not required, that BETH5301 and BETH5302 are taken in separate semesters.

This unit must be taken in conjunction with BETH5302 (Research Project B). These units are only available to students admitted to the Master of Bioethics (Honours) degree track. The Research Project (i.e. parts A and B combined) provides opportunity for research and in-depth learning in a bioethics topic of special interest or importance to the student. Successful completion of the project may also provide students with the research experience required for the pursuit of a higher degree. This unit involves independent research and regular meetings with (a) supervisor(s). In the process of completing the Research Project (i.e. parts A and B combined), students will produce an original 15,000 word thesis. Choice of thesis topic depends on availability of appropriate supervisor(s). It is recommended, but not required, that BETH5301 and BETH5302 are taken in separate semesters. A mark for both BETH5301 and BETH5302 combined is provided at the completion of BETH5302 (upon submission of thesis). It is possible to take these units in distance mode.

BETH5302
Research Project B

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** Weekly consultation with supervisor(s). **Assessment:** Research tasks, 15,000 word thesis (in conjunction with BETH5301).

Note: Only available to students admitted to the Masters of Bioethics (Honours) degree. Must be taken in conjunction with BETH5301. It is recommended, but not required that BETH5301 and BETH5302 are taken in separate semesters.

This unit must be taken in conjunction with BETH5301 (Research Project A). These units are only available to students admitted to the Master of Bioethics (Honours) degree. The Research Project (i.e. parts A and B combined) provides opportunity for research and in-depth learning in a bioethics topic of special interest or importance to the student. Successful completion of the project may also provide students with the research experience required for the pursuit of a higher degree. This unit involves independent research and regular meetings with (a) supervisor(s). In the process of completing the Research Project (i.e. parts A and B combined), students will produce an original 15,000 word thesis. Choice of thesis topic depends on availability of appropriate supervisor(s). It is recommended, but not required, that BETH5301 and BETH5302 are taken in separate semesters. A mark for both BETH5301 and BETH5302 combined is provided at the completion of BETH5302 (upon submission of thesis). It is possible to take these units in distance mode.

Resolutions

Graduate Certificate in Bioethics (GradCertBEth)

Graduate Certificate in Bioethics (Biotechnology) (GradCertBEthBTech)

Graduate Certificate in Bioethics (Clinical Ethics) (GradCertBethClinEth)

Graduate Diploma in Bioethics (GradDipBEth)

Master of Bioethics (MBEth)

Master of Bioethics (Honours) (MBEthHon)

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for:

1.1.1 *the Graduate Certificate in Bioethics, Graduate Certificate in Bioethics (Biotechnology), Graduate Certificate in Bioethics (Clinical Ethics), Graduate Diploma in Bioethics and Master of Bioethics:*

1.1.1.1 an applicant who is the holder of a Bachelor's degree or any equivalent award in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology, anthropology, history, law, or other relevant field;

1.1.2 *the Master of Bioethics (Honours):*

1.1.2.1 an applicant who has completed at least four units of study in the University's Postgraduate Program in Bioethics and who holds at least a distinction average for units of study taken in the University's Postgraduate Program in Bioethics.

2. **Units of study**

2.1 The units of study for these award courses are listed in the tables in subsection 4.1 of these resolutions.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the description of units of study associated with these resolutions.

3. **Requirements for the Graduate Certificate in Bioethics, Graduate Certificate in Bioethics (Biotechnology), Graduate Certificate in Bioethics (Clinical Ethics), Graduate Diploma in Bioethics, Master of Bioethics, Master of Bioethics (Honours)**

3.1 Candidates for the GradCertBEth are required to complete satisfactorily units of study granting a minimum of 24 credit points selected from units of study approved from time to time by the Faculty.

3.1.2 They must complete BETH5000 and three Foundational units of study.

3.2 Candidates for the GradCertBEth(BTech) are required to complete satisfactorily units of study granting a minimum of 24 credit points selected from units of study approved from time to time by the Faculty.

3.2.1 They must complete BETH5000, BETH5201, BETH5202 and one Foundational unit.

3.3 Candidates for the GradCertBEth(ClinEth) are required to complete satisfactorily units of study granting a minimum of 24 credit points selected from units of study approved from time to time by the Faculty.

3.3.1 They must complete BETH5000 and BETH5204, and two additional units of study (Foundational or Elective).

3.4 Candidates for the GradDipBEth are required to complete satisfactorily units of study granting a minimum of 36 credit points selected from units of study approved from time to time by the Faculty.

3.4.1 They must complete BETH5000, three Foundational units, and two additional units of study (Foundational or elective).

3.5 Candidates for the MBEth are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from units of study approved from time to time by the Faculty.

3.5.1 They must complete BETH5000, four Foundational units, and three Elective units of study.

3.6 Candidates for the MBEthHon are required to complete satisfactorily units of study granting a minimum of 60 credit points selected from units of study approved from time to time by the Faculty.

3.6.1 They must complete the BETH5000, four Foundational units, three Elective units, and two Research Project units of study.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Bioethics, Graduate Certificate in Bioethics (Biotechnology), Graduate Certificate in Bioethics (Clinical Ethics), Graduate Diploma in Bioethics, Master of Bioethics, Master of Bioethics (Honours) are listed in the tables below:

4.1.1 **Graduate Certificate in Bioethics (GradCertBEth)**

Unit of study		cp	Sem
Compulsory			
BETH5000	Core Concepts in Bioethics	6	1
Foundational			
BETH5101	Introduction to Ethical Reasoning	6	1
BETH5102	Philosophy of Medicine	6	1
BETH5103	Biomedicine and Society	6	2
BETH5104	Bioethics, Law and Society	6	1

4.1.2 **Graduate Certificate in Bioethics (Biotechnology) (GradCertBEthBTech)**

Unit of study		cp	Sem
Compulsory			
BETH5000	Core Concepts in Bioethics	6	1
BETH5201	Ethics and Biotechnology: Genes and Stem Cells	6	2
BETH5202	Human and Animal Research Ethics	6	2
Foundational			
BETH5101	Introduction to Ethical Reasoning	6	1
BETH5102	Philosophy of Medicine	6	1
BETH5103	Biomedicine and Society	6	2
BETH5104	Bioethics, Law and Society	6	1

4.1.3 **Graduate Certificate in Bioethics (Clinical Ethics) (GradCertBethClinEth)**

Unit of study		cp	Sem
Compulsory			
BETH5000	Core Concepts in Bioethics	6	1
BETH5204	Clinical Ethics	6	1
Foundational			
BETH5101	Introduction to Ethical Reasoning	6	1
BETH5102	Philosophy of Medicine	6	1
BETH5103	Biomedicine and Society	6	2
BETH5104	Bioethics, Law and Society	6	1
Electives			
BETH5201	Ethics and Biotechnology: Genes and Stem Cells	6	2
BETH5202	Human and Animal Research Ethics	6	2
BETH5203	Ethics and Public Health	6	2

4.1.4 **Graduate Diploma in Bioethics (GradDipBEth)**

Unit of study		cp	Sem
Compulsory			
BETH5000	Core Concepts in Bioethics	6	1
Foundational			
BETH5101	Introduction to Ethical Reasoning	6	1
BETH5102	Philosophy of Medicine	6	1
BETH5103	Biomedicine and Society	6	2
BETH5104	Bioethics, Law and Society	6	1
Electives			
BETH5201	Ethics and Biotechnology: Genes and Stem Cells	6	2
BETH5202	Human and Animal Research Ethics	6	2
BETH5203	Ethics and Public Health	6	2
BETH5204	Clinical Ethics	6	1

4.1.5 **Master of Bioethics (MBEth)**

Unit of study		cp	Sem
Compulsory			
BETH5000	Core Concepts in Bioethics	6	1
Foundational			
BETH5101	Introduction to Ethical Reasoning	6	1
BETH5102	Philosophy of Medicine	6	1
BETH5103	Biomedicine and Society	6	2
BETH5104	Bioethics, Law and Society	6	1
Elective			
BETH5201	Ethics and Biotechnology: Genes and Stem Cells	6	2
BETH5202	Human and Animal Research Ethics	6	2
BETH5203	Ethics and Public Health	6	2
BETH5204	Clinical Ethics	6	1

4.1.6 **Master of Bioethics (Honours) (MBEthHon)**

Unit of study		cp	Sem
Compulsory			
BETH5000	Core Concepts in Bioethics	6	1
BETH5301	Research Project A	6	1 and 2
BETH5302	Research Project B	6	1 and 2
Foundational			
BETH5101	Introduction to Ethical Reasoning	6	1
BETH5102	Philosophy of Medicine	6	1
BETH5103	Biomedicine and Society	6	2
BETH5104	Bioethics, Law and Society	6	1
Elective			
BETH5201	Ethics and Biotechnology: Genes and Stem Cells	6	2
BETH5202	Human and Animal Research Ethics	6	2
BETH5203	Ethics and Public Health	6	2
BETH5204	Clinical Ethics	6	1

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

4.4.3 to pass any other examination of the unit of study that may apply.

4.5 All units of study for a particular subject area may not be available every semester.

4.6 The Dean, upon the recommendation of the course coordinator, may allow substitution of any unit of study by another unit of study (up to a maximum of two units of study), for candidates with the appropriate background/experience.

4.6.1 Candidates (for all degrees) with special aims/interests may be permitted to substitute one relevant non-BETH postgraduate unit of study (in History, Medical Humanities, or Law, for example) for specifically required units upon approval of the course coordinator and Dean.

5. **Enrolment in more/less than minimum load**

5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**

Cross-institutional study shall not be available to students enrolled in the Graduate Certificate in Bioethics, the Graduate Certificate in Bioethics (Biotechnology), the Graduate Certificate in Bioethics (Clinical Ethics), the Graduate Diploma in Bioethics, the Master of Bioethics, and the Master of Bioethics (Honours), except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**

7.1 Admission to candidature may be limited by a quota.

7.2 In determining the quota, the University will take into account:

7.2.1 availability of resources including space, laboratory and computing facilities; and

7.2.2 availability of adequate and appropriate supervision.

7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of subsection 1 above.

8. **Discontinuation of enrolment**

8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**

9.1 A student may seek written permission from the Dean to suspend candidature in the course.

9.2 Suspension may be granted for a maximum of one year

10. **Re-enrolment after an absence**

10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**

11.1 Candidates shall be governed by the rules as follows:

11.2 A student who has failed a cumulative total of 12credit points at any stage of enrolment in the Master of Bioethics or Master of Bioethics (Honours) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Bioethics;

11.3 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Bioethics and/or Master of Bioethics (Honours) and/or the Graduate Diploma in Bioethics will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Bioethics;

11.4 A student who has failed a cumulative total of more than 18 credit points in the Master of Bioethics and/or Master of Bioethics (Honours) and/or the Graduate Diploma in Bioethics and/or the Graduate Certificate in Bioethics and/or the Graduate Certificate in Bioethics (Biotechnology) and/or the Graduate Certificate in Bioethics (Clinical Ethics) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**

12.1 A candidate for the GradCertBEth shall complete the requirements for the award in a minimum of one semester and a maximum of five semesters, and (in the event of suspension) except with permission of the Dean within three calendar years of admission to candidature.

12.2 A candidate for the GradCertBEth(BTech) shall complete the requirements for the award in a minimum of two semesters and a maximum of five semesters, and (in the event of suspension) except with permission of the Dean within three calendar years of admission to candidature.

12.3 A candidate for the GradCertBEth(ClinEth) shall complete the requirements for the award in a minimum of one semester and a maximum of five semesters, and (in the event of suspension) except with permission of the Dean within three calendar years of admission to candidature.

12.4 A candidate for the GradDipBEth shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters, and (in the event of suspension) except with permission of the Dean within five calendar years of admission to candidature.

12.5 A candidate for the MBEth shall complete the requirements for the award in a minimum of two semesters and a maximum of ten semesters, and (in the event of suspension) except with permission of the Dean within six calendar years of admission to candidature.

12.6 A candidate for the MBEthHon shall complete the requirements for the award in a minimum of three semesters and a maximum of twelve semesters, and (in the event of suspension) except with permission of the Dean within seven calendar years of admission to candidature.

13. **Assessment policy**

13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**

14.1 Credit may be available in the GradCertBEth, GradCertBEth(BTech), GradCertBEth(ClinEth), GradDipBEth, MBEth and MBEth(Hon) for postgraduate study which has been undertaken at the University of Sydney (either within the Postgraduate Program in Bioethics or through the University's Professional Master of Medicine Program) within the past three years and for which no award has been conferred.

14.1.2 If an award has been conferred for this study, credit is not available within any of the Bioethics programs.

14.2 A candidate who has qualified for the award of GradCertBEth, GradCertBEth(BTech), or GradCertBEth(ClinEth) may transfer, within three years, to the GradDipBEth, MBEth or MBEth (Hon) and receive credit for up to 24 credit points from the GradCertBEth, GradCertBEth(BTech), or GradCertBEth(ClinEth).

14.3 To transfer to the MBeth(Hon) the candidate must satisfy admission requirements in sub-section 1.1.2 of the Resolutions of Faculty.

14.4 A candidate who has qualified for the award of GradDipBEth may transfer, within three years, to the MBEth or MBEth(Hon) and receive credit for up to 36 credit points from the GradDipBEth.

14.5 A candidate who has qualified for the award of MBEth may transfer, within three years, to the MBEth(Hon) and receive credit for up to 48 credit points from the MBEth.

14.5.1 To transfer to MBeth(Hon) the candidate must satisfy admission requirements in subsection 1.1.2.

19. Postgraduate courses: Bioinformatics

Graduate Certificate in Applied Science (Bioinformatics)

Graduate Diploma in Applied Science (Bioinformatics)

Master of Applied Science (Bioinformatics)

This chapter sets out the requirements for postgraduate degrees offered in the Faculty of Science in the area of Bioinformatics. A comprehensive guide to the requirements and units of study of the coursework degrees is listed.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, which can be found at the end of this chapter, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/

Course overview

The Graduate Certificate in Applied Science (Bioinformatics), Graduate Diploma in Applied Science (Bioinformatics) and Master of Applied Science (Bioinformatics) are articulated award courses that provide a professional qualification to biologists and computer scientists working in industry, research and education.

The award program brings together the disciplines of computer science, statistics and the life sciences, developing and enhancing skills in bioinformatics. Students with little background in molecular biology who want to extend their understanding of the biosciences, statistics and bioinformatics will follow Stream A. Students with a strong background in molecular biology and want to study bioinformatics, statistics and computer science should follow Stream B.

The Program has core and optional units of study to satisfy both of these requirements and will produce graduates with skills in the disciplines that underpin bioinformatics and in bioinformatics itself. Graduates from the Bioinformatics Program will be proficient in molecular biology, genetics and bioinformatics. (Biology graduates who want to learn about computer programming are directed to the Graduate Diploma in Computing).

Course outcomes

The aim of this articulated coursework program is to provide students with a coordinated approach to bioinformatics, thus developing expertise to perform and develop the analysis of biological data with underlying competencies in the life sciences, computer science and statistics. Upon completion of the graduate certificate, graduate diploma or master's, graduates will have a broad understanding of the topic of bioinformatics. In addition, the master's will provide the option of experience in carrying out and completing a research project and report.

Bioinformatics units of study 2007

BINF5002
Bioinformatics Research Project A

Credit points: 6 **Teacher/Coordinator:** Dr Jermiin **Session:** Semester 1, Semester 2 **Classes:** meetings by arrangement with the supervisor **Corequisites:** BINF5003, BIOL5001, BIOL5002, MOBT5201 and STAT5001 **Assessment:** project plan, seminar, final report

Note: Department permission required for enrolment .

BINF5002 comprises the commencement of a research project on a topic with significant emphasis on the use of bioinformatics tools to address important questions in the areas of biology, biochemistry, mathematics and statistics, computer science, crop and veterinary sciences, and medical science. Students will be working with an appointed supervisor from the Faculties of Agriculture, Science, Veterinary Science, and Medicine or from industry under the guidelines of the convenor. Students will commence a small research project in an area agreed by the student, the supervisor and the convenor. Research experience is highly valued by prospective employers as it shows a willingness and ability to undertake independent, as well as guided, research in bioinformatics. The project is not conducted in the way of contact hours per week for a semester. Rather, the student is expected to work in a continuous manner throughout the semester.

BINF5003
Bioinformatics Research Project B

Credit points: 6 **Teacher/Coordinator:** Dr Jermiin **Session:** Semester 1, Semester 2 **Classes:** meetings by arrangement with the supervisor **Corequisites:** BINF5002, BIOL5001, BIOL5002, MOBT5201 and STAT5001 **Assessment:** project plan, seminar, final report

Note: Department permission required for enrolment .

BINF5003 comprises the continuation of a research project commenced in BINF5002 on a topic with significant emphasis on the use of bioinformatics tools to address important questions in the areas of biology, biochemistry, mathematics and statistics, computer science, crop and veterinary sciences, and medical science. Students will be working with an appointed supervisor from the Faculties of Agriculture, Science, Veterinary Science, and Medicine or from industry under the guidelines of the convenor. The research project will be in an area agreed by the student, the supervisor and the convenor. Research experience is highly valued by prospective employers as it shows a willingness and ability to undertake independent, as well as guided, research in bioinformatics. The project is not conducted in the way of contact hours per week for a semester. Rather, the student is expected to work in a continuous manner throughout the semester.

For stream A students only (Information Technology Background)

BIOL5001
Molecular Genetics and Inheritance

Credit points: 6 **Teacher/Coordinator:** Dr Jenny Saleeba **Session:** Semester 1 **Classes:** 2-3 tutorials per week. **Assessment:** Formal exam, quizzes

Note: Department permission required for enrolment .

The fundamentals of inheritance and applications of molecular genetics will be covered. At the completion of the Unit, students will be able to recognise the most common modes of inheritance, understand the fundamentals of linkage analysis, be familiar with common genome structures, be familiar with modes of transmission and mechanisms of change in genetic material, be familiar with the genetic mechanisms behind complex biological systems, understand basic methods in recombinant DNA technology, be adept at applying genetics to solving problems in biology and understand the fundamentals of quantitative and population genetics.

BIOL5002
Bioinformatics: Sequences and Genomes

Credit points: 6 **Teacher/Coordinator:** Dr Neville Firth **Session:** Semester 2 **Classes:** 1 lecture or tutorial per week, 1 three hour practical per fortnight. **Corequisites:** BIOL5001 **Prohibitions:** BIOL3027, BIOL3927 **Assessment:** Formal exam, projects.

Note: Department permission required for enrolment .
Note: Stream B students do not require BIOL5001

Bioinformatics - the application of computers to life sciences, and genomics - the study of biology at the genome-wide scale, are revolutionising basic and applied biological sciences in the 21st century. The unit focuses on the application of bioinformatics to the storage, retrieval and analysis of biological information, principally in the form of nucleotide and amino acid sequences. An extensive practical component emphasises the development of hands-on skills in the use of bioinformatics technologies. Students will gain an appreciation of the significance and potential of bioinformatics and genomics in contemporary life sciences; an awareness of the breadth of bioinformatics resources and applications, including non-sequence-based biological information; skills and experience in the use of a core set of programs and databases for nucleotide and amino acid sequence analysis and phylogenetic reconstruction; a basic understanding of the theoretical foundation and underlying assumptions of the programs, and their relative strengths/limitations; and, competence in the evaluation of output from the programs in appropriate biological context.

For stream A and stream B students

COMP5028
Object-Oriented Analysis and Design

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This unit introduces Object-Oriented Analysis and Design especially the principles of modelling through Rational Unified Process and agile processes using Unified Modeling Language (UML), both of which are industry standard. Students work in small groups to experience the process of object-oriented analysis, architectural design, object-oriented design, implementation and testing by building a real-world application. Objectives: In this unit students will develop the ability to: identify how the system interacts with its environment; identify appropriate objects and their attributes and methods; identify the relationships between objects; write the interfaces of each object and exception handling; implement and test the objects; read and write various UML diagrams (use case, activity, class, object, sequence, collaboration, state chart, component and deployment diagrams).

COMP5206
Introduction to Information Systems

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Prohibitions:** INFO5210 **Assessment:** Assignments, written exam

This unit provides an introduction to information systems in organisations and the role of database management. It introduces the fundamentals of database management, along with the modeling and analysis that is needed for designing and implementing database solutions. The unit also introduces a database query language. Objectives: On completion of this unit students will be able to develop an understanding of the role of information systems in organisations, and the value of data and information to organisations. Students will also develop skills in creating database solutions, capturing user requirements, and building process and data models.

COMP5211
Algorithms

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lectures and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

The study of algorithms is a fundamental aspect of computing. This unit of study covers data structures, algorithms, and gives an overview of the main ways of thinking used in IT from simple list manipulation and data format conversion, up to shortest paths and cycle detection in graphs. The objective of the unit are to teach basic concepts in data structure, algorithm, dynamic programming and program analysis. Students will gain essential knowledge in computer science.

COMP5213
Computer and Network Organisation

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This unit of study provides an overview of hardware and system software infrastructure including: compilers, operating systems, device drivers, network protocols, etc. It also includes user-level Unix skills and network usability. The objectives are to ensure that on completion of this unit students will have developed an understanding of compilers, operating systems, device drivers, network protocols, Unix skills and network usability.

COMP5214
Software Development in Java

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This unit of study introduces software development methods, where the main emphasis is on careful adherence to a process. It includes design methodology, quality assurance, group work, version control, and documentation. It will suit students who do not come from a programming background, but who want to learn the basics of computer software. Objectives: This unit of study covers systems analysis, a design methodology, quality assurance, group collaboration, version control, software delivery and system documentation.

COMP5318
Knowledge, Discovery and Data Mining

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5138 Relational Database Management Systems. **Assessment:** Assignments, written exam.

Knowledge discovery is the process of extracting useful knowledge from data. Data mining is a discipline within knowledge discovery that seeks to facilitate the exploration and analysis of large quantities of data, by automatic or semiautomatic means. This subject provides a practical and technical introduction to knowledge discovery and data mining. Objectives: Topics to be covered include problems of data analysis in databases, discovering patterns in the data, and knowledge interpretation, extraction and visualisation. Also covered are analysis, comparison and usage of various types of machine learning techniques and statistical techniques: clustering, classification, prediction, estimation, affinity grouping, description and scientific visualisation.

COMP5426
Network Based High Performance Computing

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5126 Distributed Systems Programming **Assessment:** Assignments, written exam.

This unit is intended to introduce and motivate the study of high performance computer systems. The student will be presented with the foundational concepts pertaining to the different types and classes of high performance computers. The student will be exposed to the description of the technological context of current high performance computer systems. Students will gain skills in evaluating, experimenting with, and optimizing the performance of high performance computers. The unit also provides students with the ability to undertake more advanced topics and courses on high performance computing.

MCAN5104

Image Analysis

Credit points: 6 **Teacher/Coordinator:** Dr Allan S. Jones **Session:** Semester 1, Semester 2 **Classes:** 10 one hour lectures, 10 two hour practicals over a one week period. **Assessment:** Eight practical reports (50%), 1 three part mathematical assignment (20%), 1 in-depth assignment of 2500 word length on a relevant topic (30%).

This unit of study covers the nature and processing of images and the extraction of quantitative data from them. Participants will develop a sound working knowledge of both traditional stereology techniques and modern digital image processing and analysis. Emphasis is placed on an understanding of both the strengths and the limitations that are inherent in image data, and the technology applied to it. Topics in this module include: a general review of image acquisition, filters and transforms, segmentation methods, calibration of hardware for analysis, extraction of simple features from images, advanced feature extraction from images, limitations of measurement and a general overview of stereology, including geometric probability, density estimation and sampling.

MOBT5201

Applied Molecular Biotech A (Theory)

Credit points: 6 **Teacher/Coordinator:** Dr Kevin Downard Dr Neville Firth Prof Tony Weiss **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Prohibitions:** BCHM3098, BCHM5001, MOBT5101 **Assessment:** 1 x two hour theory exam (70%) and in semester assessments (30%).

This unit of study comprises the lecture component of MOBT5101.

STAT5001

Applied Statistics for Bioinformatics

Credit points: 6 **Session:** Semester 1 **Classes:** one three hour seminar per week **Assessment:** computer exam and lab reports

This is an introduction to statistics and data analysis used in Bioinformatics and many other areas of Biology. It aims to give an understanding of the concepts and the use of a major scientific statistical package, R. In addition to an introduction to ideas of analysis of data and statistical tests the unit will introduce ideas of simulation in resampling and the methods of clustering and classification of particular importance in Bioinformatics.

Resolutions

Graduate Certificate in Applied Science (Bioinformatics)

Graduate Diploma in Applied Science (Bioinformatics)

Master of Applied Science (Bioinformatics)

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for:

1.1.1 **the Graduate Certificate in Applied Science:**

1.1.1.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.1.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.1.1; or

1.1.1.3 persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;

1.1.2 **the Graduate Diploma in Applied Science:**

1.1.2.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.2.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.2.1; or

1.1.2.3 persons who have completed requirements for the Graduate Certificate in Applied Science, or equivalent;

1.1.3 **the Master of Applied Science:**

1.1.3.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.3.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.3.1; or

1.1.3.3 persons who have completed requirements for the Graduate Diploma in Applied Science, or equivalent.

1.2 In relation to particular subject areas the Dean may require applicants to satisfy additional specific requirements relating to that subject area.

2. **Units of study**

2.1 The units of study for the Graduate Certificate in Applied Science (Bioinformatics), Graduate Diploma in Applied Science (Bioinformatics), and Master of Applied Science (Bioinformatics), are listed in subsection 4.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included under units of study description.

3. **Requirements for the Graduate Certificate in Applied Science (Bioinformatics) (GradCertApplSc(Bioinf)); Graduate Diploma in Applied Science (Bioinformatics) (GradDipApplSc(Bioinf)); Master of Applied Science (Bioinformatics) (MApplSc(Bioinf))**

3.1 Candidates for the Graduate Certificate in Applied Science (Bioinformatics) Stream A are required to complete satisfactorily four core units of study (BIOL5001, BIOL5002, MOBT5201, STAT5001).

3.2 Candidates for the Graduate Certificate in Applied Science (Bioinformatics) Stream B are required to complete satisfactorily four core units of study (BIOL5002, MOBT5201, STAT5001, COMP5213).

3.3 Candidates for the Graduate Diploma in Applied Science (Bioinformatics) Stream A are required to complete satisfactorily four core units of study (BIOL5001, BIOL5002, MOBT5201, STAT5001) and 12 credit points from optional units of study.

3.4 Candidates for the Graduate Diploma in Applied Science (Bioinformatics) Stream B are required to complete satisfactorily five core units of study (BIOL5002, MOBT5201, STAT5001, COMP5213, COMP5214) and 6 credit points from optional units of study.

3.5 Candidates for the Master of Applied Science (Bioinformatics) Stream A are required to complete satisfactorily four core units of study (BIOL5001, BIOL5002, MOBT5201, STAT5001) and 24 credit points from optional units of study.

3.6 Candidates for the Master of Applied Science (Bioinformatics) Stream B are required to complete satisfactorily five core units of study (BIOL5002, MOBT5201, STAT5001, COMP5213, COMP5214) and 18 credit points from optional units of study.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Applied Science (Bioinformatics), Graduate Diploma in Applied Science (Bioinformatics), and Master of Applied Science (Bioinformatics), are listed in the following table.

Unit of study		Core
Unless otherwise indicated, all units are worth 6 credit points		
Stream A (Information Technology Background)		
BIOL5001	Molecular Genetics & Inheritance	C*
BIOL5002	Bioinformatics: Sequences & Genomes	C*
MOBT5201	Molecular Biotechnology A (Theory)	C*
STAT5001	Applied Statistics for Bioinformatics	C*
BINF5002	Bioinformatics Research Project A	
BINF5003	Bioinformatics Research Project B	
COMP5028	Object Oriented Analysis and Design	

Unit of study		Core
COMP5318	Knowledge Discovery and Data Mining	
COMP5426	Network Based High Performance Computing	
MCAN5104	Image Analysis	
Stream B (Life Science Background)		
BIOL5002	Bioinformatics: Sequences & Genomes	C*
COMP5213	Computer & Network Organisation	C*
MOBT5201	Molecular Biotechnology A (Theory)	C*
STAT5001	Applied Statistics for Bioinformatics	C*
COMP5214	Software Development in Java	C
BINF5002	Bioinformatics Research Project A	
BINF5003	Bioinformatics Research Project B	
COMP5206	Introduction to Information Systems	
COMP5211	Algorithms	
MCAN5104	Image Analysis	
* Core Units for Graduate Certificate		

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**
5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**
6.1 Cross institutional study shall not be available to students enrolled in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science courses, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**
7.1 Admission to candidature may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of sub-section 1 above.

8. **Discontinuation of enrolment**
8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**
9.1 A student may seek written permission from the Dean to suspend candidature in the course.
9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**
10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**
11.1 Candidates for the Master of Applied Science (Bioinformatics), the Graduate Diploma in Applied Science (Bioinformatics), and the Graduate Certificate in Applied Science (Bioinformatics), shall be governed by the rules as follows:
11.1.1 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Applied Science (Bioinformatics) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Applied Science (Bioinformatics);
11.1.2 A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Applied Science (Bioinformatics) and/or the Graduate Diploma in Applied Science (Bioinformatics) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Applied Science (Bioinformatics);
11.1.3 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Graduate Certificate in Applied Science (Bioinformatics) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.
11.2 A student who has failed a cumulative total of more than 18 credit points in the Master of Applied Science (Bioinformatics) and/or the Graduate Diploma in Applied Science (Bioinformatics) and/or the Graduate Certificate in Applied Science (Bioinformatics) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.
11.3.1 A student who has failed a core unit at the second attempt in the Master of Applied Science (Bioinformatics) and/or the Graduate Diploma in Applied Science (Bioinformatics) and/or the Graduate Certificate in Applied Science (Bioinformatics) will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol.
11.3.2 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**
12.1 A candidate for the Graduate Certificate in Applied Science (Bioinformatics) shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.
12.2 A candidate for the Graduate Diploma in Applied Science (Bioinformatics) shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of six semesters.
12.3 A candidate for the Master of Applied Science (Bioinformatics) shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters.

13. **Assessment policy**
13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**
14.1 Credit is not available in the Graduate Certificate in Applied Science (Bioinformatics), Graduate Diploma in Applied Science (Bioinformatics) and Master of Applied Science (Bioinformatics) for postgraduate study which has not been undertaken in these award courses within the previous three years.
14.2 A candidate who has qualified for the award of the Graduate Certificate in Applied Science (Bioinformatics) may transfer, within three years, to the Graduate Diploma in Applied Science (Bioinformatics) and receive credit for up to 24 credit points from the Graduate Certificate in Applied Science (Bioinformatics).
14.3 A candidate who has qualified for the award of the Graduate Diploma in Applied Science (Bioinformatics) may transfer, within three years, to the Master of Applied Science (Bioinformatics)

and receive credit for up to 36 credit points from the Graduate Diploma in Applied Science.

14.4 A candidate who has completed units of study in the Applied Science program within the previous three years, but has not qualified for an award, may transfer to another award course within the same Applied Science program and receive credit for the units of study completed.

20. Postgraduate coursework: Coastal Management degrees

Graduate Certificate in Applied Science (Coastal Management)

Graduate Diploma in Applied Science (Coastal Management)

Master of Applied Science (Coastal Management)

Note that these degrees are not available to new students to commence after Semester 1, 2007

This means no new entrants from Semester 2, 2007 onwards

This chapter sets out the requirements for postgraduate degrees offered in the Faculty of Science in the area of Coastal Management. A comprehensive guide to the requirements and units of study of the coursework degrees is listed.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected at the end of this chapter, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/

Course overview

The University of Sydney Institute of Marine Science in collaboration with the Department of Environment and Conservation,the NSW Coastal Council and Surf Life Saving Australia, has developed a new and innovative graduate program in Coastal Management. This program is the only one of its kind in Australia, and has been designed and will be taught by leading researchers and practitioners of coastal management.

It will be taught primarily in coastal locations in the Sydney region. It will draw on local coastal management systems, issues and problems as part of the program material. It will also make use of the 2003 NSW Coastal Policy and Coastal Management Manual to provide students with an in-depth understanding of all aspects of coastal management. The program will include units on coastal processes and systems, coastal zone policy and management, beach management and the application of geographical information systems (GIS) to the coastal zone.

The program is ideal for recent graduates who wish to extend their knowledge of coastal and beach management, and for coastal practitioners in local, state, federal and other agencies and in industry who require additional training and knowledge of coastal management policy and issues. The program will provide formal training and also enable students to undertake a supervised coastal management project. A key aspect of all Masters units will be a broad on-site exposure to coastal processes, systems, issues and real management problems in the greater Sydney region, and in some units in regional NSW.

Course outcomes

Upon completion of the graduate certificate graduates will possess a practical and theoretical background in a range of issues related to coastal management. This knowledge can be extended by completion of a graduate diploma, and further extended through course work and research projects as part of a master's program.

Coastal Management units of study 2007

MARS5001
Coastal Processes and Systems

Credit points: 6 **Teacher/Coordinator:** Professor Andrew Short **Session:** Semester 1 **Classes:** Three days per week for 3 weeks, including lectures, tutorials and field trips. **Assessment:** Essay, field trip report

Note: This is a compulsory unit for all levels of the Applied Science (Coastal Management) program

This unit of study will examine the major coastal processes and systems of relevance to coastal zone management. These will include nearshore, estuarine and aeolian processes. Systems investigated will include rocky coasts and bluffs; beaches, barriers and dunes; and estuaries and inlets. The interaction between these processes and systems that are of most relevance to coastal management will be highlighted. These will include coastal hazards such as beach erosion, dune migration, bluff retreat, coastal flooding, inlet closure, and anthropogenic impacts such as pollution, storm water and acid sulphate soils. The unit will be presented both in lectures and field excursions, the latter enabling each system to be examined first hand.

MARS5006
Coral Reefs, Science and Management

Credit points: 6 **Session:** S2 Late Int **Classes:** University base delivery: Prefield trip Tutorial (1 hr), On-line exercises (2 hr) Field based delivery: Lectures (11 x 1 hr), Seminars (4 x 1 hr), Tutorials - individual consultations to develop concepts in research (2 x 1 hr), Independent Research an **Assessment:** Written assignments: essay and project report; oral presentations; seminar and lecture participation.

Note: Department permission required for enrolment .

This unit provides an in - depth overview of the key biological and non-biological processes that make up coral reef ecosystems. There is a focus on the biogeographic, oceanographic and physiological processes underlying the integrity of global tropical reef systems. The Great Barrier Reef is used as a case study to explore emerging concepts on the influence of natural and anthropogenic processes on the integrity of global reef and lagoon systems. Learning activities will include a series of background lectures and research seminars and tutorials in the development of a major research project. A major aspect of this unit is an independent research project conducted under the supervision of the course instructors. The unit concludes with a series of oral presentations based on student research. Assessment tasks will consist of two essays and a research project report and presentation. The curriculum in this unit is based on current research and a course book will be provided. This is a field intensive course held at One Tree Island Research Station or Heron Island Research Station. The course is ex-Gladstone Queensland and students are expected to make their own way there. This unit will be run over 8 days and there will be an additional course fee for food and accommodation, expected to be $600.

MARS5007
Coral Reefs, Energy and Climate Change

Credit points: 6 **Session:** S2 Late Int **Classes:** University base delivery: One hour prefield trip tutorial, two hours of on-line exercises Field based delivery: Eleven 1 hour lectures, four 1 hour seminars, two 1 hour tutorials - individual consultations to develop concepts in research, forty hours o **Assessment:** Written assignments: essay and project report; oral presentations; seminar and lecture participation.

Note: Department permission required for enrolment .

This unit provides an in - depth understanding of the key geological, oceanographic,. biological and economic factors effecting climate change, energy generation and needs with specific reference to the Great Barrier Reef. Computer prediction of worst and best case scenarios are used to develop management strategies and policy implications. Learning activities will include a series of background lectures and research seminars, and tutorials on the development of a major research project. A major aspect of this unit is an independent research project conducted under the supervision of the course instructors. The unit concludes with a series of oral presentations based on student research. Assessment tasks will consist of two essays and a research project report and presentation. The curriculum in this unit is based on current research and a course book will be provided. This is a field intensive course held at One Tree Island Research Station. The course is ex-Gladstone Queensland and students are expected to make their own way there. The unit will be run over 8 days and there will be an additional course fee for food and accommodation, expected to be $600.

NTMP5005
Tropical Coastal Management

Credit points: 6 **Teacher/Coordinator:** Prof Andy Short **Session:** Semester 2 **Classes:** Fieldschool 80 hours intensive. **Corequisites:** MARS (5002 and 5003) **Prohibitions:** NTMP3005 **Assessment:** Presentation, teamwork, assignment, 1 hr exam

Note: Department permission required for enrolment .

This course examines the impacts of human activities on coastal and marine environments. It explores the complex relationships among the ecological and social values of these environments and outlines strategies and tools for their management. This is an intensive course that will be held at the University of Queensland Moreton Bay Research Station, North Stradbroke Island

Textbooks
Nil. Handouts provided.

GEOG5001
Geographic Information Science A

Credit points: 6 **Teacher/Coordinator:** Dr David Chapman **Session:** Semester 1, Semester 2 **Classes:** Six workshops. **Assessment:** Report

This unit of study gives an overview of basic spatial data models, and enables students to understand the import and export of data to and from a geographical information system (GIS). The manipulation of spatial data at a level appropriate to planning or locational applications, and the development of thematic maps from diverse data layers, will be addressed.

GEOG5002
Geographic Information Science B

Credit points: 6 **Teacher/Coordinator:** Dr Eleanor Bruce **Session:** Semester 2 **Classes:** One 2 hour lectures, one 1 hour tutorial, one 3 hour practical per week for 6 weeks. **Assumed knowledge:** GEOG5001 **Assessment:** 2500 word assignment, seminar presentation, tutorial reports, WebCT quiz.

This course will provide the conceptual background to more advanced GIS analysis applications and spatial reasoning methods in the context of contemporary environmental issues. The course is designed to provide an understanding of spatial analysis techniques available within a GIS environment, explore a diversity of both social and physical environmental applications and address emerging issues in GIS research. A range of topics will be introduced including field based capture of spatial information, spatial data structures, surface modelling, visibility analysis, hydrological modeling, network analysis, spatial data uncertainty and social GIS. Conceptual material presented in lectures and tutorial workshops will be placed in an applied context through a series of laboratory and field sessions designed to strengthen practical understanding and awareness of GIS methods.

ENVI5708
Introduction to Environmental Chemistry

Credit points: 6 **Teacher/Coordinator:** A/Prof Gavin Birch **Session:** Semester 1 **Classes:** Two 1 hour lectures and one practical per week; one field trip per semester. **Assessment:** Assignment, presentation and report

Note: This is a compulsory course for the Grad Dip and Masters levels of the Applied Science (Environmental Science) program.

Introduction to Environmental Chemistry provides the basic chemical knowledge required to be able to understand chemical analysis of air, water and soil samples taken in the field. This is supplemented by a field-based project analysing soil and sediment samples for trace pollutants from locations in and around Sydney. This unit of study involves 4 contact hours per week for one semester as well as some time in the field as arranged with the class.

ENVI5803
Law and the Environment

Credit points: 6 **Teacher/Coordinator:** Dr Gerry Bates **Session:** Semester 1 **Classes:** One 2 hour lectures per week. **Assessment:** Essays

This unit of study provides an overview of Australian and international law as it pertains to the environment. It looks at a number of environmental issues at the various levels of analysis, policy making, implementation of policy and dispute resolution. It also provides a broad background to political and economic issues as they related to the legal issues. This unit of study involves lecture material and an essay on policy issues.

ENVI5809
Computer Modelling & Resource Management

Credit points: 6 **Teacher/Coordinator:** Dr David Chapman **Session:** Semester 1 **Classes:** Six workshops. **Assessment:** Report

The concept and use of computer modelling in natural resource management is introduced in this unit of study, which is aimed particularly at non-programmers.

ENVI5903
Sustainable Development

Credit points: 6 **Teacher/Coordinator:** Dr Phil McManus **Session:** Semester 2 **Classes:** Two 2 hour lectures per week for seven weeks. **Assessment:** Essay and presentation

This unit of study demonstrates the history and contested understandings of the concept of sustainable development. It applies these concepts to explore important environmental science issues such as population, water management sustainable cities, rural development, industrial ecology, and energy issues. The unit concludes by presenting a range of future scenarios and encouraging students to develop their own vision of sustainability at the global and other scales, and to communicate their means of achieving this sustainability vision.

ENVI5904
Understanding Environmental Uncertainty

Credit points: 6 **Teacher/Coordinator:** Associate Professor Ross Coleman **Session:** Semester 2 **Classes:** One three hour lecture per week for 8 weeks. **Assessment:** Tutorials, oral presentations and written reports.

No assessment of potential environmental impacts is possible without relevant information about the ecological consequences. This unit is for those without a science degree, to explain the need to quantify and what are relevant measures. Describing and understanding uncertainty will be explained in the context of precautionary principles. Issues about measuring biodiversity and the spatial and temporal problems of ecological systems will be introduced.

ENVI5905
Management of Parks

Credit points: 6 **Teacher/Coordinator:** A/Prof Deirdre Dragovich **Session:** Semester 2a **Classes:** Lectures 2hrs for 6 weeks, Practical work 3 hrs for 3 wks, Fieldwork 21 hrs (2.5 days), Total / week 7 hrs average **Assessment:** A prac report, assignment, one 1hr exam

This unit of study evaluates the reasons for the existence of parks, including National Parks, recreational spaces and reserves, and examines the applied aspects of their management. Topics covered include conservation, ecotourism, plans of management and their implementation (with particular emphasis on the remediation of the impacts of visitor numbers and erosion), fire control practices and resource management. Students will visit various parks within the Sydney region (such as the Royal National Park, the Sydney Harbour Foreshore, Jenolan Caves Reserve and Centennial Park) that highlight the different issues introduced in lectures and which illustrate the practical measures undertaken to manage the parks in a sustainable fashion.

Textbooks
A Course Handbook will be provided.

The following project unit is for masters students only:-

MARS5005
Coastal Management Project

This unit of study is not available in 2007

Credit points: 12 **Prerequisites:** MARS5001, MARS5002, MARS5003 and GEOG5001

Note: Department permission required for enrolment .
Note: This is available only to students in the Master of Applied Science (Coastal Management) program

This unit will enable students who have completed earlier coursework to design and undertake a research project related to a coastal management topic under the supervision of an appropriate member of the teaching staff. The unit will be suitable for students who wish to learn how to undertake and complete an original research project, as well as students from industry and government organisations who wish to undertake a project that relates to their professional environment.

Resolutions

Graduate Certificate in Applied Science (Coastal Management)

Graduate Diploma in Applied Science (Coastal Management)

Master of Applied Science (Coastal Management)

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for:

1.1.1 **the Graduate Certificate in Applied Science (Coastal Management):**

1.1.1.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.1.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.1.1; or

1.1.1.3 persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;

1.1.2 **the Graduate Diploma in Applied Science (Coastal Management):**

1.1.2.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.2.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.2.1; or

1.1.2.3 persons who have completed requirements for the Graduate Certificate in Applied Science, or equivalent;

1.1.3 *the Master of Applied Science (Coastal Management):*

1.1.3.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.3.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.3.1; or

1.1.3.3 persons who have completed requirements for the Graduate Diploma in Applied Science, or equivalent.

1.2 In relation to particular subject areas the Dean may require applicants to satisfy additional specific requirements relating to that subject area.

2. **Units of study**

2.1 The units of study for the Graduate Certificate in Applied Science (Coastal Management), Graduate Diploma in Applied Science (Coastal Management), and Master of Applied Science (Coastal Management), are listed in subsection 4.1.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included under unit of study descriptions.

3. **Requirements for the Graduate Certificate in Applied Science (Coastal Management) (GradCertApplSc(Coastal Mgt)); Graduate Diploma in Applied Science (Coastal Management) (GradDiplApplSc(Coastal Mgt)); Master of Applied Science (Coastal Management) (MApplSc(Coastal Mgt))**

3.1 Candidates for the Graduate Certificate in Applied Science (Coastal Management) are required to complete satisfactorily 24 credit points of study including MARS5001 and GEOG5001; a minimum of 6cp from GEOG5002, MARS5006, NTMP5005 and ENVI5708; and a maximum of 6cp from other units of study listed in the table in subsection 4.1, excluding MARS5005.

3.2 Candidates for the Graduate Diploma in Applied Science (Coastal Management) are required to complete satisfactorily 36 credit points of study including MARS5001 and GEOG5001; a minimum of 6cp from GEOG5002, MARS5006, NTMP5005 and ENVI5708; and a maximum of 18cp from other units of study listed in the table in subsection 4.1, excluding MARS5005.

3.3 Candidates for the Master of Applied Science (Coastal Management) are required to complete satisfactorily 48 credit points of study including MARS5001 and GEOG5001; a minimum of 6cp from GEOG5002, MARS5006, NTMP5005 and ENVI5708; and a maximum of 18cp from other units of study listed in the table in subsection 4.1, including MARS5005.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Applied Science (Coastal Management), Graduate Diploma in Applied Science (Coastal Management), and Master of Applied Science (Coastal Management), are listed in the following table.

Unit of study	
Unless otherwise indicated, all units are worth 6 credit points	
MARS5001	Coastal Processes and Systems
NTMP5005	Tropical Coastal Management
MARS5006	Coral Reefs, Science & Management
MARS5007	Coral Reefs, Energy and Climate
GEOG5001	Geographic Information Science A
GEOG5002	Geographic Information Science B
ENVI5705	Ecological Principles for Environmental Scientists
ENVI5708	Introduction to Environmental Chemistry
ENVI5809	Computer Modelling & Resource Management
ENVI5803	Law and the Environment
ENVI5808	Applied Ecology for Environmental Scientists
ENVI5903	Sustainable Development
ENVI5905	Management of Parks
ENVI5904	Understanding Environmental Uncertainty
MARS5005	Coastal Management Project (12 credit points) - master's students only

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**

5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**

6.1 Cross institutional study shall not be available to students enrolled in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science courses, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**

7.1 Admission to candidature may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of sub-section 1 above.

8. **Discontinuation of enrolment**

8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**

9.1 A student may seek written permission from the Dean to suspend candidature in the course.
9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**

10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**

11.1 Candidates for the Master of Applied Science (Coastal Management), the Graduate Diploma in Applied Science (Coastal Management), and the Graduate Certificate in Applied Science (Coastal Management), shall be governed by the rules as follows:
11.1.1 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Applied Science (Coastal Management) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Applied Science (Coastal Management);
11.1.2 A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Applied Science (Coastal Management) and/or the Graduate Diploma in Applied Science (Coastal Management) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Applied Science (Coastal Management);
11.1.3 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Graduate Certificate in Applied Science (Coastal Management) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.
11.2 A student who has failed a cumulative total of more than 18 credit points in the Master of Applied Science (Coastal Management) and/or the Graduate Diploma in Applied Science (Coastal Management) and/or the Graduate Certificate in Applied Science (Coastal Management) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.
11.3.1 A student who has failed a core unit at the second attempt in the Master of Applied Science (Coastal Management) and/or the Graduate Diploma in Applied Science (Coastal Management) and/or the Graduate Certificate in Applied Science (Coastal Management) will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol.
11.3.2 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**

12.1 A candidate for the Graduate Certificate in Applied Science (Coastal Management) shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.
12.2 A candidate for the Graduate Diploma in Applied Science (Coastal Management) shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of six semesters.
12.3 A candidate for the Master of Applied Science (Coastal Management) shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters.

13. **Assessment policy**

13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**

14.1 Credit is not available in the Graduate Certificate in Applied Science (Coastal Management), Graduate Diploma in Applied Science (Coastal Management) and Master of Applied Science (Coastal Management) for postgraduate study which has not been undertaken in these award courses within the previous three years.
14.2 A candidate who has qualified for the award of the Graduate Certificate in Applied Science (Coastal Management) may transfer, within three years, to the Graduate Diploma in Applied Science (Coastal Management) and receive credit for up to 24 credit points from the Graduate Certificate in Applied Science (Coastal Management).
14.3 A candidate who has qualified for the award of the Graduate Diploma in Applied Science (Coastal Management) may transfer, within three years, to the Master of Applied Science (Coastal Management) and receive credit for up to 36 credit points from the Graduate Diploma in Applied Science (Coastal Management).
14.4 A candidate who has completed units of study in the Applied Science program within the previous three years, but has not qualified for an award, may transfer to another award course within the same Applied Science program and receive credit for the units of study completed.

21. Postgraduate coursework: Environmental Science degrees

This chapter sets out the requirements for postgraduate degrees offered in the Faculty of Science in the area of Environmental Science. A comprehensive guide to the requirements and units of study of the coursework degrees is listed.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously in this chapter, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/

Further information can be found on the Environmental Science website: www.usyd.edu.au/envisci

Master of Environmental Science and Law

Course overview

The Master of Environmental Science and Law program is a novel concept of undertaking dual courses in the fields of both Science and Law. The program is unique and is not available elsewhere. It provides science graduates with the opportunity of extending their scientific knowledge into the area of the environment, as well as acquiring new skills in the field of environmental law. For law graduates, the opportunity is to extend their knowledge into environmental aspects of law, as well as to gain an understanding of some of the concepts underpinning environmental science.

Course outcomes

Upon completion of the Master of Environmental Science and Law graduates will possess a practical and theoretical background in aspects of Environmental Science and Environmental Law. This knowledge includes research and practical skills in these areas. The program is designed to integrate disciplines which are normally considered separately and which would be difficult to study outside of the master's in Environmental Science and Law program.

Units of study

The table lists the units of study available with this degree. Other units are possible with the permission of the Director of Environmental Science. For LAWS units descriptions, see below. For other descriptions please see the entries in this chapter under Applied Science (Environmental Science).
Note: Law units of study are taught in intensive mode. Units offered change from time to fome. Contact the Faculty of Law for a complete and up to date list.

Unit of study	
Unless otherwise indicated, all units are worth 6 credit points	
Core units	
LAWS6252	Legal Reasoning & Common Law System
LAWS6044	Environmental Law and Policy
Science Units (= recommended)*	
ENVI5501	Environmental Research Project (12cp)
ENVI5705*	Ecological Principles for Environmental Scientists
ENVI5707	Energy - Sources, Uses and Alternatives
ENVI5708*	Introduction to Environmental Chemistry
ENVI5808*	Applied Ecology for Environmental Scientists
ENVI5809	Computer Modelling & Resource Management
GEOG5001	Geographic Information Science A
GEOG5002	Geographic Information Science B
MARS5001	Coastal Processes and Systems
WILD5001	Australasian Wildlife: Introduction
WILD5002	Australasian Wildlife: Field Studies
Law units (# = offered every second year)	
LAWS6041	Environmental Dispute Resolution
LAWS6042	Environmental Economics
LAWS6043	Environmental Assessment Law
LAWS6045	Environmental Planning Law
LAWS6055	Heritage Law
LAWS6061	International Environmental Law
LAWS6081	Natural Resources Law
LAWS6082#	Pollution Law
LAWS6154	Sustainable Development Law in China
LAWS6163	Energy Law
LAWS6165	Biodiversity Law
LAWS6186	Native Title - Co-Existance Perspectives
LAWS6191#	Water Law
LAWS6257	Public Policy

Unit of study descriptions

Environmental units of study descriptions can be found with the Environmental Science Applied Science degrees later in this chapter

Environmental Science and Law - Law units

LAWS6041
Environmental Dispute Resolution

Credit points: 6 **Teacher/Coordinator:** Assoc Prof Rosemary Lyster **Session:** S1 Late Int **Classes:** block/intensive mode 4-5 days (9am-5pm). See timetable. **Prerequisites:** LAWS6252 and LAWS6044 for MEL, GradDipEnvLaw and MEnvSciLaw candidates **Assessment:** 1x7000wd essay (80%) and class participation (20%)

This unit aims to explore the nature of environmental disputes and the means of resolving them. The means examined include judicial review, administrative appeals and public inquiries and non-adjudicative or consensual means such as mediation. Critical evaluation of the forms and limits of dispute resolution strategies, including appropriateness of each means in resolving different types of environmental disputes, will be explored. The unit involves the use of innovative teaching techniques: lectures will be alternated with small group workshops, mediation simulations, a public inquiry and a mock court-hearing. In addition to the lecturers, there are guest lecturers including (subject to availability) a Land and Environment Court judge, Commissioner of Inquiry, Senior Counsel and a trained mediator from the Land and Environment Court. Participation in the practical exercises is a compulsory condition of the unit.

LAWS6042
Environmental Economics

This unit of study is not available in 2007

Credit points: 6 **Teacher/Coordinator:** Professor Patricia Apps **Corequisites:** Candidates enrolled in the MEL, GradDipEnvLaw and MenvSciLaw must undertake LAWS6044 Environmental Law and Policy; and LAWS6252 Legal Reasoning and the Common Law System (candidates who do not hold a legal

qualification). **Prohibitions:** Not available to candidates who have previously completed LAWS6257 "Public Policy" **Assessment:** one research paper or exam (80%), problem-based assignments (10%), class presentation (10%)

This unit will present an introduction to the following topics: omarket failure and the objectives of environmental policy oenvironmental regulation, taxes and marketable permits otheory and measurement of externalities ocost-benefit analysis oeconomics of renewable and non-renewable resources ointer-generational equity ouncertainty and risk oeconomics of sustainable development Emphasis will be given to the development of a broad social welfare approach to environmental policy which fully recognises costs and benefits for future generations.

LAWS6043
Environmental Impact Assessment Law
This unit of study is not available in 2007

Credit points: 6 **Teacher/Coordinator:** Professor Ben Boer **Prerequisites:** LAWS6252 Legal Reasoning and the Common Law System (non-law graduates only) **Assessment:** one 4000wd essay (50%) and one take home exam (50%)

This unit has three fundamental aims. The first is to provide a sound analysis of Environmental Impact Assessment (EIA) procedures in NSW and at the Commonwealth level. The second aim is to develop a critical understanding of EIA as a distinctive regulatory device by examining its historical, ethical and political dimensions as well as relevant aspects of legal theory. The third and ultimate aim is to combine these doctrinal and theoretical forms of knowledge so we can suggest possible improvements to the current practice of EIA in Australia.

LAWS6044
Environmental Law and Policy

Credit points: 6 **Teacher/Coordinator:** Dr Gerry Bates **Session:** S1 Late Int, S2 Intensive **Classes:** block/intensive mode 4-5 days (9am-5pm). See timetable. **Prerequisites:** LAWS6252 **Assessment:** 2x4000wd essays (50% each)

Note: compulsory for all environmental law candidates and pre-requisite for other law units

The aim of the unit is to introduce candidates to overarching themes in environmental law and policy as a foundation to their more detailed studies for the Environmental Law Program. This is an overview unit addressing a number of environmental issues at various levels of analysis; such as policy making, implementation of policy and dispute resolution. The unit covers the law and policy relating to environmental planning, environmental impact assessment, pollution and heritage. The concept of ecologically sustainable development and its implications for environmental law and policy is a continuing theme. The unit is designed to develop multi-dimensional thinking about environmental issues and the strategies needed to address them. The unit provides a broad background of the political and economic issues in so far as they are related to the legal issues involved.

LAWS6045
Environmental Planning Law

Credit points: 6 **Teacher/Coordinator:** Ms Nicola Franklin **Session:** S1 Late Int **Classes:** block/intensive mode 4-5 days (9am-5pm). See timetable. **Corequisites:** LAWS6252 and LAWS6044 for MEL, GradDipEnvLaw and MEnvSciLaw candidates **Assessment:** 1x4000wd essay (50%) and 1xproblem-based 4000wd assignment (50%)

This unit examines the legal and institutional structures in New South Wales for land-use regulation and the resolution of land-use conflicts. The focus is on environmental planning, development control and environmental impact assessment under the Environmental Planning and Assessment Act 1979 (NSW) and cognate legislation. The unit provides an opportunity to explore contemporary urban issues, such as urban consolidation and infrastructure funding. Federal interest in the cities is also examined. While an important aim of the unit is to provide candidates with an understanding of the New South Wales environmental planning system, the unit also aims to develop the capacity to evaluate environmental policies and programs through exploring theoretical perspectives on the function of environmental planning. The unit will critically evaluate the function and design of environmental planning systems and the legal ambit of planning discretion. Significant influences, such as escalating environmental and social concerns about our cities, will be discussed, together with an evaluation of processes and forums for public involvement in land-use policy and decision making. A good grounding in this area will be of assistance to candidates undertaking other units in the Environmental Law Program.

LAWS6055
Heritage Law

Credit points: 6 **Teacher/Coordinator:** Prof Ben Boer **Session:** S2 Late Int **Classes:** block/intensive mode **Prerequisites:** LAWS6252 and LAWS6044 for MEL, MEnvSciLaw and GradDipEnvLaw candidates **Assessment:** 1x4000wd research paper (50%) and 1xproblem assignment (50%) **Practical field work:** field trip

This unit focuses on the conservation of natural and cultural heritage, including intangible heritage, underwater heritage and Australian Aboriginal heritage. International, national, state and local regimes for heritage conservation are looked at and put into the context of broader environmental decision making. The unit aims to bring together a range of interdisciplinary strands in archaeology, anthropology, cultural and natural history, art, architecture and urban planning, and to weave them into a framework for the legal protection of world, national, state and local heritage. An integral component of the unit is field trip to areas of relevance to cultural and natural heritage conservation, focusing on northern New South Wales. Places to be studied include various towns and sites on the New South Wales State Heritage Register and on local government heritage lists, as well as habitats of threatened species and ecological communities and World Heritage areas listed under the relevant Commonwealth and State legislation. The field trip provides a unique opportunity to understand how principles of international and domestic law are implemented locally. The field trip component will be arranged in conjunction with the field trip for LAWS6165 Biodiversity Law. Candidates are encouraged to take both units of study; they are designed to complement each other closely.

Textbooks
A book of reading materials and a field trip manual will be prepared and distributed

LAWS6061
International Environmental Law

Credit points: 6 **Teacher/Coordinator:** Prof Ben Boer **Session:** S1 Late Int **Classes:** block/intensive mode 4-5 days (9am-5pm). See timetable. **Corequisites:** (LAWS6252 and LAWS6044 for MEL, GradDipEnvLaw and MEnvSciLaw candidates) and (LAWS6167 and LAWS6243 for MIL and GradDipIntLaw candidates) **Assessment:** 1xproblem-based 2500wd assignment (30%) and 1x5500wd essay (70%)

This unit aims to provide candidates with an overview of the development of international environmental law throughout the twentieth century. Attention will primarily be devoted to the international law and policy responses to global and regional environmental and resource management issues. Basic principles will be discussed prior to taking a sectoral approach in looking at the application of international environmental law in specific issue areas. The unit includes material on implementation of international environmental law in the Asia Pacific region. Relevant Australian laws and initiatives will be referred to from time to time. The focus is on law and policy that has been applied to deal with environmental problems in an international and transboundary context.

LAWS6081
Natural Resources Law

Credit points: 6 **Teacher/Coordinator:** Dr Gerry Bates **Session:** S1 Late Int **Classes:** block/intensive mode 4-5 days (9am-5pm). See timetable. **Corequisites:** LAWS6252 and LAWS6044 for MEL, GradDipEnvLaw and MEnvSciLaw candidates **Assessment:** 1xproblem-based 4000wd assignment (50%) and 1x4000wd essay (50%)

This unit examines the conflicts over the use and conservation of natural resources and how they can be resolved through legal and other mechanisms. Commonwealth and State arrangements on topics such as forestry, mining, agriculture, soil and water use, national parks,

Aboriginal land rights, fisheries and tourism are selectively examined, drawing on the international context where necessary. The unit aims to familiarise students with debates over resource management and the role of various government sectors in these debates. The theme of ecologically sustainable development is explored throughout the unit, emphasizing the need to generate specific legal and other strategies to address the concerns of government, the private sector and conservation groups for each specific resource area.

LAWS6082
Pollution Law

Credit points: 6 **Teacher/Coordinator:** Ms Nicola Franklin (Co-ordinator), Dr Gerry Bates **Session:** S2 Late Int **Classes:** block/intensive mode 4-5 days (9am-5pm). See timetable. **Prerequisites:** (LAWS6252 or LAWS6881 for GradDipPubHL candidates) and (LAWS6252 and LAWS6044 for MEL, GradDipEnvLaw and MEnvSciLaw candidates) **Assessment:** 1xproblem-based 4000wd assignment (50%) and 1x4000wd essay (50%)

This unit examines approaches to pollution prevention and control, with particular emphasis on regulation and enforcement. Compliance, deterrence and incentive strategies are evaluated, as is corporate environmental responsibility and accountability. The unit includes a study of environmental standards, permitting and land-use controls, administrative and civil enforcement, prosecution discretion and criminal and civil liability. Overarching themes are precaution and prevention, integrated pollution control, and community right to know and participate. The legislative and administrative framework that is studied is that of New South Wales, although comparisons are made with other jurisdictions. The federal dimension, including implementation of the Inter-governmental Agreement on the Environment, in particular Schedule 4, is discussed.

LAWS6154
Sustainable Development Law in China

Credit points: 12 **Teacher/Coordinator:** Ms Nicola Franklin (Co-ordinator), Prof Wang Xi **Session:** S1 Late Int **Classes:** block/intensive mode 4-5 days (9am-5pm). See timetable. Classes will be held in Jiaotong University, Shanghai, China. **Prerequisites:** LAWS6252 and LAWS6044 for MEL, GradDipEnvLaw and MEnvSciLaw candidates **Corequisites:** LAWS6167 and LAWS6243 for MIL and GradDipIntLaw candidates **Assessment:** 1x15000wd research paper (100%)

Note: For further travel information, please contact Ms Nayantara Pothen at nayantarap@law.usyd.edu.au or telephone 9351 0324.

This 12 credit point unit comprises an intensive series of lectures and field trips in Shanghai, People's Republic of China, followed by supervised research. The location for lectures is Shanghai Jiaotong University. The unit is designed to: - introduce the legal and institutional framework of environmental law and policy in China - encourage comparative and jurisprudential studies of Chinese environmental law and policy. The lectures and field trips are undertaken over a period of two weeks. The unit is taught principally by Chinese academics at Shanghai Jiaotong University. Candidates are given an introduction to Chinese law and the Chinese legal system before embarking on a study of Chinese environmental law. Field trips are included. It is likely that there will be a visit to the State Environment Protection Authority and to Huangshan, a World Heritage area.

LAWS6163
Energy Law

Credit points: 6 **Teacher/Coordinator:** Assoc Prof Rosemary Lyster **Session:** S2 Late Int **Classes:** block/intensive mode 4-5 days (9am-5pm). See timetable. **Prerequisites:** LAWS6252 and LAWS6044 for MEL, MEnvSciLaw and GradDipEnvLaw candidates **Prohibitions:** LAWS6863 **Assessment:** class participation (20%) and 1x7000wd essay (80%)

This unit adopts an inter-disciplinary and integrative approach to understanding the dynamics of one of the most pressing global environmental concerns ecologically sustainable energy use. Working loosely within the framework of the Climate Change Convention, the unit relies on the perspectives of scientists, lawyers and economists to develop an integrated approach to sustainable energy use. The unit identifies current patterns of energy use in Australia and examines Australia's response to the Climate Change Convention. It also analyses the strengths and weaknesses of various political, legal and economic mechanisms for influencing the choice of energy use. The initiatives of the Commonwealth and New South Wales governments, as well as local councils, to promote sustainable energy use and to combat global warming are scrutinised.

LAWS6191
Water Law

Credit points: 6 **Teacher/Coordinator:** Assoc Prof Rosemary Lyster **Session:** S2 Late Int **Classes:** block/intensive mode 4-5 days (9am-5pm). See timetable. **Prerequisites:** LAWS6252 and LAWS6044 for MEL, GradDipEnvLaw and MEnvSciLaw candidates **Assessment:** 1x7000wd essay (80%) and 1xclass participation (20%)

This unit examines the ecologically sustainable management of water resources incorporating legal, scientific and economic perspectives. The legal analysis incorporates the following: international principles of water law; Commonwealth and state responsibilities for water management; the Water Management Act 2000 (NSW); the legal and constitutional implications of the reallocation of rights to use water; the implications of allocation and use for Indigenous people; the regulation of water pollution; and the corporatisation and privatisation of water utilities. Case studies from a number of jurisdictions are used to explore these themes. Economic perspectives include the impact of National Competition Policy on water law while the principles of sustainable water management are discussed within a scientific paradigm.

LAWS6252
Legal Reasoning & the Common Law System

Credit points: 6 **Teacher/Coordinator:** Assoc Prof Barbara McDonald and Assoc Prof Helen Irving (S1), Assoc Prof Barbara McDonald and Prof Reg Graycar (S6), Assoc Prof Barbara/McDonad and TBA (S5) **Session:** S1 Intensive, S2 Intensive, Semester 1 **Classes:** (S6 and S5) block/intensive mode 4-5 days (9am-5pm) - see timetable and (S1) (1x2hr lec)/wk. International candidates must attend the intensive session during Week 1 of their first semester of enrolment. **Assessment:** attendance and participation at workshops (30%) and assignment on case analysis, statutory interpretation and substantive legal principle (70%)

Note: Compulsory pre-requisite for health law, environmental law, MLLR, MALP, MIR&HRM, MEnvSciLaw, MIntBus&L and MBL candidates undertaking tax units who do not have a qualification in accountancy or who have not completed a legal studies unit as part of a degree in business or commerce within a common law jurisdiction. This unit is also a pre-requisite for specified law units. Other candidates who do not have a law degree from a common law jurisdiction may seek permission to undertake this unit as an optional.

This is a compulsory unit for all postgraduate candidates who do not hold a degree in law entering the: - Master of Administrative Law and Policy - Master of Environmental Law - Master of Environmental Science and Law - Master of Health Law - Master of International Business and Law - Master of Labour Law and Relations as well as Graduate Diplomas offered in these programs. The unit has been designed to equip candidates with the necessary legal skills and legal knowledge to competently apply themselves in their chosen area of law. Instruction will cover the legislative process; the judiciary and specialist tribunals; precedent; court hierarchies; legal reasoning; constitutional law; administrative law; contracts; and torts. Some elements of the unit will be tailored in accordance with the requirements of the particular specialist programs.

LAWS6257
Public Policy

Credit points: 6 **Teacher/Coordinator:** Prof Patricia Apps **Session:** S2 Late Int **Classes:** block/intensive mode 4-5 days (9am-5pm). See timetable. **Prerequisites:** (LAWS6252 for MALP, MEL, MEnvSciLaw and GradDipEnvLaw candidates) and (LAWS6044 for MEL, MEnvSciLaw and GradDipEnvLaw candidates) **Prohibitions:** LAWS6139, LAWS6042, LAWS6113 **Assessment:** 1xresearch essay (90%), 1x problem-based assignments and class presentation of a case study (10%)

Note: compulsory for MALP candidates

The aim of the unit is to provide an understanding of the role of government policy within the analytical framework of welfare economics. Questions of central interest include: - What are the conditions that justify government intervention? - How can policies be designed to support basic principles of social justice? - What kinds of reforms promote economic efficiency? Applications will range from

taxation and social security to environmental regulation and protection, and will cover the following specific topics: - The structure of the Australian tax-benefit system - Uncertainty and social insurance - Unemployment, health and retirement income insurance - Externalities, environmental taxes and tradeable permits - Monopoly and environmental regulation - Utility pricing and access problems - Cost benefit analysis, intergenerational equity and growth The unit will provide an overview of the main empirical methodologies used in evaluating policy reforms in these areas. Candidates may select to specialise in one or more of the policy areas.

Resolutions

Master of Environmental Science and Law

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature:

1.1.1 graduates of the University of Sydney holding the degree of Bachelor of Science or Bachelor of Laws; or

1.1.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.1.

2. **Units of study**

2.1 The units of study for the Master of Environmental Science and Law are listed in the Table associated with these resolutions.

3. **Requirements for the Master of Environmental Science and Law**

3.1 Candidates for the Master of Environmental Science and Law are required to complete satisfactorily 48 credit points selected from units of study approved by the Faculties of Science and Law including:

3.1.1 a core unit of study (LAWS6044);

3.1.2 LAWS6252 is compulsory for students who do not have a law background

3.1.3 a minimum of 24 credit points selected from units of study offered by each Faculty.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Master of Environmental Science and Law are listed in the following table (in accordance with requirements in subsection 3):

Unit of study	
Unless otherwise indicated, all units are worth 6 credit points	
Core units	
LAWS6252	Legal Reasoning & Common Law System
LAWS6044	Environmental Law and Policy
Science Units (= recommended)*	
ENVI5501	Environmental Research Project (12cp)
ENVI5705*	Ecological Principles for Environmental Scientists
ENVI5707	Energy - Sources, Uses and Alternatives
ENVI5708*	Introduction to Environmental Chemistry
ENVI5808*	Applied Ecology for Environmental Scientists
ENVI5809	Computer Modelling & Resource Management
GEOG5001	Geographic Information Science A
GEOG5002	Geographic Information Science B
MARS5001	Coastal Processes and Systems
WILD5001	Australasian Wildlife: Introduction
WILD5002	Australasian Wildlife: Field Studies
Law units (# = offered every second year)	
LAWS6041	Environmental Dispute Resolution
LAWS6042	Environmental Economics
LAWS6043	Environmental Assessment Law
LAWS6045	Environmental Planning Law
LAWS6055	Heritage Law
LAWS6061	International Environmental Law
LAWS6081	Natural Resources Law
LAWS6082#	Pollution Law
LAWS6154	Sustainable Development Law in China
LAWS6163	Energy Law
LAWS6165	Biodiversity Law
LAWS6186	Native Title - Co-Existance Perspectives
LAWS6191#	Water Law
LAWS6257	Public Policy

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

4.4.3 to pass any other examination of the unit of study that may apply.

4.5 All units of study for a particular subject area may not be available every semester.

4.6 A candidate shall complete coursework to the value of 48 credit points.

4.7 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculties of Science and Law, or elsewhere in the University.

5. **Enrolment in more/less than minimum load**

5.1 A candidate may proceed on either a full-time, or a part-time basis.

6. **Cross-institutional study**

6.1 Cross-institutional study shall not be available to students enrolled in the Master of Environmental Science and Law except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**

7.1 Admission to the Master of Environmental Science and Law may be limited by a quota.

7.2 In determining the quota, the University will take into account:

7.2.1 availability of resources including space, laboratory and computing facilities; and

7.2.2 availability of adequate and appropriate supervision.

7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of subsection 1 above.

8. **Discontinuation of enrolment**

8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**

9.1 A student may seek written permission from the Dean to suspend candidature in the course.

9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**

10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**

11.1 Candidates for the Master of Science and Law shall be governed by the rule as follows:

11.1.2 A student who has failed a cumulative total of 12cp at any stage of enrolment in the Master of Science and Law will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be terminated and the student will not be permitted to re-enrol.

12. **Time limit**

12.1 A candidate for the Master of Environmental Science and Law shall complete the requirements for the award in a minimum of two semesters and a maximum of ten semesters, and except with permission of the Faculty, within six calendar years of admission to candidature.

13. **Assessment policy**

13.1 A candidate may be tested by written and oral examinations, assignments, exercises and practical work or any combination of these.

13.2 On completion of the requirements for the degree, the Dean shall determine the results of the candidature.

14. **Credit transfer policy**

14.1 A candidate who, before admission to candidature, has spent time in graduate study and, within the previous three years, has completed coursework considered by the Faculty to be equivalent to units of study prescribed for the degree, for which no award has been conferred, may receive credit of up to 12 credit points towards the requirements for the degree of Master of Environmental Science and Law.

15. **Authority of the Deans**

15.1 The Deans of Science and Law shall jointly exercise authority in any matter concerning the course not otherwise dealt with in these resolutions.

Environmental Science Applied Science degrees

Graduate Certificate in Applied Science (Environmental Science)

Graduate Diploma in Applied Science (Environmental Science)

Master of Applied Science (Environmental Science)

Further information can be found on the Environmental Science website: www.usyd.edu.au/envsci

Course overview

The Graduate Certificate in Applied Science (Environmental Science), Graduate Diploma in Applied Science (Environmental Science) and Master of Applied Science (Environmental Science) are articulated coursework programs that allow a large degree of flexibility in the depth at which studies are undertaken and the choice of subjects studied. Some of the major themes addressed include environmental sciences, environmental politics and law, project evaluation and assessment, decision making and conflict resolution.

Course outcomes

The articulated award program in Environmental Science is designed for both recent graduates wishing to obtain employment in the environmental field and for graduates already working in an environmental sphere who are interested in gaining either a formal qualification in environmental science or additional information about related areas of environmental science.

Environmental managers and scientists are increasingly finding that they need to have a broad interdisciplinary knowledge base and the ability to be flexible and innovative in their application of such knowledge. Thus the aim of this award program is to provide students with the ability to solve environmental problems that require the integration of knowledge from diverse disciplines. Emphasis is placed on studies which span several disciplines, adaptive problem solving, and the development of new skills and expertise.

Upon completion of the graduate certificate, graduates will possess a practical and theoretical background in some of the basic aspects of environmental science. This can be supplemented and extended upon completion of the graduate diploma, and extended further to include research and practical skills upon completion of the master's program. Students completing the full postgraduate program will have a solid grounding in all basic areas of environmental science, enabling them to understand the environmental problems that can arise and the disparate solutions that can be applied to solve such problems, and to comprehend all aspects of environmental assessment.

Units of study

Note for students enrolling in all Applied Science (Environmental Science)

Not all units of study may be available every semester. The Faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

Unit of study	
Unless otherwise indicated, all units are worth 6 credit points	
MARS5001	Coastal Processes and Systems
NTMP5005	Tropical Coastal Management
MARS5006	Croal Reefs, Science & Management
MARS5007	Coral Reefs, Energy and Climate
GEOG5001	Geographic Information Science A
GEOG5002	Geographic Information Science B
ENVI5708	Introduction to Environmental Chemistry
ENVI5809	Computer Modelling & Resource Management
ENVI5803	Law and the Environment
ENVI5903	Sustainable Development
ENVI5905	Management of Parks
ENVI5904	Understanding Environmental Uncertainty
	For Master's students only:
ENVI5501	Environmental Research Project (12cp)
MARS5005	Coastal Management Project (12cp)

Applied Science (Environmental Science) units of study

Graduate Certificate

ENVI5705

Ecolog Principles for Environ Scientists

Credit points: 6 **Teacher/Coordinator:** Dr Charlotte Taylor **Session:** Semester 1 **Classes:** One 3 hour lecture per week. **Assessment:** Assignment, presentation. **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: This is a compulsory course for all levels of the Applied Science (Environmental Science) program.

This unit of study introduces fundamental concepts of modern ecology for environmental scientists so as to provide non-biologically trained persons an understanding of the nomenclature of ecology and the physical parameters represented.

ENVI5808

App Ecology for Environmental Scientists

Credit points: 6 **Teacher/Coordinator:** Dr Dieter Hochuli **Session:** Semester 2 **Classes:** Three 1 hour lectures per week. **Assessment:** Essay and presentation **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: This is a compulsory unit for all levels of the Applied Science (Environmental Science) program

This unit of study compliments ENVI5705, and covers in depth the concerns of modern ecology pertaining to both marine and terrestrial creatures. An understanding of the complex issue of biodiversity and impact of the Threatened Species Conservation Act is also provided.

Graduate Diploma and Master

ENVI5705
Ecolog Principles for Environ Scientists

Credit points: 6 **Teacher/Coordinator:** Dr Charlotte Taylor **Session:** Semester 1 **Classes:** One 3 hour lecture per week. **Assessment:** Assignment, presentation. **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: This is a compulsory course for all levels of the Applied Science (Environmental Science) program.

This unit of study introduces fundamental concepts of modern ecology for environmental scientists so as to provide non-biologically trained persons an understanding of the nomenclature of ecology and the physical parameters represented.

ENVI5708
Introduction to Environmental Chemistry

Credit points: 6 **Teacher/Coordinator:** A/Prof Gavin Birch **Session:** Semester 1 **Classes:** Two 1 hour lectures and one practical per week; one field trip per semester. **Assessment:** Assignment, presentation and report **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: This is a compulsory course for the Grad Dip and Masters levels of the Applied Science (Environmental Science) program.

Introduction to Environmental Chemistry provides the basic chemical knowledge required to be able to understand chemical analysis of air, water and soil samples taken in the field. This is supplemented by a field-based project analysing soil and sediment samples for trace pollutants from locations in and around Sydney. This unit of study involves 4 contact hours per week for one semester as well as some time in the field as arranged with the class.

ENVI5808
App Ecology for Environmental Scientists

Credit points: 6 **Teacher/Coordinator:** Dr Dieter Hochuli **Session:** Semester 2 **Classes:** Three 1 hour lectures per week. **Assessment:** Essay and presentation **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: This is a compulsory unit for all levels of the Applied Science (Environmental Science) program

This unit of study compliments ENVI5705, and covers in depth the concerns of modern ecology pertaining to both marine and terrestrial creatures. An understanding of the complex issue of biodiversity and impact of the Threatened Species Conservation Act is also provided.

ENVI5904
Understanding Environmental Uncertainty

Credit points: 6 **Teacher/Coordinator:** Associate Professor Ross Coleman **Session:** Semester 2 **Classes:** One three hour lecture per week for 8 weeks. **Assessment:** Tutorials, oral presentations and written reports. **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

No assessment of potential environmental impacts is possible without relevant information about the ecological consequences. This unit is for those without a science degree, to explain the need to quantify and what are relevant measures. Describing and understanding uncertainty will be explained in the context of precautionary principles. Issues about measuring biodiversity and the spatial and temporal problems of ecological systems will be introduced.

Optional units Masters degree only - 12 credit points

ENVI5501
Environmental Research Project

Credit points: 12 **Session:** Semester 1, Semester 2 **Classes:** Meetings arranged with supervisor. **Prerequisites:** 24 credit points of study with a credit average or better **Assessment:** Written report and continuous assessment **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: This unit of study is available only to students enrolled in AppSc(EnvSc)

A valuable opportunity to apply some of the knowledge gained from earlier coursework, ENVI 5501 consists of a research project as arranged between you (the student) and an appropriate supervisor. The project topic may contain a field or laboratory component, or may be entirely literature-based. The only requirement is that the topic be of environmental emphasis, meaning that potential topics range from ecotourism to pollution detection and monitoring, erosion to solar power, environmental law to conservation biology. The topic must also be able to be completed within the timeframe of 16 weeks (one semester) of investigation, including the literature survey, sample and data collection, analysis of data and results, and write up of the report. This unit is not conducted by way of a number of contact hours per week for a semester. Instead, the student will work on the project full-time (aside from other study commitments) in a continuous manner for the entire duration (1 semester). Any student interested in taking ENVI5501 should contact the postgraduate advisor for Environmental Science to discuss their project and for help in selecting and appropriate supervisor.

Optional units all degrees

ENVI5809
Computer Modelling & Resource Management

Credit points: 6 **Teacher/Coordinator:** Dr David Chapman **Session:** Semester 1 **Classes:** Six workshops. **Assessment:** Report **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

The concept and use of computer modelling in natural resource management is introduced in this unit of study, which is aimed particularly at non-programmers.

ENVI5707
Energy - Sources, Uses and Alternatives

Credit points: 6 **Teacher/Coordinator:** Dr Chris Dey **Session:** Semester 2 **Classes:** Two 1 hour lectures per week and three field trips per semester. **Assessment:** Assignment, presentation and quiz **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Environmental impacts of energy generation and use are addressed in this unit of study. Major topics include discussion of the various energy sources, global energy resources, the economics associated with energy production, the politics and culture that surrounds energy use, and the alternative sources of solar thermal and photovoltaic energy and atmospheric systems. This unit of study includes several field trips to energy utilities and industry groups associated with alternate energy sources and generation.

ENVI5803
Law and the Environment

Credit points: 6 **Teacher/Coordinator:** Dr Gerry Bates **Session:** Semester 1 **Classes:** One 2 hour lectures per week. **Assessment:** Essays **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

This unit of study provides an overview of Australian and international law as it pertains to the environment. It looks at a number of environmental issues at the various levels of analysis, policy making, implementation of policy and dispute resolution. It also provides a broad background to political and economic issues as they related to the legal issues. This unit of study involves lecture material and an essay on policy issues.

ENVI5903
Sustainable Development

Credit points: 6 **Teacher/Coordinator:** Dr Phil McManus **Session:** Semester 2 **Classes:** Two 2 hour lectures per week for seven weeks. **Assessment:** Essay and presentation **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

This unit of study demonstrates the history and contested understandings of the concept of sustainable development. It applies these concepts to explore important environmental science issues such as population, water management sustainable cities, rural development, industrial ecology, and energy issues. The unit concludes by presenting a range of future scenarios and encouraging students to develop their own vision of sustainability at the global and other scales, and to communicate their means of achieving this sustainability vision.

ENVI5805
The Urban Environment and Planning

Credit points: 6 **Session:** Semester 1 **Classes:** Eight lectures and eight 2 hour seminars per semester **Assessment:** Report and short research paper **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

The aim of this unit of study is to introduce the concepts and procedures which are relevant to the application of scientific analysis to the formulation of urban and regional development policy and strategies.

ENVI5905
Management of Parks

Credit points: 6 **Teacher/Coordinator:** A/Prof Deirdre Dragovich **Session:** Semester 2a **Classes:** Lectures 2hrs for 6 weeks, Practical work 3 hrs for 3 wks, Fieldwork 21 hrs (2.5 days), Total / week 7 hrs average **Assessment:** A prac report, assignment, one 1hr exam **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

This unit of study evaluates the reasons for the existence of parks, including National Parks, recreational spaces and reserves, and examines the applied aspects of their management. Topics covered include conservation, ecotourism, plans of management and their implementation (with particular emphasis on the remediation of the impacts of visitor numbers and erosion), fire control practices and resource management. Students will visit various parks within the Sydney region (such as the Royal National Park, the Sydney Harbour Foreshore, Jenolan Caves Reserve and Centennial Park) that highlight the different issues introduced in lectures and which illustrate the practical measures undertaken to manage the parks in a sustainable fashion.

Textbooks
A Course Handbook will be provided.

ENVI5904
Understanding Environmental Uncertainty

Credit points: 6 **Teacher/Coordinator:** Associate Professor Ross Coleman **Session:** Semester 2 **Classes:** One three hour lecture per week for 8 weeks. **Assessment:** Tutorials, oral presentations and written reports. **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

No assessment of potential environmental impacts is possible without relevant information about the ecological consequences. This unit is for those without a science degree, to explain the need to quantify and what are relevant measures. Describing and understanding uncertainty will be explained in the context of precautionary principles. Issues about measuring biodiversity and the spatial and temporal problems of ecological systems will be introduced.

GEOG5001
Geographic Information Science A

Credit points: 6 **Teacher/Coordinator:** Dr David Chapman **Session:** Semester 1, Semester 2 **Classes:** Six workshops. **Assessment:** Report **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

This unit of study gives an overview of basic spatial data models, and enables students to understand the import and export of data to and from a geographical information system (GIS). The manipulation of spatial data at a level appropriate to planning or locational applications, and the development of thematic maps from diverse data layers, will be addressed.

GEOG5002
Geographic Information Science B

Credit points: 6 **Teacher/Coordinator:** Dr Eleanor Bruce **Session:** Semester 2 **Classes:** One 2 hour lectures, one 1 hour tutorial, one 3 hour practical per week for 6 weeks. **Assumed knowledge:** GEOG5001 **Assessment:** 2500 word assignment, seminar presentation, tutorial reports, WebCT quiz. **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

This course will provide the conceptual background to more advanced GIS analysis applications and spatial reasoning methods in the context of contemporary environmental issues. The course is designed to provide an understanding of spatial analysis techniques available within a GIS environment, explore a diversity of both social and physical environmental applications and address emerging issues in GIS research. A range of topics will be introduced including field based capture of spatial information, spatial data structures, surface modelling, visibility analysis, hydrological modeling, network analysis, spatial data uncertainty and social GIS. Conceptual material presented in lectures and tutorial workshops will be placed in an applied context through a series of laboratory and field sessions designed to strengthen practical understanding and awareness of GIS methods.

GEOG5004
Environmental Mapping and Monitoring

Credit points: 6 **Teacher/Coordinator:** Dr Peter Cowell **Session:** Semester 2 **Classes:** 2 hours of lectures and one three hour practical per week. **Assessment:** Assignments **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

The unit introduces methods associated with acquiring data in the field and examines issues associated with application of spatial data to environmental monitoring, terrain mapping and geocomputing. Students will learn both theoretically and practically how environmental data is collected using different remote sensing techniques, (pre)processing methods of integrating data in a GIS environment and the role of spatial data in understanding landscape processes and quantifying environmental change.

MARS5001
Coastal Processes and Systems

Credit points: 6 **Teacher/Coordinator:** Professor Andrew Short **Session:** Semester 1 **Classes:** Three days per week for 3 weeks, including lectures, tutorials and field trips. **Assessment:** Essay, field trip report **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: This is a compulsory unit for all levels of the Applied Science (Coastal Management) program

This unit of study will examine the major coastal processes and systems of relevance to coastal zone management. These will include nearshore, estuarine and aeolian processes. Systems investigated will include rocky coasts and bluffs; beaches, barriers and dunes; and estuaries and inlets. The interaction between these processes and systems that are of most relevance to coastal management will be highlighted. These will include coastal hazards such as beach erosion, dune migration, bluff retreat, coastal flooding, inlet closure, and anthropogenic impacts such as pollution, storm water and acid sulphate soils. The unit will be presented both in lectures and field excursions, the latter enabling each system to be examined first hand.

ENGG5601
Greenhouse Gas Mitigation

Credit points: 6 **Teacher/Coordinator:** A/Professor Ian Jones I.Jones@civil.usyd.edu.au **Session:** Semester 2 **Classes:** 2 hour lecture each week on Monday afternoons. Tutorials on Friday mornings. Offered every year **Assessment:** Assignments and final examination **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: Department permission required for enrolment .
Note: Unit Administration: Web CT

Graduate unit of study designed for environmental engineering students, either M.E.S. or Grad. Cert. of GHG Mitigation Keywords:Greenhouse science, energy efficiency, carbon sinks, climate change amelioration Objectives:To develop an understanding of, the significance of carbon dioxide in climate; the role of increasing fossil fuel energy conversion efficiency; the international framework for carbon sinks; the size, cost, potential and nature of terrestrial and oceanic sinks of carbon; the amelioration of the impacts of climate change. Outcomes:Students will be able to make recommendations of the most cost effective approach to enterprises meeting carbon dioxide limits expected to be imposed as a result of the Kyoto Protocol.

Textbooks
P. Riemer, A. Smith, K. Thambimuthu (1998). Greenhouse Gas Mitigation, Elsevier, Amsterdam. pp777.

WILD5001
Australasian Wildlife: Introduction

Credit points: 6 **Session:** S1 Intensive **Classes:** Intensively taught unit, the remainder of the unit will involve personal study and project activity. See the

Wildlife Health and Population Management website for dates. **Assessment:** assessments for each unit may include practical work, field studies, student presentations and written reports **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: Core

This unit of study provides an introduction to the wildlife of Australasia, an overview of the present status of that wildlife, and an understanding of both conservation problems and management solutions. Issues in wildlife management are exemplified using a broad range of vertebrate species occupying different environments. Emphasis is placed on providing students with a coordinated and interdisciplinary approach to wildlife health and management, and on developing expertise in recognising and solving a broad range of problems in field populations. The unit integrates lectures, practical work and supervised study, and offers students the opportunity to work through real-world wildlife conservation problems relevant to their individual backgrounds.

WILD5002

Australasian Wildlife: Field Studies

Credit points: 6 **Session:** S1 Intensive **Classes:** Intensively taught unit. See the Wildlife Health and Population Management website for dates. **Assessment:** Assessments for each unit may include practical work, field studies, student presentations and written reports **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: Core

This unit of study provides a first-hand introduction to the wildlife of Australasia, a practical overview of the present status of that wildlife, and an understanding of both conservation problems and management solutions. Issues in wildlife management are exemplified using sampling and diagnostic methods on a broad range of vertebrate species occupying different environments. The unit follows on from WILD5001 and provides practical experience via a five day field trip.

WILD5007

Sustainable Wildlife Use and Stewardship

Credit points: 6 **Teacher/Coordinator:** A/Prof Tony English **Session:** S2 Late Int **Classes:** A full-time week at the Camden campus (2 days) and at "Arthursleigh" farm (3 days). **Assessment:** The assessment of this unit occurs both in the full-time week and in individual written assignments done in the student's own time. The full-time week contributes 40% of the total mark through a number of individual and syndicate tasks, with presenations to the group. The remaining 60% comes from two written assignments of 3,000 words (20%) and 5,000 words (40%) respectively. **Campus:** Camperdown/Darlington **Mode of delivery:** Block Mode

The unit considers the potential for sustainable use of wildlife to contribute to the conservation of biodiversity and the economic well-being of local communities. There will be consideration of both consumptive and non-consumptive utilisation programs, using both Australian and international examples. Ethical and animal welfare issues will be considered in some detail. The Unit is taught in a full-time week at the Camden campus (2 days) and at "Arthursleigh" farm (3 days). There are lectures, tutorials and practical classes. A case study on the Australian kangaroo harvesting industry will provide an opportunity to examine all the factors that need to be taken into account - biological, socio-cultural, economic and animal welfare issues.

Resolutions

Graduate Certificate in Applied Science (Environmental Science)

Graduate Diploma in Applied Science (Environmental Science)

Master of Applied Science (Environmental Science)

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for:

1.1.1 *the Graduate Certificate in Applied Science:*

1.1.1.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.1.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.1.1; or

1.1.1.3 persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;

1.1.2 *the Graduate Diploma in Applied Science:*

1.1.2.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.2.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.2.1; or

1.1.2.3 persons who have completed requirements for the Graduate Certificate in Applied Science, or equivalent;

1.1.3 *the Master of Applied Science:*

1.1.3.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.3.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.3.1; or

1.1.3.3 persons who have completed requirements for the Graduate Diploma in Applied Science, or equivalent.

1.2 In relation to particular subject areas the Dean may require applicants to satisfy additional specific requirements relating to that subject area.

2. **Units of study**

2.1 The units of study for the Graduate Certificate in Applied Science (Environmental Science), Graduate Diploma in Applied Science (Environmental Science), and Master of Applied Science (Environmental Science), are listed in subsection 4.1.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included under unit of study descriptions.

[Section 2]

3. **Requirements for Graduate Certificate in Applied Science (Environmental Science) (GradCertApplSc(EnvSc)); Graduate Diploma in Applied Science (Environmental Science) (GradDipApplSc(EnvSc)); Master of Applied Science (Environmental Science) (MApplSc(EnvSc))**

3.1 Candidates for the Graduate Certificate in Applied Science (Environmental Science) are required to satisfactorily complete 24 credit points of units of study including one of two core units of study (ENVI5708 or 5808) and 18 credit points from the optional units of study.

3.2 Candidates for the Graduate Diploma in Applied Science (Environmental Science) are required to satisfactorily complete three core units of study (ENVI5705 and ENVI5808 and either ENVI5708 or ENVI5904), and 18 credit points from optional units of study.

3.3 Candidates for the Master of Applied Science (Environmental Science) are required to satisfactorily complete three core units of study (ENVI5705 and ENVI5808 and either ENVI5708 or ENVI5904), and 30 credit points from optional units of study.

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Applied Science (Environmental Science), Graduate Diploma in Applied Science (Environmental Science), and Master of Applied Science (Environmental Science), are listed in the following table.

Unit of study	
Unless otherwise indicated, all units are worth 6 credit points	
MARS5001	Coastal Processes and Systems

Unit of study	
NTMP5005	Tropical Coastal Management
MARS5006	Croal Reefs, Science & Management
MARS5007	Coral Reefs, Energy and Climate
GEOG5001	Geographic Information Science A
GEOG5002	Geographic Information Science B
ENVI5708	Introduction to Environmental Chemistry
ENVI5809	Computer Modelling & Resource Management
ENVI5803	Law and the Environment
ENVI5903	Sustainable Development
ENVI5905	Management of Parks
ENVI5904	Understanding Environmental Uncertainty
	For Master's students only:
ENVI5501	Environmental Research Project (12cp)
MARS5005	Coastal Management Project (12cp)

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**
5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**
6.1 Cross institutional study shall not be available to students enrolled in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science courses, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**
7.1 Admission to candidature may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 2 above.

8. **Discontinuation of enrolment**
8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**
9.1 A student may seek written permission from the Dean to suspend candidature in the course.
9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**
10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**
11.1 Candidates for the Master of Applied Science, the Graduate Diploma in Applied Science, and the Graduate Certificate in Applied Science, shall be governed by the rules as follows:
11.1.1 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Applied Science will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Applied Science;
11.1.2 A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Applied Science and/or the Graduate Diploma in Applied Science will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Applied Science;
11.1.3 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Graduate Certificate in Applied Science will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will not be permitted to re-enrol.
11.2 A student who has failed a cumulative total of more than 18 credit points in the Master of Applied Science and/or the Graduate Diploma in Applied Science and/or the Graduate Certificate in Applied Science will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.
11.3.1 A student who has failed a core unit at the second attempt in the Master of Applied Science and/or the Graduate Diploma in Applied Science and/or the Graduate Certificate in Applied Science will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol.
11.3.2 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**
12.1 A candidate for the Graduate Certificate in Applied Science shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.
12.2 A candidate for the Graduate Diploma in Applied Science shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of six semesters.
12.3 A candidate for the Master of Applied Science shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters.

13. **Assessment policy**
13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**
14.1 Credit is not available in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science for postgraduate study which has not been undertaken in these award courses within the previous three years.
14.2 A candidate who has qualified for the award of the Graduate Certificate in Applied Science may transfer, within three years, to the Graduate Diploma in Applied Science and receive credit for up to 24 credit points from the Graduate Certificate in Applied Science.
14.3 A candidate who has qualified for the award of the Graduate Diploma in Applied Science may transfer, within three years, to the Master of Applied Science and receive credit for up to 36 credit points from the Graduate Diploma in Applied Science.
14.4 A candidate who has completed units of study in the Applied Science program within the previous three years, but has not qualified for an award, may transfer to another award course within the same Applied Science program and receive credit for the units of study completed.

22. Postgraduate coursework: History and Philosophy of Science degrees

This chapter sets out the requirements for postgraduate degree offered in the Faculty of Science in the area of History and Philosophy of Science. A comprehensive guide to the requirements and units of study of the coursework degrees is listed.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously in this chapter, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/

Graduate Certificate in Science (History and Philosophy of Science)

Course overview

The Graduate Certificate in Science (HPS) provides an introduction to the historical, philosophical, and sociological analysis of science. Candidates will be introduced to the main accounts of the nature of science and the methodologies underlying those interpretations.

Course outcomes

Upon completion of the graduate certificate candidates will understand the nature of the discipline of History and Philosophy of Science and will have acquired either basic research skills in history of science or basic skills in the sociological study of science or the basic skills of philosophical argument or some combination of the above, depending on their choice of options.

Units of study

- HPSC4101 Philosophy of Science
- HPSC4102 History of Science
- HPSC4103 Sociology of Science
- HPSC4104 Recent Topics in HPS
- HPSC4105 HPS Research Methods
- HPSC4108 Core Topics in HPS

Other information

The unit of study, HPSC4108 Core Topics in HPS, is not available to students who have completed a major in History and Philosophy of Science or equivalent program of study at another institution.

Course resolutions

See this chapter following unit of study descriptions.

History and Philosophy of science units available in 2007

HPSC4101
Philosophy of Science

Credit points: 6 **Teacher/Coordinator:** Dr Ofer Gal **Session:** Semester 1 **Classes:** One 2 hour seminar per week, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Written assignments, seminar participation.

Note: Department permission required for enrolment .

The success of science in enabling us to manipulate the natural world has been so surprising, so often, that it has caused many individuals to revise a large part of their pre-scientific philosophical and religious consensus. Something very important is going on, and a number of fascinating philosophical topics emerge when we try to analyse what it is. Working backwards from the success of an epistemological enterprise offers a fruitful way to do philosophy, and, reciprocally, our philosophical insights help to clarify the contentious question of what it means to claim that science is successful. This unit investigates the relationships between scientific theories and evidence, and the relationships between scientific theories. Participants will have an opportunity to relate the successes and failures of specific sciences to contemporary philosophical debates. Each week the seminar will discuss a piece of philosophical theory in the light of examples from particular sciences. Technical topics will be covered, but very little background knowledge will be assumed.

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

HPSC4102
History of Science

Credit points: 6 **Teacher/Coordinator:** HPS Staff **Session:** Semester 1, Semester 2 **Classes:** One 2 hour seminar per week. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Essays, seminar participation.

Note: Department permission required for enrolment .

This unit explores major episodes in the history of science as well as introducing students to historiographic methods. Special attention is paid to developing practical skills in the history and philosophy of science.

Textbooks
Course reader

HPSC4103
Sociology of Science

Credit points: 6 **Teacher/Coordinator:** Dr Hans Pols **Session:** Semester 2 **Classes:** One 2 hour seminar per week, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Essays, fieldwork report, seminar participation mark.

Note: Department permission required for enrolment .

This unit explores recent approaches in the social studies of scientific knowledge. Students evaluate various sociological approaches by conducting their own research on topics relevant to their own major thesis. The unit starts with an overview of the development of history and philosophy of science since 1945, to put the emergence of the sociology of science into perspective, before moving on to a selection of readings from the field. Topics will include: the strong program critique of traditional philosophy of science, the sociology of technology, the impact of feminism on the study of science, and the actor-network approach developed by Bruno Latour and Michel Callon.

Textbooks
Course reader

HPSC4104
Recent Topics in HPS

Credit points: 6 **Teacher/Coordinator:** HPS Staff **Session:** Semester 1, Semester 2 **Classes:** One 2 hour seminar per week, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Essays, seminar participation.

Note: Department permission required for enrolment .

An examination of one area of the contemporary literature in the history and philosophy of science. Special attention will be paid to development of research skills in the history and philosophy of science.

Textbooks

Course reader

HPSC4105
HPS Research Methods

Credit points: 6 **Teacher/Coordinator:** Dr Rachel Ankeny **Session:** Semester 1, Semester 2 **Classes:** One 2 hour seminar per week, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Literature review, archival research project, seminar participation mark, short essays.

Note: Department permission required for enrolment .

Adopting a seminar style, this unit provides students with an advanced knowledge of the skills necessarily to conduct their own original research in the sociology, history and philosophy of science. Participants will be given a weekly set of core readings, and specialists both from within the Unit and from outside will present their views on the topic in question. This presentation will form the basis for a discussion involving the students, the academic members of the Unit, and invited speakers. Topics will include: the use of case studies in the philosophy of science, how to conduct oral history projects, institutional history, and sociological methodology.

Textbooks
Course reader

HPSC4108
Core topics: History & Philosophy of Sci

Credit points: 6 **Teacher/Coordinator:** HPS staff. **Session:** Semester 1, Semester 2 **Classes:** One 2 hour seminar per week. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission **Prohibitions:** Not available to students who have completed a major in History and Philosophy of Science or an equivalent program of study at another institution. **Assessment:** Essays, seminar presentations, seminar participation mark.

Note: Department permission required for enrolment .

An intensive reading course, supported by discussion seminars, in the main figures and events of the 'Scientific Revolution' of the 16th to 18th centuries, in the leading historiographic interpretations of the scientific revolution and in the use of episodes in the scientific revolution as evidence for the philosophies of science of Karl Popper, Imre Lakatos, Thomas Kuhn and contemporary authors.

Textbooks
Course reader

Resolutions

Graduate Certificate in Science (History and Philosophy of Science)

[Section 1]

1. **Admission**
1.1 The Dean of the Faculty of Science may admit to candidature for the Graduate Certificate in Science (History and Philosophy of Science) an applicant who is:
1.1.1 the holder of the degree of Bachelor of Science or Bachelor of Medical Science or Bachelor of Arts or Bachelor of Liberal Studies, or any other award of Bachelor of the University of Sydney; or
1.1.2 a graduate of another university or other appropriate institution who has qualifications equivalent to those specified in subsection 1.1.1.
2. **Units of study**
2.1 The units of study for the Graduate Certificate in Science are listed in the table in sub-section 4.1 of these resolutions.
2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the description of units of study.
3. **Requirements for the Graduate Certificate in Science (History and Philosophy of Science)**
3.1 A candidate shall complete course work to the value of 24 credit points selected from the following table associated with these resolutions, and including HPSC4108 (if they have not completed a major in History and Philosophy of Science, or equivalent program of study, at another institution).

[Section 2]

4. **Details of units of study**
4.1 The units of study for the Graduate Certificate in Science (History and Philosophy of Science) are listed in the table as follows:

All units of study are worth 6 credit points, unless otherwise indicated.

Unit of study	
HPSC4101	Philosophy of Science
HPSC4102	History of Science
HPSC4103	Sociology of Science
HPSC4104	Recent Topics in HPS
HPSC4105	HPS Research Methods
HPSC4108	Core Topics in HPS

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
5. **Enrolment in more/less than minimum load**
5.1 A candidate may proceed on either a full-time or a part-time basis.
6. **Cross-institutional study**
6.1 Cross-institutional study shall not be available to students enrolled in the Graduate Certificate in Science (History and Philosophy of Science) except where the University of Sydney has a formal Cooperation Agreement with another University.
7. **Restrictions on enrolment**
7.1 Admission to the Graduate Certificate in Science (History and Philosophy of Science), may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of subsection 1 above.
8. **Discontinuation of enrolment**
8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.
9. **Suspension of candidature**
9.1 A student may seek written permission from the Dean to suspend candidature in the course.
9.2 Suspension may be granted for a maximum of one year.
10. **Re-enrolment after an absence**
10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.
11. **Satisfactory progress**
11.1 The Dean may call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the Graduate Certificate in Science (History and Philosophy of Science).
11.2 If good cause has not been established, the student's candidature will be terminated.

12. **Time limit**

12.1 A candidate shall proceed as a full time student for a period of one semester or as a part time student for up to three semesters.

13. **Assessment policy**

13.1 A candidate may be tested by written and oral examinations, assignments, exercises and practical work or any combination of these.

13.2 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**

14.1 Credit is not available in the Graduate Certificate in Science (History and Philosophy of Science), except for postgraduate units of study which have been taken through the University of Sydney Unit for History and Philosophy of Science within the previous three years, and for which no award has been conferred.

23. Postgraduate coursework: Information Technology degrees

This chapter sets out the requirements for coursework postgraduate degrees offered by the School of Information Technologies. Following is a brief description of the degrees. A comprehensive guide to the requirements and units of study of the coursework degrees is listed.

Courses offered

The University of Sydney offers targeted postgraduate programs in IT to meet the demands of the IT industry.

For students who already have an IT background, there is the articulated program of the Graduate Certificate in Information Technology, the Graduate Diploma in Information Technology, and the degree of Master of Information Technology. These programs provide a core of knowledge in information technology, supplemented by a broad range of areas of options within areas of Computer Networks and the Internet, E-Business, Multimedia, Database Management and Administration, Software Engineering, Business Information Systems, and Computer Science.

For IT graduates, they provide an excellent opportunity for in-depth study of specialist areas, possibly leading to research, or a retraining opportunity for IT graduates wishing to extend the breadth of their expertise.

The University also recognises that there are many graduates from disciplines other than IT who seek a career change, either by moving into the IT industry or by enhancing their existing career with IT qualifications. The Graduate Diploma in Computing is specifically designed for graduates without an IT degree.

Graduate Diploma in Computing

Course overview

The Graduate Diploma in Computing is recognised as an industry relevant award, and it has been accredited by the Australian Computer Society (ACS) as an Associate Level course in information technology.

Relationship to other degrees

The combination of the Graduate Diploma in Computing followed by the Master of Information Technology provides an effective conversion program into the field of IT for graduates without an IT degree.

Course outcomes

Upon completion of the Graduate Diploma in Computing, graduates will possess a practical and theoretical background in some of the basic aspects of Information Technology. Graduates who satisfactorily complete the graduate diploma will also be eligible for admission to the Master of Information Technology and the Master of Information Technology Management. Satisfactory completion of the Graduate Diploma in Computing for purposes of entry into the Master of Information Technology and the Master of Information Technology Management require that a candidate has not failed more than 12 credit points of units of study in the Graduate Diploma in Computing.

Admission requirements

Applicants for the Graduate Diploma in Computing should hold a bachelor's degree in a discipline other than IT. The graduate diploma assumes significant numeracy skills such as those found in a Science or Engineering degree. Applicants holding a bachelor's degree in other areas who have completed relevant subjects with a mathematical foundation will also be eligible. Alternatively, applicants holding a bachelor's degree in any discipline and who have worked in Information Technology for more than five years are eligible. All applicants must have completed their bachelor's with credit average results or better.

Course requirements

A total of 48 credit points must be completed from the listed Computing units of study:

- 18 units of study must be completed before COMP5114 Digital Media Fundamentals can be taken;
- 18 credit points must be completed before COMP5028 Object Oriented Analysis and Design can be taken;
- 18 credit points must be completed before COMP5116 Internet Protocols can be taken;
- COMP5214 Software Development in Java and COMP5212 Software Construction cannot be taken in the same semester;
- COMP5212 Software Construction cannot be taken until at least 12 credit points of study, including COMP5214 Software Development in Java, have been completed.

Credit for previous study

Credit for previous study will not be granted in the Graduate Diploma in Computing. Units of study completed in the Graduate Diploma in Computing cannot be counted as units of study completed within any other postgraduate IT courses including the Graduate Certificate of Information Technology, Graduate Diploma of Information Technology, Master of Information Technology, Graduate Certificate of Information Technology Management, Graduate Diploma of Information Technology Management, or Master of Information Technology Management.

Units of study available in 2007

The units of study offered may change annually.

Unit of study		Semester
COMP5206	Introduction to Information Systems	1, 2
COMP5214	Software Development in Java	1, 2
COMP5211	Algorithms	1, 2
COMP5213	Computer and Network Organisation	1, 2
COMP5212	Software Construction	1, 2
COMP5114	Digital Media Fundamentals	1, 2
COMP5028	Object Orientated Analysis and Design	1, 2
COMP5116	Internet Protocols	1, 2

Computing units of study

COMP5211
Algorithms
Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lectures and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

The study of algorithms is a fundamental aspect of computing. This unit of study covers data structures, algorithms, and gives an overview of the main ways of thinking used in IT from simple list manipulation and data format conversion, up to shortest paths and cycle detection in graphs. The objective of the unit are to teach basic concepts in data structure, algorithm, dynamic programming and program analysis. Students will gain essential knowledge in computer science.

COMP5213
Computer and Network Organisation
Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This unit of study provides an overview of hardware and system software infrastructure including: compilers, operating systems, device drivers, network protocols, etc. It also includes user-level Unix skills and network usability. The objectives are to ensure that on completion of this unit students will have developed an understanding of compilers, operating systems, device drivers, network protocols, Unix skills and network usability.

COMP5214
Software Development in Java
Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This unit of study introduces software development methods, where the main emphasis is on careful adherence to a process. It includes design methodology, quality assurance, group work, version control, and documentation. It will suit students who do not come from a programming background, but who want to learn the basics of computer software. Objectives: This unit of study covers systems analysis, a design methodology, quality assurance, group collaboration, version control, software delivery and system documentation.

COMP5206
Introduction to Information Systems
Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Prohibitions:** INFO5210 **Assessment:** Assignments, written exam

This unit provides an introduction to information systems in organisations and the role of database management. It introduces the fundamentals of database management, along with the modeling and analysis that is needed for designing and implementing database solutions. The unit also introduces a database query language. Objectives: On completion of this unit students will be able to develop an understanding of the role of information systems in organisations, and the value of data and information to organisations. Students will also develop skills in creating database solutions, capturing user requirements, and building process and data models.

COMP5212
Software Construction
Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Prerequisites:** Students cannot enrol until they have completed at least 12 cp of study in the Graduate Diploma in Computing, including COMP5214 Software Development in Java. **Assessment:** Assignments, written exam

This is a programming unit of study focusing on the C language, with emphasis on the individual producing code that works correctly. Topics include: the memory model, and errors associated with that (including pointers, malloc/free, sizeof, stack vs heap); coding simple dynamic data structures (linked lists, binary trees); debugging; threads, and errors associated with them; use of Unix tools for managing programming activities such as testing; learning from manual entries for standard library functions and Unix commands. Objectives: On completion of this unit students will have acquired programming skills and techniques applicable to the development of software used in areas such as networking, computer engineering, language translation, and operating systems.

COMP5114
Digital Media Fundamentals
Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This unit provides an overview of processing digital media which include text, audio, pictorial data and video. It introduces various processing techniques and standards, and presents some applications. Objectives: The unit covers Multimedia Primer; Text Processing which includes text parsing, text summarization, text manipulation, text index and retrieval, and surrogate coding; Audio Data Processing which includes audio attribute, audio masking, MP3 audio, audio manipulation and audio segmentation; pictorial data processing which includes still image processing, multi-modal image processing and artificial image processing; video data processing which includes active image processing, video segmentation, motion analysis, moving object extraction, video representation and codification.

COMP5116
Internet Protocols
Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written examination

In this unit students will develop the ability to gain in depth knowledge of the structure and algorithms used in the TCP/IP networking protocols that make up the foundation of the Internet. Furthermore, the unit will provide students with the architectural insight to being able to design and analyse protocols in the perspective of their intended use. Objectives: On completion of this unit students will develop an understanding on the layered model, the core protocols, the routing protocols, the link layer and the various tools for traffic and protocol analysis.

COMP5028
Object-Oriented Analysis and Design
Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This unit introduces Object-Oriented Analysis and Design especially the principles of modelling through Rational Unified Process and agile processes using Unified Modeling Language (UML), both of which are industry standard. Students work in small groups to experience the process of object-oriented analysis, architectural design, object-oriented design, implementation and testing by building a real-world application. Objectives: In this unit students will develop the ability to: identify how the system interacts with its environment; identify appropriate objects and their attributes and methods; identify the relationships between objects; write the interfaces of each object and exception handling; implement and test the objects; read and write various UML diagrams (use case, activity, class, object, sequence, collaboration, state chart, component and deployment diagrams).

Degrees in Information Technology Management

Graduate Certificate in Information Technology Management

Graduate Diploma in Information Technology Management

Master of Information Technology Management

Course overview

The University of Sydney offers planned, targeted postgraduate programs in IT to meet the demands of the IT industry.

For technically-skilled graduates seeking career advancement in the 'management ladder' of IT organisations, the University offers a course known as the Master of Information Technology Management. In this course, a background in computing skills is assumed, but the emphasis is not on developing these technical skills. The focus of the Master of Information Technology Management is on a thorough and detailed understanding of the management of resources such as projects, people, knowledge, and technologies in the distinctive way needed within IT organisations. The Master of Information Technology Management is specifically designed for graduates who are currently moving along, or seeking to move along, a career path through managerial roles such as Project Manager, Program Manager, General Manager of Operations (GMO), Chief Information Officer (CIO), or Chief Technology Officer (CTO).

The Master of Information Technology Management provides a selection of postgraduate units of study covering a Core set of IT management topics. Students can also choose from a number of Elective topics to add depth or breadth to their studies. For students considering study leading to a research degree, the Master of Information Technology Management has a Research Path option that can be used to gain admission to an MSc by Research or a PhD.

The Master of Information Technology Management requires 1 year (2 semesters) of full-time study.

Note that for IT graduates seeking advanced technical studies, there is a separate articulated program of the Graduate Certificate in Information Technology, the Graduate Diploma in Information Technology, and the degree of Master of Information Technology. These programs provide an excellent opportunity for students to build upon their undergraduate IT studies and extend their technical knowledge in a wide range of IT specialisations.

Course outcomes

Upon completion of the Graduate Certificate, graduates will possess a practical and theoretical background in some of the basic aspects of Information Technology Management. This can be supplemented and extended upon completion of the graduate diploma, and extended further to include research and practical skills by completion of the master's program.

Upon completion of the Master of Information Technology Management, graduates will have a sound knowledge base in several contemporary topics within Information Technology Management. They may also have the opportunity of applying this knowledge to the execution of a small research project.

The Master of Information Technology Management is designed as an industry relevant award. It has been developed under the guidelines of the Australian Computer Society (ACS), and it has been accredited by the ACS as a Professional level course in information technology.

Admission requirements

Graduate certificate

Applicants for the Graduate Certificate in Information Technology Management should hold a bachelor's degree; or be able to offer evidence of recognised prior learning which is considered to demonstrate the knowledge and aptitude required to undertake this course.

Graduate diploma

Applicants for the Graduate Diploma in Information Technology Management should hold a bachelor's degree; or have completed the Graduate Certificate in Information Technology Management at the University of Sydney with credit average results or above.

Master

All Information Technology Management degrees

For all applicants of the Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management, and Master of Information Technology Management the bachelor's degree does not have to be an Information Technology degree, but it should contain a significant amount of technical subjects related to computing, as typically found in an IT, Science, or Engineering degree. Applicants holding a bachelor's degree in other areas, such as Finance, Commerce, Health Sciences, and Social Sciences, who have completed relevant IT subjects will also be eligible for admission. Applicants holding a bachelor's degree in any discipline and who have worked in Information Technology for more than five years are eligible for admission.

Course requirements

Graduate Certificate in Information Technology Management

- A total of 24 credit points must be completed;
- Credit points must be selected from Core units of study, excluding IT Research Project units of study;
- INFO5990 Professional Practice in IT must be completed as a Core unit of study.

Graduate Diploma in Information Technology Management:

- A total of 36 credit points must be completed;
- At least 30 credit points must come from Core units of study, excluding IT Research Project units of study;
- INFO5990 Professional Practice in IT must be completed as a Core unit of study;
- INFO5991 IT Professional Services must be completed as a Core unit of study;
- A maximum of 6 credit points of Elective units of study can be taken.

Master of Information Technology Management:

- A total of 48 credit points must be completed;
- At least 30 credit points must come from Core units of study;
- INFO5990 Professional Practice in IT must be completed as a Core unit of study;
- INFO5991 IT Professional Services must be completed as a Core unit of study;
- INFO5992 Understanding IT Innovations must be completed as a Core unit of study;
- A maximum of 18 credit points of Elective units of study can be taken;
- After completing 24 credit points of coursework, students who achieve Credit average results or above in their coursework may select 12 credit points of Information Technology Project units of study among their Core units;
- After completing 24 credit points of coursework, students who have Distinction average results or above may be eligible for the Research Path subject to the approval of the Head of the School of Information Technologies and the Dean;

- Students who pursue the Research Path must study INFO4990 Research Methods, and select 18 credit points from IT Research Project units of study among their Core units;
- Students who pursue the Research Path do not have to take INFO5991 IT Professional Services and INFO5992 Understanding IT Innovations as Core units of study.

Credit for previous study

Credit is not available in the Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management and Master of Information Technology Management except for postgraduate study which has been undertaken in postgraduate award courses in information technology at the University of Sydney within the previous three years and for which no award has been conferred. If an award has been conferred, credit for study in these award courses is limited to 12 credit points.

Units of study available in 2007

All INFS-coded units of study have the Core unit INFS6000 as assumed knowledge. Inclusion of a COMP-coded Project unit of study is subject to conditions identified in the Course Requirements. INFO6007 and INFS6014 are mutually exclusive, and students can take only one of these two units of study.

Unit of study		Semester
Core units (Mandatory)		
INFO5990	Professional Practice in IT	1,2
INFO5991	IT Professional Services	1,2
INFO5992	Understanding IT Innovations	1,2
Core units (Additional)		
COMP5206	Introduction to Information Systems	1,2
COMP5028	Object Oriented Analysis and Design	1,2
COMP5138	Relational Database Management Systems	1,2
COMP5703	Information Technology Project (12 cp)	1,2
INFO6007	Project Management in IT	1,2
ISYS4050	Knowledgement Management Systems	1
Coreunits (Research Path)		
INFO4990	Research Methods	1,2
COMP5702 IT	Research Project A (12 cp)	1,2
COMP5704 IT	Research Project B	1,2
Elective units		
COMP5213	Computer and Network Organisation	1,2
COMP5114	Digital Media Fundamentals	1,2
COMP5116	Internet Protocols	1,2
ECON6004	Regulating e-Business	1
INFS6000	Business Information Systems	1,2
INFS6001	BIS Management	1,2
INFS6002	BIS Strategy	2
INFS6004	BIS Change Management	1
INFS6012	Business Process Integration	1
INFS6013	Risk Management & BIS Assurance	1
INFS6014	BIS Project Management	2
INFS6015	Business Process Management	2
INFS6016	Internet Business Models & Strategies	1,2
INFS6017	Strategic Information Design & Management	2
INFS6018	Business Intelligence Systems	1
WORK6003	People, Management and Technology	1
WORK6026	Organisational Change and Development	2

Core units of study

INFO5990
Professional Practice in IT

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This Unit of Study defines and explains the standards of knowledge of Information & Communication Technology (ICT) professionals. It covers the factors necessary for successful management of system development or enhancement projects, including managing the system life cycle, system performance evaluation, managing expectations of team members, cost effectiveness analysis, scheduling and change management. The unit also covers the issues related to the Organisational Behaviour, Interpersonal Communications, Ethics and Social implications as part of their involvement in professional practice.

INFO5991
IT Professional Services

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** INFO5990 **Assessment:** Assignments, written exam

This unit of study builds upon and extends the standard body of Information & Communication Technology (ICT) knowledge required by IT professionals. Specifically, it covers topics related to the management of key resources in IT organisations including: people, projects, knowledge, and processes. The delivery of this unit is driven by a critical examination of selected case studies that focus on topics such as organisational capability assessment, recruitment and organisational capability development, outsourcing strategies, and IT procurement.

INFO5992
Understanding IT Innovations

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 3 hour tutorial per week. **Assumed knowledge:** INFO5990 **Assessment:** Assignments

An essential skill for an IT manager is the ability to keep up-to-date with emerging technologies, and be able to evaluate the significance of these technologies to their organisation's business activities. This unit of study is based around a study of current technologies and the influence of these technologies on business strategies. On completion of this unit, sutdents will be able to identify and analyse an emerging technology and write a detailed evaluation of the impact of this technology on existing business practices.

COMP5206
Introduction to Information Systems

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Prohibitions:** INFO5210 **Assessment:** Assignments, written exam

This unit provides an introduction to information systems in organisations and the role of database management. It introduces the fundamentals of database management, along with the modeling and analysis that is needed for designing and implementing database solutions. The unit also introduces a database query language. Objectives: On completion of this unit students will be able to develop an understanding of the role of information systems in organisations, and the value of data and information to organisations. Students will also develop skills in creating database solutions, capturing user requirements, and building process and data models.

COMP5138
Relational Database Management Systems

Credit points: 6 **Session:** Semester 1, Semester 2, Summer Main **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Prohibitions:** COMP5015 **Assessment:** Assignments, written exam.

This unit of study will provide a comprehensive conceptual and practical introduction to managing large relational databases. Relational and normalization theory will be emphasized along with a focus on relational query language (SQL). Objectives: In this unit students will develop the ability to: - Understand the foundations of database management; - Strengthen their theoretical knowledge of database systems in general and relational data model and systems in particular; - Create robust relational database designs; - Understand the theory and applications of relational query processing and optimization; - Study the critical issues in data and database administration; - Explore the key emerging topics in database management.

COMP5703
Information Technology Project

Credit points: 12 **Session:** Semester 1, Semester 2 **Classes:** Eight hours of practical work per week. **Assessment:** Report.

Note: Department permission required for enrolment .

Specialist/Elective/Project

INFO6007
Project Management in IT

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Prohibitions:** INFS6014 IT Project Management **Assumed knowledge:** INFS6000 or COMP5206 or INFO5990 **Assessment:** Assignments, written exam.

This unit of study covers the factors necessary for successful management of system development or enhancement projects. Both technical and behavioural aspects of project management are discussed. Potential topics of interest could include managing the system life cycle, system and database integration issues, system performance evaluation, managing expectations of team members, cost effectiveness analysis, scheduling and change management.

ISYS4050
Knowledge Management Systems

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour scheduled small-group class per week, plus 10 hours per week private work. **Assumed knowledge:** Information systems concepts, database concepts **Assessment:** Practical assignments, written assignments, exam

This unit will provide a comprehensive introduction to the emerging area of Knowledge Management (KM) from both technological and organisational perspectives. Topics include document repositories, ontologies and the semantic web, customer relationship management systems, communities of practice, and computer-supported cooperative work. Students will approach relevant research being done in the University of Sydney.

Core Research Path units of study

INFO4990
IT Research Methods

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 3 hour scheduled small-group class per week, plus 9 hours per week private work (including interaction with research supervisor). **Assumed knowledge:** Elementary statistics **Assessment:** Written papers (critical evaluation of a research paper, literature survey, research plan, thesis structure) and oral presentation.

Note: Department permission required for enrolment .

This unit forms a key foundation for the student's work on their IT-related research project within an Honours degree. It introduces the varied approaches to research common in different fields of IT, such as experimentation, simulation, prototyping/design, mathematical proof, surveys, and interpretive methods. The main focus is on understanding how research is done, and how it is evaluated. Key assessment tasks include writing a critical evaluation of a research paper from the literature, a survey of the literature within some topic, a research plan, and a presentation of a research plan. It is expected that the student would use their thesis research as the basis for this assessment, and use feedback provided in this unit to improve the work for inclusion in the final thesis.

COMP5702
IT Research Project A

Credit points: 12 **Session:** Semester 1, Semester 2 **Classes:** Eight hours of practical work per week. **Assessment:** Report.

Note: Department permission required for enrolment .

Specialist/Elective/Project

COMP5704
IT Research Project B

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** Four hours of practical work per week. **Assessment:** Report.

Note: Department permission required for enrolment .

Specialist/Elective/Project

Elective units of study

COMP5213
Computer and Network Organisation

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This unit of study provides an overview of hardware and system software infrastructure including: compilers, operating systems, device drivers, network protocols, etc. It also includes user-level Unix skills and network usability. The objectives are to ensure that on completion of this unit students will have developed an understanding of compilers, operating systems, device drivers, network protocols, Unix skills and network usability.

COMP5114
Digital Media Fundamentals

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This unit provides an overview of processing digital media which include text, audio, pictorial data and video. It introduces various processing techniques and standards, and presents some applications. Objectives: The unit covers Multimedia Primer; Text Processing which includes text parsing, text summarization, text manipulation, text index and retrieval, and surrogate coding; Audio Data Processing which includes audio attribute, audio masking, MP3 audio, audio manipulation and audio segmentation; pictorial data processing which includes still image processing, multi-modal image processing and artificial image processing; video data processing which includes active image processing, video segmentation, motion analysis, moving object extraction, video representation and codification.

COMP5116
Internet Protocols

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written examination

In this unit students will develop the ability to gain in depth knowledge of the structure and algorithms used in the TCP/IP networking protocols that make up the foundation of the Internet. Furthermore, the unit will provide students with the architectural insight to being able to design and analyse protocols in the perspective of their intended use. Objectives: On completion of this unit students will develop an understanding on the layered model, the core protocols, the routing protocols, the link layer and the various tools for traffic and protocol analysis.

ECON6004
Regulating e-Business

Credit points: 6 **Session:** Semester 1 **Classes:** 3 hours which may include one or more of the following: lectures, seminars, tutorials, or workshops **Assessment:** Group participation, 1 group project, final exam

The growth of e-business has been accompanied by calls for governments to act on behalf of existing businesses, workers,

consumers, and marginal groups. There are dangers from the threats from disruption by unauthorised or malicious intervention, from the harmful effects of global monopolies, from the possibilities for tax evasion, from the danger of invaded privacy, and from inappropriate, immoral, or illegal activity. Governments in the United States, Europe, Asia, and Australia have adopted very different approaches to these issues. Managers need to be aware of legal structures and commercial regulations as well as the development and delivery of e-business solutions, and their responses need to adjust to achieve their firm's goals.

INFS6000
Business Information Systems
This unit of study is not available in 2007
Credit points: 6 **Classes:** 3 hours per week

The objective is to help you understand (i) using data to meet organizational objectives and expected outcomes, ii) the complex and changing information environment from the perspective of stakeholders, and (iii) the management issues associated with making effective use of the combined capabilities of technology and employee knowledge. These are explored with reference to enterprise-wide systems as well as small to medium systems in business and government. Understanding is fostered through presenting conceptual frameworks, analytical tools and research findings from over 30 years in business information systems. Four themes are referenced during the unit: data and data structures as a corporate resource; core business processes within business cycles; ethics and socio-technical issues in BIS, and, information and knowledge for business intelligence and decisions by managers.

INFS6001
BIS Management
Credit points: 6 **Session:** Semester 1, Semester 2, Summer Main **Classes:** Three hours per week **Assessment:** Group assignments; Mid-semester exam; Final exam
Note: This unit of study may be offered in intensive mode

This unit introduces you to the organisational foundations of information systems and their emerging strategic role. You will develop an understanding of real-world systems and their relationship to organisations, management and business processes. The unit provides you with a solid understanding of the technology underlying information systems and how various information technologies work together to create infrastructure for electronic commerce and electronic business. You will explore the role of information systems in capturing and distributing organisational knowledge and in enhancing management decision making. Finally, you will have the opportunity to explore the special management challenges and opportunities created by the pervasiveness and power of information systems.

INFS6002
BIS Strategy
Credit points: 6 **Session:** Semester 2 **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000 **Assessment:** Class participation, Examination, Individual assignments and Group projects

In this unit, you will explore current issues and theoretical concepts in information technology strategy and management. A key aim of the unit is to provide you with a detailed understanding of concepts, tools and methodologies that can be of assistance to organisations in their design, implementation and enactment of IT strategies and governance of value-adding IT resources. The focus will be on users and IT strategy and management in context rather than on more technical aspects. Your understanding will be enhanced through active participation in case studies, which are an essential element of the unit.

INFS6004
BIS Change Management
Credit points: 6 **Session:** Semester 1 **Classes:** Three hours per week

Many BIS implementations require organisational change, or are part of broader change initiatives, and this unit aims to equip you with the ability to operate as a change agent to lead and manage that process. You will be exposed to the factors that need to be considered to fully understand an organisation's specific context and provided with the knowledge, methodologies and techniques to successfully manage the change related aspects of a BIS implementation within that context. Topics covered by this unit include the roles of change, approaches to change - including Strategic Change, Business Process Reengineering and Total Quality Management and managing the end-to-end change process - including overcoming organisational resistance.

INFS6012
Business Process Integration
Credit points: 6 **Session:** Semester 1 **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000

This unit will provide you with an overview of integrated enterprise systems using packaged software solutions (via the SAP R/3 enterprise resource planning system). It offers practical experience in using the SAP R/3 system so as to familiarize you with all the modules and their functionality. You will learn how enterprise resource planning integrates functions within business and you will gain a thorough understanding of the information flows in procurement, production planning, production control, inventory control, sales and distribution, financial accounting and cost controlling.

INFS6013
Risk Management and BIS Assurance
Credit points: 6 **Session:** Semester 1 **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000

This unit will introduce you to the concepts and practices relating to the protection and assurance of business information systems. Business information and information related systems are valuable assets to organisations and are of critical importance in meeting regulatory obligations. Therefore the risk of disruption, theft or destruction to information systems has business value and compliance implications. This unit provides you with the opportunity to investigate key concepts, strategies and methodologies that will assist you in identifying, analysing and evaluating potential risk areas and critical control needs throughout the information system lifecycle. Your knowledge will be expanded in a multi-level approach that examines tools and technologies for safeguarding business information resources, the key stakeholders and institutional arrangements for business information systems assurance. The theoretical and conceptual material covered in seminars is reinforced through problem based learning.

INFS6014
BIS Project Management
Credit points: 6 **Session:** Semester 2 **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000

This unit will introduce you to the end to end project management lifecycle from project planning and initiation through implementation to benefits realisation. You will be exposed to both the technical and behavioural aspects of project management infrastructures, techniques and methodologies - including PMBOK, PRINCE2 and OPM3. You will be introduced to concepts and will critically analyse their application in specific project contexts. In addition you will learn how to use the standard project management tool Microsoft Project. Major topics covered in the unit include project plan development, execution and control along with consideration of the change management implications of the project for its host organisation.

INFS6015
Business Process Management
Credit points: 6 **Session:** Semester 2 **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000 **Assumed knowledge:** INFS6012

This unit will introduce you to concepts of Business Process Management (BPM) and capabilities to discover, analyse, design, deploy and optimize end to end business processes. You will obtain a detailed understanding of strategies, methods, tools and technologies associated with BPM. You will also develop practical skills by modelling and re-designing business processes using commercial software. Business processes that stretch across organizational boundaries and the management of such processes are the central themes of this unit.

INFS6016
Technology Enabled Business Innovation
Credit points: 6 **Session:** Semester 2 **Classes:** Three hours per week

This unit will assist you to develop knowledge and skills in innovative, technology-enabled business models and strategies from a management perspective. It will enable you to better understand and apply the concepts, strategies, tools and technologies necessary for undertaking business innovation. From basic knowledge of business models and essential business processes this unit will increase your awareness and understanding of stakeholders, their capabilities and their limitations in the strategic convergence of technology and business. It will increase your insights into the technology and infrastructure required to support commerce in the 21st Century and will support development of your capabilities to analyse, develop and evaluate innovative technology-enabled business strategies and models.

INFS6017
Strategic Information & Knowledge Mgmt
Credit points: 6 **Session:** Winter Main **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000

In this unit you will be exposed to a sociotechnical change perspective to the study of information, content and knowledge management. The unit provides you with the opportunity to investigate the systems that enable the acquisition, storage and distribution of business and government information. The major emphasis is on the ways that organisations generate, communicate and leverage value from their information and knowledge assets. Different views of information such as "information as evidence" and "information as asset" will be presented, and you will explore the tensions arising from the interplay of these two views. Your knowledge will be expanded in a multi-level approach that examines digital information products, information users and institutional arrangements for information and knowledge management.

INFS6018
Business Intelligence Systems
Credit points: 6 **Session:** Semester 1 **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000 **Assumed knowledge:** INFS6017

One of the key business challenges for any organisation today, is to convert large volumes of data, coming from various internal and external sources, into relevant information and then into actionable business intelligence. This applies equally to small as well as large companies, traditional and online business. Business intelligence solutions are widely used in customer relationship management, human resources, financial analysis, supply chain management, sales and marketing campaigns, manufacturing etc. This unit introduces fundamental BI concepts including datawarehousing and data mining multidimensional modelling and enterprise data management. The main emphasis is placed on the enterprise context of business intelligence tools and methodologies and their use in decision making. The unit also examines how business intelligence relates to Business Performance Management, Business Processes Management, Knowledge Management and Change Management in an enterprise. A common commercial software platform will be used to demonstrate the role of systems in business intelligence.

WORK6003
People, Management and Technology
This unit of study is not available in 2007
Credit points: 6 **Assessment:** Continuous: Essays, case studies and/or exam

This unit analyses the interaction of technology, organisations and work and highlights the importance of the human element in managing technology. Design, acquisition and utilisation of technology are examined as distinct yet complimentary phases in the strategic management of technology. The unit also expands into strategic and macro level issues.

WORK6026
Organisational Change and Development
Credit points: 6 **Session:** Semester 1a **Classes:** Two hours per week **Assessment:** Continuous: Essay and exam

This unit seeks to develop diagnostic and prescriptive skills in relation to the management of organisational change while also encouraging the adoption of a critical perspective of the field. Part 1 (Organisational Change and the Nature of Organisations) introduces the fields of organisational change, explains its relevance to organisation performance and strategy and examines key change management models. Part 2 (Diagnosis and Intervention) examines the utility of key organisational change models and techniques and identifies factors that may impact on the effectiveness of the change management process. Part 3 (Key Areas of Intervention) analyses the application of organisational change practices and initiatives to a number of specific organisational issues.

Degrees in Information Technology

Graduate Certificate in Information Technology

Graduate Diploma in Information Technology

Master of Information Technology

Course overview

The University of Sydney offers planned, targeted postgraduate programs in IT to meet the demand of the IT industry. This articulated program includes the Graduate Certificate in Information Technology, the Graduate Diploma in Information Technology and the Master of Information Technology degree and is designed to provide a core of knowledge in information technology, supplemented by a broad range of options within areas of Computer Networks and the Internet, E-Business Technologies, Multimedia, Database Management and Administration, Software Engineering, Business Information Systems, etc. The combination of core units and electives provides an excellent retraining opportunity. Students will not only obtain breadth and depth in their knowledge of the IT industry but will also be able to choose from a selection of options which will allow them to focus on a specialisation in the broad span of the industry.

The Master of Information Technology requires 1 year (2 semesters) of full-time study. The degree is designed to teach you current developments in topics you have already studied as well as extend your knowledge in advanced computing subjects. The program consists of coursework and/or projects in your major area of interest.

During the first semester of attendance you have the opportunity to select from a number of Information Technology units of study. These cover topics in software engineering, database systems, multimedia,

computer networks, business information systems, telecommunications engineering, and computer engineering.

Also available is a selection of specialist units of study covering advanced topics within various areas. In addition you have the option to choose information technology projects to replace some specialist units in the second semester if the average mark of your units of study is credit or above. The project involves a substantial piece of programming using the knowledge gained during the course and may be related to your employment.

Course outcomes

Upon completion of the Graduate Certificate, graduates will possess a practical and theoretical background in some of the basic aspects of Information Technology. This can be supplemented and extended upon completion of the graduate diploma, and extended further to include research and practical skills by completion of the master's program.

Upon completion of the Master of Information Technology graduates will have a sound knowledge base in several contemporary topics within information technology. They may also have the opportunity of applying this knowledge to the implementation of a useful system.

The Master of Information Technology is recognised as an industry relevant award, and it has been accredited by the Australian Computer Society (ACS) as a Professional Level course in information technology.

Admission requirements

Graduate certificate

Applicants for the Graduate Certificate in Information Technology should hold a bachelor's degree with substantial study of a relevant field of Information Technology; or a Bachelor of Engineering, Software Engineering or Telecommunications Engineering; or be able to offer evidence of recognised prior learning which is considered to demonstrate the knowledge and aptitude required to undertake this course.

Graduate diploma

Applicants for the Graduate Diploma in Information Technology should hold a Bachelor's degree with substantial study of a relevant field of Information Technology; or a Bachelor of Engineering with a major sequence of study in Computer Engineering, Software Engineering or Telecommunications Engineering; or have completed the Graduate Certificate in Information Technology at the University of Sydney with credit average results or above.

Master

Applicants for the Master of Information Technology should hold a Bachelor's degree with credit average results in a major sequence in any aspect of Information Technology; or a Bachelor of Engineering with credit average results in a major sequence in Computer Engineering, Software Engineering or Telecommunications Engineering; or have completed the Graduate Diploma in Information Technology at the University of Sydney with credit average results or above; or have satisfactorily completed the Graduate Diploma in Computing at the University of Sydney. Satisfactory completion of the Graduate Diploma in Computing for purposes of entry into the Master of Information Technology requires that a candidate has not failed more than 12 credit points of units of study in the Graduate Diploma in Computing.

Course requirements

Graduate Certificate in Information Technology

- A total of 24 credit points must be completed;
- Credit points can be selected from Foundational and Specialist units of study, excluding IT project units of study.

Graduate Diploma in Information Technology

- A total of 36 credit points must be completed;
- A maximum of 24 credit points can be selected from Foundational units of study;
- At least 12 credit points should come from Specialist units of study, excluding IT project units of study.

Master of Information Technology

- A total of 48 credit points must be completed;
- A maximum of 24 credit points can be selected from Foundational units of study;
- At least 24 credit points should come from Specialist units of study or IT project units of study;
- Every student must complete a defined major in the Master of Information Technology, which requires them to complete at least 18 credit points of Core units in the designated major and INFO5990;
- After completing 24 credit points of course work, students who achieve Credit average results or above in their coursework may select 12 credit points of IT project units of study among their Specialist units;
- After completing 24 credit points of course work, students who have Distinction average results or above may be eligible for the Research path subject to the approval of the Head of the School of Information Technologies and the Dean;
- Students who pursue the Research path must study INFO4990 and select 18 credit points from IT research project units of study.

Credit for previous study

Credit is not available in the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology, and Master of Information Technology except for postgraduate study which has been undertaken in postgraduate award courses in information technology at the University of Sydney within the previous three years and for which no award has been conferred. If an award has been conferred, credit for study in these award courses is limited to 12 credit points. Students enrolled in either the GradCertIT, GradDipIT, or MInfTech are not permitted to transfer to the Master of Applied Information Technology course.

Course Resolutions

See end of this chapter.

Units of study available in 2007

Unit of study	Semester
Unless otherwise indicated, all units are worth 6 credit points	
Foundational units	
COMP5114 Digital Media Fundamentals	1,2
COMP5028 Object Oriented Analysis and Design	1,2
COMP5116 Internet Protocols	1,2
COMP5138 Relational Database Management Systems	1,2
INFS6000 Business Information Systems	1,2
Specialist units	
COMP4045 Computational Geometry	1
COMP4046 Statistical Natural Language Processing	1
COMP4048 Information Visualisation	2
COMP5318 Knowledge Discovery and Data Mining	1,2
COMP5338 Advanced Data Models	1,2
COMP5347 E-Commerce Technology	1
COMP5348 Enterprise Scale Software Development	1
COMP5415 Multimedia Authoring and Production	2
COMP5416 Advanced Network Technologies	2
COMP5424 Information Technology in Biomedicine	1
COMP5425 Multimedia Storage, Retrieval and Delivery	1
COMP5426 Network Based High Performance Computing	1
INFO4990 IT Research Methods	1,2
INFO5990 Professional Practice in IT	1,2
INFO5991 IT Professional Services	1,2

Unit of study	Semester
INFO6007 Project Management in IT	1, 2
NETS4047 Pervasive Computing	2
EBUS5003 E-Commerce Systems	2
ELEC5303 Computer Control System Design	1
ELEC5402 Digital Integrated Circuit Design	1
ELEC5507 Error Control Coding	1
ELEC5508 Wireless Engineering	2
ELEC5509 Advanced Communication Networks	1
ELEC5510 Satellite Communication Systems	2
ELEC5511 Optical Communication Systems	1
ELEC5512 Optical Networks	2
ELEC5513 Network Management and Queuing Theory	2
ELEC5613 Image Processing and Computer Vision	1
ELEC5614 Real Time Computing	2
ELEC5615 Advanced Computer Engineering	2
ELEC5616 Computer & Network Security	1
HIMT5057 Introduction to Health Informatics	1
HIMT5058 Health Informatics Applications	2
HIMT5060 Integration of Health Informatics	2
HIMT5069 Health Care Systems	1
INFS6001 BIS Management	1,2
INFS6002 BIS Strategy	2
INFS6004 BIS Change Management	1
INFS6012 Business Process Integration	1
INFS6013 Risk Management & BIS Assurance	1
INFS6014 BIS Project Management	2
INFS6015 Business Process Management	2
INFS6016 Internet Business Models & Strategies	1,2
INFS6017 Strategic Information Design & Management	2
MATH4431 Advanced Option Pricing	2
MATH4433 Interest Rate Modelling	2
IT project units	
COMP5702 IT Research Project A (12 cp)	1,2
COMP5703 Information Technology Project (12 cp)	1,2
COMP5704 IT Research Project B	1,2
Units of study available in majors in 2007	
The following majors are available in the Master's of Information Technology. Majors are not defined for the Graduate Certificate or for the Graduate Diploma in Information Technology.	

Units of study available in majors in 2007

Core units for Computer Networks major	
To achieve a major in Computer Networks, a student must complete INFO5990 and 18 credit points of study units from this list. COMP5416 and ELEC5509 are mutually exclusive, and students can take only one of these two units of study. Students in the Research path must complete INFO4990. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP5116	Internet Protocols
COMP5416	Advanced Network Technologies
COMP5426	Network Based High Performance Computing
ELEC5509	Advanced Communication Networks
NETS4047	Pervasive Computing
COMP5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP5702	IT Research Project A (12 cp)
COMP5704	IT Research Project B
(COMP5702 + COMP5704 = 18 cp)	

Core units for Multimedia Technology major	
To achieve a major in Multimedia Technology, a student must complete INFO5990 and 18 credit points of study units from this list. Students in the Research path must complete INFO4990. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP5114	Digital Media Fundamentals
COMP5415	Multimedia Authoring and Production
COMP5425	Multimedia Storage, Retrieval & Delivery
ELEC5613	Image Processing and Computer Vision
COMP5703	Information Technology Project (12 cp)
One of the Core units selected from the Computer Science major to a maximum of 6 credit points.	
Only available to the Research path:	
COMP5702	IT Research Project A (12 cp)
COMP5704	IT Research Project B
(COMP5702 + COMP5704 = 18 cp)	

Core units for Database Management Systems major	
To achieve a major in Database Management Systems, a student must complete INFO5990 and 18 credit points of study units from this list. Students in the Research path must complete INFO4990. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP5138	Relational Database Management Systems
COMP4046	Statistical Natural Language Processing
COMP5338	Advanced Data Models
COMP5318	Knowledge, Discovery and Data Mining
COMP5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP5702	IT Research Project A (12 cp)
COMP5704	IT Research Project B
(COMP5702 + COMP5704 = 18 cp)	

Core units for Software Engineering major	
To achieve a major in Software Engineering, a student must complete INFO5990 and 18 credit points of study units from this list. Students in the Research path must complete INFO4990. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP5028	Object Orientated Analysis and Design
COMP5347	E-Commerce Technology
COMP5348	Enterprise Scale Software Development
EBUS5003	E-Commerce Systems
COMP5703	Information Technology Project (12 cp)
One of the Core units selected from the Computer Science major to a maximum of 6 credit points.	
Only available to the Research path:	
COMP5702	IT Research Project A (12 cp)
COMP5704	IT Research Project B
(COMP5702 + COMP5704 = 18 cp)	

Core units for Computer Science major	
To achieve a major in Computer Science, a student must complete INFO5990 and 18 credit points of study units from this list. Students in the Research path must complete INFO4990. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP4045	Computational Geometry
COMP4046	Statistical Natural Language Processing
COMP4048	Information Visualisation
NETS4047	Pervasive Computing
COMP5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP5702	IT Research Project A (12 cp)
COMP5704	IT Research Project B
(COMP5702 + COMP5704 = 18 cp)	

Core units for Telecommunications Engineering major	
To achieve a major in Telecommunications Engineering, a student must complete INFO5990 and 18 credit points of study units from this list. Students in the Research Path must complete INFO4990. COMP5416 and ELEC5509 are mutually exclusive, and students can take only one of these two units of study. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the School of EIE. A maximum of 18 credit points of ELEC-coded units of study can be completed. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP5116	Internet Protocols
COMP5416	Advanced Network Technologies
ELEC5507	Error Control Coding
ELEC5508	Wireless Engineering
ELEC5509	Advanced Communication Networks
ELEC5510	Satellite Communication Systems
ELEC5511	Optical Communication Systems
ELEC5512	Optical Networks
COMP5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP5702	IT Research Project A (12 cp)
COMP5704	IT Research Project B
(COMP5702 + COMP5704 = 18 cp)	

Core units for Computer Engineering major	
To achieve a major in Computer Engineering, a student must complete INFO5990 and 18 credit points of study units from this list. Students in the Research Path must complete INFO4990. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the School of EIE. A maximum of 18 credit points of ELEC-coded units of study can be completed. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP5116	Internet Protocols
ELEC5303	Computer Control System Design
ELEC5402	Digital Integrated Circuit Design
ELEC5513	Network Management and Queuing Theory
ELEC5614	Real Time Computing
ELEC5615	Advanced Computer Engineering
ELEC5616	Computer and Network Security
COMP5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP5702	IT Research Project A (12 cp)
COMP5704	IT Research Project B
(COMP5702 + COMP5704 = 18 cp)	

Core units for E-Business Technologies major	
To achieve a major in E-Business Technologies, a student must complete INFO5990 and 18 credit points of study units from this list. Students in the Research Path must complete INFO4990. All Specialist INFS-coded units of study have the Foundational INFS6000 as assumed knowledge. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the Chair of the BIS Discipline. A maximum of 18 credit points of INFS-coded units of study can be completed. *Unless otherwise indicated, all units are worth 6 credit points.*	
INFS6000	Business Information System
INFS6001	BIS Management
INFS6004	BIS Change Management
INFS6012	Business Process Integration
INFS6014	BIS Project Management
INFS6016	Internet Business Models & Strategies
COMP5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP5702	IT Research Project A (12 cp)
COMP5704	IT Research Project B
(COMP5702 + COMP5704 = 18 cp)	

Core units for Business Information Systems major	
To achieve a major in Business Information Systems a student must complete INFO5990 and 18 credit points of study units from this list. Students in the Research Path must complete INFO4990. All Specialist INFS-coded units of study have the Foundational INFS6000 as assumed knowledge. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the Chair of the BIS Discipline. A maximum of 18 credit points of INFS-coded units of study can be completed. *Unless otherwise indicated, all units are worth 6 credit points.*	
INFS6000	Business Information System
INFS6001	BIS Management
INFS6002	BIS Strategy
INFS6012	Business Process Integration
INFS6013	Risk Management and BIS Assurance
INFS6014	BIS Project Management
INFS6015	Business Process Management
INFS6017	Strategic Information Design & Management
COMP5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP5702	IT Research Project A (12 cp)
COMP5704	IT Research Project B
(COMP5702 + COMP5704 = 18 cp)	

Core units for Project Management major	
To achieve a major in Project Management, a student must complete INFO5990 and 18 credit points of study units from this list, including INFO6007 or INFS6014. Students in the Research Path must complete INFO4990. All Specialist INFS-coded units of study have the Foundational INFS6000 as assumed knowledge. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the Chair of the BIS Discipline. INFO6007 and INFS6014 are mutually exclusive, and students can take only one of these two units of study. A maximum of 18 credit points of INFS-coded units of study can be completed. *Unless otherwise indicated, all units are worth 6 credit points.*	
INFS6000	Business Information System
INFO5991	IT Professional Services
INFO6007	Project Management in IT
INFS6001	BIS Management
INFS6002	BIS Strategy
INFS6014	BIS Project Management
COMP5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP5702	IT Research Project A (12 cp)
COMP5704	IT Research Project B
(COMP5702 + COMP5704 = 18 cp)	

Core units for Health Informatics major	
To achieve a major in Health Informatics, a student must complete INFO5990 and 18 credit points of study units from this list, including HIMT5057. Students in the Research Path must complete INFO4990. HIMT5057 must be completed before HIMT5058 or HIMT5060 can be taken. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the School of Health Information Management. A maximum of 18 credit points of HIMT-coded units of study can be completed. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP5424	Information Technology in Biomedicine
HIMT5057	Introduction to Health Informatics
HIMT5058	Health Information Applications
HIMT5060	Integration of Health Information
HIMT5069	Health Care Systems
COMP5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP5702	IT Research Project A (12 cp)
COMP5704	IT Research Project B
(COMP5702 + COMP5704 = 18 cp)	

Core units for Financial Modelling major

The Financial Modelling major is not available in 2007.

Foundational units of study

COMP5114
Digital Media Fundamentals

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This unit provides an overview of processing digital media which include text, audio, pictorial data and video. It introduces various processing techniques and standards, and presents some applications. Objectives: The unit covers Multimedia Primer; Text Processing which includes text parsing, text summarization, text manipulation, text index and retrieval, and surrogate coding; Audio Data Processing which includes audio attribute, audio masking, MP3 audio, audio manipulation and audio segmentation; pictorial data processing which includes still image processing, multi-modal image processing and artificial image processing; video data processing which includes active image processing, video segmentation, motion analysis, moving object extraction, video representation and codification.

COMP5116
Internet Protocols

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written examination

In this unit students will develop the ability to gain in depth knowledge of the structure and algorithms used in the TCP/IP networking protocols that make up the foundation of the Internet. Furthermore, the unit will provide students with the architectural insight to being able to design and analyse protocols in the perspective of their intended use. Objectives: On completion of this unit students will develop an understanding on the layered model, the core protocols, the routing protocols, the link layer and the various tools for traffic and protocol analysis.

COMP5138
Relational Database Management Systems

Credit points: 6 **Session:** Semester 1, Semester 2, Summer Main **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Prohibitions:** COMP5015 **Assessment:** Assignments, written exam.

This unit of study will provide a comprehensive conceptual and practical introduction to managing large relational databases. Relational and normalization theory will be emphasized along with a focus on relational query language (SQL). Objectives: In this unit students will develop the ability to: - Understand the foundations of database management; - Strengthen their theoretical knowledge of database systems in general and relational data model and systems in particular; - Create robust relational database designs; - Understand the theory and applications of relational query processing and optimization; - Study the critical issues in data and database administration; - Explore the key emerging topics in database management.

COMP5028
Object-Oriented Analysis and Design

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This unit introduces Object-Oriented Analysis and Design especially the principles of modelling through Rational Unified Process and agile processes using Unified Modeling Language (UML), both of which are industry standard. Students work in small groups to experience the process of object-oriented analysis, architectural design, object-oriented design, implementation and testing by building a real-world application. Objectives: In this unit students will develop the ability to: identify how the system interacts with its environment; identify appropriate objects and their attributes and methods; identify the relationships between objects; write the interfaces of each object and exception handling; implement and test the objects; read and write various UML diagrams (use case, activity, class, object, sequence, collaboration, state chart, component and deployment diagrams).

INFS6000
Business Information Systems

This unit of study is not available in 2007

Credit points: 6 **Classes:** 3 hours per week

The objective is to help you understand (i) using data to meet organizational objectives and expected outcomes, ii) the complex and changing information environment from the perspective of stakeholders, and (iii) the management issues associated with making effective use of the combined capabilities of technology and employee knowledge. These are explored with reference to enterprise-wide systems as well as small to medium systems in business and government. Understanding is fostered through presenting conceptual frameworks, analytical tools and research findings from over 30 years in business information systems. Four themes are referenced during the unit: data and data structures as a corporate resource; core business processes within business cycles; ethics and socio-technical issues in BIS, and, information and knowledge for business intelligence and decisions by managers.

COMP4045
Computational Geometry

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour scheduled small-group class per week, plus 10 hours per week private work. **Assumed knowledge:** Data structures, analysis of algorithms **Assessment:** Practical assignments, written assignments, exam

Geometric data are used in fields including information and scientific visualisation, image processing, pattern recognition, chip layout, and geographic information systems. This unit focuses on the study of computational algorithms which efficiently process geometric data. Students will approach relevant research being done in the University of Sydney.

Textbooks
M. de Berg, et al "Computational Geometry: Algorithms and Applications", Springer (2000)

COMP4046
Statistical Natural Language Processing

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour scheduled small-group class per week, plus 10 hours per week private work. **Assumed knowledge:** Concepts of linguistics, elementary statistics, AI techniques **Assessment:** Practical assignments, written assignments, exam

This unit deals with techniques that allow computers to handle natural human languages (such as English, French), by analysis of large corpora of text. Particulat emphasis is given to methods that analyse the meaning in texts, the categorisation of texts, and the general application of machine learning methods to these topics. Students will approach the relevant research being done in the University of Sydney.

COMP4048
Information Visualisation

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour scheduled small-group class per week, plus 10 hours per week private work. **Assumed knowledge:** Discrete mathematics **Assessment:** Practical assignments, written assignments, exam

This unit provides knowledge of the concepts techniques and algorithms involved in producing graphical representations of relational information, especially graph drawings. Students will approach relevant research in the University of Sydney.

Textbooks
C. Ware "Information Visualisation" Morgan Kaufman (2000); R. Spence "Information Visualisation" Addison-Wesley (2000)

COMP5318
Knowledge, Discovery and Data Mining

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5138

Relational Database Management Systems. **Assessment:** Assignments, written exam.

Knowledge discovery is the process of extracting useful knowledge from data. Data mining is a discipline within knowledge discovery that seeks to facilitate the exploration and analysis of large quantities of data, by automatic or semiautomatic means. This subject provides a practical and technical introduction to knowledge discovery and data mining. Objectives: Topics to be covered include problems of data analysis in databases, discovering patterns in the data, and knowledge interpretation, extraction and visualisation. Also covered are analysis, comparison and usage of various types of machine learning techniques and statistical techniques: clustering, classification, prediction, estimation, affinity grouping, description and scientific visualisation.

COMP5347
e-Commerce Technology

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5028 Object Oriented Analysis and Design **Assessment:** Assignments, written exam.

This unit will focus on technological advances supporting the development of e-commerce applications and systems. This includes server-side development of e-business applications, methodologies and practices for the development of web-applications, J2EE/Java-based support for front-end development, XML processing, and database integration, as well as web services development (SOAP, WSDL, UDDI) and handheld wireless integration.

COMP5415
Multimedia Authoring and Production

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5114 Digital Media Fundamentals **Assessment:** Assignments, written exam.

This unit provides fundamentals on multimedia authoring and production. It focuses on multimedia animation and authoring and introduces some multimedia authoring packages. The students will get a great exposure to the software authoring package Alice. It will study the applications of multimedia authoring in the areas of tele-medicine, progressive animation, multi-casting, and distance learning.

COMP5425
Multimedia Storage, Retrieval & Delivery

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP 5122 Multimedia Human Computer Interaction **Assessment:** Assignments, written exam

The unit covers Multimedia Storage and Compression, fundamental compression techniques, audio storage and compression, image storage and compression (JPEG, JBIG and JPEG2000), video storage and compression (MPEG, MPEG1, MPEG2, MPEG4 and MPEG7), Multimedia Information Retrieval information retrieval fundamentals, visual information retrieval, video cataloguing and retrieval issues of multimedia systems and delivery image watermarking, video watermarking, video encryption, future HCI, progressive transmitted images and video, multicasting control, immersive video for future digital TV

COMP5416
Advanced Network Technologies

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5116 Internet Protocols and COMP5126 Distributed Systems Programming **Assessment:** Assignments, written exam

The unit introduces networking concepts beyond the best effort service of the core TCP/IP protocol suite. Provides understanding of the fundamental issues in building an integrated multi-service network for global Internet services, taking into account service objectives, application characteristics and needs and network mechanisms. Enables students to understand the core issues and be aware of proposed solutions so they can actively follow and participate in the development of the Internet beyond the basic bit transport service.

COMP5424
Information Technology in Biomedicine

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

Specialist/Elective Information technology (IT) has significantly contributed to the research and practice of medicine, biology and health care. The IT field is growing enormously in scope with biomedicine taking a lead role in utilizing the evolving applications to its best advantage. The goal of this unit is to provide students with the necessary knowledge to understand the information technology in biomedicine. The major emphasis will be on the principles associated with biomedical digital imaging systems and their applications, computer modeling of biomedical systems, and biomedical system identification. Specialist areas such as medical image compression, telemedicine, Picture Archiving and Communication System (PACS), and web technology in biomedicine etc. will also be addressed.

COMP5426
Network Based High Performance Computing

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5126 Distributed Systems Programming **Assessment:** Assignments, written exam.

This unit is intended to introduce and motivate the study of high performance computer systems. The student will be presented with the foundational concepts pertaining to the different types and classes of high performance computers. The student will be exposed to the description of the technological context of current high performance computer systems. Students will gain skills in evaluating, experimenting with, and optimizing the performance of high performance computers. The unit also provides students with the ability to undertake more advanced topics and courses on high performance computing.

COMP5338
Advanced Data Models

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Prohibitions:** COMP5306 **Assumed knowledge:** COMP5138 Relational Database Management Systems **Assessment:** Assignments, written exam.

This course will offer a comprehensive survey of post-relational data models and technologies with significant emphasis on XML and content management on the world wide web. The important challenges in managing the complex and varied data in modern database environments will be specifically addressed.

COMP5348
Enterprise Scale Software Development

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** COMP5028 Object Oriented Analysis and Design **Assessment:** Assignments, exam

This unit covers a range of approaches for constructing large-scale computer-based systems which can deal with data and business processes through a large company or other organisation. In building software on this scale, it is essential to integrate existing "legacy" code and data stores. The unit includes a study of both middleware technologies and process management techniques needed to develop enterprise scale computer-based systems.

NETS4047
Pervasive Computing

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour scheduled small-group class per week, plus 10 hours per week private work. **Assumed knowledge:** Networking concepts, operating system concepts, programming expertise **Assessment:** Practical assignments, written assignments, exam

Pervasive computing deals with the likely future where many computational devices are widely dispersed in the environment: there will be sensors in rooms, people will carry PDAs or mobile phones with capacity for running sophisticated software, etc, there may be chips in one's clothing. Key isues include communication between the devices and humans; interpretation of, and adapting computation

to, the human context; managing the information and communication efficiently so knowledge gets to the places where it is needed. Students will approach the relevant research being done in the University of Sydney.

EBUS5003
e-Commerce Systems

Credit points: 6 **Session:** Semester 2 **Classes:** 1 hours of lectures and a 3 hour tutorial per week. **Prohibitions:** EBUS5002 E-Commerce Systems. **Assumed knowledge:** EBUS4001 E-Business Engineering or EBUS5001 E-Commerce Application Programming. **Assessment:** Tutorial work 10%, assignments 40%, end of semester exam 50%.

Large Internet systems are built using application frameworks. They allow great reuse so developers do not have to design and implement applications from scratch, as students have done in EBUS3004 and EBUS4001. The unit lays down the basic concepts and hands on experience on the design and development of enterprise systems, emphasizing the development of systems using design patterns and application frameworks. A project-based approach will introduce the problems often found when building such systems, and will require students to take control of their learning. Several development Java frameworks will be used, including Spring, Hibernate, and others. Principles of design patterns will also be studied.

ELEC5303
Computer Control System Design

Credit points: 6 **Session:** Semester 1 **Classes:** 2 hours of lectures and a 2 hour lab/tutorial per week **Prohibitions:** ELEC4301 **Assessment:** Weekly quiz 10%, lab exam 10%, mid semester exam 25%, end of semester exam 55%
Note: Department permission required for enrolment .

This unit aims to teach the basic issues involved in the analysis and design of computer;controlled systems. The emphasis is on theory rather than technological application or industrial practice. However, students are expected to test some of these ideas on a few benchmark control problems in the laboratory. Completion of the unit will facilitate progression to advanced study in the area and to work in industrial control. This unit assumes a basic knowledge of calculus, functions of real variables, Laplace transform, matrix theory and control theory. The following topics are covered. Sampled data systems: aliasing. Zero order hold equivalent: inverse of sampling, sampling system with time delay. Properties of difference equations: solution, stability, change of co;ordinates, Z transform. Input output models: pulse response, pulse transfer operator, pulse transfer function, interpretation of poles and zeros. Analysis of discrete time system: stability (Jury's test, Nyquist criterion, Lyapunov method), sensitivity and robustness, observability (observers, reduced order observers), reachability and controllers, loss of reachability/observability through sampling, output feedback, the Separation theorem. Optimal control: Kalman filter, linear quadratic regulator, output feedback, the Separation theorem. Approximating continuous time controllers. Finite word length mplementations.

ELEC5402
Digital Integrated Circuit Design

Credit points: 6 **Session:** Semester 1 **Classes:** 2 hours of lectures and a 2 hour lab per week **Prohibitions:** ELEC4402 **Assumed knowledge:** (ELEC3401 Electronic Devices and Circuits or ELEC3404 Electronic Circuit Design), and (ELEC2601 Microcomputer Systems or ELEC3607 Embedded Computing). **Assessment:** Lab work 75%, end of semester exam 25%

This unit of study explores CMOS technology and integrated circuit design and fabrication. The fundamental theory and techniques behind digital integrated circuit design are introduced. A primary focus of this unit is providing the student with practical laboratory design experience using a professional VLSI CAD tool to design digital integrated circuits. This unit provides a foundation for more advanced digital integrated circuit design techniques and also analogue integrated circuit design. Topics covered in this unit are: IC manufacturing process and CMOS technology, CMOS static logic design, CMOS dynamic logic design, arithmetic building block design, sequential logic design, VLSI interconnection and wiring issues, timing issues, digital memory design, digital system design methodologies.

ELEC5507
Error Control Coding

Credit points: 6 **Session:** Semester 1 **Classes:** 2 hours of lectures and a 1hour tutorial per week **Prohibitions:** ELEC4503 **Assessment:** Quizzes 30%, end of semester exam 70%

This unit deals with the principles of error control coding techniques and their applications in various communication and data storage systems. Its aim is to present the fundamentals of error control coding techniques and develop theoretical and practical skills in the design of error control encoders;decoders. Successful completion of this unit will facilitate progression to advanced study or to work in the fields of telecommunications and computer engineering. It is assumed that the students have some background in communications principles and probability theory. The following topics are covered. Introduction to error control coding, linear algebra. Linear block codes, cyclic codes, BCH codes, Reed-Solomon codes, burst-error correcting codes, design of codecs for block codes, applications of block codes in communications and digital recording. Convolutional codes, Viterbi algorithm, design of codecs for convolutional codes, applications of convolutional codes in communications, soft decision decoding of block and convolutional codes, trellis coded modulation, block coded modulation, design of codecs for trellis codes, applications of trellis codes in data transmission. Turbo codes and applications to space and mobile communications.

ELEC5508
Wireless Engineering

Credit points: 6 **Session:** Semester 2 **Classes:** 2 hours of lectures and a 1 hour tutorial per week **Prohibitions:** ELEC5504, ELEC4504 **Assumed knowledge:** (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3504 Data Communications and the Internet or ELEC3506 Data Communications and the Internet or NETS2150 Fundamentals of Networking). **Assessment:** Assignment 30%, end of semester exam 70%

This unit will introduce the key ideas in modern wireless telecommunications networks. It will address both physical layer issues such as propagation and modulation, plus network layer issues such as capacity, radio resource management and mobility management issues. The following topics are covered. Mobile radio channel: Multipath fading, diversity, log-normal fading, mean propagation loss, propagation models. Cellular technologies: Cell types, coverage, frequency reuse, spectral efficiency, link budget, power budget, traffic capacity. Omnidirectional and sectorised antennas. Handover, interaction with the fixed network. Microcells and macrocells, Medium access control: Near-far effect and the hidden terminal problem. Multiple access schemes: FDMA, TDMA, CDMA. Aloha and s-Aloha, carrier sense multiple access, reservation-based MAC schemes, polling, spread-aloha multiple access. GSM: System architecture, radio resource management, mobility management, connection management. Third generation systems: WCDMA and cdma2000. Wireless LANs: IEEE802.11, Hiperlan, Bluetooth. Convergence: GSM evolution to data services via GPRS and EDGE. Issues with TCP over wireless. Mobility management in MobileIP.

ELEC5509
Advanced Communication Networks

Credit points: 6 **Session:** Semester 1 **Classes:** 2 hours of lecture and a 2 hour tutorial per week **Prohibitions:** ELEC5501 **Assumed knowledge:** ELEC3504 Data Communications and the Internet or ELEC3506 Data Communications and the Internet or NETS3007 Network Protocols. **Assessment:** Report and seminar 25%, end of semester exam 75%

This unit of study serves as an introduction to communications network research. The unit relies on a solid understanding of data communications and mobile networks. It introduces some of the currently most debated research topics in mobile networking and presents an overview of different technical solutions. Students are expected to critically evaluate these solutions in their context and produce an objective analysis of the advantages/disadvantages of the different research proposals. The general areas covered are wireless Internet, mobility management, quality of service in mobile and IP networks, ad hoc networks, and cellular network architectures. The following topics are covered. Introduction to wireless and mobile

Internet. Wireless cellular data networks. Cellular mobile networks. Mobile networks of the future. Quality of service in a mobile environment. Traffic modelling for wireless Internet. Traffic management for wireless Internet. Mobility management in mobile networks. Transport protocols for mobile networks. Internet protocols for mobile networks.

ELEC5510
Satellite Communication Systems

Credit points: 6 **Session:** Semester 2 **Classes:** 2 hours of lectures and a 1 hour tutorial per week **Prohibitions:** ELEC5502 **Assumed knowledge:** ELEC3505 Communications (or ELEC3503 Introduction to Digital Communications) and ELEC4505 Digital Communication Systems (or ELEC4502 Digital Communication Systems) **Assessment:** Class performance 5%, tutorial attendance 5%, assignment 20%, end of semester exam 70%

Satellite communication systems provide fixed and mobile communication services over very large areas of land, sea and air. This unit presents the fundamental knowledge and skills in the analysis and design of such systems. It introduces students to the broad spectrum of satellite communications and its position in the entire telecommunications network; helps students to develop awareness of the key factors affecting a good satellite communications system and theoretical and practical skills in the design of a satellite communications link. Topic areas include: satellite orbits and their properties; satellite subsystems; communications link design; satellite antenna; modulation and multiplexing techniques; multiple access techniques; error control for digital satellite links; propagation effects and their impact and satellite;earth links; satellite applications.

ELEC5511
Optical Communication Systems

Credit points: 6 **Session:** Semester 1 **Classes:** 2 hours of lectures and a 2 hour lab/tutorial per week **Prohibitions:** ELEC5503 **Assumed knowledge:** (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3402 Communications Electronics or ELEC3405 Communications Electronics and Photonics) **Assessment:** Assignments and labs 25%, end of semester exam 75%

IIntroduction to optical fibre communications. Optical fibre transmission characteristics; fibre modes, multi-mode fibres, single;mode fibres, dispersion, loss. Semiconductor and fibre laser signal sources; dynamic laser models, switching, chirp, noise, optical transmitters. Optical modulation techniques. Optical amplifiers and repeaters, noise characteristics. Fibre devices, gratings, multiplexers. Optical detectors, shot noise and avalanche noise. Optical receiver and regenerator structures; sensitivity and error rate performance. Photonic switching and processing. Optical local area networks. Multi;channel multiplexing techniques. Design of optical fibre communication systems.

ELEC5512
Optical Networks

Credit points: 6 **Session:** Semester 2 **Classes:** 2 hours of lectures and a 1 hour lab/tutorial per week **Prohibitions:** ELEC5506 **Assumed knowledge:** ELEC3503 Introduction to Digital Communications or ELEC3505 Communications. **Assessment:** Two assignments totalling 20%, end of semester exam 80%

Introduction, photonic network architectures: point to point, star, ring, mesh; system principles: modulation formats, link budgets, optical signal to noise ratio, dispersion, error rates, optical gain and regeneration; wavelength division multiplexed networks; WDM components: optical filters, gratings, multiplexers, demultiplexers, wavelength routers, optical crossconnects, wavelength converters, WDM transmitters and receivers; Wavelength switched or routed networks, ultra high speed TDM, dispersion managed links, soliton systems; broadcast and distribution networks, multiple access, subcarrier multiplexed lightwave video networks, optical local area and metropolitan area networks; protocols for photonic networks: IP, Gbit Ethernet, SDH or SONET, FDDI, ATM, Fibre Channel.

ELEC5513
Network Management and Queuing Theory

Credit points: 6 **Session:** Semester 2 **Classes:** 2 hours of lecture and a 2 hours tutorial per week **Prohibitions:** Nil **Assumed knowledge:** ELEC3506 Data Communications and the Internet (or ELEC3504 Data Communications and the Internet) and ELEC3505 Communications (or ELEC3503 Introduction to Digital Communications). **Assessment:** Tutorial attendance 5%, assignments and group projects 25%, 2 hour end of semester exam 70%

This unit presents the fundamental knowledge and skills in the design, planning and management of telecommunications networks. Upon successful completion, students will be able to understand the legal and social framework of network management; understand and appreciate key aspects of network design, planning and management; understand and apply techniques to solve real problems in network design, implementation and management. Topic areas include: data communications and network management overview; review of computer network technology (LAN and WAN); simple network management protocol (SNMP) management; remote network monitoring (RMON); broadband network management. introduction to queuing theory and its application in network planning and design.

ELEC5613
Image Processing and Computer Vision

Credit points: 6 **Session:** Semester 1 **Classes:** 2 hours of lectures, a 2 hour lab/tutorial per week **Prohibitions:** ELEC4302 **Assumed knowledge:** SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) or ELEC2602 Digital System Design (or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design) or ELEC3603 Introduction to Computing Systems. **Assessment:** Project and lab 25%, end of semester exam 75%

This unit is concerned with the computer analysis and processing of images. The emphasis is on fundamental theory with discussion of some applications. A reasonable background in engineering mathematics and a modern programming language is assumed. The prime aim of this unit of study is to develop a sound understanding of the basic theory of image processing and a capacity for research and inquiry. Completion of the unit will facilitate progression to advanced study in the area and to work in the image processing field. Topics covered include Image perception and representation; Enhancements;histogram & pixelwise transforms; Transforms ;FFT, Laplace, Z, Hough; Filtering; Compression and image coding; Texture analysis;Modelling, classification, segmentation; Geometry ; Transforms, matching; Mathematical Morphology ; non;inear filtering, distances, residues, HMT; Segmentation;Thresholding, split & merge, snakes, watershed, SRG, recent PDE methods. The unit will conclude by discussing some applications in fields such as medical image processing and automation.

ELEC5614
Real Time Computing

Credit points: 6 **Session:** Semester 2 **Classes:** 2 hours of lectures, 2hours of labs and a 1hour tutorial per week **Prohibitions:** ELEC4602 **Assumed knowledge:** SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) and ELEC3607 Embedded Computing (or ELEC2601 Microprocessor Systems). **Assessment:** Project and lab 25%, end of semester exam 75%

This unit is concerned with the theory and practice of real time computer systems as applied to the design of embedded systems and computer control systems in engineering, manufacturing and automation. Some background in programming, object oriented design and system architecture is assumed. A prime aim of this unit of study is to develop a capacity for research and inquiry in the field of real time and embedded systems. Completion of this unit will facilitate progression to advanced study or to work in embedded systems and industrial real time computer systems. The following topics are covered. Hard real time and embedded systems, as applied to engineering, manufacturing and automation. Timing and scheduling: periodic vs aperiodic processes, deadlines, rate monotonic, deadline monotonic and earliest deadline scheduling. Management of shared resources. Real time languages and their features. Real time operating systems. Real time software design. Embedded Systems: overview, signal flow, interfacing. Reliability and fault tolerance in hardware and software. SCADA and DCCS. Some case studies.

ELEC5615
Advanced Computer Engineering

Credit points: 6 **Session:** Semester 2 **Classes:** 2 hours of lectures and a 2 hour tutorial per week **Prohibitions:** ELEC5611 **Assumed knowledge:** ELEC4605 Computer Engineering or ELEC4601 Computer Design. **Assessment:** Assignments 30%, end of semester exam 70%

Note: Department permission required for enrolment .

This unit of study is comprised of a selection of topics covering advanced computer architecture, advanced digital engineering and embedded systems. They may be chosen from the following: Advanced Computer Architecture: Processor organisation, parallelism, scalability, language and application driven architectures, design tools and methodologies. Advanced Digital Engineering: Advanced hardware description language skills for ASIC and FPGA design; CAD methodologies; designing for low power, high speed, small area, low cost and testability; advanced printed circuit board design, system design exercises. Advanced Embedded systems: System on chip design and associated hardware description languages and CAD tools; embedded system internetworking; real time design constraints; case studies and laboratory exercises in communications and industrial control applications.

ELEC5616
Computer and Network Security

Credit points: 6 **Session:** Semester 1 **Classes:** 2 hours of lectures and a 2 hour lab/tutorial per week **Prohibitions:** ELEC5611, NETS3016, NETS3916 **Assumed knowledge:** ELEC3607 Embedded Computing (or ELEC2601 Microprocesor Systems) or ELEC3506 Data Communications and the Internet (or ELEC3504 Data Communications and the Internet) or EBUS3004 E-Business Programming (or EBUS3002 E-Commerce Website Programming). **Assessment:** Lab 20%, tutorial 5%, project 15%, end of semester exam 60%

This unit examines the basic cryptographic building blocks of security, working through to their applications in authentication, key exchange, secret and public key encryption, digital signatures, protocols and systems. It then considers these applications in the real world, including models for integrity, authentication, electronic cash, viruses, firewalls, electronic voting, risk assessment, secure web browsers and electronic warfare. Practical cryptosystems are analysed with regard to the assumptions with which they were designed, their limitations, failure modes and ultimately why most end up broken.

INFO4990
IT Research Methods

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 3 hour scheduled small-group class per week, plus 9 hours per week private work (including interaction with research supervisor). **Assumed knowledge:** Elementary statistics **Assessment:** Written papers (critical evaluation of a research paper, literature survey, research plan, thesis structure) and oral presentation.

Note: Department permission required for enrolment .

This unit forms a key foundation for the student's work on their IT-related research project within an Honours degree. It introduces the varied approaches to research common in different fields of IT, such as experimentation, simulation, prototyping/design, mathematical proof, surveys, and interpretive methods. The main focus is on understanding how research is done, and how it is evaluated. Key assessment tasks include writing a critical evaluation of a research paper from the literature, a survey of the literature within some topic, a research plan, and a presentation of a research plan. It is expected that the student would use their thesis research as the basis for this assessment, and use feedback provided in this unit to improve the work for inclusion in the final thesis.

INFO5990
Professional Practice in IT

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assessment:** Assignments, written exam.

This Unit of Study defines and explains the standards of knowledge of Information & Communication Technology (ICT) professionals. It covers the factors necessary for successful management of system development or enhancement projects, including managing the system life cycle, system performance evaluation, managing expectations of team members, cost effectiveness analysis, scheduling and change management. The unit also covers the issues related to the Organisational Behaviour, Interpersonal Communications, Ethics and Social implications as part of their involvement in professional practice.

INFO5991
IT Professional Services

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Assumed knowledge:** INFO5990 **Assessment:** Assignments, written exam

This unit of study builds upon and extends the standard body of Information & Communication Technology (ICT) knowledge required by IT professionals. Specifically, it covers topics related to the management of key resources in IT organisations including: people, projects, knowledge, and processes. The delivery of this unit is driven by a critical examination of selected case studies that focus on topics such as organisational capability assessment, recruitment and organisational capability development, outsourcing strategies, and IT procurement.

INFO6007
Project Management in IT

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Prohibitions:** INFS6014 IT Project Management **Assumed knowledge:** INFS6000 or COMP5206 or INFO5990 **Assessment:** Assignments, written exam.

This unit of study covers the factors necessary for successful management of system development or enhancement projects. Both technical and behavioural aspects of project management are discussed. Potential topics of interest could include managing the system life cycle, system and database integration issues, system performance evaluation, managing expectations of team members, cost effectiveness analysis, scheduling and change management.

HIMT5057
Introduction to Health Informatics

Credit points: 6 **Teacher/Coordinator:** Janelle Craig (02) 9351 9651, j.craig@fhs.usyd.edu.au **Session:** Semester 1 **Classes:** Intensive compulsory block mode **Assessment:** Assignments

This unit introduces the definition of data, information and knowledge as well as what defines a system and a model. National and state information policies will be reviewed and steps in policy formulation, analysis and implementation will be covered. A central focus will be issues relating to privacy, confidentiality, security and the ethical use of health information. This will include discussion of relevant legislation.

HIMT5058
Health Informatics Applications

Credit points: 6 **Teacher/Coordinator:** Janelle Craig (02) 9351 9651, j.craig@fhs.usyd.edu.au **Session:** Semester 2 **Classes:** Intensive compulsory block mode **Assessment:** Assignments

This unit will introduce system analysis and design concepts, including the system life cycle, scheduling tools and approaches to assessing user requirements. Relevant IT standards for the health sector, for example HL7 will be covered along with issues related to data warehousing. Health informatics applications such as imaging, smart cards, telemedicine, wireless data transmission, handheld computers, robotics, data transmission via the Internet, expert systems and decision support systems will be discussed. A focus will be the design and implementation of the electronic patient record.

HIMT5060
Integration of Health Informatics

Credit points: 6 **Teacher/Coordinator:** Dr Joanne Callen (02) 9351 9558, j.callen@fhs.usyd.edu.au **Session:** Semester 2 **Classes:** Intensive compulsory block mode **Assessment:** Assignments

This unit aims to provide students with management skills that are needed to ensure the successful integration of information technology

into an organisation. Topics covered include decision-making, the management of change and organisational culture. The features and development of an effective learning organisation are discussed.

HIMT5069
Health Care Systems

Credit points: 6 **Teacher/Coordinator:** Janelle Craig (02) 9351 9651, j.craig@fhs.usyd.edu.au **Session:** Semester 1 **Classes:** Block mode **Assessment:** Assignments and examinations

This unit provides an introduction to the Australian health care system. Topics covered include Commonwealth and State responsibilities for health with a particular focus on funding issues, healthcare expenditure, the structure and organisation of health insurance, health care facilities and the health workforce. The unit encourages a critical appraisal of current health arrangements and policies and an appreciation of the pluralistic nature of the health system. Students will participate in the Health Care Game, an interactive web-based program, as part of the unit.

INFS6001
BIS Management

Credit points: 6 **Session:** Semester 1, Semester 2, Summer Main **Classes:** Three hours per week **Assessment:** Group assignments; Mid-semester exam; Final exam

Note: This unit of study may be offered in intensive mode

This unit introduces you to the organisational foundations of information systems and their emerging strategic role. You will develop an understanding of real-world systems and their relationship to organisations, management and business processes. The unit provides you with a solid understanding of the technology underlying information systems and how various information technologies work together to create infrastructure for electronic commerce and electronic business. You will explore the role of information systems in capturing and distributing organisational knowledge and in enhancing management decision making. Finally, you will have the opportunity to explore the special management challenges and opportunities created by the pervasiveness and power of information systems.

INFS6002
BIS Strategy

Credit points: 6 **Session:** Semester 2 **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000 **Assessment:** Class participation, Examination, Individual assignments and Group projects

In this unit, you will explore current issues and theoretical concepts in information technology strategy and management. A key aim of the unit is to provide you with a detailed understanding of concepts, tools and methodologies that can be of assistance to organisations in their design, implementation and enactment of IT strategies and governance of value-adding IT resources. The focus will be on users and IT strategy and management in context rather than on more technical aspects. Your understanding will be enhanced through active participation in case studies, which are an essential element of the unit.

INFS6004
BIS Change Management

Credit points: 6 **Session:** Semester 1 **Classes:** Three hours per week

Many BIS implementations require organisational change, or are part of broader change initiatives, and this unit aims to equip you with the ability to operate as a change agent to lead and manage that process. You will be exposed to the factors that need to be considered to fully understand an organisation's specific context and provided with the knowledge, methodologies and techniques to successfully manage the change related aspects of a BIS implementation within that context. Topics covered by this unit include the roles of change, approaches to change - including Strategic Change, Business Process Reengineering and Total Quality Management and managing the end-to-end change process - including overcoming organisational resistance.

INFS6012
Business Process Integration

Credit points: 6 **Session:** Semester 1 **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000

This unit will provide you with an overview of integrated enterprise systems using packaged software solutions (via the SAP R/3 enterprise resource planning system). It offers practical experience in using the SAP R/3 system so as to familiarize you with all the modules and their functionality. You will learn how enterprise resource planning integrates functions within business and you will gain a thorough understanding of the information flows in procurement, production planning, production control, inventory control, sales and distribution, financial accounting and cost controlling.

INFS6013
Risk Management and BIS Assurance

Credit points: 6 **Session:** Semester 1 **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000

This unit will introduce you to the concepts and practices relating to the protection and assurance of business information systems. Business information and information related systems are valuable assets to organisations and are of critical importance in meeting regulatory obligations. Therefore the risk of disruption, theft or destruction to information systems has business value and compliance implications. This unit provides you with the opportunity to investigate key concepts, strategies and methodologies that will assist you in identifying, analysing and evaluating potential risk areas and critical control needs throughout the information system lifecycle. Your knowledge will be expanded in a multi-level approach that examines tools and technologies for safeguarding business information resources, the key stakeholders and institutional arrangements for business information systems assurance. The theoretical and conceptual material covered in seminars is reinforced through problem based learning.

INFS6014
BIS Project Management

Credit points: 6 **Session:** Semester 2 **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000

This unit will introduce you to the end to end project management lifecycle from project planning and initiation through implementation to benefits realisation. You will be exposed to both the technical and behavioural aspects of project management infrastructures, techniques and methodologies - including PMBOK, PRINCE2 and OPM3. You will be introduced to concepts and will critically analyse their application in specific project contexts. In addition you will learn how to use the standard project management tool Microsoft Project. Major topics covered in the unit include project plan development, execution and control along with consideration of the change management implications of the project for its host organisation.

INFS6015
Business Process Management

Credit points: 6 **Session:** Semester 2 **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000 **Assumed knowledge:** INFS6012

This unit will introduce you to concepts of Business Process Management (BPM) and capabilities to discover, analyse, design, deploy and optimize end to end business processes. You will obtain a detailed understanding of strategies, methods, tools and technologies associated with BPM. You will also develop practical skills by modelling and re-designing business processes using commercial software. Business processes that stretch across organizational boundaries and the management of such processes are the central themes of this unit.

INFS6016
Technology Enabled Business Innovation

Credit points: 6 **Session:** Semester 2 **Classes:** Three hours per week

This unit will assist you to develop knowledge and skills in innovative, technology-enabled business models and strategies from a management perspective. It will enable you to better understand and apply the concepts, strategies, tools and technologies necessary for undertaking business innovation. From basic knowledge of business models and essential business processes this unit will increase your awareness and understanding of stakeholders, their capabilities and their limitations in the strategic convergence of technology and business. It will increase your insights into the technology and infrastructure required to support commerce in the 21st Century and will support development of your capabilities to analyse, develop and evaluate innovative technology-enabled business strategies and models.

INFS6017
Strategic Information & Knowledge Mgmt

Credit points: 6 **Session:** Winter Main **Classes:** Three hours per week **Prerequisites:** INFS5000 or INFS6000

In this unit you will be exposed to a sociotechnical change perspective to the study of information, content and knowledge management. The unit provides you with the opportunity to investigate the systems that enable the acquisition, storage and distribution of business and government information. The major emphasis is on the ways that organisations generate, communicate and leverage value from their information and knowledge assets. Different views of information such as "information as evidence" and "information as asset" will be presented, and you will explore the tensions arising from the interplay of these two views. Your knowledge will be expanded in a multi-level approach that examines digital information products, information users and institutional arrangements for information and knowledge management.

MATH4431
Advanced Option Pricing

Credit points: 6 **Session:** Semester 1 **Classes:** Lectures/tutorials : 3 hours per week in total. **Assumed knowledge:** BSc in mathematics or equivalent, and familiarity with financial concepts such as arbitrage, options, and the basics of Black-Scholes option-pricing methodology. **Assessment:** 60% from final exam, 40% from two assignments

An important and large part of modern quantitative finance is concerned with the valuation of derivative securities including not only vanilla calls and puts but also the vast family of exotic options. The latter includes barrier options, lookback options, compound options, American options, Asian options, rainbow options, credit derivatives and many others. This unit develops a none-too-technical mathematical framework for obtaining the fair or arbitrage-free prices of such derivative securities. This framework includes the two main approaches in popular use: the risk-neutral expectations method and the corresponding PDE method. Students will be introduced to the necessary stochastic calculus methods that underlie both approaches. Some computational methods employed in industry will also be discussed. While a good understanding of mathematical statistics and PDE's would be an advantage, the unit assumes neither. Thus students and practitioners with strong analytical skills will still benefit from this unit, considered by some as the most advanced academic program of its kind in the country.

MATH4433
Interest Rate Modelling

Credit points: 6 **Session:** Semester 2 **Classes:** Lectures/tutorials : 3 hours per week in total. **Assumed knowledge:** BSc in mathematics or equivalent, and familiarity with financial concepts such as arbitrage, options, and the basics of Black-Scholes option-pricing methodology, as well as the essentials of the stochastic calculus, and familiarity with mathematical computing **Assessment:** 60% from final exam, 40% from two assignments

Interest rate derivatives such as forwards, bond options, swaps, swaptions, caps and floors are extensively traded in financial markets around the world. Consequently, the modelling of interest rates and the pricing of interest rate derivatives are matters of considerable importance in the finance industry. This unit will begin with a review of riskless term-structure models, and then introduce various stochastic spot-rate and yield curve models, including those of Merton, Vasicek, Cox-Ingersoll-Ross, Ho-Lee, Hull-White, Black-Derman-Toy, and Black-Karacynsky. The final part of the course will be on forward rate models of the kind arising in theHeath-Jarrow-Morton framework, and including the so-called "market models" (such as that of Brace-Gatarek-Musiela). Recurring themes will be the central risk-neutral measure and the forward measure, and their roles in the pricing of forwards, swaps, caps, bond options, caps and floors. Some familiarity with stochastic calculus and its relevance to the derivative pricing is assumed, although a brief review of this material will be included. A degree of familiarity with MATLAB is also highly desirable, as one of the assignments will involve some computational work.

IT project units

COMP5702
IT Research Project A

Credit points: 12 **Session:** Semester 1, Semester 2 **Classes:** Eight hours of practical work per week. **Assessment:** Report.

Note: Department permission required for enrolment .

Specialist/Elective/Project

COMP5703
Information Technology Project

Credit points: 12 **Session:** Semester 1, Semester 2 **Classes:** Eight hours of practical work per week. **Assessment:** Report.

Note: Department permission required for enrolment .

Specialist/Elective/Project

COMP5704
IT Research Project B

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** Four hours of practical work per week. **Assessment:** Report.

Note: Department permission required for enrolment .

Specialist/Elective/Project

Resolutions

Graduate Diploma in Computing

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for the Graduate Diploma in Computing:

1.1.1 graduates who have completed a bachelor's degree, with results equivalent to credit average or above, and who have demonstrated significant numeracy skills by completing relevant subjects with a mathematical foundation; or

1.1.2 graduates who have completed a bachelor's degree, with results equivalent to Credit average or above, and who have worked in the area of Information Technology for more than 5 years, who can offer evidence of prior learning which is considered to demonstrate the knowledge and aptitude required to undertake this course.

2. **Units of study**

2.1 The units of study for the Graduate Diploma in Computing are listed in the table associated with these Resolutions in subsection 4.1.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the unit of study descriptions.

3. **Requirements for the Graduate Diploma in Computing**

3.1 Candidates for the Graduate Diploma in Computing are required to complete satisfactorily units of study giving credit for a total of 48 credit points, selected from units of study approved for the Graduate Diploma in Computing.

3.2 Satisfactory completion of the Graduate Diploma in Computing for purposes of entry into the Master of Information Technology require that a candidate has not failed more than 12 credit points of units of study in the Graduate Diploma in Computing.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Diploma in Computing are listed in the following table:

Unit of study		Sem
COMP5206	Introduction to Information Systems	1, 2
COMP5214	Software Development in Java	1, 2
COMP5211	Algorithms	1, 2
COMP5213	Computer and Network Organisation	1, 2
COMP5212	Software Construction	1, 2
COMP5114	Digital Media Fundamentals	1, 2
COMP5028	Object Orientated Analysis and Design	1, 2
COMP5116	Internet Protocols	1, 2

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

4.4.3 to pass any other examination of the unit of study that may apply.

4.5 All units of study for a particular subject area may not be available every semester.

4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**

5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**

6.1 Cross-institutional study shall not be available to students enrolled in the Graduate Diploma in Computing except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**

7.1 Admission to the Graduate Diploma in Computing, may be limited by a quota.

7.2 In determining the quota, the University will take into account:

7.2.1 availability of resources including space, laboratory and computing facilities; and

7.2.2 availability of adequate and appropriate supervision.

7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of subsection 1 above.

8. **Discontinuation of enrolment**

8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**

9.1 A student may seek written permission from the Dean to suspend candidature in the course.

9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**

10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**

11.1 The Dean may require any student who has failed a cumulative total of 18 credit points or more at any stage of enrolment in the Graduate Diploma in Computing to show good cause why he or she should be allowed to re-enrol.

11.2 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**

12.1 A candidate for the Graduate Diploma in Computing shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of eight semesters.

13. **Assessment policy**

13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer**

14.1 Credit is not available in the Graduate Diploma in Computing for previous study unless it was postgraduate study undertaken in this award course within the previous three years.

14.2 Units of study completed in the Graduate Diploma in Computing cannot be counted as units of study completed within the Graduate Certificate of Information Technology, Graduate Diploma of Information Technology, or Master of Information Technology.

Resolutions

Graduate Certificate in Information Technology Management

Graduate Diploma in Information Technology Management

Master of Information Technology Management

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for:

1.1.1 *the Graduate Certificate in Information Technology Management:*

1.1.1.1 graduates who have completed a Bachelor's degree;

1.1.1.2 persons who are able to offer evidence of recognised prior learning which is considered to demonstrate the knowledge and aptitude required to undertake this course.

1.1.1.3 The bachelor's degree does not have to be an Information Technology degree, but it should contain a significant amount of technical subjects related to computing, as typically found in an IT, Science, or Engineering degree.

1.1.1.4 Applicants holding a bachelor's degree in other areas, such as Finance, Commerce, Health Sciences, and Social Sciences, who have completed relevant IT subjects will also be eligible.

1.1.1.5 Applicants holding a bachelor's degree in any discipline and who have worked in Information Technology for more than five years are eligible.

1.2 *the Graduate Diploma in Information Technology Management:*

1.1.2.1 graduates who have completed a bachelor's degree.

1.1.2.2 persons who have completed the Graduate Certificate in Information Technology Management at the University of Sydney, with Credit average results or above

1.1.1.3 The bachelor's degree does not have to be an Information Technology degree, but it should contain a significant amount of technical subjects related to computing, as typically found in an IT, Science, or Engineering degree.

1.1.1.4 Applicants holding a bachelor's degree in other areas, such as Finance, Commerce, Health Sciences, and Social Sciences, who have completed relevant IT subjects will also be eligible.

1.1.1.5 Applicants holding a bachelor's degree in any discipline and who have worked in Information Technology for more than five years are eligible.

1.1.3 *the Master of Information Technology Management:*

1.1.3.1 graduates who have completed a bachelor's degree, with results equivalent to Credit average or above.

1.1.3.2 persons who have completed the Graduate Diploma in Information Technology Management at the University of Sydney, with Credit average results or above;

1.1.3.3 persons who have completed the Graduate Diploma in Computing at the University of Sydney.

1.1.1.4 The bachelor's degree does not have to be an Information Technology degree, but it should contain a significant amount of technical subjects related to computing, as typically found in an IT, Science, or Engineering degree.

1.1.1.5 Applicants holding a bachelor's degree in other areas, such as Finance, Commerce, Health Sciences, and Social Sciences, who have completed relevant IT subjects will also be eligible.

1.1.1.6 Applicants holding a bachelor's degree in any discipline and who have worked in Information Technology for more than five years are eligible.

1.2 In considering an application for admission to the Graduate Certificate in Information Technology Management, the Graduate Diploma in Information Technology Management and the Master of Information Technology Management, the Head of the School of Information Technologies and the Dean shall select, in preference, applicants who are most *meritorious in terms of subsections 1.1.1-1.1.3 above.*

2. **Units of study**

2.1 The units of study for the Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management and Master of Information Technology Management are listed in the tables in subsection 4.1 of these Resolutions.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the tables associated with these resolutions.

3. **Requirements for the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology and Master of Information Technology**

3.1 Candidates for the Graduate Certificate in Information Technology Management are required to complete satisfactorily units of study giving credit for a total of 24 credit points selected from units of study approved for the Master of Information Technology Management.

3.1.2 Candidates for the Graduate Certificate in Information Technology must select units from the list of core units of study, excluding IT Research Project units of study.

3.1.3 INFO5990 Professional Practice in IT must be completed as a Core unit of study.

3.2 Candidates for the Graduate Diploma in Information Technology Management are required to complete satisfactorily units of study giving credit for a total of 36 credit points selected from units of study approved for the Master of information Technology Management.

3.2.1 Of the 36 credit points, a minimum of 30 credit points must be selected from core units of study, excluding IT Research Project units of study.

3.2.2 INFO5990 Professional Practice in IT and INFO5991 IT Professional Services, must be completed as core units of study.

3.2.3 A maximum of 6 credit points of elective units of study can be taken.

3.3 Candidates for the Master of Information Technology Management are required to complete satisfactorily units of study giving credit for a total of 48 credit points selected from units of study approved for the Master of Information Technology Management.

3.3.1 Of the 48 credit points, a minimum of 30 credit points must be selected from core units of study.

3.3.2 INFO5990 Professional Practice in IT, INFO5991 IT Professional Services, and INFO5992 Understanding IT Innovations, must be completed as core units of study.

3.3.3 A maximum of 18 credit points of Elective units of study can be taken.

3.3.4 Enrolment in IT projects will be approved only for students who have completed at least 24 credit points and may be limited by quota.

3.3.5 After completing 24 credit points of coursework, students who achieve Credit average results or above in their coursework may select 12 credit points of Information Technology Project units of study among their core units.

3.4 *Research Path in the Master of Information Technology Management*

3.4.1 After completing 24 credit points of coursework, students who have Distinction average results or above may be eligible for the Research Path subject to the approval of the *Head of the School of Information Technologies, and the Dean.*

3.4.2 Students who pursue the Research Path must study INF04990 Research Methods, and select 18 credit points from IT Research Project units of study among their core units.

3.4.3 Students who pursue the Research Path are not required to take INFO5991 IT Professional Services and INFO5992 Understanding IT Innovations as core units of study.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management and Master of Information Technology Management are listed in the following tables:

Table of units of study

Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management, Master of Information Technology Management

The units of study offered may change annually.

All INFS-coded units of study have the Core unit INFS6000 as assumed knowledge. Inclusion of a COMP-coded Project unit of study is subject to conditions identified in the Course Requirements. INFO6007 and INFS6014 are mutually exclusive, and students can take only one of these two units of study.

Unless otherwise indicated, all units are worth 6 credit points.

Unit of study	Semester
Core units (Mandatory)	
INFO5990 Professional Practice in IT	1,2
INFO5991 IT Professional Services	1,2
INFO5992 Understanding IT Innovations	1,2
Core units (Additional)	
COMP5206 Introduction to Information Systems	1,2
COMP5028 Object Oriented Analysis and Design	1,2
COMP5138 Relational Database Management Systems	1,2
COMP5703 Information Technology Project (12 cp)	1,2
INFO6007 Project Management in IT	1,2
ISYS4050 Knowledge Management Systems	1
Core units (Research Path)	
INFO4990 Research Methods	1,2
COMP5702 IT Research Project A (12 cp)	1,2
COMP5704 IT Research Project B	1,2
Elective units	
COMP5213 Computer and Network Organisation	1,2
COMP5114 Digital Media Fundamentals	1,2
COMP5116 Internet Protocols	1,2
ECON6004 Regulating e-Business	1
INFS6000 Business Information Systems	1,2
INFS6001 BIS Management	1,2
INFS6002 BIS Strategy	2
INFS6004 BIS Change Management	1
INFS6012 Business Process Integration	1
INFS6013 Risk Management & BIS Assurance	2
INFS6014 BIS Project Management	2
INFS6015 Business Process Management	2
INFS6016 Internet Business Models & Strategies	2
INFS6017 Strategic Information Design & Management	1
WORK6003 People, Management and Technology	1
WORK6026 Organisational Change and Development	2

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.
5. **Enrolment in more/less than minimum load**
5.1 A candidate may proceed on either a full-time or a part-time basis.
6. **Cross-institutional study**
6.1 Cross-institutional study shall not be available to students enrolled in the Graduate Certificate in Information Technology Management, the Graduate Diploma in Information Technology Management, and the Master of Information Technology Management, except where the University of Sydney has a formal Cooperation Agreement with another University.
7. **Restrictions on enrolment**
7.1 Admission to the Graduate Certificate in Information Technology Management, the Graduate Diploma in Information Technology Management and the Master of Information Technology Management, may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of subsection 2 above.
8. **Discontinuation of enrolment**
8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.
9. **Suspension of candidature**
9.1 A student may seek written permission from the Dean to suspend candidature in the course.
9.2 Suspension may be granted for a maximum of one year.
10. **Re-enrolment after an absence**
10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.
11. **Satisfactory progress**
11.1 Candidates for the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology, and the Master of Information Technology, shall be governed by the rules as follows:
11.1.1 The Dean may:
11.1.1.1 advise a student when his or her performance has been such that a rule would normally be applied and call upon that student to show good cause why the rule should not be applied; and
11.1.1.2 where the student does not show good cause, apply the rule.
11.1.2 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Information Technology Management will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Information Technology Management;
11.1.3 A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Information Technology Management and/or the Graduate Diploma in Information Technology Management will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Information Technology Management;
11.1.4 A student who has failed a cumulative total of more than 18 credit points in the Master of Information Technology Management and/or the Graduate Diploma in Information Technology Management and/or the Graduate Certificate in Information Technology Management will be required to show good cause why he or she should be allowed to re-enrol.
11.1.5 If good cause has not been established, the student will not be permitted to re-enrol.
12. **Time limit**
12.1 A candidate for the Graduate Certificate in Information Technology shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.
12.2 A candidate for the Graduate Diploma in Information Technology shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of six semesters.
12.3 A candidate for the Master of Information Technology shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters.
13. **Assessment policy**
13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.
14. **Credit transfer policy**
14.1 Credit is not available in the Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management, and the Master of Information Technology Management except for postgraduate study which has been undertaken in information technology at the University of Sydney within the previous three years.
14.2 If no award has been conferred for this study, credit may be transferred in full to the Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management, and the Master of Information Technology Management.
14.3 If an award has been conferred for this study, credit to a limit of 12 credit points may be transferred to the Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management, and the Master of Information Technology Management.
15. **Restrictions on Transfer**
15.1 Students enrolled in either the Graduate Certificate in Information Technology Management, the Graduate Diploma in Information Technology Management, or the Master of Information Technology Management, are not permitted to transfer to the Master of Information Technology award courses.
15.2 Students enrolled in either the Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management, or Master of Information Technology Management, are not permitted to transfer to the Master of Applied Information Technology award courses.

Resolutions

Graduate Certificate in Information Technology

Graduate Diploma in Information Technology

Master of Information Technology

[Section 1]

1. **Admission**
1.1 The Dean of the Faculty of Science may admit to candidature for:
1.1.1 *the Graduate Certificate in Information Technology:*
1.1.1.1 graduates who have completed a Bachelor's degree, with a substantial study in a relevant field of Information Technology;
1.1.1.2 graduates who have completed a Bachelor of Engineering degree with a major sequence of study in Computer Engineering, Software Engineering or Telecommunications Engineering; or
1.1.1.3 persons who offer evidence of recognised prior learning which is considered to demonstrate the knowledge and aptitude required to undertake the units of study.

1.1.2 *the Graduate Diploma in Information Technology:*
1.1.2.1 graduates who have completed a bachelor's degree in any aspect of Information Technology;
1.1.2.2 graduates who have completed a Bachelor of Engineering degree with a major sequence of study in Computer Engineering, Software Engineering or Telecommunications Engineering: or
1.1.2.3 persons who have completed requirements for the Graduate Certificate in Information Technology at the University of Sydney, with Credit average results or above.
1.1.3 *the Master of Information Technology:*
1.1.3.1 graduates who have completed a bachelor's degree, with results equivalent to Credit average or above in a major sequence of study in any aspect of Information Technology; or
1.1.3.2 graduates who have completed a Bachelor of Engineering degree with results equivalent to Credit average or above in a major sequence of study in Computer Engineering, Software Engineering or Telecommunications Engineering; or
1.1.3.3 persons who have completed the Graduate Diploma in Information Technology at the University of Sydney, with Credit average results or above; or
1.1.3.4 persons who have completed the Graduate Diploma in Computing at the University of Sydney.
1.2 The Dean of the Faculty of Science shall only admit students to units of study in the defined majors in the Master of Information Technology, who have completed preliminary study in the relevant major area of study.
1.3 In considering an application for admission to candidature, the Head of the School of Information Technologies and the Dean shall select, in preference, applicants who are most meritorious in terms of subsections 1.1.1-1.1.3 above.

2. **Units of study**
2.1 The units of study for the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology and Master of Information Technology are listed in the tables in subsection 4.1 of these Resolutions.
2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the unit of study descriptions.

3. **Requirements for the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology and Master of Information Technology**
3.1 Candidates for the Graduate Certificate in Information Technology are required to complete satisfactorily units of study giving credit for a total of 24 credit points selected from units of study, excluding: INFO5990 and IT Project units of study, approved for the Master of 1nformation Technology.
3.1.1 Candidates for the Graduate Diploma in Information Technology are required to complete satisfactorily units of study giving credit for a total of 36 credit points selected from units of study approved for the Master of Information Technology.
3.1.1.2 Of the 36 credit points required for the Graduate Diploma in Information Technology, a maximum of 24 credit points can be selected from Foundational units of study; and at least 12 credit points should come from Specialist units of study, excluding INFO5990 and IT project units of study.
3.1.2 Candidates for the Master of Information Technology are required to complete satisfactorily units of study giving credit for a total of 48 credit points selected from the units of study approved for the Master of Information Technology, satisfying the conditions approved from time to time by the Faculty.
3.1.2.1 Of the 48 credit points required for the Master of Information Technology, a maximum of 24 credit points can be selected from Foundational units; and at least 24 credit points should come from Specialist units or IT projects.
3.1.2.2 Enrolment in IT projects will be approved only for those students who have completed at least 24 credit points from Foundational or Specialist units at Credit average or above.
3.1.2.3 Enrolment in IT projects may be limited by quota.
3.1.2.4 To qualify for the award of Master of Information Technology students must complete one of the defined majors referred to in sub-section 3 of the Resolutions of the Senate, as published in the University of Sydney Calendar.
3.1.2.5 The testamur for the Master of Information Technology shall specify the major(s) completed in order to qualify for the award.

[Section 2]

4. **Details of units of study**
4.1 The units of study for the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology and Master of Information Technology are listed in the following table:

Unit of study	Sem
Unless otherwise indicated, all units are worth 6 credit points	
Foundational units	
COMP5114 Digital Media Fundamentals	1,2
COMP5028 Object Oriented Analysis and Design	1,2
COMP5116 Internet Protocols	1,2
COMP5138 Relational Database Management Systems	1,2
INFS6000 Business Information Systems	1,2
Specialist units	
COMP4045 Computational Geometry	1
COMP4046 Statistical Natural Language Processing	1
COMP4048 Information Visualisation	2
COMP5318 Knowledge Discovery and Data Mining	1,2
COMP5338 Advanced Data Models	1,2
COMP5347 E-Commerce Technology	1
COMP5348 Enterprise Scale Software Development	1
COMP5415 Multimedia Authoring and Production	2
COMP5416 Advanced Network Technologies	2
COMP5424 Information Technology in Biomedicine	1
COMP5425 Multimedia Storage, Retrieval and Delivery	1
COMP5426 Network Based High Performance Computing	1
INFO4990 IT Research Methods	1,2
INFO5990 Professional Practice in IT	1,2
INFO5991 IT Professional Services	1,2
INFO6007 Project Management in IT	1, 2
NETS4047 Pervasive Computing	2
EBUS5003 E-Commerce Systems	2
ELEC5303 Computer Control System Design	1
ELEC5402 Digital Integrated Circuit Design	1
ELEC5507 Error Control Coding	1
ELEC5508 Wireless Engineering	2
ELEC5509 Advanced Communication Networks	1
ELEC5510 Satellite Communication Systems	2
ELEC5511 Optical Communication Systems	1
ELEC5512 Optical Networks	2
ELEC5513 Network Management and Queuing Theory	2
ELEC5613 Image Processing and Computer Vision	1
ELEC5614 Real Time Computing	2
ELEC5615 Advanced Computer Engineering	2
ELEC5616 Computer & Network Security	1
HIMT5057 Introduction to Health Informatics	1
HIMT5058 Health Informatics Applications	2
HIMT5060 Integration of Health Informatics	2
HIMT5069 Health Care Systems	1
INFS6001 BIS Management	1,2
INFS6002 BIS Strategy	2
INFS6004 BIS Change Management	1
INFS6012 Business Process Integration	1
INFS6013 Risk Management & BIS Assurance	1
INFS6014 BIS Project Management	2
INFS6015 Business Process Management	2
INFS6016 Internet Business Models & Strategies	1,2

Unit of study	Sem
INFS6017 Strategic Information Design & Management	2
MATH4431 Advanced Option Pricing	2
MATH4433 Interest Rate Modelling	2
IT project units	
COMP5702 IT Research Project A (12 cp)	1,2
COMP5703 Information Technology Project (12 cp)	1,2
COMP5704 IT Research Project B	1,2

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**
5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**
6.1 Cross-institutional study shall not be available to students enrolled in the Graduate Certificate in Information Technology, the Graduate Diploma in Information Technology, and the Master of Information Technology, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**
7.1 Admission to the Graduate Certificate in Information Technology, the Graduate Diploma in Information Technology and the Master of Information Technology, may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of sub-section 1 above.

8. **Discontinuation of enrolment**
8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**
9.1 A student may seek written permission from the Dean to suspend candidature in the course.
9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**
10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**
11.1 Candidates for the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology, and the Master of Information Technology, shall be governed by the rules as follows:
11.1.1 The Dean may:
11.1.1.1 advise a student when his or her performance has been such that a rule would normally be applied and call upon that student to show good cause why the rule should not be applied; and
11.1.1.2 where the student does not show good cause, apply the rule.
11.1.2 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Information Technology will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Information Technology;
11.1.3 A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Information Technology and/or the Graduate Diploma in Information Technology will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Information Technology;
11.1.4 A student who has failed a cumulative total of more than 18 credit points in the Master of Information Technology and/or the Graduate Diploma in Information Technology and/or the Graduate Certificate in Information Technology will be required to show good cause why he or she should be allowed to re-enrol.
11.1.5 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**
12.1 A candidate for the Graduate Certificate in Information Technology shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.
12.2 A candidate for the Graduate Diploma in Information Technology shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of six semesters.
12.3 A candidate for the Master of Information Technology shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters.

13. **Assessment policy**
13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**
14.1 Credit is not available in the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology, and the Master of Information Technology except for postgraduate study which has been undertaken in information technology at the University of Sydney within the previous three years.
14.2 If no award has been conferred for this study, credit may be transferred in full to the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology, and the Master of Information Technology.
14.3 If an award has been conferred for this study, credit to a limit of 12 credit points may be transferred to the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology, and the Master of Information Technology.

15. **Restrictions on Transfer**
15.1 Students enrolled in either the Graduate Certificate in Information Technology, the Graduate Diploma in Information Technology, or the Master of Information Technology are not permitted to transfer to the Master of Applied Information Technology award course.

24. Postgraduate coursework: Medical Physics degrees

Master of Medical Physics

Graduate Diploma in Medical Physics

This chapter sets out the requirements for coursework postgraduate degrees offered in the Faculty of Science in the area of Medical Physics. A comprehensive guide to the requirements and units of study of the coursework degrees is listed.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously in at the end of this chapter, following the unit of study descriptions, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at:
www.usyd.edu.au/publications/calendar/

Course overview

The Master of Medical Physics (MMedPhys) and the Graduate Diploma in Medical Physics (GradDipMedPhys) are the entry level qualifications for trainee medical physicists. Physical scientists apply their knowledge and training in many different areas of medicine including the treatment of cancer, medical imaging, physiological monitoring and medical electronics.

Course outcomes

The MMedPhys and GradDipMedPhys provide the entry level qualification for trainee medical physicists working in a hospital medical physics department. Both courses are accredited by the Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM). Graduates of these courses will qualify to apply for trainee medical physicist positions in hospitals in Australia and New Zealand. Medical physicists employed in hospitals often undertake research studies part-time for the higher Doctor of Philosophy (PhD) research degree.

Medical Physics units

PHYS5001
Radiation Physics
Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour practical per week. **Assessment:** assignments, written exam

In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the production of ionising radiation and its fundamental interactions with matter and related factors are covered.

PHYS5002
Anatomy and Physiology
Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour practical per week. **Assessment:** assignments, written exam

In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the concepts of the structure of the human cell and tissues are introduced. The organisation and function of each of the major organ systems that constitute the human body are covered. Example of pathology of diseases commonly encountered in the practice of medical physics will be included.

PHYS5003
Instrumentation
Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour practical per week. **Assessment:** assignments, written exam

In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the principles underlying the fundamental operation of instrumentation used in medicine are covered. Examples will include pressure and volume measurements in respiratory medicine, and electric potential measurements in cardiology.

PHYS5004
Radiation Dosimetry
Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture and one 1 hour practical per week. **Assessment:** assignments, written exam

In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the principles of both absolute and relative measurement of ionising radiation in radiotherapy and medical imaging are covered. Issues related to the dosimetry of non-ionising radiation are also covered.

PHYS5005
Radiotherapy Physics
Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 1 hour practical per week. **Assessment:** assignments, written exam

In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, both theoretical and practical aspects of the major topics in radiotherapy physics are covered. These topics include radiation beam production and modification, calibration and characterisation, principles of treatment planning, dose calculation and reporting, and the physics of brachytherapy.

PHYS5006
Medical Imaging Physics
Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 1 hour practical per week. **Assessment:** assignments, written exam

In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the physical principles underlying the science of imaging in radiology, ultrasound, magnetic resonance imaging and nuclear medicine are covered.

PHYS5007
Image Processing
Credit points: 3 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 1 hour practical per week for half the semester. **Assessment:** assignments, written exam

In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the theory of image formation, concepts of computing, numerical methods and image processing are covered, including techniques such as enhancement, registration, fusion and 3D reconstruction.

PHYS5008
Radiation Biology and Health Physics
Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 1 hour practical per week. **Assessment:** assignments, written exam

In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the

biological effects due to the interaction of radiation with human tissues from the DNA level through to the major organ systems are covered. Factors affecting dose response of tissue are considered along with models describing characteristic behaviour.

PHYS5009
Research Methodology

Credit points: 3 **Session:** Semester 2 **Classes:** One 2 hour lecture and one 1 hour practical per week for half the semester. **Assessment:** assignments, written exam

In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, an understanding of the processes involved in conducting various forms of research, basic data analysis and interpretation, research writing and presentation skills are covered. The professional framework is presented by considering issues such as legal, ethical and basic management issues.

PHYS5010
Project

Credit points: 24 **Session:** Semester 1, Semester 2 **Assessment:** report

Note: This unit is only available for students in the Master of Medical Physics degree

This unit is a research project to be carried out in a hospital or similar environment. The topic of the project will be determined in consultation with the course coordinator.

Resolutions

Master of Medical Physics

Graduate Diploma in Medical Physics

[Section 1]

1. **Admission**

1.1 The Faculty may, on the recommendation of the Head of the School of Physics, admit to candidature for:

1.1.1 the Graduate Diploma in Medical Physics:

1.1.2 an applicant who is the holder of a bachelor's degree in Science or Engineering from the University of Sydney provided the applicant has achieved a major in physics, or equivalent;

1.1.3 a graduate of another university or appropriate institution who has equivalent qualifications to those specified in subsection 1.1.2.

1.2 the Master of Medical Physics

1.2.1 a person who has the qualifications specified in subsection 1.1.2; or

1.2.2 a person who has completed requirements for the Graduate Diploma in Medical Physics.

2. **Units of study**

2.1 The units of study for the Graduate Diploma in Medical Physics and the Master of Medical Physics are listed in the *Table of units of study* associated with these resolutions.

3. **Requirements for the Graduate Diploma in Medical Physics and Master of Medical Physics**

3.1 Candidates for the Graduate Diploma in Physics are required to complete 48 credit points consisting of the core units of study in the *Table of units of study* in subsection 4.1, excluding the project PHYS5010.

3.2 Candidates for the Master of Medical Physics are required to complete 72 credit points consisting of the 48 credit points of core units of study in the *Table of units of study* in subsection 4.1, including the 24 credit point project PHYS5010.

3.3 A candidate must complete successfully 48 credit points of units of study before enrolling in PHYS5010.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Diploma in Medical Physics, and the Master of Medical Physics are listed in the following table (in accordance with requirements in subsection 3):

Unit of study		Credit points
All units are core. Unless otherwise indicated all units are worth 6 credit points		
PHYS5001	Radiation Physics	6
PHYS5002	Anatomy and Physiology	6
PHYS5003	Instrumentation	6
PHYS5004	Radiation Dosimetry	6
PHYS5005	Radiotherapy Physics	6
PHYS5006	Medical Imaging Physics	6
PHYS5007	Image Processing	3
PHYS5008	Radiation Biology and Health Physics	6
PHYS5009	Research Methodology	3
PHYS5010	Project (Master's only)	24

4.2 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed. In these resolutions, 'to complete a unit of study' or any derivative expression means:

4.2.1 to attend lectures and meetings, if any, for seminars and tutorial instruction;

4.2.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

4.2.3 to pass any other examination of the unit of study that may apply.

5. **Enrolment in more/less than minimum load**

5.1 A candidate may proceed on either a full-time or part-time basis.

6. **Cross-institutional study**

6.1 Cross-institutional study shall not be available to students enrolled in the Graduate Diploma in Medical Physics and the Master of Medical Physics courses, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**

7.1 Admission to either course may be limited by quota.

7.2 In determining the quota the University will take into account:

7.2.1 availability of resources including space, library, equipment, laboratory and computing facilities; and

7.2.2 availability of adequate and appropriate supervision.

7.2.3 In considering an application for admission to candidature the Head of Department and the Faculty shall take account of the quota and will select in preference applicants who are most meritorious in terms of section 1 above.

8. **Discontinuation of enrolment**

8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course. Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**

9.1 A student may seek written permission from the Dean to suspend candidature in the course.

9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**

10.1 A student who plans to reenrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**

11.1 Candidates for the Master of Medical Physics and the Graduate Diploma in Medical Physics shall be governed by the rules as follows:

11.1.1 A student who has failed a cumulative total of 12cp at any stage of enrolment in the Master of Medical Physics will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been

established, the student's enrolment will be transferred to the Graduate Diploma in Medical Physics;

11.1.2 A student who has failed a cumulative total of 18cp at any stage of enrolment in the Master of Medical Physics and/or the Graduate Diploma in Medical Physics will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.

11.1.3 A student who has failed a unit at the second attempt in the Master of Medical Physics and/or the Graduate Diploma in Medical Physics will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol. If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**

12.1 For the Graduate Diploma in Medical Physics:

12.1.1 A full-time candidate shall complete the requirements for the Graduate Diploma not earlier than the end of the second semester of candidature, and not later than the fourth semester of candidature.

12.1.2 A part-time candidate shall complete the requirements for the Graduate Diploma not earlier than the end of the fourth semester of candidature, and not later than the sixth semester of candidature.

12.2 For the Master of Medical Physics:

12.2.1 A full-time candidate shall complete the requirements for the Masters degree not earlier than the end of the third semester of candidature, and not later than the fourth semester of candidature.

12.2.2 A part-time candidate shall complete the requirements for the Masters degree not earlier than the end of the fourth semester of candidature, and not later than the sixth semester of candidature.

13. **Assessment policy**

13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature, on the recommendation of the Head of the School of Physics.

14. **Credit transfer policy**

14.1 Credit is not available in the Graduate Diploma in Medical Physics and Master of Medical Physics for postgraduate study which has not been undertaken in these award courses within the previous three years.

14.2 A candidate who has qualified for the award of the Graduate Diploma in Medical Physics may transfer, within three years, to the Master of Medical Physics and receive credit for up to 48 credit points from the Graduate Diploma in Medical Physics.

25. Postgraduate coursework: Microscopy and Microanalysis degrees

Graduate Certificate in Applied Science (Microscopy and Microanalysis)

Graduate Diploma in Applied Science (Microscopy and Microanalysis)

Master of Applied Science (Microscopy and Microanalysis)

This chapter sets out the requirements for postgraduate degrees offered in the Faculty of Science in the area of Microscopy and Microanalysis. A comprehensive guide to the requirements and units of study of the coursework degrees follows.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously in this chapter, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/

Course overview

The Graduate Certificate in Applied Science (Microscopy and Microanalysis), Graduate Diploma in Applied Science (Microscopy and Microanalysis) and Master of Applied Science (Microscopy and Microanalysis) are articulated award courses that provide a professional qualification to microscopists for industry, research, medical science and education. The course develops and enhances skills in specimen preparation, operation of microscopes and analytical equipment, interpretation of microscopical images and microanalysis.

Course outcomes

The aim of this articulated coursework program is to provide students with a coordinated and interdisciplinary approach to microscopy and microanalysis, thus developing expertise to recognise and solve a broad range of problems in life and material sciences. Upon the completion of the graduate certificate, graduates will possess practical and theoretical background in a wide variety of microscopy, microanalysis and specimen preparation techniques for the materials or life sciences. The graduate diploma will add more specialist knowledge in particular areas of interest or relevance. In addition, the master's will provide experience in designing, carrying out and completing an independent project and report.

Admission requirements

Graduate Certificate in Applied Science (Microscopy and Microanalysis)

Applicants for the Graduate Certificate in Applied Science (Microscopy and Microanalysis) should have a Bachelor of Science, Bachelor of Applied Science, Bachelor of Engineering, or equivalent qualifications or experience. Applications will also be considered from those with a Bachelor of Arts who wish to acquire microscopy and microanalysis skills for such areas as archaeology, history of art and museum studies.

Graduate Diploma in Applied Science (Microscopy and Microanalysis)

Applicants for the Graduate Diploma in Applied Science (Microscopy and Microanalysis) should have a Bachelor of Science, Bachelor of Applied Science, Bachelor of Engineering, or equivalent degree or have completed the Graduate Certificate in Applied Science (Microscopy and Microanalysis). Applications will also be considered from those with a Bachelor of Arts who wish to acquire microscopy and microanalysis skills for such areas as archaeology, history of art and museum studies.

Master of Applied Science (Microscopy and Microanalysis)

Applicants for the Master of Applied Science (Microscopy and Microanalysis) should have a Bachelor of Science, Bachelor of Applied Science, Bachelor of Engineering, or equivalent degree or have completed the Graduate Diploma in Applied Science (Microscopy and Microanalysis) with a credit average.

All degrees – availability of units

Not all units of study may be available every semester. The faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

Research path

After completing 24 credit points of coursework, students who have Distinction average results or above across all units of study attempted may be eligible for the Research path subject to the approval of the Director of the Key Centre for Microscopy and Microanalysis and the Dean. Students who pursue the Research path must study MCAN5201, MCAN5202, MCAN5203 and MCAN5210.

Units of Study

MCAN5005
Introductory Microscopy & Microanalysis

Credit points: 6 **Teacher/Coordinator:** Dr. Lilian Soon **Session:** Semester 1, Semester 2 **Classes:** Nine hour lectures, nine hour practicals, three hour tutorials (3 sessions). **Assessment:** Two reports/portfolios of images from light microscopy and demonstrations (80%). Practical assessment: two reports/portfolios of images from light microscopy and demonstrations (80%). Practical exercises (10%), attendance and participation (10%).

The course provides an introduction to the fundamental principles of optics and the related principles of spectroscopy that are commonly used in microscopy and microanalysis. Students are introduced to a variety of imaging and analysis techniques and their role in both biotechnology and the technology of materials, as relevant to laboratory-professionals and researchers. An emphasis on light-optical microscopy and related imaging modes is developed.

MCAN5006
Electron Microscopy

Credit points: 6 **Teacher/Coordinator:** Prof. Simon Ringer and (non-academic) Dr Tim Petersen **Session:** Semester 1, Semester 2 **Classes:** Eight groups(two people per group; can vary) of 4 one hour, 25 minutes lectures, 4 one hour lectures, 4 two hour practicals (TEMs), 4 one hour practical (SEM), forty minute tutorial, forty five minute practical demonstration. **Assessment:** Practical, analytical exercises in a written report including an annotated image portfolio (30-40 pages with ½ page sized images).

Trains participants, with no prior knowledge of electron microscopy, to become operators of scanning and transmission electron microscopes. Participants are given theoretical and practical understanding of the operation and construction of the microscope and how to obtain the optimum performance from it in routine operation.

MCAN5101
Confocal & Fluorescence Microscopy

Credit points: 6 **Teacher/Coordinator:** Assoc. Prof. Filip Braet **Session:** Semester 1, Semester 2 **Classes:** 8 one hour lectures, thirty hour practicals (5 sessions). **Prerequisites:** MCAN 5005. **Assessment:** 60% portfolio, 30% exercises, 10% attendance and participation.

Introduces the general principles of confocal microscopy and training in the use of the confocal microscope. It covers the theory behind confocal microscopy, the instrumentation and its applications. Develops knowledge and skills in specimen preparation for biological and medical applications of optical and confocal microscopes - immunochemistry, cell loading, GFP.

MCAN5102
Biological Specimen Preparation

Credit points: 6 **Teacher/Coordinator:** Dr Lilian Soon and Dr Allan S. Jones **Session:** Semester 1, Semester 2 **Classes:** Electron microscopy section: 6 lectures, twenty three hours of practicals (13 sessions), one hour discussion, over one week. Light microscopy section: 2 one hour lectures, 4 three hour practicals, over one week. **Prerequisites:** MCAN5005 **Assessment:** Practical sessions assessed on basis of participation and competence. Electron microscopy section requires a report containing a portfolio of images of at least 2500 words (60%) and submission of 2-4 prepared specimens. Light microscopy requires submission of four individual specimens for assessment with an accompanying report on each (about 1500 words). A major written assignment of at least 2500 words (includes library search tasks).

Develops knowledge and skills in the fundamentals of specimen preparation for light microscopy. Techniques covered will include tissue processing for paraffin microtomy and an introduction to histochemical staining methods. In addition this unit will present the theory and practical skills of routine specimen preparation techniques used for electron microscopy in the biological sciences including fixing, embedding, sectioning, drying, coating and staining techniques. An introduction to cryotechniques and immuno methodologies is included.

MCAN5103
Materials Preparation and Microscopy

Credit points: 6 **Teacher/Coordinator:** Prof. Simon Ringer, Dr. Tim Petersen **Session:** Semester 1, Semester 2 **Classes:** 3 thirty minute lectures, 3 five and a half hour laboratory practicals, 1 three and a half hour demonstrations. **Assessment:** Flat polished SEM specimen brass (20%), TEM specimen of Al or steel using electropolishing (20%), TEM cross-sectional specimen of a Si based devices using tripod polishing (30%), Quiz (20%), Materials preparation log (10%).

Gives practical training in the preparation of specimens for electron microscopy from a wide range of materials, including: metals, semiconductors, powders, ceramics and polymers. A comprehensive range of preparation techniques will be covered, including: electropolishing, tripod polishing, ion milling, dimple grinding, ultramicrotomy, cleavage and focused ion beam (FIB). Aspects of transmission electron microscopy specific to inorganic materials, such as crystallography, diffraction patterns and diffraction contrast will be introduced.

MCAN5104
Image Analysis

Credit points: 6 **Teacher/Coordinator:** Dr Allan S. Jones **Session:** Semester 1, Semester 2 **Classes:** 10 one hour lectures, 10 two hour practicals over a one week period. **Assessment:** Eight practical reports (50%), 1 three part mathematical assignment (20%), 1 in-depth assignment of 2500 word length on a relevant topic (30%).

This unit of study covers the nature and processing of images and the extraction of quantitative data from them. Participants will develop a sound working knowledge of both traditional stereology techniques and modern digital image processing and analysis. Emphasis is placed on an understanding of both the strengths and the limitations that are inherent in image data, and the technology applied to it. Topics in this module include: a general review of image acquisition, filters and transforms, segmentation methods, calibration of hardware for analysis, extraction of simple features from images, advanced feature extraction from images, limitations of measurement and a general overview of stereology, including geometric probability, density estimation and sampling.

MCAN5110
Nanostructural Analysis of Materials

Credit points: 6 **Teacher/Coordinator:** Prof. Simon Ringer, Dr Zongwen Liu **Session:** Semester 1, Semester 2 **Classes:** 8 one hour lectures, twenty hours of practicals, two hours of tutorials. **Assumed knowledge:** MCAN5005 or equivalent **Assessment:** Written report including portfolio of images, at least 3000 words (100%).

This unit provides students with knowledge and training so that they may explore the relationships between the structure and properties of materials. The unit covers the principles and practice of materials characterisation with an emphasis on techniques for the quantitative determination of the nanoscale structure and chemistry of materials. Topics include diffraction, contrast theory in transmission electron microscopy, analytical electron microscopy, other X-ray, ion beam and scanned probe methodologies.

MCAN5111
Microscopy of Biomolecular Processes

Credit points: 6 **Teacher/Coordinator:** Assoc. Prof. Filip Braet **Session:** Semester 2 **Classes:** 11 lectures and twenty four hours of practicals. **Assumed knowledge:** MCAN5101 or MCAN5102 or equivalent **Assessment:** Assignments (90%), class participation (10%)

This unit covers the principles and practice of advanced microscopy techniques for probing cellular and biomolecular processes. It will cover techniques to investigate cellular processes at the molecular and protein level including, intracellular signalling, uptake and metabolism of drugs/carcinogens/exogenous material and localisation of enzymes/proteins associated with cells. Topics may include: advanced confocal microscopy, immunolabelling and associated cryo-procedures for EM, micro and nano-analytical procedures for biological applications.

MCAN5112
Advances in Modern Microscopy

Credit points: 6 **Teacher/Coordinator:** Dr Allan S Jones, A/Prof. Filip Braet, Dr Lilian Soon and others. **Session:** Semester 1, Semester 2 **Classes:** 12 one hour lectures, 2-4 one hour tutorials, 12 two hour practicals over a two week period. **Assessment:** Six practical reports, two to four tutorial reports, two major assignments of approximately 2500 words.

This unit provides students with knowledge of and training in the application of the very latest advances in microscopy techniques and technologies. Students will examine in detail advances that are occurring in several areas of current microscopy practice and obtain knowledge of both the specific operational characteristics and the associated theory of newly developed instruments. Course content will maintain a focus on cutting-edge techniques that reflect the dynamic advances occurring in microscopy technologies.

MCAN5210
Research Methodology

Credit points: 6 **Teacher/Coordinator:** Dr Lilian Soon and Dr July Cairney **Session:** Semester 2 **Classes:** Thirteen hours of lectures, one hour student presentation, four hours of tutorials/practicals. **Assessment:** Risk assessment (10%), written research proposal (30%), written experimental plan (30%), worked exercises in data analysis (30%).

Note: Core for research path, optional for Masters

This unit covers the principles and practice of research methodology. Topics included: literature and database searches; citing and referencing; research proposals; safety, risk assessment and ethics; experimental design and documentation; statistics, errors and data analysis; and written and oral communication.

MCAN5201
Project and Report A

Credit points: 6 **Teacher/Coordinator:** Assoc. Prof. Filip Braet, Dr Allan Jones, Dr Lilian Soon **Session:** Semester 1, Semester 2 **Classes:** At least forty five hours devoted to a research project. **Assessment:** Continuing unit (see MCAN 5205 for assessment details).

Gives students the opportunity to extend the practical work encountered in other modules, and gain skills in carrying out and writing up a research project. Students will choose topics in consultation with members of academic staff and complete project work under supervision. Students also need to enrol in MCAN5202.

MCAN5202
Project and Report B

Credit points: 6 **Teacher/Coordinator:** Assoc. Prof. Filip Braet, Dr Alan Jones, Dr Lilian Soon **Session:** Semester 1, Semester 2 **Classes:** At least forty five hours devoted to a research project. **Corequisites:** MCAN 5201. **Assessment:** Written report (70%) and a oral presentation (30%).

See MCAN 5201.

MCAN5203
Project and Report Part C

Credit points: 6 **Teacher/Coordinator:** Assoc. Prof. Filip Braet, Dr Allan Jones, Dr Lilian Soon **Session:** Semester 1, Semester 2 **Classes:** Research project. **Corequisites:** MCAN5201 Project and Report A MCAN5202 Project and Report B MCAN5210 Research Methodology **Assessment:** Oral presentation (20%), problem solving task (20%), written report in the form of a journal publication (60%).

Note: Research path only

This unit of study is an extension of Project and Report A and B and is only for those students approved for the Research path. Students will further extend their research, as well as formulating a literature review and a research plan and incorporating referee's comments into the final report. Students also need to enrol in or have completed MCAN5201, MCAN5202 and MCAN 5210.

MCAN5210
Research Methodology

Credit points: 6 **Teacher/Coordinator:** Dr Lilian Soon and Dr July Cairney **Session:** Semester 2 **Classes:** Thirteen hours of lectures, one hour student presentation, four hours of tutorials/practicals. **Assessment:** Risk assessment (10%), written research proposal (30%), written experimental plan (30%), worked exercises in data analysis (30%).

Note: Core for research path, optional for Masters

This unit covers the principles and practice of research methodology. Topics included: literature and database searches; citing and referencing; research proposals; safety, risk assessment and ethics; experimental design and documentation; statistics, errors and data analysis; and written and oral communication.

Resolutions

Graduate Certificate in Applied Science (Microscopy and Microanalysis)

Graduate Diploma in Applied Science (Microscopy and Microanalysis)

Master of Applied Science (Microscopy and Microanalysis)

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for:

1.1.1 *the Graduate Certificate in Applied Science (Microscopy and Microanalysis):*

1.1.1.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.1.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.1.1; or

1.1.1.3 persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;

1.1.2 *the Graduate Diploma in Applied Science (Microscopy and Microanalysis):*

1.1.2.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.2.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.2.1; or

1.1.2.3 persons who have completed requirements for the Graduate Certificate in Applied Science, or equivalent;

1.1.3 *the Master of Applied Science (Microscopy and Microanalysis):*

1.1.3.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.3.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.3.1; or

1.1.3.3 persons who have completed requirements for the Graduate Diploma in Applied Science, or equivalent.

1.2 In relation to particular subject areas the Dean may require applicants to satisfy additional specific requirements relating to that subject area.

2. **Units of study**

2.1 The units of study for the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science (Microscopy and Microanalysis) are listed in subsection 4.1.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in unit of study descriptions.

3. Requirements for Graduate Certificate in Applied Science (Microscopy and Microanalysis); Graduate Diploma in Applied Science (Microscopy and Microanalysis) and Master of Applied Science (Microscopy and Microanalysis)

3.1 Candidates for the Graduate Certificate in Applied Science (Microscopy and Microanalysis) are required to complete satisfactorily 12 credit points from core units of study and 12 credit points from optional units of study.

3.2 Candidates for the Graduate Diploma in Applied Science (Microscopy and Microanalysis) are required to complete satisfactorily 12 credit points from core units of study and a further 24 credit points from optional units of study.

3.3 Candidates for the Master of Applied Science (Microscopy and Microanalysis) are required to complete satisfactorily 12 credit points from core units of study, a further 24 credit points from optional units of study, and 12 credit points of additional core project and report units of study.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Applied Science (Microscopy and Microanalysis), Graduate Diploma in Applied Science (Microscopy and Microanalysis) and Master of Applied Science (Microscopy and Microanalysis) are listed in the following table:

Unit of study		Core/ Option
All units are worth 6 credit points. There are no prerequisites, corequisites or other special conditions for enrolment in these units of study except that 24 credit points of units of study must be completed successfully before a candidate may enrol in MCAN5201, MCAN5202 or MCAN5203.		
Graduate Certificate, Graduate Diploma and Master's core units		
MCAN5005	Introductory Microscopy & Microanalysis	C
MCAN5006	Electron Microscopy	C
Graduate Certificate, Graduate Diploma and Master's Optional units		
MCAN5101	Confocal & Fluorescence Microscopy	O
MCAN5102	Biological Specimen Preparation	O
MCAN5103	Materials Preparation and Microscopy	O
MCAN5104	Image Analysis	O
MCAN5110	Nanostructural Analysis of Materials	O
MCAN5111	Microscopy of Biomolecular Processes	O
MCAN5112	Advances in Modern Microscopy	O
MCAN5210	Research Methodology	O

Unit of study		Core/ Option
Master's additional core units		
MCAN5201	Project and Report A	C
MCAN5202	Project and Report B	C
Master's, Research path, Additional Core units		
MCAN5203	Project and Report Part C	C
MCAN5210	Research Methodology	C

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**
5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**
6.1 Cross institutional study shall not be available to students enrolled in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science courses, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**
7.1 Admission to candidature may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of sub-section 1 above.

8. **Discontinuation of enrolment**
8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**
9.1 A student may seek written permission from the Dean to suspend candidature in the course.
9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**
10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**
11.1 Candidates for the Master of Applied Science (Microscopy and Microanalysis), the Graduate Diploma in Applied Science (Microscopy and Microanalysis), and the Graduate Certificate in Applied Science (Microscopy and Microanalysis), shall be governed by the rules as follows:
11.1.1 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Applied Science (Microscopy and Microanalysis) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Applied Science (Microscopy and Microanalysis);
11.1.2 A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Applied Science (Microscopy and Microanalysis) and/or the Graduate Diploma in Applied Science (Microscopy and Microanalysis) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Applied Science (Microscopy and Microanalysis);
11.1.3 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Graduate Certificate in Applied Science (Microscopy and Microanalysis) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will not be permitted to re-enrol.
11.2 A student who has failed a cumulative total of more than 18 credit points in the Master of Applied Science (Microscopy and Microanalysis) and/or the Graduate Diploma in Applied Science (Microscopy and Microanalysis) and/or the Graduate Certificate in Applied Science (Microscopy and Microanalysis) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.
11.3.1 A student who has failed a core unit at the second attempt in the Master of Applied Science (Microscopy and Microanalysis) and/or the Graduate Diploma in Applied Science (Microscopy and Microanalysis) and/or the Graduate Certificate in Applied Science (Microscopy and Microanalysis) will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol.
11.3.2 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**
12.1 A candidate for the Graduate Certificate in Applied Science (Microscopy and Microanalysis) shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.
12.2 A candidate for the Graduate Diploma in Applied Science (Microscopy and Microanalysis) shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of six semesters.
12.3 A candidate for the Master of Applied Science (Microscopy and Microanalysis) shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters.

13. **Assessment policy**
13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**
14.1 Credit is not available in the Graduate Certificate in Applied Science (Microscopy and Microanalysis), Graduate Diploma in Applied Science (Microscopy and Microanalysis) and Master of Applied Science (Microscopy and Microanalysis) for postgraduate study which has not been undertaken in these award courses within the previous three years.
14.2 A candidate who has qualified for the award of the Graduate Certificate in Applied Science (Microscopy and Microanalysis) may transfer, within three years, to the Graduate Diploma in Applied Science (Microscopy and Microanalysis) and receive credit for up to 24 credit points from the Graduate Certificate in Applied Science (Microscopy and Microanalysis).
14.3 A candidate who has qualified for the award of the Graduate Diploma in Applied Science (Microscopy and Microanalysis) may transfer, within three years, to the Master of Applied Science (Microscopy and Microanalysis) and receive credit for up to 36 credit points from the Graduate Diploma in Applied Science (Microscopy and Microanalysis).
14.4 A candidate who has completed units of study in the Applied Science program within the previous three years, but has not qualified for an award, may transfer to another award course within the same Applied Science program and receive credit for the units of study completed.

26. Postgraduate coursework: Molecular Biotechnology degrees

Graduate Certificate in Applied Science (Molecular Biotechnology),

Graduate Diploma in Applied Science (Molecular Biotechnology)

Master of Applied Science (Molecular Biotechnology)

This chapter sets out the requirements for postgraduate degrees offered in the Faculty of Science in the area of Molecular Biotechnology. A comprehensive guide to the requirements and units of study of the coursework degrees is listed.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously in this chapter, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at:
www.usyd.edu.au/publications/calendar/

Course overview and outcomes

The Graduate Certificate in Applied Science (Molecular Biotechnology), Graduate Diploma in Applied Science (Molecular Biotechnology) and Master of Applied Science (Molecular Biotechnology) are articulated programs intended for industry employees and those experienced in related fields to obtain relevant knowledge in molecular biotechnology. They include teaching in current and innovative areas and provide specialisations with attractive prospects for retraining and employment and for further education.

These programs cover new and leading edge high technologies that provide education in relevant aspects of biology, biochemistry, chemistry, food science and technology, agricultural science, bioinformatics and information bioscience. They aim to provide a basic knowledge and skills base emphasising scientific applications.

The courses also provides a professional graduate education for scientists and technologists already working in these areas. Students will be exposed to a solid grounding in molecular biotechnology including an appreciation of social and ethical implications. This professional development award course is particularly designed for those seeking training in this expanding high technology area.

Optional units

Students may select optional units from any of the other graduate diploma or master's courses offered by the Faculty, subject to timetable constraints. These optional units are listed in the postgraduate section of this handbook.

Please note, the unit MOBT5303 is not an allowable elective for graduate diploma students.

Units of study 2007

MOBT5101
Applied Molecular Biotechnology A

Credit points: 12 **Teacher/Coordinator:** Dr Neville Firth **Session:** Semester 1 **Classes:** 1 two hour lecture and 1 one hour turorial per week **Assessment:** Continuous assessment throughout semester, end of semester examination

This unit of study provides a solid foundation for education and training in applied molecular biotechnology. Classes emphasise molecular biology and genetics combined with essential aspects underscoring modern molecular biotechnology.

Textbooks
Required text: Acquaah, G. 2004, Understanding Biotechnology, Pearson Prentice Hall, New Jersey.
Recommended text: Glick, B. and Pasternak J. 2003, Molecular Biotechnology: Principles and Applications of Recombinant DNA", third edition, ASM Press, Washington.

MOBT5102
Applied Molecular Biotechnology B

Credit points: 12 **Teacher/Coordinator:** Dr Rachel Codd **Session:** Semester 2 **Classes:** 1 two hour lecture and 1 one hour turorial per week **Assessment:** Continuous assessment throughout semester, end of semester examination

Applied molecular biotechnology B broadens knowledge of and training in applications of the field. Key areas of molecular biology and genetics are combined with studies embracing major issues in modern molecular biotechnology, and are illustrated by examples and case studies.

Textbooks
Required text: Acquaah, G. 2004, Understanding Biotechnology, Pearson Prentice Hall, New Jersey.
Recommended text: Glick, B. and Pasternak J. 2003, Molecular Biotechnology: Principles and Applications of Recombinant DNA", third edition, ASM Press, Washington.

BETH5201
Ethics and Biotech: Genes and Stem Cells

Credit points: 6 **Session:** Semester 2 **Classes:** The equivalent of one 2-hour seminar per week will be presented in an intensive format. In addition, students will spend up to four hours per week on online learing tasks, small group sessions, project work and consultation with lecturers over the course **Assumed knowledge:** A three-year undergraduate degree in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field, or by special permission. **Assessment:** Essays, short written assignments, one project.

Note: A limited number of students may be granted permission to take this unit during their honours year.

This unit introduces students to the broader social/political, ethical/philosophical and legal/regulatory issues that underlie genetics, stem cell research and the emerging biotechnologies. The unit will provide a brief overview of the relevant science before considering scientific, cultural and religious understandings of life and human identity. The second part of the unit will review the political, regulatory and commercial context of biotechnology and the control of information. Students will then review the history of genetics and eugenics and the ethical issues that arise in clinical and population genetics, stem cell research and cloning. The final part of the unit will explore the boundaries of research and knowledge and the issues raised by emerging biotechnologies, such as nanotechnology and proteomics. Learning activities will include an intensive seminar program, small group sessions and reading. Students will be able to concentrate on stem cell research, clinical or molecular genetics or other biotechnologies according to their clinical and scientific interests and experience.

MOBT5303
Applied Molecular Biotech C (Project)

Credit points: 6 **Teacher/Coordinator:** A/Prof Kevin Downard **Session:** Semester 1, Semester 2 **Prerequisites:** MOBT (5101 or 5102). **Prohibitions:** MOBT5103 **Assessment:** Report (60%) and individual/group poster and presentation (40%)

Note: This unit is available to students in the Master of Applied Science (Molecular Biotechnology) only.

This unit of study provides students with the opportunity to undertake hands-on experience in the biotechnology industry. This will typically involve placement in an approved industry partner's facility on a part-time basis or a case study project conducted in association with an industry affiliate. Entry to an industry placement is limited by a quota and the availability of facilities and projects. Results obtained in MOBT units of study undertaken in the preceding semester (in theory and practical components) will decide whether students are assigned to placements or case study projects. All students enrolled in this unit are required to complete an industry placement suitability survey which will also be taken into consideration. Assessment is based on a student's performance in their placement or project, a report, poster and presentation.

Resolutions

Graduate Certificate in Applied Science (Molecular Biotechnology)

Graduate Diploma in Applied Science (Molecular Biotechnology)

Master of Applied Science (Molecular Biotechnology)

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for:

1.1.1 *the Graduate Certificate in Applied Science (Molecular Biotechnology):*

1.1.1.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.1.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.1.1; or

1.1.1.3 persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;

1.1.2 *the Graduate Diploma in Applied Science (Molecular Biotechnology):*

1.1.2.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.2.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.2.1; or

1.1.2.3 persons who have completed requirements for the Graduate Certificate in Applied Science, or equivalent;

1.1.3 *the Master of Applied Science (Molecular Biotechnology):*

1.1.3.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.3.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.3.1; or

1.1.3.3 persons who have completed requirements for the Graduate Diploma in Applied Science, or equivalent.

1.2 In relation to particular subject areas the Dean may require applicants to satisfy additional specific requirements relating to that subject area.

1.3 The additional requirements for Molecular Biotechnology are as follows.

1.3.1 Applicants for the Graduate Certificate in Applied Science (Molecular Biotechnology) should hold a bachelor's degree with credit average results in substantial study in areas of relevance to Molecular Biotechnology, such as biochemistry, biology, chemistry, genetics or molecular biology, or have previous experience in a relevant area that is considered to demonstrate the knowledge and aptitude required to undertake this award course.

1.3.2 Applicants for the Graduate Diploma in Applied Science (Molecular Biotechnology) should hold a bachelor's degree with credit average results in substantial study in areas of relevance to Molecular Biotechnology, such as biochemistry, biology, chemistry, genetics or molecular biology, or have completed the Graduate Certificate in Applied Science (Molecular Biotechnology) at the University of Sydney, without failing any units of study.

1.3.3 Applicants for a Master of Applied Science (Molecular Biotechnology) should hold a bachelor's degree with credit average results in substantial study in areas of relevance to Molecular Biotechnology, such as biochemistry, biology, chemistry, genetics or molecular biology; or have completed the Graduate Certificate in Applied Science (Molecular Biotechnology) at the University of Sydney, without failing any units of study; or have completed the Graduate Diploma in Applied Science (Molecular Biotechnology) at the University of Sydney without failing more than 6 credit points of study.

2. **Units of study**

2.1 The units of study for the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science (Molecular Biotechnology) are listed in subsection 4.1.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the unit of study descriptions.

3. **Requirements for Graduate Certificate in Applied Science (Molecular Biotechnology) (GradCertApplSc(MBT)); Graduate Diploma in Applied Science (Molecular Biotechnology) (GradDipApplSc(MBT)); Master of Applied Science (Molecular Biotechnology) (MApplSc(MBT))**

3.1 Candidates for the Graduate Certificate in Applied Science (Molecular Biotechnology) are required to complete satisfactorily two core units of study (MOBT5101 and MOBT5102).

3.2 Candidates for the Graduate Diploma in Applied Science (Molecular Biotechnology) are required to complete satisfactorily two core units of study (MOBT5101 and MOBT5102) and 12 credit points from optional units of study.

3.3 Candidates for the Master of Applied Science (Molecular Biotechnology) are required to complete satisfactorily four core units of study (MOBT5101, MOBT5102, MOBT5203 or BETH5201, and MOBT5303) and 12 credit points from optional units of study.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science (Molecular Biotechnology) are listed in the following table.

Unit of study		Core/ Option
Unless otherwise indicated, all units are worth 6 credit points. To enrol in these units of study, candidates must satisfy the specific requirements relating to the subject area as detailed in subsection 3 of the Resolutions.		
Core units all degrees		
MOBT5101	Applied Molecular Biotechnology A (12 credit points)	C
MOBT5102	Applied Molecular Biotechnology B (12 credit points)	C
Core units Master's only		
BETH5201	Ethics and Biotechnology (Genes and Stem Cells)	C/O
MOBT5303	Applied Molecular Biotech C (Project)	C/O

Unit of study	Core/ Option
Optional units Master's only: 12 credit points of units of study selected with the permission of the program coordinator.	

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**
5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**
6.1 Cross institutional study shall not be available to students enrolled in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science courses, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**
7.1 Admission to candidature may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of sub-section 1 above.

8. **Discontinuation of enrolment**
8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**
9.1 A student may seek written permission from the Dean to suspend candidature in the course.
9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**
10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**
11.1 Candidates for the Master of Applied Science (Molecular Biotechnology), the Graduate Diploma in Applied Science (Molecular Biotechnology), and the Graduate Certificate in Applied Science (Molecular Biotechnology), shall be governed by the rules as follows:
11.1.1 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Applied Science (Molecular Biotechnology) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Applied Science (Molecular Biotechnology);
11.1.2 A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Applied Science (Molecular Biotechnology) and/or the Graduate Diploma in Applied Science (Molecular Biotechnology) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Applied Science (Molecular Biotechnology);
11.1.3 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Graduate Certificate in Applied Science (Molecular Biotechnology) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will not be permitted to re-enrol.
11.2 A student who has failed a cumulative total of more than 18 credit points in the Master of Applied Science (Molecular Biotechnology) and/or the Graduate Diploma in Applied Science (Molecular Biotechnology) and/or the Graduate Certificate in Applied Science (Molecular Biotechnology) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.
11.3.1 A student who has failed a core unit at the second attempt in the Master of Applied Science (Molecular Biotechnology) and/or the Graduate Diploma in Applied Science (Molecular Biotechnology) and/or the Graduate Certificate in Applied Science (Molecular Biotechnology) will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol.
11.3.2 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**
12.1 A candidate for the Graduate Certificate in Applied Science (Molecular Biotechnology) shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.
12.2 A candidate for the Graduate Diploma in Applied Science (Molecular Biotechnology) shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of six semesters.
12.3 A candidate for the Master of Applied Science (Molecular Biotechnology) shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters.

13. **Assessment policy**
13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**
14.1 Credit is not available in the Graduate Certificate in Applied Science (Molecular Biotechnology), Graduate Diploma in Applied Science (Molecular Biotechnology) and Master of Applied Science (Molecular Biotechnology) for postgraduate study which has not been undertaken in these award courses within the previous three years.
14.2 A candidate who has qualified for the award of the Graduate Certificate in Applied Science (Molecular Biotechnology) may transfer, within three years, to the Graduate Diploma in Applied Science (Molecular Biotechnology) and receive credit for up to 24 credit points from the Graduate Certificate in Applied Science (Molecular Biotechnology).
14.3 A candidate who has qualified for the award of the Graduate Diploma in Applied Science (Molecular Biotechnology) may transfer, within three years, to the Master of Applied Science (Molecular Biotechnology) and receive credit for up to 36 credit points from the Graduate Diploma in Applied Science (Molecular Biotechnology).
14.4 A candidate who has completed units of study in the Applied Science program within the previous three years, but has not qualified for an award, may transfer to another award course within the same Applied Science program and receive credit for the units of study completed.

27. Postgraduate coursework: Neuroscience degrees

Graduate Certificate in Applied Science (Neuroscience)

Graduate Diploma in Applied Science (Neuroscience)

Master of Applied Science (Neuroscience)

Note: these award courses are not available to new students from 2007.

This chapter sets out the requirements for coursework postgraduate degrees offered in the Faculty of Science in the area of Neuroscience. A comprehensive guide to the requirements and units of study of the coursework degrees is listed.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously at the end of this chapter, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at

www.usyd.edu.au/publications/calendar/

Course overview

The Graduate Certificate in Applied Science (Neuroscience), Graduate Diploma in Applied Science (Neuroscience) and Master of Applied Science (Neuroscience) are articulated programs that allow flexible combinations of units of study.

The programs cover basic concepts in neuroscience together with advanced treatment of most major current research areas in neuroscience, particularly those with medical and other potential applications, and an introduction to related developments in other disciplines.

Course outcomes

The study of the brains and nervous systems of living creatures represents one of the most exciting and fast moving fields in 21st century science. It is also one that is having a considerable impact on attempts to solve major problems in health, including various neural diseases, current social problems such as addiction, and longer term social trends such as aging. The programs are designed both for graduates already working in a field where development of their expertise in at least some aspects of neuroscience is important and for recent graduates who wish to acquire a solid and broad grounding in this area.

Many professionals, particularly in health-related areas, find that they need to update or broaden their knowledge and understanding of the structure and function of the nervous system. Traditionally such training has been provided within individual departments, such as anatomy, physiology, pharmacology or psychology, and consequently has tended to be narrow in focus. The present programs have from the outset been designed to be inter-disciplinary; most units of study are taught by staff from at least three different departments. This is to meet the aim of providing a broad and comprehensive treatment of neuroscience.

Upon completion of the graduate certificate, graduates will have a solid grounding in basic principles of neuroscience and more specialised understanding of four different areas. This is supplemented in the diploma by inclusion of a fifth area and by acquisition of some project skills by working on either a library- or laboratory-based project. Extension of these project skills is obtained during completion of the master's by working on a total of three unrelated projects, of which two would normally be laboratory-based.

Unit of study	
All units are worth 6 credit points	
Units are available in 2007	
Project units graduate diploma and master's only	
NEUR5001	Neuroscience Library Project
NEUR5002	Neuroscience Laboratory Project A
NEUR5003	Neuroscience Laboratory Project B
NEUR5004	Neuroscience Laboratory Project C

Neuroscience units of study

NEUR5001
Neuroscience Library Project

Credit points: 6 **Session:** S2 Late Int, Semester 1, Semester 2 **Classes:** It is expected that the student meet at least three times during the semester with the supervisor (personally arranged times) **Prerequisites:** 12 credit points from NEUR (5101, 5102, 5103, 5104, 5105, 5106, 5107, 5108) **Assessment:** Assessment is based on the submission and evaluation of a scholarly article (6,000 words maximum) reviewing a field of contemporary neuroscience research. The article will be assessed by two internal and one external reviewers. These evaluations will comprise the entire mark for this unit. **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: Department permission required for enrolment .

This provides the opportunity to develop knowledge gained from units of study on a specialised topic. The topic and nature of supervision will be arranged between the student and an appropriate supervisor, subject to the approval of the Co-ordinator of the Neuroscience Program. This unit of study is available only to students enrolled in the Graduate Diploma of Applied Science (Neuroscience) or in the Master in Applied Science (Neuroscience). It would normally be available only after a student has completed two units of study in the Neuroscience program or equivalent units of study approved by the Dean.

NEUR5002
Neuroscience Laboratory Project A

Credit points: 6 **Session:** S2 Late Int, Semester 1, Semester 2 **Classes:** It is expected that the research project should occupy the equivalent of about 2.5 weeks full-time research (~ 84 hours). This work will be performed under the direct supervision of an approved academic. **Prerequisites:** 24 credit points from NEUR (5101, 5102, 5103, 5104, 5105, 5106, 5107, 5108) **Assessment:** Assessment for this unit of study comprises two elements. (1) Supervisors evaluation of student participation in laboratory work (attendance, technical skills, application) [10% of final mark]. (2) Written report in the style of a scientific journal article (i.e., a short communication in the European Journal of Neuroscience), which will be evaluated by two internal and one external reviewers [90% of final mark] **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: Department permission required for enrolment .

This provides the opportunity to develop laboratory skills by participation in a research project on a specialised topic. The topic

and nature of supervision will be arranged between the student and an appropriate supervisor, subject to the approval of the Co-ordinator of the Neuroscience Program. This unit of study is available only to students enrolled in the Graduate Diploma of Applied Science (Neuroscience) or in the Master in Applied Science (Neuroscience). It would normally be available only after a student has completed four units of study in the Neuroscience program or equivalent units of study approved by the Dean.

NEUR5003
Neuroscience Laboratory Project B

Credit points: 6 **Session:** S2 Late Int, Semester 1, Semester 2 **Classes:** It is expected that the research project should occupy the equivalent of about 2.5 weeks full-time research (~ 84 hours). This work will be performed under the direct supervision of an approved academic. **Prerequisites:** NEUR5002 **Assessment:** Assessment for this unit of study comprises two elements. (1) Supervisors evaluation of student participation in laboratory work (attendance, technical skills, application) [10% of final mark]. (2) Written report in the style of a scientific journal article (i.e., a short communication in the European Journal of Neuroscience), which will be evaluated by two internal and one external reviewers [90% of final mark] **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: Department permission required for enrolment .

This is similar to NEUR5002, but would involve a different supervisor and a topic in a different discipline from those for the project a student undertook for NEUR5002. A student is normally required to complete NEUR5002 before enrolling in NEUR5003.

NEUR5004
Neuroscience Laboratory Project C

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** It is expected that the research project should occupy the equivalent of about 2.5 weeks full-time research (~ 84 hours). This work will be performed under the direct supervision of an approved academic. **Prerequisites:** NEUR5002 and NEUR5003. **Assessment:** Assessment for this unit of study comprises two elements. (1) Supervisors evaluation of student participation in laboratory work (attendance, technical skills, application) [10% of final mark]. (2) Written report in the style of a scientific journal article (i.e., a short communication in the European Journal of Neuroscience), which will be evaluated by two internal and one external reviewers [90% of final mark] **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: Department permission required for enrolment .

This is similar to NEUR5002, but would involve a different supervisor and a topic in a different discipline from those for the projects a student undertook for NEUR5002 and NEUR5003. A student is normally required to complete NEUR 5002 and NEUR5003 before enrolling in NEUR5004.

SCEL5106
Science Elective - Neuroscience

Credit points: 6 **Session:** Semester 1, Semester 2 **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: Department permission required for enrolment .
Note: Faculty approval required.

This unit is only available to students enrolled in the postgraduate Neuroscience program. The content of the unit, assessment requirements and hours required are by negotiation with the program coordinator.

SCEL5206
Science Elective - Neuroscience

Credit points: 6 **Session:** Semester 1, Semester 2 **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

Note: Department permission required for enrolment .
Note: Faculty approval required.

This unit is only available to students enrolled in the postgraduate Neuroscience program. The content of the unit, assessment requirements and hours required are by negotiation with the program coordinator.

Resolutions

Graduate Certificate in Applied Science (Neuroscience)

Graduate Diploma in Applied Science (Neuroscience)

Master of Applied Science (Neuroscience)

[Section 1]

1. **Admission**
1.1 The Dean of the Faculty of Science may admit to candidature for:
1.1.1 *the Graduate Certificate in Applied Science (Neuroscience):*
1.1.1.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;
1.1.1.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.1.1; or
1.1.1.3 persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;
1.1.2 *the Graduate Diploma in Applied Science (Neuroscience):*
1.1.2.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;
1.1.2.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.2.1; or
1.1.2.3 persons who have completed requirements for the Graduate Certificate in Applied Science, or equivalent;
1.1.3 *the Master of Applied Science (Neuroscience):*
1.1.3.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;
1.1.3.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.3.1; or
1.1.3.3 persons who have completed requirements for the Graduate Diploma in Applied Science, or equivalent.
1.2 In relation to particular subject areas the Dean may require applicants to satisfy additional specific requirements relating to that subject area.
2. **Units of study**
2.1 The units of study for the Graduate Certificate in Applied Science (Neuroscience), Graduate Diploma in Applied Science (Neuroscience) and Master of Applied Science (Neuroscience) are listed in subsection 4.1.
2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the unit of study descriptions.
3. Requirements for Graduate Certificate in Applied Science (Neuroscience) (GradCertApplSc(NeuroSc)); Graduate Diploma in Applied Science (Neuroscience) (GradDipApplSc(NeuroSc)); Master of Applied Science (Neuroscience) (MApplSc(NeuroSc))
3.1 Candidates for the Graduate Certificate in Applied Science (Neuroscience) are required to complete satisfactorily four units of study selected from NEUR5101, NEUR5102, NEUR5103, NEUR5104, NEUR5105, NEUR5106, NEUR5107 or NEUR5108.
3.2 Candidates for the Graduate Diploma in Applied Science (Neuroscience) are required to complete satisfactorily five units of study selected from NEUR5101, NEUR5102, NEUR5103, NEUR5104, NEUR5105, NEUR5106, NEUR5107 or NEUR5108 and either NEUR5001 or NEUR5002.
3.3 Candidates for the Master of Applied Science (Neuroscience) are required to complete satisfactorily five units of study selected from NEUR5101, NEUR5102, NEUR5103, NEUR5104, NEUR5105, NEUR5106, NEUR5107 or NEUR5108 and three units of study selected from NEUR5001, NEUR5002, NEUR5003, NEUR5004.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Applied Science (Neuroscience), Graduate Diploma in Applied Science (Neuroscience) and Master of Applied Science (Neuroscience) are listed in the following table.

Unit of study	
All units are worth 6 credit points. There are no prerequisites, corequisites or other special conditions for enrolment in these units of study.	
Optional units all degrees	
NEUR5101	Neurobiology of Addiction
NEUR5102	Neuroscience of Aging
NEUR5103	Brain Development
NEUR5104	Psychobiology of Learning and Memory
NEUR5105	Movement and Motor Control
NEUR5106	Pain
NEUR5107	Neurobiology of Psychoses
NEUR5108	Visual Neuroscience
Project units graduate diploma and master's only	
NEUR5001	Neuroscience Library Project
NEUR5002	Neuroscience Laboratory Project A
NEUR5003	Neuroscience Laboratory Project B
NEUR5004	Neuroscience Laboratory Project C

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

4.4.3 to pass any other examination of the unit of study that may apply.

4.5 All units of study for a particular subject area may not be available every semester.

4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**

5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**

6.1 Cross institutional study shall not be available to students enrolled in the Graduate Certificate in Applied Science (Neuroscience):, Graduate Diploma in Applied Science (Neuroscience) and Master of Applied Science (Neuroscience) courses, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**

7.1 Admission to candidature may be limited by a quota.

7.2 In determining the quota, the University will take into account:

7.2.1 availability of resources including space, laboratory and computing facilities; and

7.2.2 availability of adequate and appropriate supervision.

7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of sub-section 1 above.

8. **Discontinuation of enrolment**

8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**

9.1 A student may seek written permission from the Dean to suspend candidature in the course.

9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**

10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**

11.1 Candidates for the Master of Applied Science (Neuroscience), the Graduate Diploma in Applied Science (Neuroscience), and the Graduate Certificate in Applied Science (Neuroscience), shall be governed by the rules as follows:

11.1.1 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Applied Science (Neuroscience) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Applied Science (Neuroscience);

11.1.2 A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Applied Science (Neuroscience) and/or the Graduate Diploma in Applied Science (Neuroscience) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Applied Science (Neuroscience);

11.1.3 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Graduate Certificate in Applied Science (Neuroscience) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will not be permitted to re-enrol.

11.2 A student who has failed a cumulative total of more than 18 credit points in the Master of Applied Science (Neuroscience) and/or the Graduate Diploma in Applied Science (Neuroscience) and/or the Graduate Certificate in Applied Science (Neuroscience) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.

11.3.1 A student who has failed a core unit at the second attempt in the Master of Applied Science (Neuroscience) and/or the Graduate Diploma in Applied Science (Neuroscience) and/or the Graduate Certificate in Applied Science (Neuroscience) will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol.

11.3.2 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**

12.1 A candidate for the Graduate Certificate in Applied Science (Neuroscience) shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.

12.2 A candidate for the Graduate Diploma in Applied Science (Neuroscience) shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of six semesters.

12.3 A candidate for the Master of Applied Science (Neuroscience) shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters.

13. **Assessment policy**

13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**

14.1 Credit is not available in the Graduate Certificate in Applied Science (Neuroscience), Graduate Diploma in Applied Science (Neuroscience) and Master of Applied Science (Neuroscience) for postgraduate study which has not been undertaken in these award courses within the previous three years.

14.2 A candidate who has qualified for the award of the Graduate Certificate in Applied Science (Neuroscience)may transfer, within three years, to the Graduate Diploma in Applied Science (Neuroscience) and receive credit for up to 24 credit points

from the Graduate Certificate in Applied Science (Neuroscience).

14.3 A candidate who has qualified for the award of the Graduate Diploma in Applied Science (Neuroscience) may transfer, within three years, to the Master of Applied Science (Neuroscience) and receive credit for up to 36 credit points from the Graduate Diploma in Applied Science (Neuroscience).

14.4 A candidate who has completed units of study in the Applied Science program within the previous three years, but has not qualified for an award, may transfer to another award course within the same Applied Science program and receive credit for the units of study completed.

28. Postgraduate coursework: Nutrition and Dietetics degrees

This chapter sets out the requirements for coursework postgraduate degrees offered in the Faculty of Science in the area of Nutrition and Dietetics. The Faculty offers one degree in the area – the Master of Nutrition and Dietetics.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously at the end of this chapter, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/

Master of Nutrition and Dietetics

Course overview

The MNutrDiet is a course designed to survey all aspects of human nutrition, with special emphasis on the needs of dietitians who will be working in Australia. It provides the basic training for hospital and community dietitians and nutritionists and is one of the recognised professional courses for dietitians in Australia.
The course requires two years of full-time work and study. The first year consists of coursework, lectures, tutorials and practicals. In the second year, one semester is devoted to clinical training and the other semester is spent on a small research project. The dates for this course do not follow the undergraduate academic year. The second year commences in late January.

Course outcomes

Upon completion of the course, the graduate will have a sound knowledge base in nutrition and dietetics, possess the skills to improve nutritional status of individuals, families and the community at large and to modulate the course of illness with dietetics. The graduate will be skilled in basic research and have a lifelong commitment to the pursuit of excellence in professional conduct.

Admission requirements

Applicants must have a degree from a recognised tertiary institution and have completed two semesters of study in Biochemistry and two semesters in Human Physiology. This preparation is required by the Dietitians Association of Australia. Applicants who meet the minimum entry requirements are then ranked according to their academic record and performance in Biochemistry and Physiology. Offers of places are dependent upon the ranking of applicants and competition for places.

Course requirements

First Year: This is an integrated academic year of teaching, practicals and study. As part of the course, students attend the Ryde College of Technical and Further Education for practicals in commercial cookery, followed by dietetic cookery. All students take the units of study listed below.

Second year: In the February semester of second year (Jan to June), students undertake a clinical and community dietetics training placement, while in the July semester of second year (July to Nov) students carry out a research project.

During the second year all students are required to attend formal lectures at the University on several days. Lectures on management, advanced clinical nutrition and advanced community nutrition are compulsory.
The units of study are supervised by a Program Committee in Nutrition and Dietetics, chaired by the Dean of the Faculty of Science.

Course Resolutions: see end of this chapter.

Unit of study descriptions

First year

NTDT5501
Nutritional Science

Credit points: 6 **Teacher/Coordinator:** A/Prof Samir Samman **Session:** Semester 1 **Classes:** 4 lectures per week. **Assessment:** Set reading, 2-hr exam

NTDT 5501 aims to give a broad appreciation of different nutrients and the ways in which they are metabolised. The focus is on the multiple factors that drive metabolism and subsequently the relationship between nutrients and health and/or disease. Nutrients are discussed according to category, macronutrients and micronutrients, and there are different themes, including: the chemistry of macronutrients, vitamins and minerals, food sources and factors affecting availability for absorption, metabolism and excretion of the nutrient, the biochemical, physiological and pharmacological actions, methods of assessing biochemical status, the requirements at each stage of life and recommended intakes, signs of deficiency and toxicity, interactions with other nutrients. NTDT 5501 is a compulsory unit of study for students undertaking the Master of Nutrition and Dietetics or Master of Nutrition Science degrees and compliments the learning in Food Science. NTDT 5501 is also offered as an optional course to students in other degree programs.

Textbooks
Mann JI and Truswell AS. Essentials of Human Nutrition. 2nd edition, Oxford University Press 2002.
Shils ME, Olson JA, Sheike M and Ross AC. Modern Nutrition in Health and Disease. 10th edition, Lipincott 2004.

NTDT5502
Food Science

Credit points: 3 **Teacher/Coordinator:** Prof. J Brand-Miller **Session:** Semester 1 **Classes:** 2 lectures per week. **Assessment:** Set reading, exam.

NTDT 5502 aims to give a broad appreciation of different types of foods, the ways in which they are processed and consumed, their social context as well as their nutritional attributes. The focus is on the multiple factors that drive a food's relationship to health and/or disease. Foods are covered according to category: animal foods, seafoods, cereals, sugars, fats and oils, dairy products, legumes, nuts, roots, tubers, green leafy vegetables, fruits, herbs and spices and alcohol. NTDT 5502 is a compulsory unit of study for students undertaking the Master of Nutrition and Dietetics or Master of Nutritional Science degrees and compliments the learning in Nutritional Science. NTDT 5502 is also offered as an optional course to students in other degree programs.

Textbooks
Mann JI and Truswell AS. Essentials of Human Nutrition. 2nd edition, Oxford University Press 2002.
Proudlove RK. The Science and Technology of Foods. Forbes London, 1997.

NTDT5503
Dietary Intake & Nutritional Assessment

Credit points: 6 **Teacher/Coordinator:** Dr Karen Webb **Session:** Semester 1 **Classes:** 3 lectures, 2 workshops per week **Assessment:** Assignment, reports.

Basic concepts in nutritional status; four methods of dietary assessment in individuals, advantages and limitations; validation of dietary methods; nutritional guidelines, targets and recommended dietary intakes; computerized nutrient analysis; limitations of food composition analysis. Behavioural influences on food intake. Nutritional assessment of individuals through clinical examination and commonly used laboratory biochemical tests for nutritional status; methods used to diagnose nutritional deficiencies; specificity, reliability of biochemical tests. Anthropometry and body composition; soft tissue measurement; percent body fat; reference standards; growth standards and percentiles.

Textbooks
Principles of Nutritional Assessment, 2nd Ed. R.S. Gibson, Oxford University Press, New York, 2005.
Nutritional Assessment. A Laboratory Manual. RS Gibson, Oxford University Press, New York, 1993.

NTDT5504
Communications A

Credit points: 3 **Teacher/Coordinator:** Soumela Amanatidis Veronica Taffs **Session:** Semester 1 **Classes:** 2 lec, 1 workshop / wk **Assessment:** One assignment, 2 tutorial papers

NTDT 5504 introduces students to the theories of effective communication. Students will acquire skills used to communicate with individuals in a variety of contexts, including the patient/client and his/her family, colleagues, other health team members and the community-at-large. Factors enhancing and distracting from effective communication are identified. The role of the dietitian as a facilitator of change is explored. Barriers to change and techniques used to enhance compliance are identified. Opportunity is provided for students to evaluate their own communication and interviewing skills. Students will also acquire knowledge and skills in planning, implementing and evaluating small group education.

Textbooks
Bauer K and Sokolik C. "Basic Nutrition Counselling Skills". Wadsworth, 2002.

NTDT5305
Food Service Management

Credit points: 6 **Teacher/Coordinator:** Ms Maria Kokkinakos **Session:** Semester 1 **Classes:** 4 to 6 hours per week practical classes, 1.5 hours per week lectures, 2 site visits of 1.5 hours each. **Assessment:** Continuous assessment that may include practical work and project.

The study of food service systems for use in institutions.

Second year

NTDT5307
Clinical Nutrition and Dietetics

Credit points: 12 **Session:** Semester 2 **Classes:** Lectures average nine hours per week, tutorials/practicals average three hours per week. **Assessment:** Two assessment tasks and formal examination.

This unit of study includes paediatrics at the New Children's Hospital, the study of medicine as it relates to nutrition, and the modification of diet and nutrition support of patients with different illnesses.

NTDT5308
Community and Public Health Nutrition

Credit points: 10 **Teacher/Coordinator:** Ms Sue Amanatidis **Session:** Semester 2 **Classes:** Average of seven hours lectures per week. **Assessment:** Combination of assignments and formal exam.

This unit of study covers several topics which include: 1. Introduction to health promotion which aims to introduce students to planning, implementing and evaluating nutrition health promotion programs for various population groups. Topics covered include principles of health promotion, effective nutrition promotion strategies, and program evaluation. 2. Nutrition and chronic disease which examines the relationship and evidence for the role and etiology of chronic diseases such as cancer, heart disease, hypertension and diabetes. It also investigates the current nutrition policies and guidelines aimed at preventing these diseases. 3. Food habits which covers theories of food habits and examines food habits of various population groups such as children, adolescents, older people and vulnerable groups. 4. Basic concepts of epidemiology which investigates the advantages and limitations of various epidemiological methods.

NTDT5309
Communication

Credit points: 2 **Teacher/Coordinator:** Ms Veronica Taffs **Session:** Semester 2 **Classes:** Lectures average one hour per week, tutorials/practicals average one hour per week. **Assessment:** Two practical assessment tasks

The study of counselling and education methods to communicate nutrition to individuals, groups and nations.

NTDT5310
Nutrition Research Project

Credit points: 24 **Teacher/Coordinator:** A/Prof Samir Samman **Session:** Semester 1, Semester 2 **Classes:** Tutorials two hours per week, supervised research experience. **Assessment:** Two assignments, presentation, report.

During the research semester each student has a research supervisor. Research projects can include small surveys, simple bench work, supervised hospital assignments or library searches, and are carried out in the University or with an external supervisor. Students also attend nutrition seminars.

NTDT5311
Nutrition Practice

Credit points: 12 **Teacher/Coordinator:** Ms Margaret Nicholson **Session:** Semester 1, Semester 2 **Classes:** Whole day lectures/workshops held on two to four occasions through the semester. **Assessment:** Attendance only

Note: This unit of study will commence prior to the start of semester.

The aim of this unit is to provide further knowledge and develop counselling strategies in specialty areas of dietetic practice. It builds on subjects introduced in the first year of the Masters course.

NTDT5312
Nutrition & Dietetics Training Placement

Credit points: 12 **Teacher/Coordinator:** Ms Margaret Nicholson **Session:** Semester 1, Semester 2 **Classes:** 18 week full time attendance of practical placement at clinical/community/food service sites. **Assessment:** Practical work and attendance

Note: This unit of study will commence prior to the start of semester.

Students are attached to two or more teaching hospitals and their associated community dietetic centres. The majority of time is spent in the wards or outpatient departments. There are up to 20 weeks' of training in dietetic practice in major primary health institutions so this unit starts early.

Resolutions

Master of Nutrition and Dietetics

[Section 1]

1. **Admission**

1.1 The Faculty of Science, on the recommendation of the Nutritional Science Program Committee, may admit to candidature for the degree:

1.1.1 graduates of the University of Sydney who have, unless exempted by the Nutritional Science Program Committee, completed acceptable units of study in Biochemistry and Physiology.

1.1.2 graduates of other universities who have qualifications equivalent to those specified in 1.1.1, and on such conditions as the Nutritional Science Program Committee may prescribe.

2. **Units of study**
2.1 The units of study for the Master of Nutrition and Dietetics are listed in subsection 4.1.
2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in description of units of study associated with this course.
3. **Requirements for the Master of Nutrition and Dietetics**
3.1 Candidates for the Master of Nutrition and Dietetics are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from the table of units of study in subsection 4.1, in their first year of study.
3.2 In the second year of candidature a candidate will:
3.2.1 undertake training in the dietetics departments of primary health care settings;
3.2.2 complete further units of study as prescribed by the Nutritional Science Program Committee; and
3.2.3 undertake a project approved by the Head of the Human Nutrition unit. The results of this project shall be presented for examination in the form of a long essay.

[Section 2]

4. **Details of units of study**
4.1 The units of study for the Master of Nutrition and Dietetics are listed in the following table (in accordance with requirements in subsection 3):

Unit of study		Credit points
Year 1, Semester 1		
NTDT5501	Nutritional Science	6
NTDT5502	Food Science	3
NTDT5503	Dietary Intake & Nutritional Assessment	6
NTDT5504	Communications A	3
NTDT5305	Food Service Management	6
Year 1, Semester 2		
NTDT5307	Clinical Nutrition and Dietetics	12
NTDT5308	Community and Public Health Nutrition	10
NTDT5309	Communication	2
Year 2, Semester by arrangement		
NTDT5310	Nutrition Research Project	24
NTDT5311	Nutrition Practice	12
NTDT5312	Nutrition & Dietetics Training Placement	12

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
4.6 A candidate shall complete in the first year of candidature such units of study as may be prescribed by the Nutritional Science Program Committee in: Nutritional Biochemistry, Nutritional Science, Foods and Food Science, Nutrition in Individuals, Nutrition in Populations, Principles of Dietetic Practice, Clinical Nutrition, Nutrition Management, Communications.
5. **Enrolment in more/less than minimum load**
5.1 A candidate for the Master of Nutrition and Dietetics may proceed on a full-time basis only.
6. **Cross-institutional study**
6.1 Cross institutional study shall not be available to students enrolled in Master of Nutrition and Dietetics, except where the University of Sydney has a formal Cooperation Agreement with another University.
7. **Restrictions on enrolment**
7.1 Admission to candidature may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of subsection 1 above.
8. **Discontinuation of enrolment**
8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.
9. **Suspension of candidature**
9.1 A student may seek written permission from the Dean to suspend candidature in the course.
9.2 Suspension may be granted for a maximum of one year.
10. **Re-enrolment after an absence**
10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.
11. **Satisfactory progress**
11.1 Candidates for the Master of Nutrition and Dietetics shall be governed by the rule as follows:
11.1.2 A student who has failed a cumulative total of 12cp at any stage of enrolment in the Master of Nutrition and Dietetics will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be terminated and the student will not be permitted to re-enrol.
12. **Time limit**
12.1 A candidate for the degree shall be enrolled full-time and, except with the permission of the Faculty of Science, shall complete the requirements for the degree no later than two years from the date of first enrolment.
13. **Assessment policy**
13.1 On completion of the requirements for the degree, the Faculty shall determine the result of the candidature, on the recommendation of the Nutritional Science Program Committee, acting on a report from the Head of the Human Nutrition unit.
14. **Credit transfer policy**
14.1 Credit is not available in the Master of Nutrition and Dietetics for previous study.

Master of Nutritional Science

Note: this award course is not available to new students in 2007.

Course overview

The MNutrSc provides the same survey of all aspects of human nutrition in the first year as the MNutrDiet, but is designed for those persons who wish to pursue a career in nutrition research. The second year is devoted to a research project, with regular seminars. Students have a range of areas to choose from for their research year, for example sports nutrition, lipid biochemistry, infant nutrition or ecological research.

Course outcomes

Upon completion of the course the graduate will have a sound knowledge base in nutritional science and possess the skills to conduct nutrition research projects.

Course requirements

First year: The first year coursework and practicals coincide with those for MNutrDiet except that NTDT5305 is replaced with the units of study NTDT5306 and NTDT5315.

Second year: The second year is devoted to a full-time research project, supervised by a member of the academic staff of the Human Nutrition Unit, which is written up for assessment in a short thesis. Students enrol in NTDT5313 and NTDT5314.

Unit of study descriptions

See also units listed under first year Master of Nutrition and Dietetics

NTDT5306
Introduction to Food Service

Credit points: 3 **Teacher/Coordinator:** Ms Maria Kokkinakos **Session:** Semester 1 **Classes:** 1.5 hours per week lectures, 2 site visits of 1.5 hours each. **Assessment:** Continuous assessment that may include project.

An introduction to food service systems in institutions.

NTDT5315
Scientific Methodology in Nutrition

Credit points: 3 **Teacher/Coordinator:** A/Prof Samir Samman **Session:** Semester 1 **Classes:** Tutorials one hour per week **Assessment:** One assignment, presentation, report.

A small report on the desired area of research in year 2.

NTDT5313
Nutritional Science Research A

Credit points: 24 **Session:** Semester 1 **Classes:** Supervised research experience. **Assessment:** Presentation, research proposal.

Students have a range of areas to choose from for their research year, e.g. sports nutrition, lipid biochemistry, infant nutrition or ecological research.

NTDT5314
Nutritional Science Research B

Credit points: 24 **Session:** Semester 2 **Classes:** Tutorials two hours per week, supervised research experience. **Assessment:** 1 assignment, presentation, report.

Resolutions

Master of Nutritional Science

[Section 1]

1. **Admission**
1.1 The Dean of the Faculty of Science, on the recommendation of the Nutritional Science Program Committee, may admit to candidature for the Master of Nutritional Science:
1.1.1 graduates of the University of Sydney, who have, unless exempted by the Nutritional Science Program Committee, completed acceptable units of study in Biochemistry and Physiology.
1.1.2 graduates of other universities who have qualifications equivalent, to those specified in subsection 1.1.1, and on such conditions as the Nutritional Science Program Committee may prescribe.
2. **Units of study**
2.1 The units of study for the Master of Nutritional Science are listed in subsection 4 of these resolutions.
2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in description of units of study associated with these resolutions.
3. **Requirements for the Master of Nutritional Science**
3.1 Candidates for the Master of Nutritional Science are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from units of study listed in subsection 4.1, in their first year of study.
3.2 A candidate in the second year of candidature shall proceed by research and thesis. A candidate shall:
3.2.1 carry out an original investigation on a topic approved by the Head of the Human Nutrition unit;
3.2.2 write a short thesis embodying the results of the investigation and state in the thesis, generally in a preface and specifically in notes, the sources from which the information was taken, the extent to which the work of others has been made use of, and the proportion of the thesis which the student claims as original; and
3.2.3 lodge with the Faculty three copies of the thesis, typewritten and bound.
3.2.4 The thesis shall be accompanied by a certificate from the supervisor stating whether in his or her opinion the form of the presentation of the thesis is satisfactory.
3.2.5 A candidate may not present as the thesis any work which has been presented for a degree at this or another tertiary institution, but shall not be precluded from incorporating such work in the thesis, provided that in presenting the thesis indications are given to the part of the work which has been so incorporated.
3.3 The Faculty shall lodge one copy of the thesis with the Librarian if the degree is awarded.
3.4 *Supervision*
3.4.1 The Faculty of Science shall appoint, on the recommendation of the Head of the Human Nutrition unit, a full-time member of the teaching staff of the University to act as the supervisor for each candidate.

[Section 2]

4. **Details of units of study**
4.1 The units of study for the Master of Nutritional Science are listed in the following table:

Unit of study		Credit points
Year 1, Semester 1		
NTDT 5501	Nutritional Science	6
NTDT 5502	Food Science	3
NTDT5503	Dietary Intake & Nutrition	6
NTDT5504	Principles of Dietetic Practice	3
NTDT5306	Introduction to Food Service	3
NTDT5315	Scientific Methodology in Nutrition	3
Year 1, Semester 2		
NTDT5307	Clinical Nutrition & Dietetics	12
NTDT5308	Community & Public Health	10
NTDT5309	Communication	2
Year 2		
NTDT5313	Nutritional Science Research A	24
NTDT5314	Nutritional Science Research B	24

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
4.6 A candidate shall complete in the first year of candidature such units of study as may be prescribed by the Nutritional Science Program Committee in: Nutritional Biochemistry, Nutritional Science, Foods and Food Science, Nutrition in Individuals, Nutrition in Populations, Principles of Dietetic Practice, Clinical Nutrition, Nutrition Management, and Communications.

5. **Enrolment in more/less than minimum load**
5.1 A candidate for the Master of Nutritional Science may proceed on a full-time basis only.

6. **Cross-institutional study**
6.1 Cross institutional study shall not be available to students enrolled in the Master of Nutritional Science, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**
7.1 Admission to candidature may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 2 above.

8. **Discontinuation of enrolment**
8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**
9.1 A student may seek written permission from the Dean to suspend candidature in the course.
9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**
10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**
11.1 Candidates for the Master of Nutritional Science shall be governed by the rule as follows:
11.1.2 A student who has failed a cumulative total of 12cp at any stage of enrolment in the Master of Nutritional Science will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be terminated and the student will not be permitted to re-enrol.

12. **Time limit**
12.1 A candidate for the degree shall proceed full-time and, except with the permission of the Dean of the Faculty, shall complete the requirements for the degree no later than two years from the date of first enrolment.

13. **Assessment policy**
13.1 The Dean of the Faculty, on the recommendation of the Head of the Human Nutrition unit, shall appoint two or, where the Dean considers it appropriate, more than two examiners of whom one may be the person appointed to act as supervisor of the candidate.
13.2 On completion of the requirements for the degree, the Faculty shall determine the results of the candidature, on the recommendation of the Nutritional Science Program Committee, acting on a report from the Head of the Human Nutrition unit.

14. **Credit transfer policy**
14.1 Credit is not available for the Master of Nutritional Science.

Applied Science (Nutrition and Dietetics)

The following Applied Science degrees are not available to new students in 2007:

- Graduate Certificate in Applied Science (Nutrition and Dietetics)
- Graduate Diploma in Applied Science (Nutrition and Dietetics)
- Master of Applied Science (Nutrition and Dietetics)

For course details and resolutions, see the 2006 Faculty of Science Handbook.

29. Postgraduate coursework: Psychology degrees

This chapter sets out the requirements for coursework postgraduate degrees offered by the School of Psychology.

The information in this chapter contains information in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously in this chapter, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/

The School offers a range of degrees:

- the Graduate Diploma in Psychology for graduates in other disciplines to obtain a Psychology majors
- the Graduate Diploma in Science (Psychology)**(not open to new students in 2007)**
- the Graduate Certificate, Graduate Diploma and Master of Applied Science (Psychology of Coaching) - an articulated postgraduate program for students interested in the applied science of human performance enhancement and coaching.
- the Graduate Certificate, Graduate Diploma and Master of Applied Science (Health Psychology) – an articulated postgraduate program for students interested in the theory and practical applications of health psychology.

Graduate Diploma in Psychology

Course outcomes

Upon completion of the course, the graduate will have a Psychology major, accredited by the Australian Psychological Society, equivalent to that available in the Bachelor of Arts, Bachelor of Science, Bachelor of Economics (Social Science), Bachelor of Liberal Studies or the Bachelor of Arts and Sciences. They will have studied all basic areas of experimental Psychology, statistical methods in Psychology, and an extensive range of optional topics. They will be eligible to apply to continue to a fourth year in Psychology (Honours) and from there to a higher degree in Psychology.

Eligibility for admission

Applicants holding relevant degrees

1. The Faculty of Science may admit to candidature applicants who hold the award course of Bachelor of Science, Bachelor of Arts, Bachelor of Economics (Social Science), Bachelor of Liberal Studies from the University of Sydney, Bachelor of Arts and Sciences or equivalent degree as deemed by the Faculty, who have not previously completed a major in Psychology. When assessing an applicant, both undergraduate record and UAI (or equivalent) may be taken into account.

Applicants who have completed junior Psychology units

2. Applicants must have already successfully completed 12 credit points of Junior Psychology (currently PSYC1001 and 1002) or equivalent within the last 10 years, except that an applicant who has completed 6 credit points of Junior Psychology at The University of Sydney in the previous 12 months with a grade of Distinction or better, shall be considered for admission. (Subject to Academic Board approval).

Method of progression

Students are required to study a minimum of 48 credit points of Intermediate and Senior level Psychology. This shall consist of 24 credit points of Intermediate Psychology (currently PSYC2111 or 2011, 2112 or 2012, 2113 or 2013 and 2114 or 2014) and a minimum of 24 credit points of Senior Psychology. Students must complete the necessary qualifying units of study for entry into later units of study. Normally, progression will be over a minimum of four semesters. Students may study additional Senior Psychology if they wish.

Study in Psychology beyond the graduate diploma

To be eligible for study in Psychology beyond the graduate diploma at the University of Sydney, students must, except with School approval, include PSYC3010 Advanced Statistics for Psychology for entry to the Graduate Diploma in Science or Psychology 4 (Honours). Successful completion of HPSC3023 History & Philosophy of Psychology & Psychiatry is essential for students intending to take the Theoretical Thesis option in Psychology Honours.

Exemptions and Advanced Standing

Students may apply for exemptions if they have already completed studies which the Faculty deems equivalent to those in the program. Such units of study must have been completed within the previous 10 years.
The number of exemptions allowed will not exceed Faculty of Science regulations or will not exceed 24 credit points, whichever is the lower.

See chapter 10 for unit of study descriptions, under the School of Psychology entry.

Resolutions

Graduate Diploma in Psychology

[Section 1]

1. **Admission**
1.1 The Dean of the Faculty of Science may admit to candidature for the Graduate Diploma in Psychology:
1.1.1 applicants who hold the degree of Bachelor of Science, Bachelor of Arts, Bachelor of Economics (Social Science), or Bachelor of Liberal Studies from the University of Sydney, or 1.1.2 applicants who hold an equivalent degree as deemed by the Faculty, who have not previously completed a major in Psychology.
1.2 When assessing an applicant, both undergraduate record and UAI (or equivalent) may be taken into account.
1.3 Applicants must have already successfully completed 12 credit points of Junior Psychology (currently PSYC1001 and 1002) or equivalent within the last 10 years, except that an applicant who has completed 6 credit points of Junior Psychology at the University of Sydney in the previous 12 months with a grade of Distinction or better shall be considered for admission.
1.4 Conditions of candidature are prescribed by Resolutions of the Faculty.
2. **Units of study**
2.1 The units of study for the Graduate Diploma in Psychology are listed in Table 1 associated with the resolutions of the Bachelor of Science.
2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the description of units of study associated with these resolutions.
3. **Requirements for the Graduate Diploma in Psychology**
3.1 A candidate shall complete coursework to the value of 48 credit points comprising:
3.1.1 24 credit points of Intermediate units of study in Psychology, and

3.1.2 24 credit points of Senior units of study in Psychology which must, except with Departmental approval, include PSYC(3012 or 3010) and one of PSYC(3011, 3012, 3013 and 3014).
3.2 The prerequisites and progression requirements for these units of study as set out in Table I for the BSc must be met.

[Section 2]

4. **Details of units of study**
4.1 The units of study for the Graduate Diploma Psychology are listed in Table 1 of the Resolutions of the Bachelor of Science.
4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
5. **Enrolment in more/less than minimum load**
5.1 A candidate may proceed on a part-time basis only.
6. **Cross-institutional study**
6.1 Cross-institutional study shall not be available to students enrolled in the Graduate Diploma in Psychology except where the University of Sydney has a formal Cooperation Agreement with another University.
7. **Restrictions on enrolment**
7.1 Admission to the Graduate Diploma in Psychology, may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of subsection 1 above.
8. **Discontinuation of enrolment**
8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.
9. **Suspension of candidature**
9.1 A student may seek written permission from the Dean to suspend candidature in the course.
9.2 Suspension may be granted for a maximum of one year.
10. **Re-enrolment after an absence**
10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.
11. **Satisfactory progress**
11.1 Candidates for the Graduate Diploma in Psychology shall be governed by the rule as follows:
11.1.2 A student who has failed a cumulative total of 12cp at any stage of enrolment in the Graduate Diploma in Psychology will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be terminated and the student will not be permitted to re-enrol.
12. **Time limit**
12.1 A candidate for the Graduate Diploma in Psychology shall complete the requirements for the award in a minimum of four semesters and a maximum of eight semesters, and (in the event of suspension) except with permission of the Dean within five calendar years of admission to candidature.
13. **Assessment policy**
13.1 A candidate may be tested by written and oral examinations, assignments, exercises and practical work or any combination of these.
13.2 On completion of the requirements for the Graduate Diploma in Psychology, the results of the examination of the coursework and participation in the seminar series shall be reported by the School of Psychology to the Faculty, which shall determine the result of the candidature.
14. **Credit transfer policy**
14.1 Students may apply for credit (up to 24 credit points) for unit(s) of study where they have already completed studies which the Faculty deems equivalent to unit(s) in the Graduate Diploma in Psychology and for which no award has been conferred.
14.2 Such units of study must have been completed within the previous 10 years.

Graduate Diploma in Science (Psychology)

This degree is not available to new students in 2007

Award Course overview

The Graduate Diploma in Science (Psychology) is an Honours equivalent (in the terms used by the Australian Psychological Society) fourth year of study in Psychology. It was designed to meet the needs of students wishing to continue with Psychology but who have not completed a four year Honours program. The diploma requires one year of full-time or two years of part-time study.

Course outcomes

Upon completion of this course the graduate will have a sound background in significant issues in general and applied psychology, an understanding of research methodology in both experimental and field studies contexts, be capable of finding and assessing relevant research literature, be eligible to apply for further programs of study in psychology and be prepared to undertake supervised training in certain professional areas of psychology.

Eligibility for admission

To be considered for admission to the degree an applicant must be a holder of a bachelor's degree with an APS accredited major in Psychology within the past 10 years from a recognised tertiary institution and has achieved a minimum Credit average in senior (third) year units of study which includes a unit in statistics/research methods which meets the requirements of the School. Entrance may be limited by a quota. Entry is normally based on academic merit. Requests for deferral of commencement of candidature will not be granted.

Course requirements

The program involves attending lectures and seminars in 5 core and 2 optional units. The optional units offered are PSYC4506 Health and Safety Psychology Issues, PSYC4507 Counselling Psychology and PSYC4508 Psychology of Addiction. A full-time load will require 3 days of attendance per week. Part-time candidates will complete the PSYC4500 Research Project (A), PSYC4505 Research Project (B), and PSYC4501 Psychological Research Methods in their first year.
Course Resolutions: see this chapter.

Core units

The compulsory (core) units are PSYC4500 Research Project (A), PSYC4501 Psychological Research Methods, PSYC4502 Ethics, PSYC4503 Special Fields Topic and PSYC4505 Research Project (B).

Options

The optional units offered are PSYC4506 Health and Safety Psychology Issues, PSYC4507 Counselling Psychology and PSYC4508 Psychology of Addiction. A full-time load will require 3 days of attendance per week. Part-time candidates will complete the PSYC4500 Research Project (A), PSYC4505 Research Project (B), and PSYC4501 Psychological Research Methods in their first year.

Entry to other postgraduate programs

Students who have completed the Graduate Diploma in Science (Psychology) are eligible to apply for fifth and sixth year university programs in Psychology.

Current Departmental rules on progress

Candidates will not normally be allowed to repeat failed units of study if they have also failed the research project. Candidates who have passed the research project may be allowed to repeat up to two failed units of study.

Units of study

Unit of study		Credit points
Full-time students		
Semester 1 Core units 24 credit points		
PSYC4500	Research Project (A)	10
PSYC4501	Psychological Research Methods	8
PSYC4503	Special Fields Topic (A)	6
Semester 2 Core units 24 credit points		
PSYC4505	Research Project (B)	10
PSYC4502	Ethics and Current Issues in Psychology	2
Semester 2 Optional units of study (select 2 electives)		
PSYC4506	Health & Safety Psychology Issues	6
PSYC4507	Counselling Psychology	6
PSYC4508	Psychology of Addiction	6
Part-time students		
Year 1, Semester 1 18 credit points		
PSYC4500	Research Project (A)	10
PSYC4501	Psychological Research Methods	8
Year 1, Semester 2 12 credit points		
PSYC4505	Research Project (B)	10
PSYC4502	Ethics	2
Year 2, Semester 1 6 credit points		
PSYC4503	Special Fields Topic	6
Year 2, Semester 2 12 credit points		
Two Electives		12

Unit of study descriptions

Core units

PSYC4500
Research Project (A)

Credit points: 10 **Session:** Semester 1 **Classes:** One 1 hour class per week. **Corequisites:** PSYC4501 **Prohibitions:** PSYC4710 **Assessment:** 9000 word report

This is the largest single component of the Graduate Diploma program. The Research Project is a yearlong component and is intended to demonstrate the capability of students to conceive and carry out original high level research. The Research Project is supervised by either a member of the academic staff or an approved supervisor from outside the School. Each supervisor has nominated a specific research area on which a small group of students will work. Each student in the research group must generate their individual hypothesis or hypotheses and prepare and submit their own independently written report, although a single experiment/survey will be carried out and the collection of data and data sets may be shared. A completed draft of each student's report will be read by the supervisor prior to the writing of a final version. The text of the report must not exceed 9,000 words in length (excluding abstract, tables, appendices and references).

PSYC4501
Psychological Research Methods

Credit points: 8 **Session:** Semester 1 **Classes:** 44 hours per semester. **Prohibitions:** PSYC4711 **Assumed knowledge:** Nothing in excess of requirements set for admission into the GradDipSc(Psych) programme **Assessment:** EDSA - examination; FRM - class quiz and examination

EXPERIMENTAL DESIGN AND STATISTICAL ANALYSIS (EDSA) The aim of this course is to expand the menu of statistical tools available to students for their research, and to develop their understanding of the conceptual bases of these tools. Tutorial work will involve exposure to the features available in a large statistical package (SPSS) while at the same time reinforcing the concepts discussed in lectures. FIELD RESEARCH METHODS (FRM) The aim of this course is to: - develop students' awareness of the methods of field research in Psychology; - to encourage a critical evaluation of the methods and develop an awareness of the problems in obtaining accurate field research data; - to encourage a creative attitude and awareness of ways in which these problems might be overcome; - overall, to develop students' expertise in carrying out quality field research and to be a critical consumer of others' field research. The lecture series, supplemented by other reading, follows a progressive consideration of all stages that may be encountered in a field research project, from decisions on the appropriate statement of the research problem, methods of gathering data, sampling procedures, coding of data, etc. The tutorial sessions utilize a series of in class and out of class exercises to give students a "hands on" awareness of the methods, problems and developing solutions in the field research process.

PSYC4503
Special Fields Topic

Credit points: 6 **Session:** Semester 1 **Classes:** One 1 hour seminar per week for 12 weeks. **Prohibitions:** PSYC4715, PSYC4719 **Assessment:** Assignments

Students choose one of the topics available. The research seminar areas currently available are: Conceptual Foundations of Quantitative Methods, Current Approaches in Advanced Social Psychology, Current Controversies in Developmental Psychology, Eating and Weight-Related Issues, Health Psychology, Intelligence and Cognitive Abilities, Neuropsychological Rehabilitation, Learning, Models of Anxiety and Depression, Mysteries of the Mind, Neuroscience, Research in Counselling Psychology, Theory and Systems, Visual Neuroscience and Perceptual Systems, which are also offered as part of the Psychology Honours program. This list could change subject to staff availability.

PSYC4505
Research Project (B)

Credit points: 10 **Session:** Semester 2 **Classes:** One 1 hour supervision per week. **Prerequisites:** PSYC4500 **Prohibitions:** PSYC4720 **Assessment:** 9000 word report

See description under Research Project A (PSYC4500) above.

PSYC4502
Ethics

Credit points: 2 **Session:** Semester 2 **Classes:** One 1 hour lecture per week for 7 weeks. **Prohibitions:** PSYC4712 **Assessment:** Examination (1.5 hours) 100%

This unit covers current ethical and professional issues in Psychology. Lectures concerning current ethical and professional issues will be given by Psychologists working in a range of professional settings, such as clinical, counselling, organizational, assessment, educational, health and research settings. The lecturers will discuss professional and ethical issues that commonly arise in these settings.

Textbooks
APS Code of Conduct for Psychologists. Other references vary with topics covered each year.

Elective units

PSYC4509
Problem Gambling

Credit points: 6 **Session:** Semester 2 **Classes:** 25 hours per semester. **Assessment:** Essay and examination.

This unit is intended to provide a comprehensive coverage of the causes, assessment and treatment of problem gambling. The syllabus includes: History of gambling; explanations for gambling behaviour; concepts of compulsive gambling, pathological gambling, excessive gambling and problem gambling; prevalence of problem and pathological gambling; theories of causation of pathological gambling; assessment of excessive gambling and the problems caused by excessive gambling; treatment of pathological gambling: behavioural, cognitive, client centred, and other methods; effectiveness of different treatment approaches; preventive strategies.

PSYC4506
Health and Safety Psychology Issues

Credit points: 6 **Session:** Semester 2 **Classes:** 25 hours per semester. **Prohibitions:** PSYC4716 **Assessment:** Class presentation (25%) and take-home exam (75%)

This course will elucidate the principles of health psychology (which is concerned with human behaviour in the context of health & illness), via critical evaluation of their relevance to various health problems. Topics covered include risk perception, genetic counseling and testing, health and illness behaviour, psychosocial predictors of disease development and outcome, psychosocial interventions, doctor-patient communication and end-of-life issues.

PSYC4507
Counselling Psychology

Credit points: 6 **Session:** Semester 2 **Classes:** 25 hours per semester. **Prohibitions:** PSYC4717 **Assessment:** Examination and seminars

The weekly meetings will consist of lectures, seminar papers, discussions, role plays and demonstrations. The main aim of the course is to consider the application of general skills and theories of counselling to specific areas of counselling. Topics will be selected from those listed below on the basis of the experience and interests of the class members. Defining counselling. Skills oriented models of individual counselling and the organizing principles of counselling as proposed by various theoretical viewpoints. Relational counselling: Extending theories and principles of individual counselling to relational work and issues. Practice: Applying counselling theory and skills in various community settings; Industry, education, personal growth, vocational guidance, rehabilitation, health, grief, contemporary issues (eg. domestic violence, suicide), multicultural issues. Professional issues: Supervision; burnout; ethics; professional associations; using research to guide and inform counselling practice.

Textbooks
Corey, G. (2001). Theory and Practice of Counseling and Psychotherapy. Brooks-Cole.
Egan, G. (2001). The Skilled Helper : A Problem Management Approach to Helping. Brooks-Cole.

PSYC4508
Psychology of Addiction

Credit points: 6 **Session:** Semester 2 **Classes:** 25 hours per semester. **Prohibitions:** PSYC4718 **Assessment:** Essay and examination.

The course is concerned with addictive behaviours such as smoking, alcohol consumption, illicit drug use, eating, gambling, and playing computer games. The course begins with a critical examination of the meaning of 'addiction'. The remainder of the course is divided between addictive behaviour where drugs are not involved (so-called 'psychological addictions') and addictive behaviour where consumption of drugs is involved (so-called 'drug addictions'). The focus of the first segment on psychological addiction is the question of whether such behaviour meets the criteria for description as addictive, and what is gained by broadening or weakening the notion of addiction to include psychological addiction. The behaviours used as the primary examples of psychological addictions are excessive eating and pathological gambling. The focus of the second segment on drug addiction is the biology, pharmacology, genetics and socio-political climate of drug consumption. Emphasis is placed on the question of whether nicotine is an addictive substance. Throughout the unit, there is a strong emphasis on clinical aspects of addictive behaviour and preferred treatment options. The course is intended to be a useful introduction to students who are contemplating a career in drug and alcohol work, in addictions counselling and in the treatment of pathological gambling.

Resolutions

Graduate Diploma in Science (Psychology)

[Section 1]

1. **Admission**
1.1 The Dean of the Faculty of Science may admit to candidature for the Graduate Diploma in Science (Psychology):
1.1.1 graduates who have completed a bachelor's degree, with an APS accredited major in Psychology from a recognised tertiary institution within the past 10 years and who have achieved a minimum of credit average in Senior (third year) units of study, which includes units of study in statistics/research methods, which meet the requirements of the Department.
1.2 The Academic Board, on the recommendation of the appropriate Interdepartmental Committee and of the Faculty, may admit to candidature for the graduate diploma, graduates of other universities or other appropriate institutions who have qualifications equivalent, in the opinion of the Academic Board, to those specified in subsection 1.1.1.
2. **Units of study**
2.1 The units of study for the Graduate Diploma in Science (Psychology) are listed in the table in subsection 4.1 of these resolutions.
2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the unit of study descriptions.
3. **Requirements for the Graduate Diploma in Science (Psychology)**
3.1 Candidates for the Graduate Diploma in Science (Psychology) are required to complete satisfactorily units of study giving credit for a total of 48 credit points, selected from units of study approved for the Graduate Diploma in Science (Psychology).

[Section 2]

4. **Details of units of study**
4.1 The units of study for the Graduate Diploma in Science (Psychology) are listed in the table as follows:

Unit of study		Credit points
Full-time students		
Semester 1 Core units 24 credit points		
PSYC4500	Research Project (A)	10
PSYC4501	Psychological Research Methods	8
PSYC4503	Special Fields Topic (A)	6
Semester 2 Core units 24 credit points		
PSYC4505	Research Project (B)	10
PSYC4502	Ethics and Current Issues in Psychology	2
Semester 2 Optional units of study (select 2 electives)		
PSYC4506	Health & Safety Psychology Issues	6
PSYC4507	Counselling Psychology	6
PSYC4508	Psychology of Addiction	6
Part-time students		
Year 1, Semester 1 18 credit points		
PSYC4500	Research Project (A)	10
PSYC4501	Psychological Research Methods	8
Year 1, Semester 2 12 credit points		
PSYC4505	Research Project (B)	10
PSYC4502	Ethics	2

Unit of study		Credit points
Year 2, Semester 1 6 credit points		
PSYC4503	Special Fields Topic	6
Year 2, Semester 2 12 credit points		
Two Electives		12

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
4.6 A candidate shall complete coursework to the value of 48 credit points. The structure of the program is given in the table in subsection 4.1.

5. **Enrolment in more/less than minimum load**
5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**
6.1 Cross-institutional study shall not be available to students enrolled in the Graduate Diploma in Science (Psychology) except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**
7.1 Admission to the Graduate Diploma in Science (Psychology), may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of subsection 1 above.

7. **Discontinuation of enrolment**
7.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
7.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

8. **Suspension of candidature**
8.1 A student may seek written permission from the Dean to suspend candidature in the course.
8.2 Suspension may be granted for a maximum of one year.

9. **Re-enrolment after an absence**
9.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

10. **Satisfactory progress**
10.1 A candidate cannot repeat any part of the Graduate Diploma in Science (Psychology) if he or she fails the Research project and at least one other component OR passes the Research Project but fails more than two components.
10.2 If the candidate fails either the Research Project or one other component, permission may be granted for the candidate to repeat that unit of study the following year.
10.3 The Dean may call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the Graduate Diploma in Science (Psychology).
10.4 If good cause has not been established, the student's candidature will be terminated.

11. **Time limit**
11.1 A candidate for the Graduate Diploma in Science (Psychology) shall proceed as a full-time student for a period of two semesters or, with the approval of the interdepartmental Committee, as a part-time student for four semesters.

12. **Assessment policy**
12.1 A candidate may be tested by written and oral examinations, assignments, exercises and practical work or any combination of these.
12.2 On completion of the requirements for the Graduate Diploma in Science (Psychology), the results of the examination of the coursework and participation in the seminar series shall be reported by the Interdepartmental Committee to the Faculty, which shall determine the result of the candidature.

13. **Credit transfer policy**
13.1 Credit is not available in the Graduate Diploma in Science (Psychology) for previous study.

Psychology of Coaching

Graduate Certificate in Applied Science (Psychology of Coaching)

Graduate Diploma in Applied Science (Psychology of Coaching)

Master of Applied Science (Psychology of Coaching)

Course overview

The Master of Applied Science (Psychology of Coaching) is an articulated postgraduate program which teaches the applied science of human performance enhancement and coaching. Coaching psychology sits at the intersection of counselling, clinical and organisational psychology and focuses on working with non-clinical populations. This program provides students with a sound grounding in the theoretical and methodological aspects of coaching and coaching psychology and teaches fundamental applied coaching skills.

Students enrolled in the Graduate Certificate in Applied Science (Psychology of Coaching) may only enrol part-time.

Study for the Graduate Diploma in Applied Science (Psychology of Coaching) and the Master of Applied Science (Psychology of Coaching) may be undertaken in either part-time or full-time mode.

The progression sequence for part-time students is as follows: First semester of enrolment PSYC4721 and PSYC4722; second semester of enrolment and following semesters, PSYC4724 and remaining elective units to suit the individual student's needs and interests and to meet degree requirements.

For students studying full time, the progression sequence is as follows: First semester of enrolment PSYC4721; PSYC4722 and other elective units, second semester of enrolment PSYC4724 and remaining elective units to suit the individual student's needs and interests and to meet degree requirements. PSYC4721 and PSYC4722 must be completed before enrolling in PSYC4724. If PSYC4741 and PSYC4722 are taken in separate semesters, students should enrol in PSYC4721 before PSYC4722.

Eligibility for admission

An applicant for admission will satisfy the admission requirements for the Graduate Certificate in Applied Science or the Graduate Diploma in Applied Science or the Master of Applied Science and:

1. have a minimum 3 year sequence in Psychology; and
2. relevant work experience. Relevant work experience may include counselling, experience in organisational learning and development, management experience, employment in applied

psychology settings, professional coaching or other areas directly related to coaching.

Course outcomes

This program is designed to provide graduates with the key theoretical understandings and the core skills necessary to work as a coach in a wide range of settings. Graduates of this course will be equipped to work in the scientist-practioner model, and can expect to find employment as human performance consultants and personal, workplace of executive coaches in industry, in the human resources field or in private practice.

Units of study available in 2007 for Psychology of Coaching

Unit of study		Core/option
All units are worth 6 credit points		
Core units all degrees		
PSYC4721	Theories & Techniques of Coaching Psych	C
PSYC4722	Fundamentals of Coaching Practice	C
PSYC4724	Coaching Practice: Co-coaching & Groups	C
Elective units â graduate diploma		
PSYC4723	Socio-cognitive Issues in Coaching Psych	O
PSYC4725	Assessment and Selection	O
PSYC4727	Coaching in Organisations	O
PSYC4729	Groups, Teams and Systems	O
PSYC4730	Personal and Work/Life Coaching	O

Unit of study descriptions

Core units of study

PSYC4721
Theories & Techniques of Coaching Psych

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 3 hour lecture per week. **Assessment:** Written papers (essay, journal or case study) and exam.

This unit outlines the emergence of Coaching from its roots in personal development, sports coaching, management consulting, clinical and counselling psychology, and details the fundamental models and techniques of coaching. Theories and techniques will be evaluated by reference to empirical research and conceptual analysis. Drawing on a broad base of established Behavioural Science, primary attention will be paid to cognitive-behavioural and solution-focused theories and techniques of behaviour change and their application to coaching clients. We will also evaluate key popular psychological approaches to coaching and personal development. Each weekly seminar has a lecture component and an experiential learning component. The experiential learning component requires students to evaluate each week's topic in relation to their own personal life experience and to participate in group discussion and coaching practice.

PSYC4722
Fundamentals of Coaching Practice

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** Block teaching. **Corequisites:** PSYC 4721. **Assessment:** Written papers (essay, journal or case study) and exam.

This unit teaches the Fundamentals of coaching, and lays the foundations for sound contemporary practice. Drawing on established approaches (e.g. Egan, 1974; Whitemore, 1992) students will be trained in the core micro skills of coaching. The unit details key coaching strategies in relation to common applications of coaching; workplace coaching, executive coaching, and personal or life coaching. Core issues relating to mental health problems and coaching practice are addressed, and we explore the essentials of professional practice development/ marketing and Ethical (ICF) practice. Each seminar has a lecture component and an experiential learning component. The experiential learning component requires students to evaluate each topic in relation to their own personal life/work experience and to participate in group discussion. Practical experience of self-coaching and co-coaching are central aspects of this unit, students will apply self-coaching strategies to their own lives. This unit is run in a block teaching format.

PSYC4724
Coaching Practice: Co-Coaching & Groups

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 3 hour lecture per week. **Prerequisites:** PSYC (4721 and 4722). **Assessment:** Written papers (case study and learning journal) and exam.

Students will consolidate the theory and skills acquired in PSYC4721 and PSYC4722 through a semester-long coaching practicum. Using real-life issues in a supportive and confidential environment, students will coach each other in a structured solution-focused personal coaching program based on the material taught in previous units of study. This unit gives students experience in being both a coach and a client. A key component of this course will be feedback from the lecturer on students' coaching styles, skills and other relevant issues. As such this unit provides students with the opportunity to embed and develop their coaching skills. Case studies and case presentations will form part of the unit.

Elective units

PSYC4723
Socio-cognitive Issues in Coaching Psych

Credit points: 6 **Session:** Semester 1 **Classes:** Block teaching with some evening tutorials. **Prerequisites:** PSYC (4721 and 4722 and either 4724 or 4728) **Assessment:** Written papers (major and minor essay) and exam.

The aim of this unit is to give students an understanding of key socio-cognitive issues related to coaching and behaviour change The focus of the unit is on critical appraisal of theory and the relation of theory to practice and research. Topics covered in this unit include models of self-regulated behaviour, personality type, the relationships between emotion, cognition and behaviour, and the roles of learnt resourcefulness, learned optimism, psychological mindedness, self-reflection and insight in behaviour change. The unit also critically evaluates contemporary understandings and assessments of emotional intelligence. Current topics and research methods in coaching psychology are also examined. Each weekly seminar has a lecture component and an experiential learning component. The experiential learning component requires students to evaluate each topic in relation to their own personal life/work experience and to participate in group discussion. This unit is run in a block teaching format.

PSYC4725
Assessment and Selection

Credit points: 6 **Session:** Semester 2 **Classes:** One 2 hour lecture per week. **Prerequisites:** PSYC (4721 and 4722 and either 4724 or 4728) **Assessment:** Take home exam, Selection Case Study and Design of assessment program.

This unit will introduce students to some of the major assessment instruments used in coaching psychology. This unit does not accredit students to administer any of the instruments examined in this unit of study. Rather the unit focuses both on critical evaluation of assessment instruments and on fostering an understanding of where each may be best utilised. Assessment instruments include: NEO 4; 16PF5; Myers Briggs Type Inventory; the DISK; Human Synergistics; BarOn EQI; WAIS; MMPI; Self-directed Search; Strong Interest Inventory; Multi-factor Leadership Questionnaire.

PSYC4727
Coaching in Organisations

Credit points: 6 **Session:** S1 Intensive **Classes:** Four Day Seminars: Block Teaching. **Prerequisites:** PSYC4721 and PSYC4722 and PSYC4724 **Assessment:** A written coaching proposal (3,000 words) (50%), take home

exam and written assignment (1,000 words) (35%), in-class exam (short answer and multiple choice) (15%).

Executive and management coaching have emerged as key factors in the enhancement of performance within organisations and corporations. This unit examines key issues in contemporary executive and management coaching and equips students with the knowledge and skills to provide world-class executive and management coaching. The emphasis is on critical evaluation of theory and application to practice. Although primarily focused on solution-focused and cognitive-behavioural approaches to executive coaching, psychodynamic (e.g. Kilburg) and systems (e.g. O'Neil) approaches are also considered. The course covers issues in senior executive coaching, coaching middle management, establishing manger-as-coach programs and coaching in the workplace.

PSYC4729
Groups, Teams and Systems

Credit points: 6 **Session:** Semester 2 **Classes:** One 3 hour lecture per week. **Prerequisites:** PSYC (4721 and 4722 and either 4724 or 4728) **Assessment:** Written papers (major essay, minor essay) and exam.

Coaching always takes place within the context of human systems, be they family, social networks, or workplace organisations. This unit of study considers both the theory and practice of working in human systems. At the theoretical level, students undertaking this unit will consider the major theoretical advances which aid our understanding of groups and complex human systems. These will include systems theory and complexity theory as well as major research findings in group and team dynamics. Students will also consider the practical implications of these theoretical approaches to coaching within organisations. Issues surrounding self organisation, leadership and control, and the management of change in complex adaptive systems will also be discussed. Students will design and facilitate a small group coaching program. This unit is run in a block teaching format.

PSYC4730
Personal and Work/Life Coaching

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture per week. **Prerequisites:** PSYC (4721 and 4722 and either 4724 or 4728) **Assessment:** Written papers (Essays or case studies) and exam.

This unit of study considers both the theory and practice of coaching adults in relation to work/life issues. Self-directed career development and imposed career transitions are important issues increasingly faced by adults. In addition, work/life balance is recognised as being an important factor in creating and maintaining well-being. Thus personal (or life) coaches have a major role to play. This unit of study details the role of the personal coach, and gives students an introduction to major theoretical perspectives on work/life balance, and career development theory and practice. Students will study key psychological theories of adult development as they relate to personal (or life) coaching practice. The perspectives covered include Work Adjustment Theory, Trait and Type Theory, and Life Span Theory. The course will focus on coaching clients through important work/life transitions, with an emphasis on understanding individual differences in relation to gender, age and personality.

Resolutions

Graduate Certificate in Applied Science (Psychology of Coaching)

Graduate Diploma in Applied Science (Psychology of Coaching)

Master of Applied Science (Psychology of Coaching)

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for:

1.1.1 *the Graduate Certificate in Applied Science (Psychology of Coaching):*

1.1.1.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.1.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.1.1; or

1.1.1.3 persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;

1.1.2 *the Graduate Diploma in Applied Science (Psychology of Coaching):*

1.1.2.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.2.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.2.1; or

1.1.2.3 persons who have completed requirements for the Graduate Certificate in Applied Science, or equivalent;

1.1.3 *the Master of Applied Science (Psychology of Coaching):*

1.1.3.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.3.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.3.1; or

1.1.3.3 persons who have completed requirements for the Graduate Diploma in Applied Science, or equivalent.

1.2 In relation to particular subject areas the Dean may require applicants to satisfy additional specific requirements relating to that subject area.

1.3 The additional requirements for Psychology of Coaching are as follows.

1.3.2 An applicant for admission to the Graduate Certificate in Applied Science (Psychology of Coaching), Graduate Diploma in Applied Science (Psychology of Coaching) or Master of Applied Science (Psychology of Coaching) should:

1.3.3 have a minimum 3 year sequence of study in Psychology; and

1.3.4 relevant work experience. Relevant work experience may include counselling, experience in organisational learning and development, management experience, employment in applied psychology settings, professional coaching or other areas directly related to coaching.

2. **Units of study**

2.1 The units of study for the Graduate Certificate in Applied Science (Psychology of Coaching), Graduate Diploma in Applied Science (Psychology of Coaching) and Master of Applied Science (Psychology of Coaching) are listed in subsection 4.1.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the unit of study descriptions.

3. **Requirements for Graduate Certificate in Applied Science (Psychology of Coaching) (GradCertApplSc(PsychCoach)); Graduate Diploma in Applied Science (Psychology of Coaching) (GradDipAppSc (PsychCoach)); Master of Applied Science(Psychology of Coaching) (MApplSc(PsychCoach))**

3.1 Candidates for the Graduate Certificate in Applied Science (Psychology of Coaching) are required to satisfactorily complete three core units of study PSYC4721, PSYC4722 and PSYC4724 and 6 credit points from elective units.

3.2 Candidates for the Graduate Diploma in Applied Science (Psychology of Coaching) are required to satisfactorily complete three core units of study PSYC4721, PSYC4722 and PSYC4724 and 18 credit points from elective units.

3.3 Candidates for the Master of Applied Science (Psychology of Coaching) are required to complete satisfactorily three core units of study PSYC4721, PSYC4722 and PSYC4724 and a further 30 credit points from elective units of study.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Applied Science (Psychology of Coaching), Graduate Diploma in Applied Science (Psychology of Coaching), and Master of Applied Science (Psychology of Coaching), are listed in the following table:

Unit of study		Core/option
All units are worth 6 credit points. To enrol in these units of study, candidates must satisfy the specific requirements detailed in subsection 3 of the Resolutions.		
Core units all degrees		
PSYC4721	Theories & Techniques of Coaching Psych	C
PSYC4722	Fundamentals of Coaching Practice	C
PSYC4724	Coaching Practice: Co-coaching & Groups	C
Elective units Graduate Diploma and Master's		
PSYC4723	Socio-cognitive Issues in Coaching Psych	O
PSYC4725	Assessment and Selection	O
PSYC4727	Coaching in Organisations	O
PSYC4729	Groups, Teams and Systems	O
PSYC4730	Personal and Work/Life Coaching	O

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

4.4.3 to pass any other examination of the unit of study that may apply.

4.5 All units of study for a particular subject area may not be available every semester.

4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**

5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**

6.1 Cross institutional study shall not be available to students enrolled in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science courses, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**

7.1 Admission to candidature may be limited by a quota.

7.2 In determining the quota, the University will take into account:

7.2.1 availability of resources including space, laboratory and computing facilities; and

7.2.2 availability of adequate and appropriate supervision.

7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of subsection 1 above.

8. **Discontinuation of enrolment**

8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**

9.1 A student may seek written permission from the Dean to suspend candidature in the course.

9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**

10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**

11.1 Candidates for the Master of Applied Science (Psychology of Coaching), the Graduate Diploma in Applied Science (Psychology of Coaching), and the Graduate Certificate in Applied Science (Psychology of Coaching), shall be governed by the rules as follows:

11.1.1 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Applied Science (Psychology of Coaching) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Applied Science (Psychology of Coaching);

11.1.2 A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Applied Science (Psychology of Coaching) and/or the Graduate Diploma in Applied Science (Psychology of Coaching) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Applied Science (Psychology of Coaching);

11.1.3 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Graduate Certificate in Applied Science (Psychology of Coaching) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will not be permitted to re-enrol.

11.2 A student who has failed a cumulative total of more than 18 credit points in the Master of Applied Science (Psychology of Coaching) and/or the Graduate Diploma in Applied Science (Psychology of Coaching) and/or the Graduate Certificate in Applied Science (Psychology of Coaching) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.

11.3.1 A student who has failed a core unit at the second attempt in the Master of Applied Science (Psychology of Coaching) and/or the Graduate Diploma in Applied Science (Psychology of Coaching) and/or the Graduate Certificate in Applied Science (Psychology of Coaching) will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol.

11.3.2 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**

12.1 A candidate for the Graduate Certificate in Applied Science (Psychology of Coaching) shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.

12.2 A candidate for the Graduate Diploma in Applied Science (Psychology of Coaching) shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of six semesters.

12.3 A candidate for the Master of Applied Science (Psychology of Coaching) shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters.

13. **Assessment policy**

13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**

14.1 Credit is not available in the Graduate Certificate in Applied Science (Psychology of Coaching), Graduate Diploma in Applied Science (Psychology of Coaching) and Master of Applied Science (Psychology of Coaching) for postgraduate study which has not been undertaken in these award courses within the previous three years.

14.2 A candidate who has qualified for the award of the Graduate Certificate in Applied Science (Psychology of Coaching) may

transfer, within three years, to the Graduate Diploma in Applied Science (Psychology of Coaching) and receive credit for up to 24 credit points from the Graduate Certificate in Applied Science (Psychology of Coaching).

14.3 A candidate who has qualified for the award of the Graduate Diploma in Applied Science (Psychology of Coaching) may transfer, within three years, to the Master of Applied Science (Psychology of Coaching) and receive credit for up to 36 credit points from the Graduate Diploma in Applied Science (Psychology of Coaching).

14.4 A candidate who has completed units of study in the Applied Science program within the previous three years, but has not qualified for an award, may transfer to another award course within the same Applied Science program and receive credit for the units of study completed.

Health Psychology degrees

Graduate Certificate in Applied Science (Health Psychology)

Graduate Diploma in Applied Science (Health Psychology)

Master of Applied Science (Health Psychology)

Course overview

The Master of Applied Science (Health Psychology) is an articulated postgraduate program which teaches the theory and practical applications of Health Psychology. Health psychology is the field of psychology devoted to the study of the promotion and maintenance of health; the causes and detection of illness; the prevention and treatment of illness; and the improvement of health care systems and health care policy. The Master of Applied Science (Health Psychology) is designed to provide students with an understanding of the theoretical, methodological and practical aspects of health psychology.

Students enrolled in the Graduate Certificate in Applied Science (Health Psychology), the Graduate Diploma in Applied Science (Health Psychology) and the Master of Applied Science (Health Psychology) may undertake study in either part-time or full-time mode. There are three core units of study at graduate certificate level PSYC5001, PSYC5002 and PUBH5018. Students then chose an elective from PSYC5003, PSYC5004, PSYC5005 and BACH5180.

At graduate diploma level students complete the units of study at Certificate level as well as one elective from PSYC5003, PSYC5004, PSYC5005 and BACH5180 and one core unit of study BACH5268.

At master's level students complete two additional electives.

A research stream is also available to Master of Applied Science (Health Psychology) students in their second semester of enrolment, upon completeion of at least 24 credit points with a distinction average in their first full-time semester (or equivalent).

Course outcomes

This program is designed to meet the needs of a wide variety of health professionals interested in the growing area of health psychology: for example, people working within the Department of Health and other organisations, charities and research groups, allied health professionals, psychology students, geneticists and genetic counsellors. These programs will allow these individuals to pursue health psychology careers within the health service, academia and government.

Units of study available in 2007 for Health Psychology

Unit of study		Credit points
Core units of study - all degrees		
PSYC5010	Health Psychology in Clinical Practice	6
PSYC5011	Applying Models of Health Behaviour	6
PUBH5018	Introductory Biostatistics	6
Additional core units - Masters Research stream		
PSYC5015	Research Project in Health Psychology	12
BACH5268	Developing a Research Project	6
Elective units of study		
PSYC5013	Coping and Adjustment to Illness	6
PSYC5012	Advanced Communication Skills	6
BACH5180	Stress and Illness	6
PSYC5014	Developments in Health Psychology	6
HPSC1001	Bioethics	6
PUBH5010	Epidemiology Methods and Uses	6
NURS6010	Clinical Qualitative Research	6
NURS5024	Cancer Nursing Practice	6
NURS5025	Understanding Cancer Causes and Therapies	6
NURS5026	Health Promotion in Cancer Recovery	6
BACH5061	Statistical Analysis with SPSS	6
BACH5300	Action Research	6

Unit of study descriptions

Core units of study - all degrees

PSYC5010
Health Psychology in Clinical Practice

Credit points: 6 **Session:** Semester 1 **Classes:** 1 one hour lecture, two hours of tutorials per week **Assessment:** Tutorial attendence and presentation, major assignment - 2500 word essay **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

The work of health psychologists relies on a broad range of professional skills and attributes. The aim of this unit of study is to conceptually define health within a biopsychosocial framework and to present some of the psychological reactions to hospitalisation, illness and pain. This unit of study provides students with an introduction to key areas of health psychology, and demonstrates how they relate to other disciplines. It also considers the context within which treatment takes place. This unit of study will explore mental and physical diseases. This unit of study examines the application of psychology in clinical settings. The unit of study considers the application of psychological theory to illness and preparation for hospitalization; the management of adverse psychological sequelae arising from hospitalization; and rehabilitation.

PSYC5011
Applying Models of Health Behaviour

Credit points: 6 **Session:** Semester 2 **Classes:** 1 one hour lecture and two hours of tutorials per week **Assessment:** Presentation of intervention, write up of intervention **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

The student will be given the opportunity to develop an intervention based on social cognitions models. The process can be followed from start to finish allowing the individual to utilise knowledge and skills gained in other units of study. It is an intended outcome for students enrolled in the MApplSc (HealthPsych) that students can demonstrate an understanding of the key models and theories in Health Psychology which are seen by many to be the foundations of the subject area. The aim of this unit of study is to allow students to identify an area of Health Psychology where an intervention would be appropriate, review existing literature on the topic, formulate the intervention, and evaluate the intervention on a pilot level.

PUBH5018
Introductory Biostatistics

Credit points: 6 **Teacher/Coordinator:** Dr Petra Macaskill **Session:** Semester 1 **Classes:** 1x2hr lecture, 11x1hr lectures, 11x2hr tutorials, 2x2hr and 10x0.5hr statistical computing self directed learning tasks over 12 weeks **Assessment:**

1x4page assignment (30%) and 1x2.5hr open-book exam (70%) **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

This unit aims to provide students with an introduction to statistical concepts, their use and relevance in public health. This unit covers: summarising and displaying data; sampling; probability distributions; sampling distribution of the mean; confidence interval and significance tests for one-sample and paired continuous data, for a proportion and paired binary data, for two independent proportions, for the means of two independent samples; correlation and simple linear regression; distribution-free methods for two independent samples, two paired samples and correlation; sample size estimation; statistical aspects of study design and analysis and implementing methods using statistical software (SPSS). It is expected that students spend an additional 2 hours preparing for their tutorials. This unit may be undertaken in face to face or online/distance mode. Computing tasks are self-directed.

Textbooks
Course notes are provided.

Core units of study - Master of Applied Science (Health Psychology) Research Stream

PSYC5015
Research Project

Credit points: 12 **Session:** Semester 1, Semester 2 **Classes:** The student will use as many of the identified sessions as s/he wishes for collection of data, preparation of the project etc under the supervision of their research supervisor. Lectures are voluntary, and are designed to cover common problems. The majori **Prerequisites:** all of PSYC5010, PSYC5011, PUBH5018 and BACH5268; plus 12 credit points of electives. Students must have a distinction average in the prerequisite units. **Assessment:** Project **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

The student will be given the opportunity to carry out a substantial piece of research in the field of health psychology. The research process can be followed from start to finish allowing the individual to utilise knowledge and skills gained in other unit of study. It is an intended outcome for students enrolled in the MApplSc (HealthPsych research stream) that they present evidence of their capacity to conduct a substantial piece of independent research that builds clearly upon their prior learning and which draws upon appropriate methodologies. The aim of this unit of study is to allow students to identify a research issue, review existing literature on the topic, formulate novel research questions, and test these questions through the application of contemporary psychological methodologies and appropriate data-analytic procedures.

BACH5268
Developing A Research Project

Credit points: 6 **Teacher/Coordinator:** Dr Rob Heard, email: r.heard@fhs.usyd.edu.au **Session:** Semester 1, Semester 2 **Classes:** 3 hrs/week semester 1 on campus Delivery Mode: Normal delivery evening Cumb Sem 1, DE Cumb Sem 1, Cumb Sem 2 **Assessment:** 3 assignments **Campus:** Cumberland **Mode of delivery:** Normal (lecture/lab/tutorial) Evening

Note: Not available for Doctor of Health Science students

This unit provides an overview of the research process and focus on the formulation of a research proposal. It provides students with an opportunity to review and update their knowledge of research methods, and introduce the research electives which concentrate on a particular methodology or aspect of the research process. Basic research design issues are considered. Various methods of data collection are examined together with their suitability for investigating different types of research questions. Students explore the use of quantitative and qualitative data, longitudinal and cross-sectional designs, and data resulting from experimental interview, observation, single case and survey research methods in addition to content analysis and secondary data analysis. Emphasis is placed on the issues of validity and reliability of data collection techniques. Basic statistical procedures are briefly reviewed and applications such as epidemiology and evaluation research are introduced.

Textbooks

Minichiello V, Sullivan G, Greenwood K, & Axford R. (2004) Handbook of Research Methods for Nursing and Health Sciences (2nd ed) Frenchs Forest NSW: Pearson Education Australia.

Elective units of study

PSYC5013
Coping and Adjustment to Illness

Credit points: 6 **Session:** Semester 1 **Classes:** 1 one hour lecture and two hours of tutorials per week **Assessment:** Formal examination **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

The unit of study aims to apply a psychosocial perspective to the study of disability and chronic disease. In this unit, students will consider the impact of acute and chronic illness states (including physical and mental illness) on the patient and their family. Aspects of quality of life affected will be considered, including sexuality, body image, fatigue, existential crisis, social and intimate relationships, physical reactions and spirituality. The impact of formal and informally systems of social support on illness and outcomes will be explored. The unit will incorporate evaluation of research methods used in such studies together with the application of health psychology theory and a critical examination of research findings. Relationships between health cognitions, health behaviour and psychological adjustment will be an important theme of the unit of study, as will be a consideration of interventions to improve patient well being. Broad social, cultural, and political aspects of disability and acute and chronic disease will also be examined. The rise in number of people suffering from or caring for someone who has a chronic condition has proved to be a major challenge facing health psychologists. The impact on and needs of carers and family members will also be considered in this unit of study.

PSYC5012
Advanced Communication Skills

Credit points: 6 **Session:** S2 Intensive **Classes:** lectures, seminars and role play. This unit will be taught in block intensive mode over five days **Assessment:** Role play examination, essay **Campus:** Camperdown/Darlington **Mode of delivery:** Block Mode

In this unit of study students will consider risk communication, health professional skills, empathy, breaking bad news and interaction analysis. This unit of study seeks to develop a critical awareness of the psychological aspects of the health care contexts. The unit of study will investigate: health professional-patient communication and implications for patient adherence to treatment programmes and patient satisfaction; the impact of psycho-social and physical aspects of hospitalisation on patients and health care professionals; effects of representations and perceptions of illness and symptoms on decision making and health related behaviour. Patient interaction with the health care system is an important issue across a range of facets of health care provision. The aim of this unit of study is to provide students with a comprehensive understanding of the key issues related to the nature of and outcome form patient interaction with health care provision.

BACH5180
Stress and Illness: Management Issues

Credit points: 6 **Teacher/Coordinator:** Dr Gomathi Sitharthan **Session:** Semester 1 **Classes:** On campus contract learning **Assessment:** Assignments **Campus:** Cumberland **Mode of delivery:** Normal (lecture/lab/tutorial) Day

The nature of the relationship of the psychophysiological stress response and the development of illness will be explored and critically evaluated in this elective. A range of disorders will be considered, for example headaches, coronary heart disease and diabetes. Current research literature across a variety of relevant disciplines will be evaluated as a background to original research. An introduction to the theoretical and practical aspects of a range of stress management techniques is provided. Emphasis will be placed on the research utility of those techniques commonly included in stress-management 'packages', such as relaxation, biofeedback, cognitive restructuring and time management. This is an on-campus directed independent study unit.

Textbooks

Stress and Health. 3rd Edition. Rice, PC. (1999). Melbourne: Brooks/Cole Publishing Company.

PSYC5014
Developments in Health Psychology

Credit points: 6 **Session:** Semester 1 **Classes:** tutorials- three hours per week **Assessment:** one major assignment - 5000 word essay **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

The purpose of this unit of study is to allow the student to choose a topic of particular relevance to their areas of expertise. It will allow the student to examine new developments within Health Psychology which may impact on their clinical or work practice.

PUBH5010
Epidemiology Methods and Uses

Credit points: 6 **Teacher/Coordinator:** Associate Professor Alex Barratt, Dr Tim Driscoll **Session:** Semester 1 **Classes:** 1x1hr lecture and 1x2hr tutorial per week for 13 weeks (lectures and tutorials may be completed online) **Assessment:** 1x4page assignment (30%) and 1x2.5hr open-book exam (70%) **Campus:** Camperdown/Darlington **Mode of delivery:** Normal (lecture/lab/tutorial) Day

This unit provides students with core skills in epidemiology, particularly the ability to critically appraise public health and clinical epidemiological research literature. This unit covers: study types; measures of frequency; measures of association; use and interpretation of population health data; selection bias; information bias; confounding / effect modification; screening and test evaluation; infectious disease outbreaks; causal inference; measuring public health impact and systematic reviews. It is expected that students spend an additional 2 hours preparing for their tutorials. This unit may be undertaken in face to face or online/distance mode.

Textbooks
Webb, P.W., Bain, C.J. and Pirozzo, S.L: Essential Epidemiology: An Introduction for Students and Health Professionals: Cambridge University Press 2005.

NURS6010
Clinical Qualitative Research

Credit points: 6 **Session:** Semester 2 **Classes:** intensive mode **Assessment:** assignments, exam **Campus:** Camperdown/Darlington **Mode of delivery:** Block Mode

This unit explores the specific issues related to the use of qualitative research in clinical settings and with clinical populations. In particular, it explores the appropriate uses of a qualitative research methodology in which the experiences of people with a health issue or illness are being researched. The unit focuses specifically on research approaches where human social interaction and/or observation is fundamental to the collection of data. The unit explores issues of design, methods of data collection, ethical and clinical considerations as well as matters related to rigor, analysis and reporting of results.

NURS5024
Cancer Nursing Practice

Credit points: 6 **Session:** Semester 2 **Classes:** intensive mode **Prerequisites:** NURS5025 **Assessment:** assignments, exam **Campus:** Camperdown/Darlington **Mode of delivery:** Block Mode

This unit will explore the evidence-based knowledge for best nursing practice in cancer treatment and care. The nurse's role in the diagnosis of cancer, treatment and follow up will be investigated. Biomedical approaches to cure and cancer control will be explored, and key principles of cancer nursing therapeutics addressed. The therapeutic nursing role of communicating with patients and their families, translating medical information, educating patients and families, and providing support will be investigated. The unit will also identify common side effects of the medical treatment for cancer and identify best practice for developing related supportive care strategies. The unit will further investigate how nursing services are being reconfigured in Australia to more appropriately meet the needs of people undergoing diagnostic tests or treatment for cancer, rather than for the those of the service or service provider.

NURS5025
Understanding Cancer Causes & Therapies

Credit points: 6 **Session:** Semester 1 **Classes:** intensive mode **Assessment:** assignments, exam **Campus:** Camperdown/Darlington **Mode of delivery:** Block Mode

This unit of study is a pre requisite for the field of cancer nursing and will provide the scientific basis for cancer nursing practice. The unit will explore cancer epidemiology, with a focus on identifying the determinants and distribution of cancer in defined populations. The reporting and measurement of cancer in Australia will be included. Cancer as a genetic disease is explored and advances in understanding the biology of cancer is critiqued. Biological and physiological principles that support cancer treatments will be reviewed in detail.

NURS5026
Health Promotion in Cancer Recovery

Credit points: 6 **Session:** Semester 2 **Classes:** intensive mode **Prerequisites:** NURS5025 **Assessment:** assignment, exam **Campus:** Camperdown/Darlington **Mode of delivery:** Block Mode

This unit will analyse the consequences of a cancer diagnosis and the subsequent treatment, on the individual and their family. The short and long term side effects, impact on quality of life, employment, physical and psychological functioning will be reviewed. Approaches to maximising the individual's recovery will be explored, with specific focus on the role of early interventions, and maintaining individual autonomy. Areas such as body image, fertility, employment, and management offatigue will be a major focus of this unit.

BACH5061
Statistical Analysis With SPSS

Credit points: 6 **Teacher/Coordinator:** Dr Peter Choo and Ms Karen Pepper **Session:** Semester 1, Semester 2 **Classes:** Individual supervision including a small number of on-campus classes. **Assessment:** Practical assignments **Campus:** Cumberland **Mode of delivery:** Normal (lecture/lab/tutorial) Day

This unit teaches the student to use the SPSS for Windows computer package to manage and analyse research data using a range of common statistical procedures. Data management procedures will include data transformation and selection, and import and exporting data. Statistical analyses to be covered include descriptive statistics, t-test, analysis of variance, correlation and regression, chi-square, non-variance, multiple regression, and factor analysis.

Textbooks
SPSS Analysis Without Anguish, Coakes, S.J. & Steel, L.G. (1999)

BACH5300
Action Research

Credit points: 6 **Teacher/Coordinator:** Dr Ian Hughes (02) 9351 9582, i.hughes@fhs.usyd.edu.au **Session:** Semester 1 **Classes:** Web based: no on-campus attendance required. **Assessment:** Three assignments **Practical field work:** None **Campus:** Cumberland **Mode of delivery:** On-line

Action research is a participatory, process concerned with developing practical knowledge in the pursuit of worthwhile human purposes. In participation with others, health professionals and researchers bring action and reflection, theory and practice gogether in the pursuit of practical solutions to pressing issues of health and wellbeing of individuals and their communities. Action research is a set of practices for systematic development of knowledge grounded in a participatory worldview. It is rather different from traditional academic research, with different purposes, based in different relationships, and with different ways of conceiving knowledge and its relation to practice. Action research can be applied in community work, complex systems research, collaborative inquiry, improving health interventions and in other ways. This Unit is suitable for research students developing action research, participatory research or similar projects, and for health professionals who are serious about improving their practice. Check the Unit web site www.fhs.usyd.edu.au/bach/5300.shtml for recent details.

Textbooks
See: www.fhs.usyd.edu.au/bach/5300.shtml

Resolutions

Graduate Certificate in Applied Science (Health Psychology)

Graduate Diploma in Applied Science (Health Psychology)

Master of Applied Science (Health Psychology)

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for:

1.1.1 **the Graduate Certificate in Applied Science (Health Psychology):**

1.1.1.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.1.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.1.1; or

1.1.1.3 persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;

1.1.2 **the Graduate Diploma in Applied Science (Health Psychology):**

1.1.2.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.2.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.2.1; or

1.1.2.3 persons who have completed requirements for the Graduate Certificate in Applied Science, or equivalent;

1.1.3 **the Master of Applied Science (Health Psychology):**

1.1.3.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.3.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.3.1; or

1.1.3.3 persons who have completed requirements for the Graduate Diploma in Applied Science, or equivalent.

1.2 In relation to particular subject areas the Dean may require applicants to satisfy additional specific requirements relating to that subject area.

1.3 The additional requirements for Health Psychology are as follows.

1.3.1 Students must have either a four-year Psychology degree or a three-year degree in a cognate discipline with at least two years relevant employment experience.

1.3.2 Students can articulate from Certificate to Master by obtaining Distinction level results at the Certificate level.

1.3.3 To obtain entry into the Research Master stream, students will need to obtain distinction or better at the Certificate level.

2. **Units of study**

2.1 The units of study for the Graduate Certificate in Applied Science (Health Psychology), Graduate Diploma in Applied Science (Health Psychology) and Master of Applied Science (Health Psychology) are listed in subsection 4.1.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the unit of study descriptions.

3. **Requirements for the Graduate Certificate in Applied Science (Health Psychology) (GradCertAppSc (HlthPsych)); Graduate Diploma in Applied Science (Health Psychology) (GradDipApplSc HlthPsych)); Master of Applied Science (Health Psychology) (MApplSc (HlthPsych))**

3.1 Candidates for the Graduate Certificate in Applied Science (Health Psychology) are required to complete satisfactorily the following core units of study: PSYC5010, PSYC5011, PUBH5018 and one elective unit of study from the following: PSYC5013, PSYC5012, or BACH5180.

3.2 Candidates for the Graduate Diploma in Applied Science (Health Psychology) are required to complete satisfactorily the following core units of study: PSYC5010, PSYC5011, PUBH5018, BACH5268; and two elective units of study from PSYC5013, PSYC5012, and BACH5180.

3.3 Candidates for the Master of Applied Science (Health Psychology) are required to complete satisfactorily the following core units of study: PSYC5010, PSYC5011, PUBH5018, BACH5268; two elective units of study from PSYC5013, PSYC5012, and BACH5180; one elective unit of study and one research elective unit of study.

3.4 Candidates for the Master of Applied Science (Health Psychology) may be admitted to the Research stream in their second semester of enrolment, upon completion of at least 24 credit points with a distinction average.

3.4.1 Candidates in the Research stream of the Master of Applied Science (Health Psychology) are required to complete satisfactorily the following units of study: PSYC5010, PSYC5011, PUBH5018, BACH5268; two elective units of study from PSYC5012, PSYC5013, BACH5180; and PSYC5015.

3.5 The units of study associated with the award course are listed in the table in subsection 4.1. Other electives will be available to students where appropriate and with agreement with the programs' coordinator and Head of School and with agreement from the Faculty involved.

3.6 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Applied Science (Health Psychology), Graduate Diploma in Applied Science (Health Psychology) and Master of Applied Science (Health Psychology) are listed in table 4 of these resolutions, as follows:

Unless otherwise indicated, all units are worth 6 credit points.

Unit of study		Core/ Option
Core for Graduate Diploma, Master		
PSYC5010	Health Psychology in Clinical Practice	C
PSYC5011	Applying Models of Health Behaviour	C
PUBH5018	Introductory Biestatistics	C
BACH5268	Developing a Research Project	C
Core for Master (Research path) only:		
PSYC5015	Research project in Health Psychology (12 cp)	C
	Electives	
PSYC5012	Advanced Communication Skills	O
PSYC5013	Coping and adjustment to illness	O
PSYC5014	Developments in Health Psychology	O
BACH5180	Stress and illness	O
BACH5061	Statistical Analysis with SPSS	O
BACH5300	Action Research	O
PUBH5010	Epidemiology Methods and Uses	O
NURS6010	Clinical Qualitative Research	O
NURS5024	Cancer nursing practice	O
NURS5025	Understanding cancer causes and therapies	O
NURS5026	Health promotion in cancer recovery	O

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.
4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:
4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and
4.4.3 to pass any other examination of the unit of study that may apply.
4.5 All units of study for a particular subject area may not be available every semester.
4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**
5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**
6.1 Cross institutional study shall not be available to students enrolled in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science courses, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**
7.1 Admission to candidature may be limited by a quota.
7.2 In determining the quota, the University will take into account:
7.2.1 availability of resources including space, laboratory and computing facilities; and
7.2.2 availability of adequate and appropriate supervision.
7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of subsection 1 above.

8. **Discontinuation of enrolment**
8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.
8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**
9.1 A student may seek written permission from the Dean to suspend candidature in the course.
9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**
10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**
11.1 Candidates for the Master of Applied Science (Health Psychology), the Graduate Diploma in Applied Science (Health Psychology), and the Graduate Certificate in Applied Science (Health Psychology), shall be governed by the rules as follows:
11.1.1 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Applied Science (Health Psychology), will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Applied Science (Health Psychology);
11.1.2 A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Applied Science (Health Psychology), and/or the Graduate Diploma in Applied Science (Health Psychology), will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Applied Science (Health Psychology);
11.1.3 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Graduate Certificate in Applied Science (Health Psychology), will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will not be permitted to re-enrol.
11.2 A student who has failed a cumulative total of more than 18 credit points in the Master of Applied Science (Health Psychology), and/or the Graduate Diploma in Applied Science (Health Psychology), and/or the Graduate Certificate in Applied Science (Health Psychology), will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.
11.3.1 A student who has failed a core unit at the second attempt in the Master of Applied Science (Health Psychology), and/or the Graduate Diploma in Applied Science (Health Psychology), and/or the Graduate Certificate in Applied Science (Health Psychology), will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol.
11.3.2 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**
12.1 A candidate for the Graduate Certificate in Applied Science (Health Psychology), shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.
12.2 A candidate for the Graduate Diploma in Applied Science (Health Psychology), shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of six semesters.
12.3 A candidate for the Master of Applied Science (Health Psychology), shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters.

13. **Assessment policy**
13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**
14.1 Credit is not available in the Graduate Certificate in Applied Science (Health Psychology), Graduate Diploma in Applied Science (Health Psychology) and Master of Applied Science (Health Psychology) for postgraduate study which has not been undertaken in these award courses within the previous three years.
14.2 A candidate who has qualified for the award of the Graduate Certificate in Applied Science (Health Psychology) may transfer, within three years, to the Graduate Diploma in Applied Science (Health Psychology) and receive credit for up to 24 credit points from the Graduate Certificate in Applied Science (Health Psychology).
14.3 A candidate who has qualified for the award of the Graduate Diploma in Applied Science (Health Psychology)may transfer, within three years, to the Master of Applied Science (Health Psychology) and receive credit for up to 36 credit points from the Graduate Diploma in Applied Science (Health Psychology).
14.4 A candidate who has completed units of study in the Applied Science program within the previous three years, but has not qualified for an award, may transfer to another award course within the same Applied Science program and receive credit for the units of study completed.

30. Postgraduate coursework: Spatial Information Science degrees

This chapter sets out the requirements for the Graduate Certificate in Applied Science (Spatial information Science). A comprehensive guide to the requirements and units of study of the coursework degrees is listed.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously at the end of this chapter, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/

Course overview

The Graduate Certificate in Applied Science (Spatial Information Science) provides an understanding of spatial analysis and modelling theory and use of GIS and Remote Sensing methods in a range of application fields. The opportunity to select optional units in combination with the core GIS units will allow students to focus on a preferred specialisation within the broader spatial science spectrum. In providing a solid grounding in the principles of spatio-temporal analysis and spatial reasoning the core units will engender a depth of knowledge that is immediately transferable to industry. The optional units will extend this knowledge in specific applications areas and reinforce spatial science skills through practical and field-based training.

Course outcomes

The program will enable students to adopt effective spatial analysis methods for addressing broader environmental and socio-economic issues, examine geographical trends, embrace advances in spatial information technologies and contribute to innovations in the spatial science industry.

Unit of study descriptions

GEOG5001
Geographic Information Science A

Credit points: 6 **Teacher/Coordinator:** Dr David Chapman **Session:** Semester 1, Semester 2 **Classes:** Six workshops. **Assessment:** Report

Associated degrees: Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), M Sc, PG Coursework Exchange.

This unit of study gives an overview of basic spatial data models, and enables students to understand the import and export of data to and from a geographical information system (GIS). The manipulation of spatial data at a level appropriate to planning or locational applications, and the development of thematic maps from diverse data layers, will be addressed.

GEOG5002
Geographic Information Science B

Credit points: 6 **Teacher/Coordinator:** Dr Eleanor Bruce **Session:** Semester 2 **Classes:** One 2 hour lectures, one 1 hour tutorial, one 3 hour practical per week for 6 weeks. **Assumed knowledge:** GEOG5001 **Assessment:** 2500 word assignment, seminar presentation, tutorial reports, WebCT quiz.

Associated degrees: Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), PG Coursework Exchange.

This course will provide the conceptual background to more advanced GIS analysis applications and spatial reasoning methods in the context of contemporary environmental issues. The course is designed to provide an understanding of spatial analysis techniques available within a GIS environment, explore a diversity of both social and physical environmental applications and address emerging issues in GIS research. A range of topics will be introduced including field based capture of spatial information, spatial data structures, surface modelling, visibility analysis, hydrological modeling, network analysis, spatial data uncertainty and social GIS. Conceptual material presented in lectures and tutorial workshops will be placed in an applied context through a series of laboratory and field sessions designed to strengthen practical understanding and awareness of GIS methods.

GEOG5004
Environmental Mapping and Monitoring

Credit points: 6 **Teacher/Coordinator:** Dr Peter Cowell **Session:** Semester 2 **Classes:** 2 hours of lectures and one three hour practical per week. **Assessment:** Assignments

Associated degrees: Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), PG Coursework Exchange.

The unit introduces methods associated with acquiring data in the field and examines issues associated with application of spatial data to environmental monitoring, terrain mapping and geocomputing. Students will learn both theoretically and practically how environmental data is collected using different remote sensing techniques, (pre)processing methods of integrating data in a GIS environment and the role of spatial data in understanding landscape processes and quantifying environmental change.

COMP5338
Advanced Data Models

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** One 2 hour lecture and one 1 hour tutorial per week. **Prohibitions:** COMP5306 **Assumed knowledge:** COMP5138 Relational Database Management Systems **Assessment:** Assignments, written exam.

Associated degrees: B I T, B I T (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl I T, Grad Cert I T.

This course will offer a comprehensive survey of post-relational data models and technologies with significant emphasis on XML and content management on the world wide web. The important challenges in managing the complex and varied data in modern database environments will be specifically addressed.

ENVI5809
Computer Modelling & Resource Management

Credit points: 6 **Teacher/Coordinator:** Dr David Chapman **Session:** Semester 1 **Classes:** Six workshops. **Assessment:** Report

Associated degrees: Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), M Envi Sci Law, M Sc, PG Coursework Exchange.

The concept and use of computer modelling in natural resource management is introduced in this unit of study, which is aimed particularly at non-programmers.

Resolutions

Graduate Certificate in Applied Science (Spatial Information Science)

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for:

1.1.1 *the Graduate Certificate in Applied Science (Spatial Information Science)*

1.1.1.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.1.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.1.1; or

1.1.1.3 persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study.

2. **Units of study**

2.1 The units of study for the Graduate Certificate in Applied Science (Spatial Information Science) are listed in subsection 4.1.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the unit of study descriptions.

3. **Requirements for the Graduate Certificate in Applied Science (Spatial Information Science)**

3.1 Candidates for the Graduate Certificate in Applied Science (Spatial Information Science) are required to complete satisfactorily two core units of study (GEOG5001 and GEOG5002) and 12 credit points from optional units of study.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Applied Science (Spatial Information Science) are listed in the following table:

Unit of study		Core/optional
Unless otherwise indicated, all units are worth 6 credit points.		
GEOG5001	Geographic Information Science A	C
GEOG5002	Geographic Information Science B	C
GEOG5004	Environmental Mapping and Monitoring	O
COMP5338	Advanced Data Models	O
ENVI5809	Computer Modelling & Resource Management	O
AFNR5502	Remote Sensing, GIS and Land Management	O

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

4.4.3 to pass any other examination of the unit of study that may apply.

4.5 All units of study for a particular subject area may not be available every semester.

4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**

5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**

6.1 Cross institutional study shall not be available to students enrolled in the Graduate Certificate in Applied Science (Spatial Information Science) except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**

7.1 Admission to candidature may be limited by a quota.

7.2 In determining the quota, the University will take into account:

7.2.1 availability of resources including space, laboratory and computing facilities; and

7.2.2 availability of adequate and appropriate supervision.

7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 2 above.

8. **Discontinuation of enrolment**

8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**

9.1 A student may seek written permission from the Dean to suspend candidature in the course.

9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**

10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**

11.1 Candidates forthe Graduate Certificate in Applied Science (Spatial Information Science), shall be governed by the rules as follows:

11.1.1 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Graduate Certificate in Applied Science (Spatial Information Science) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will not be permitted to re-enrol.

11.1.2 A student who has failed a core unit at the second attempt in the Graduate Certificate in Applied Science (Spatial Information Science) will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol.

11.3.2 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**

12.1 A candidate for the Graduate Certificate in Applied Science (Spatial Information Science) shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.

13. **Assessment policy**

13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**

14.1 Credit is not available in the Graduate Certificate in Applied Science (Spatial Information Science), for postgraduate study which has not been undertaken in this award course within the previous three years.

31. Postgraduate coursework: Wildlife Health and Population Management Degrees

Graduate Certificate in Applied Science (Wildlife Heath and Population Management)

Graduate Diploma in Applied Science (Wildlife Heath and Population Management)

Master of Applied Science (Wildlife Heath and Population Management)

This chapter sets out the requirements for both research and coursework postgraduate degrees offered in the ares of Wildlife Health and Population Management.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously at the end of this chapter, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/

Course overview

The Graduate Certificate in Applied Science (Wildlife Health and Population Management), Graduate Diploma in Applied Science (Wildlife Health and Population Management) and Master of Applied Science (Wildlife Health and Population Management) are articulated award courses that provide a professional qualification to biologists and veterinarians working in private practice, industry, research and education. The award program brings together the disciplines of animal health and wildlife population management, developing and enhancing skills in conservation techniques for native fauna, diagnosis and management of wildlife health, and management of native and pest species populations.

Course outcomes

The aim of this articulated coursework program is to provide students with a coordinated and interdisciplinary approach to wildlife health and wildlife management, thus developing expertise to recognise and solve a broad range of problems in field populations. Upon completion of the graduate certificate, graduate diploma or master's, graduates will have a broad understanding of the topic of wildlife management and practical skills developed from field studies. In addition, the master's will provide experience in designing, carrying out and completing a research project and thesis.

Admission requirements

Graduate Certificate in Applied Science (Wildlife Heath and Population Management)

Applicants for the Graduate Certificate in Applied Science (Wildlife Health and Population Management) should hold a first degree in science or veterinary science, or have the knowledge and aptitude obtained from professional or other experience required to undertake the award course.

Graduate Diploma in Applied Science (Wildlife Heath and Population Management)

Applicants for the Graduate Diploma in Applied Science (Wildlife Health and Population Management) similarly should hold a first degree in science or veterinary science, or have the knowledge and aptitude obtained from professional or other experience required to undertake the award course, or have completed the Graduate Certificate in Applied Science (Wildlife Health and Population Management).

Master of Applied Science (Wildlife Heath and Population Management)

Applicants for the Master of Applied Science (Wildlife Health and Population Management) should hold a first degree in science or veterinary science, or have the knowledge and aptitude obtained from professional or other experience required to undertake the award course, or have completed the Graduate Diploma in Applied Science (Wildlife Health and Population Management)

Information for all degrees

Not all units of study will be available every semester. The Faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

Units of study

Core units of study

WILD5001
Australasian Wildlife: Introduction

Credit points: 6 **Session:** S1 Intensive **Classes:** Intensively taught unit, the remainder of the unit will involve personal study and project activity. See the Wildlife Health and Population Management website for dates. **Assessment:** assessments for each unit may include practical work, field studies, student presentations and written reports

Note: Core

This unit of study provides an introduction to the wildlife of Australasia, an overview of the present status of that wildlife, and an understanding of both conservation problems and management solutions. Issues in wildlife management are exemplified using a broad range of vertebrate species occupying different environments. Emphasis is placed on providing students with a coordinated and interdisciplinary approach to wildlife health and management, and on developing expertise in recognising and solving a broad range of problems in field populations. The unit integrates lectures, practical work and supervised study, and offers students the opportunity to work through real-world wildlife conservation problems relevant to their individual backgrounds.

WILD5002
Australasian Wildlife: Field Studies

Credit points: 6 **Session:** S1 Intensive **Classes:** Intensively taught unit. See the Wildlife Health and Population Management website for dates. **Assessment:** Assessments for each unit may include practical work, field studies, student presentations and written reports

Note: Core

This unit of study provides a first-hand introduction to the wildlife of Australasia, a practical overview of the present status of that wildlife, and an understanding of both conservation problems and management solutions. Issues in wildlife management are exemplified using sampling and diagnostic methods on a broad range of vertebrate species occupying different environments. The unit follows on from WILD5001 and provides practical experience via a five day field trip.

Additional Core unit Masters

WILD5009
Research Project

Credit points: 12 **Session:** Semester 1, Semester 2 **Classes:** meetings throughout semester to be arranged with supervisor. **Assessment:** independent research project

Note: Core for the Masters program

A valuable opportunity to apply some of the knowledge gained from earlier coursework, WILD5009 comprises a research project on a topic with significant emphasis on wildlife health and/or population management, as arranged between the student and an appropriate supervisor. This research experience is highly valued by prospective employers as it shows a willingness and ability to undertake guided but independent research. The project is not conducted by way of contact hours per week for a semester. Instead the student is expected to work on the project full-time and in a continuous manner for the semester. This unit of study is available only to students enrolled in the Master of Applied Science (Wildlife Health and Population Management).

Optional units

WILD5003
Wildlife Health

Credit points: 6 **Teacher/Coordinator:** A/Prof Tony English **Session:** S1 Late Int **Classes:** A full-time week on the Camden campus, with one day spent on a field trip to Taronga Zoo. **Assessment:** The assessment of this unit occurs both in the full-time week and in individual written assignments done in the student's own time. The full-time week contributes 40% of the total mark through a number of individual and syndicate tasks, with presentations to the group. The remaining 60% comes from two written assignments of 3,000 words (20%) and 5,000 words (40%) respectively.

This unit of study provides an introduction to the health issues confronting wildlife in Australasia, an overview of the health status of that wildlife, and an understanding of both the investigation of health problems and the effective management of these. Issues in wildlife disease management are exemplified using a broad range of vertebrate species occupying different environments. Emphasis is placed on providing students with a coordinated and interdisciplinary approach to wildlife health, and on developing expertise in recognising and solving a broad range of health problems in field populations. The unit is taught intensively in a full-time week on the Camden campus, with one day spent on a field trip to Taronga Zoo. The unit integrates lectures, practical work and supervised study, and offer students the opportunity to work through real-world wildlife conservation problems relevant to their individual backgrounds.

Textbooks
Unit of Study Handbook is the primary reference.

WILD5004
Vertebrate Pest Management

Credit points: 6 **Teacher/Coordinator:** A/Prof Tony English **Session:** S2 Intensive **Classes:** The Unit is taught in a full-time week at the university farm "Arthursleigh" near Marulan NSW. There are lectures, tutorials, and a variety of practical classes. **Assessment:** The assessment of this unit occurs both in the full-time week and in individual written assignments done in the student's own time. The full-time week contributes 40% of the total mark through a number of individual and syndicate tasks, with presentations to the group. The remaining 60% comes from two written assignments of 3,000 words (20%) and 5,000 words (40%) respectively.

Note: Optional

Vertebrate pests occur in many parts of the world, and can pose significant problems for management of habitat, agricultural productivity, human and wildlife health. This unit focuses on vertebrates that have been introduced to new environments, and considers in detail the impacts and management of pest vertebrates in Australia. Steps in pest management are reviewed, from problem analysis to acceptable levels of control, using case studies of cane toads, rabbits, house mice and red foxes. Traditional mortality methods of management are reviewed, and emphasis placed on developing methods based on fertility control. The Unit is taught in a full-time week at the university farm "Arthursleigh" near Marulan NSW. There are lectures, tutorials, and a variety of practical classes. The Unit is taught in a full-time week at the university farm "Arthursleigh" near Marulan NSW. There are lectures, tutorials, and a variety of practical classes.

Textbooks
Unit of Study Handbook is the primary reference.

WILD5005
In Situ Wildlife Management

Credit points: 6 **Teacher/Coordinator:** A/Prof Tony English **Session:** S1 Late Int **Classes:** Intensively taught unit. See the Wildlife Health and Population Management website for dates. **Assessment:** Assessments for each unit may include practical work, field studies, student presentations and written reports

Note: Optional

Wildlife populations do not remain static, but change in size and composition over both time and space. The challenge for managers is to recognise when change in target populations exceeds acceptable limits and intervention is necessary. This unit of study develops skills in assessing population status and recognising differences between 'small populations' and 'declining populations'. It introduces methods used in population pattern analysis, demographic analysis, threat and resource assessment, and determination of health, emphasising the value of a coordinated and interdisciplinary approach to problem recognition and resolution.

WILD5006
Ex Situ Wildlife Management

Credit points: 6 **Teacher/Coordinator:** A/P Tony English **Session:** S2 Late Int **Classes:** The Unit is taught in a full-time week at Western Plains Zoo in Dubbo, NSW. **Assessment:** The assessment of this unit occurs both in the full-time week and in individual written assignments done in the student's own time. The full-time week contributes 40% of the total mark through a number of individual and syndicate tasks, with presenations to the group. The remaining 60% comes from two written assignments of 3,000 words (20%) and 5,000 words (40%) respectively.

Wildlife populations are under a variety of threats, most of which result from human activities. Modern conservation biology seeks practical solutions to these problems, using a wide variety of options. These options may include captive breeding and re-introduction programs, provided that a range of biological, ethical and politico-economic issues are addressed. This unit of study will provide students with the ability to evaluate the likely cost-effectiveness of such programs. It will also develop knowledge of the technologies available to capture and translocate wildlife, and of the planning required to ensure the best possible chance of success. The Unit is taught in a full-time week at Western Plains Zoo in Dubbo, NSW. The unit integrates lectures, tutorials, practical work and supervised study, and offers students the opportunity to examine real-world problems in the conservation and management of threatened wildlife populations using case studies relevant to their individual backgrounds.

Textbooks
Unit of Study Handbook is the primary reference.

WILD5007
Sustainable Wildlife Use and Stewardship

Credit points: 6 **Teacher/Coordinator:** A/Prof Tony English **Session:** S2 Late Int **Classes:** A full-time week at the Camden campus (2 days) and at "Arthursleigh" farm (3 days). **Assessment:** The assessment of this unit occurs both in the full-time week and in individual written assignments done in the student's own time. The full-time week contributes 40% of the total mark through a number of individual and syndicate tasks, with presenations to the group. The remaining 60% comes from two written assignments of 3,000 words (20%) and 5,000 words (40%) respectively.

The unit considers the potential for sustainable use of wildlife to contribute to the conservation of biodiversity and the economic well-being of local communities. There will be consideration of both consumptive and non-consumptive utilisation programs, using both Australian and international examples. Ethical and animal welfare issues will be considered in some detail. The Unit is taught in a full-time week at the Camden campus (2 days) and at "Arthursleigh" farm (3 days). There are lectures, tutorials and practical classes. A case study on the Australian kangaroo harvesting industry will provide an

opportunity to examine all the factors that need to be taken into account - biological, socio-cultural, economic and animal welfare issues.

WILD5009
Research Project

Credit points: 12 **Session:** Semester 1, Semester 2 **Classes:** meetings throughout semester to be arranged with supervisor. **Assessment:** independent research project

Note: Core for the Masters program

A valuable opportunity to apply some of the knowledge gained from earlier coursework, WILD5009 comprises a research project on a topic with significant emphasis on wildlife health and/or population management, as arranged between the student and an appropriate supervisor. This research experience is highly valued by prospective employers as it shows a willingness and ability to undertake guided but independent research. The project is not conducted by way of contact hours per week for a semester. Instead the student is expected to work on the project full-time and in a continuous manner for the semester. This unit of study is available only to students enrolled in the Master of Applied Science (Wildlife Health and Population Management).

Other optional units of study

ENVI5808 Applied Ecology for Enviornmental Scientists

Resolutions

Graduate Certificate in Applied Science (Wildlife Health and Population Management)

Graduate Diploma in Applied Science (Wildlife Health and Population Management)

Master of Applied Science (Wildlife Health and Population Management)

[Section 1]

1. **Admission**

1.1 The Dean of the Faculty of Science may admit to candidature for:

1.1.1 *the Graduate Certificate in Applied Science (Wildlife Health and Population Management):*

1.1.1.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.1.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.1.1; or

1.1.1.3 persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;

1.1.2 *the Graduate Diploma in Applied Science (Wildlife Health and Population Management):*

1.1.2.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.2.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.2.1; or

1.1.2.3 persons who have completed requirements for the Graduate Certificate in Applied Science, or equivalent;

1.1.3 *the Master of Applied Science (Wildlife Health and Population Management):*

1.1.3.1 graduates of the University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;

1.1.3.2 graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection 1.1.3.1; or

1.1.3.3 persons who have completed requirements for the Graduate Diploma in Applied Science, or equivalent.

1.2 In relation to particular subject areas the Dean may require applicants to satisfy additional specific requirements relating to that subject area.

2. **Units of study**

2.1 The units of study for the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science (Wildlife Health and Population Management) are listed in subsection 4.

2.2 Credit point value, assumed knowledge, corequisites, prerequisites and any special conditions are included in the unit of study description.

3. **Requirements for Graduate Certificate in Applied Science (Wildlife Health and Population Management), Graduate Diploma in Applied Science (Wildlife Health and Population Management) and Master of Applied Science (Wildlife Health and Population Management)**

3.1 Candidates for the Graduate Certificate in Applied Science (Wildlife Health and Population Management) are required to complete satisfactorily two core units of study (WILD5001 and WILD5002) and 12 credit points from optional units of study.

3.2 Candidates for the Graduate Diploma in Applied Science (Wildlife Health and Population Management) are required to complete satisfactorily two core units of study (WILD5001 and WILD5002) and 24 credit points from optional units of study.

3.3 Candidates for the Master of Applied Science (Wildlife Health and Population Management) are required to complete satisfactorily three core units of study (WILD5001, WILD5002 and WILD5009) and 24 credit points from optional units of study.

[Section 2]

4. **Details of units of study**

4.1 The units of study for the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science (Wildlife Health and Population Management) are listed in the following table.

Unless otherwise indicated, all units are worth 6 credit points. There are no prerequisites, corequisites or other special conditions for enrolment in these units of study except that 24 credit points of units of study must be completed successfully before a candidate may enrol in WILD5009.

Unit of study		
	Core units all degrees	
WILD5001	Australasian Wildlife: Introduction	C
WILD5002	Australasian Wildlife: Field Studies	C
	Additional core unit Master	
WILD5009	Research Project (12cp)	C
	Optional units	
WILD5003	Wildlife Health	O
WILD5004	Vertebrate Pest Management	O
WILD5005	In Situ Wildlife Management	O
WILD5006	Ex Situ Wildlife Management	O
WILD5007	Sustainable Wildlife Use & Stewardship	O
ENVI5808	Applied Ecology for Environmental Scientists	O

4.2 A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

4.3 A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed.

4.4 In these resolutions, 'to complete a unit of study' or any derivative expression means:

4.4.1 to attend the lectures and the meetings, if any, for seminars or tutorial instruction;

4.4.2 to complete satisfactorily the essays, exercises, practical and project work if any; and

4.4.3 to pass any other examination of the unit of study that may apply.

4.5 All units of study for a particular subject area may not be available every semester.

4.6 The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate

coursework programs in the Faculty or elsewhere in the University.

5. **Enrolment in more/less than minimum load**

5.1 A candidate may proceed on either a full-time or a part-time basis.

6. **Cross-institutional study**

6.1 Cross institutional study shall not be available to students enrolled in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science courses, except where the University of Sydney has a formal Cooperation Agreement with another University.

7. **Restrictions on enrolment**

7.1 Admission to candidature may be limited by a quota.

7.2 In determining the quota, the University will take into account:

7.2.1 availability of resources including space, laboratory and computing facilities; and

7.2.2 availability of adequate and appropriate supervision.

7.3 In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of subsection 1 above.

8. **Discontinuation of enrolment**

8.1 A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course.

8.2 Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

9. **Suspension of candidature**

9.1 A student may seek written permission from the Dean to suspend candidature in the course.

9.2 Suspension may be granted for a maximum of one year.

10. **Re-enrolment after an absence**

10.1 A student who plans to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First Semester of the following year or the end of May for Second Semester of the same year.

11. **Satisfactory progress**

11.1 Candidates for the Master of Applied Science (Wildlife Health and Population Management), the Graduate Diploma in Applied Science (Wildlife Health and Population Management), and the Graduate Certificate in Applied Science (Wildlife Health and Population Management), shall be governed by the rules as follows:

11.1.1 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Applied Science (Wildlife Health and Population Management) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Applied Science (Wildlife Health and Population Management);

11.1.2 A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Applied Science (Wildlife Health and Population Management) and/or the Graduate Diploma in Applied Science (Wildlife Health and Population Management)will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Applied Science (Wildlife Health and Population Management);

11.1.3 A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Graduate Certificate in Applied Science (Wildlife Health and Population Management) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will not be permitted to re-enrol.

11.2 A student who has failed a cumulative total of more than 18 credit points in the Master of Applied Science (Wildlife Health and Population Management) and/or the Graduate Diploma in Applied Science (Wildlife Health and Population Management) and/or the Graduate Certificate in Applied Science (Wildlife Health and Population Management) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.

11.3.1 A student who has failed a core unit at the second attempt in the Master of Applied Science (Wildlife Health and Population Management) and/or the Graduate Diploma in Applied Science (Wildlife Health and Population Management) and/or the Graduate Certificate in Applied Science (Wildlife Health and Population Management) will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol.

11.3.2 If good cause has not been established, the student will not be permitted to re-enrol.

12. **Time limit**

12.1 A candidate for the Graduate Certificate in Applied Science (Wildlife Health and Population Management)shall complete the requirements for the award in a minimum enrolment of one semester and a maximum enrolment of four semesters.

12.2 A candidate for the Graduate Diploma in Applied Science (Wildlife Health and Population Management) shall complete the requirements for the award in a minimum enrolment of two semesters and a maximum enrolment of six semesters.

12.3 A candidate for the Master of Applied Science (Wildlife Health and Population Management) shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters.

13. **Assessment policy**

13.1 On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

14. **Credit transfer policy**

14.1 Credit is not available in the Graduate Certificate in Applied Science (Wildlife Health and Population Management), Graduate Diploma in Applied Science (Wildlife Health and Population Management) and Master of Applied Science (Wildlife Health and Population Management) for postgraduate study which has not been undertaken in these award courses within the previous three years.

14.2 A candidate who has qualified for the award of the Graduate Certificate in Applied Science (Wildlife Health and Population Management) may transfer, within three years, to the Graduate Diploma in Applied Science (Wildlife Health and Population Management) and receive credit for up to 24 credit points from the Graduate Certificate in Applied Science (Wildlife Health and Population Management).

14.3 A candidate who has qualified for the award of the Graduate Diploma in Applied Science (Wildlife Health and Population Management) may transfer, within three years, to the Master of Applied Science (Wildlife Health and Population Management) and receive credit for up to 36 credit points from the Graduate Diploma in Applied Science (Wildlife Health and Population Management).

14.4 A candidate who has completed units of study in the Applied Science program within the previous three years, but has not qualified for an award, may transfer to another award course within the same Applied Science program and receive credit for the units of study completed.

32. Staff

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Sutira Teh

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Associate Professor Ian Spence, BSc PhD *Monash*
Dr Charlotte Taylor, BSc *Dund* MHEd *NSW* PhD *Aberd*
Associate Professor Donald E Taylor, MSc *Monash* DPhil *Oxf*
Professor Neville Weber, MSc PhD
Dr Bing Bing Zhou, PhD *ANU* BSc *Nanjing*

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Administration Manager (Operations)
Suzanne Winch

Administration Manager (Student Services)
Kath Farrell

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Undergraduate Student Adviser
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Undergraduate Assistant
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International Student Adviser
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Aldrine Creado

Computer Systems Officer
Duc Hoang

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Jasmine Chambers

Assistant Marketing Manager
Louise Freys

Marketing & Events Officer
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Victoria Trebell

Web Developer
Jayne Ion, BA *Guelph* GradCertIT *CSU*

Agricultural Chemistry and Soil Science

Professor and Dean, Faculty of Agriculture, Food & Natural Resources
Les Copeland, BSc PhD, FRACI CChem. Appointed 2001

Professor in Agricultural and Environmental Chemistry (Personal Chair)
Ivan R Kennedy, PhD DSc(Agric) *WAust*, FRACI CChem. Appointed 1996

Professor in Soil Science
Alexander B McBratney, DSc PhD *Aberd*. Appointed 1995

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Inakwu OA Odeh, BSc(Agric) *Ibadan* MSc *Ahmando Bello* PhD *Adel*

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Postdoctoral Fellow
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Budiman Minasny, BAgr *Sumatera Utara* MAgr PhD
Raphael Viscarra Rossell, BScAgr PhD

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Kevin McLauchlan, BiolTechHCert *STC*

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Norman K Matheson, PhD *Edin* MSc
Rodney J Roughley, MScAgr PhD *Lond*

Anatomy and Histology

Bosch Professor of Histology and Embryology
Christopher R Murphy, BSc *Adel* PhD *Flin* DSc. Appointed 2003

Chair of Anatomy and Pain Management
Richard J Bandler, BA *Miami (Ohio)* PhD *Carnegie-Mellon* DSc

Personal Chair in Visual Neuroscience
Bogdan Dreher, MS PhD *Warsaw* DSc

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Johnston W McAvoy, BSc *Belf* PhD *Flin*. Appointed 2001

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Frank Lovicu, PhD
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Michael Slater, BSc *Macq* PhD

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Biological Sciences

ARC Federation Fellows
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Richard Shine, AM, BSc *ANU* PhD *UNE* DSc, FAA. Appointed 2006
Andrew Parker, BSc *John Moores* PhD *Macq*

Challis Professor of Biology and Professor of Biology (Genetics)
Ronald Anthony Skurray, AUAPharm PhD DSc *Adel*, MASM FAIBiol. Appointed 1991

Professor in Terrestrial Ecology (Personal Chair)
Christopher Dickman, BSc *Leeds* PhD *ANU*. Appointed 2004

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Chemistry

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Maxwell J Crossley, BSc PhD *Melb*, FAA FRACI CChem. Appointed 1999

Professor in Chemistry (Inorganic Chemistry)(Personal Chair)
Peter A Lay, BSc *Melb* PhD *ANU*, FRACI CChem. Appointed 1997

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Peter R Harrowell, BSc PhD*Chic*. Appointed 2006
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B Klaas Nauta, PhD *NCarolina*
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Hongjuan Fang, MSc *Lanzhau* PhD *Chinese Ac.Sci.*
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Sever Sternhell, PhD DSc DIC *Lond* MSc, FAA FRACI CChem
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Robert J Hunter, BSc PhD, AM FAA FRACI CChem
Julia M James, BSc PhD *Lond*, MRACI CChem
John C Mackie, PhD DSc, FRACI CChem

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Donald V Radford, MSc PhD DipEd *NE*

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Alan J Williams, MSc PhD, MRACI CChem

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Carolyn Dillon, PhD
Peter Hidi, MSc *Bud*, FRACI MIACIS
Sutharsiny Indusegaram, PhD
David Sangster, BSc, FRACI

Geosciences

Head of School
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Professor
John Connell, BA PhD *Lond*. Appointed 2001
Andrew D Short, MA *Hawaii* PhD *Louisiana State* BA. Appointed 2003

Edgeworth David Professor of Geology and William Hilton Hovell Lecturer
Peter John Davies, BSc *Leic* PhD *Sheff*. Appointed 1991

Professor of Geophysics
Iain M Mason, BScEng *Cape Town* PhD *Edin*. Appointed 1995

CRC Mining Professor of Mining Geophysics
Peter Hatherly, PhD *Macq*

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Thomas CT Hubble, MAppSc *NSW* MSc DipEd PhD
Michael Glen Hughes, BSc PhD
Philip McManus, BA GradDip *MES* PhD
William Pritchard, BA PhD
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Lecturers
Julie Dickinson, MSc *Waik* PhD *Melb*
Kurt Iveson, BEcon (SocSci) PhD
Melissa R Neave, PhD *NYState*
Derek Wyman, BSc *WOnt* PhD *Sask*

Research Fellows
Elaine Baker, PhD
Adriana Dutkiewicz, PhD *Flin*
Jonathan Hargreaves, BSc *York* SPhil *Oxf*

Research Associates
Stephanie McCready, PhD
Elizabeth Moylan
Jeffery Neilson, PhD
Daniel A Penny, BA PhD *Monash*
Maria Sdrolias, PhD
John You, PhD

Emeritus Professors
Maurice T Daly, BA PhD
Trevor Langford-Smith, BA *Melb* MSc *Adel* PhD *ANU* BSc

Honorary Professor
Eric Waddell, BA *Oxf* MA *McGill* PhD *ANU*

Honorary Associates
David F Branagan, PhD, FGS
David E M Chapman, MEngSc *NSW* BA PhD
Greg Crough
Donald W Emerson, BE MSc *NSW* PhD, FAIG FAIMM
Wayne Erskine
Richard Facer, BSc PhD
Stephanie Fahey, BA PhD
Gabor Foldvary
James Gardner, PhD
Hendrik Heijnis
Ronald Horvath, MA PhD
John P Hudson, MA PhD *ANU*

Mark Hutchinson
Robert A Jones, BEng *WAust* MEng *Auck* MSc *Lond*
Jock B Keene, BAgEc ME PhD *Calif* BSc
Keith Klepeis
Louis Moresi, PhD
Gordon Packham, PhD
Graeme Philip, PhD *Cant* DSc *Melb*
Peter Roy, BSc PhD *ImpColl*
Robin F Warner, BA *Birm* PhD *NE*
Edward Wheelwright, DFC MA *StAnd*

Senior Technical Officers
Nelson Cano
Graham Lloyd
David Mitchell
Tom E Savage, BE

Senior Computer Systems Officers
Ivan Teliatnikov
John S Twyman, BSc(Hons)

School Manager
Marlyn Horgan

Finance and Administration Officer
Lubos Spatina

Student Liaison Officer
Belinda McMillen

Discipline of Infectious Diseases and Immunology

Immunology

Discipline Head and Professor
Warwick J Britton, MBBS BScMed PhD, FRACP FRCP FRCPA DTM&H

Associate Professor
Helen Briscoe, BSc PhD *Edin*

Senior Lecturer
Robert H Loblay, MBBS PhD, FRACP

Sesqui Lecturer
Allison Abendroth, BSc PhD *Adel*

Sesqui Lecturer in Bioinformatics
Jonathan Arthur, BSc PhD

Senior Technical Officer
Jason Compton, ADiplAppSc TechCertPhotography

Honorary Associates
Clinical Senior Lecturer Stephen Adelstein, MB BCh PhD, FRACP FRCPA
Professor Antony Basten, AO, MBBS DPhil *Oxf*, FAA FTSE FRCP FRACP FRCPA
G Alex Bishop, MScAgr PhD
Clinical Senior Lecturer Roger J Garsia, MBBS PhD, FRACP FRCPA
Mark D Gorrell, BSc PhD *ANU*
Barbara D Fazekas de St Groth, BSc(Med) PhD *Melb* MBBS
Associate Professor Gary M Halliday, BSc PhD *Monash*
Bernadette Saunders, BSc PhD *Melb*

Infectious Diseases

Discipline Head and Bosch Professor of Medicine
Warwick J Britton, MBBS, BMedSc, PhD, FRACP, FRCP, FRCPA, DTM&H. Appointed 1990

Associate Professors
Colin Harbour, BSc *Wales* PhD *Lond*

Lecturers
Belinda Herring, BSc MAPPSc PhD
James Triccas, BSc PhD

Clinical Professor
Gwendolyn Lesley Gilbert, MD BSc *Melb*, FRACP FRCPA FASM (with Medicine). Appointed 1990

Clinical Associate Professors
Richard Alan Vickery Benn, DipBact *Lond* BSc(Med) MBBS, FRCPA FRACP FASM (with Medicine)
Thomas Goottlieb, MBBS, FRACP FRCPA

Clinical Senior Lecturers
Ross Bradbury, MBBS, FRACP FRCPA
Colin MacLeod, MBBS, FRCPA FRACP MASM FAFPHM (with Medicine)

Honorary appointments

Emeritus Professor
Yvonne Edna Cossart, AO, DCP *Lond* BSc(Med) MBBS, FRCPA.
Raymond Kearney, BSc PhD *Qld*

Senior Research Fellows
Barbara R Rose, BSc PhD, FAIMLS AAIMLT MASM
Karen Vickery, BVSc(Hons), MVSc, PhD

Research Fellows
James Manos, BSc PhD *NSW*
Nham Tran, BSc PhD *NSW*

Technical staff

Senior Technical Officers
Jason Compton, BSc
Jean Zou, PhD

Technical Officer
Kate Gilchrist, AssDip

Information Technologies

Professor and Head of School
Albert Zomaya, BEng *Cairo* MSc PhD *McG*.

Professors
Peter Eades, BA PhD *ANU*. Appointed Chair of Software Technology, 2000
David Everitt, BE PhD *Qld*. Appointed Chair of Internetworking 2001
David (Dagan) Feng, ME *SJTU* MS PhD *UCLA*. Appointed 2000
Mary Lou Maher, BS *Col* MS PhD *CMU* FIE
Jon D Patrick, DipBehHealthPsych *LaTrobe* Dipl Surv *RMIT* BSc *Deakin* MSc *Dub* PhD *Monash*. Appointed Chair of Language Technologies, 2004

Associate Professors
Sanjay Chawla, PhD *Tennessee* BA *Delhi*
Joseph G Davis, BSc *Calicut* PostGradDipMgmt IIMA PhD *Pitt*
Alan Fekete, PhD *Harv* BSc
Judy Kay, PhD
Robert J Kummerfeld, PhD

Senior Lecturers
Weidong (Tom) Cai, BSc *HuaQiao* PhD
Michael Charleston, PhD *Masse* LTCL *Trinity College London*
Jonathan Gray, PhD *Sheffield City Polytechnic* BA *Sheff*
Seok Hee Hong, PhD *Ewha* MS
Liaquat Hossain, PhD *Woll*
Geoffrey Kennedy, PhD *Otago* MA *Kent* MSc *Macq* BSc *NSW*
Bjorn Landfeldt, PhD *NSW* Cisco Senior Lecturer in Internet Technologies (jointly with EIE)
Ian A Parkin, PhD *Adel* BSc
Selvakennedy Selvadurai PhD *UPM*
Masahiro Takatsuka, PhD *Monash* ME *TokyoInst Tech*
Kalina Yacef, PhD MSc DEA *Paris*
Bing Bing Zhou, PhD *ANU* BSc *Nanjing*

Lecturers
Byounggu Choi, PhD MIS *KAIST* BA *Korea*
Vera Chung, PhD *QUT*
Irena Koprinska, PhD *Sofia* MSc *TU-Sofia*
Josiah Poon, PhD MSc *Deakin* BSv(Hons) *Manc* GradCertEd *Qld*
Simon Poon, MEng *UTS* BSc GradCert MathsSci *UTS*
Uwe Rohm, DipCS *Passau* PhD *ETH Zurich*
Bernhard Scholz, Dipl-Ing Dr Techn. *TUVienna*
Anastasios Viglas, MA PhD *Prin*
Ying Zhou, PhD *NUS* MEng BSc *Nanjing*

Associate Lecturers
Xiu Ying Wang
Zhiyong Wang, PhD *HKPU*

Research Staff
Cindy Bai, Research Assistant
Bernd Burgstaller, MS PhD *TU-Vienna*, Research Associate
Daniel Chu, Research Associate
James Curran, ARC Postdoctoral Fellow, PhD *Edin*, BSc(Adv)
Jahan Hassan, Research Fellow
Jinman Kim, Postdoctoral Research Fellow
Geoff Langdale, PhD MSc *Carnegie Mellon*, Research Fellow
Tara Murphy, ARC Postdoctoral Research Fellow
Ricky Subrata, Research Fellow
Michael Till BSc(Hons), Research Associate
Chen Wang, Research Fellow
Lingfeng Wen, PhD, Postdoctoral Fellow

Computer Systems Supervisor
Greg Ryan, BSc(Hons)

Computer Systems Officers
Roy Giles, BSc *Wales*
Bruce Janson, BSc(Hons)
Ronald Jore, BSc(Hons) *TU Berlin*
Abed Kassis, BSc(Hons) *Melb*
Piers R Lauder, BSc *Warw* DipCompSc *Brad*
David London, BEng *UWA*
Steve Smith, BSc(Hons) *Demontfort*

Chief Technical Officer
Remo Di Giovanni

Senior Technical Officers
Allan Creighton
Arthur Scott

Technical Officers
William Calleja
Witold Janus
Administrative Manager
Helene Orr, BA *UNE*

Administrative Officers
Sharon Chambers
Candice Fenech
Wei Ying Ho
Suzan Koshaba
Michael McCabe
Dhanusha Perera
Josephine Spongberg

Adjunct Professor
Professor Ya Qin Zhang

Honorary Appointments
John Baker, PhD *NSW*
Em Professor John Makepeace Bennett AO, PhD *Camb* BE(Civ) BE(Mech&Elec) BSc *Qld*, FTS FACS FBCS FIEAust FIMA
Fang Chen, MBA *Warnborough* PhD *Beijing Jiaotong Uni* BE MEngSc *Beijing Aeron & Astron*
Zheru Chi, BEng MEng PhD *Zhejiang*
Merl De Silva, MBBS *Ceylon* DMRD Royal College of Physicians, London FRACR Royal Australian College of Radiologists
Stefan Eberl, MSc PhD *NSW*
Michael Fulham, MB BS *NSW*
Roger Fulton, MSc PhD *UTS*
Ian Gorton, PhD *Sheff*
Michael Hitchens, PhD *Newcastle (NSW)*
Doan B Hoang, BE ME *WAust* PhD *Newcastle (NSW)*
Brian Hutton, MSc *Aberd* PhD *UTS* BSc
Jeffrey Kingston, BSc PhD
Ray Lister, PhD
Zhonghua Ma, BEng *SJTU*, MEng *DLUT*, PhD *SJTU*
Chris Maltby
Gordon McCalla, BSc MSc *Alta* PhD *BrCol*
Eric McCreath, PhD *NSW* BE
Steve Meikle, PhD *NSW*
Agathe Merceron, PhD *Paris*
Cecile Paris, PhD *Col*
Jack R Phillips, BMechE PhD *Melb*
Aaron Quigley, PhD *Newcastle* BS(Mod) Hons *Trinity College Dublin*
Muhammad Salam, MSc *Karachi* PhD *Cant*
Andrea Stern, BA *Macq* Diploma *NSW*
Richard Thomas, BSc *U. College North Wales*, MSc *London School Economics*, MPhil *York*, PhD *UWA*
Eric Tsui, PhD *Deakin*
Kai Xu, PhD *QLD*, BEng (IT) BEng (Bus) *SJTU*
David Zhang, PhD *HarbinIT* PhD *UWaterloo*
Hong Jiang Zhang, PhD *Denmark* BS *Zhengzhou*
Jian Zhang, BSc *EChina Normal* PG Dip *Shanghai Inst Mech Eng* MSc *Flin* PhD *NSW*

Mathematics and Statistics

Professor in Pure Mathematics (Personal Chair)
John J Cannon, MSc PhD. Appointed 2000

Professor in Pure Mathematics
Edward Norman Dancer, BSc *ANU* PhD *Camb*, FAA. Appointed 1993

Professor in Applied Mathematics
Nalini Joshi, BSc MA PhD *Prin*. Appointed 2002

Professor in Mathematical Statistics (Personal Chair)
John Robinson, BSc *Qld* PhD. Appointed 1991

Professor in Mathematical Statistics
Neville C Weber, MSc PhD, AStat. Appointed 2005

Readers
Donald I Cartwright, PhD *Ill* BSc
Jonathan Hillman, BSc *WAust* AM *Harv* PhD *ANU*
King-Fai Lai, BSc *Lond* MPhil PhD *Yale*

Associate Professor and Head of School
Donald E Taylor, MSc *Monash* DPhil *Oxf*

Associate Professors
Robert B Howlett, BA PhD *Adel*
Charles C Macaskill, BSc PhD *Adel*
Rubin Zhang, BSc *Shandong* PhD *Tas*

Director of First Year Studies
Sandra C Britton, BSc *NSW* MA

Senior Lecturers
Peter W Buchen, BSc PhD *Camb*
Christopher M Cosgrove, BSc PhD
Clio Cresswell, BSc PhD *UNSW*
Daniel Daners, PhD *Zurich*
David Easdown, BA *ANU* PhD *Monash*
David J Galloway, BA PhD *Camb*
Jenny Henderson, DipEd *Flin* MSc
David J Ivers, BSc PhD
David R Kohel, BSc *Texas A&M* PhD *Berkeley*

Andrew P Mathas, BSc MSc PhD *Ill*
Alexander I Molev, Diploma PhD *Moscow*
Mary R Myerscough, DPhil *Oxf* MSc
Nigel R O'Brian, MA *Camb* PhD *Warw*
William D Palmer, MLitt MA *NE* BSc PhD DipEd
Laurentiu Paunescu, MSc *Bucharest* PhD
M Shelton Peiris, DipMath MSc *Peradeniya* PhD *Monash*
Marc E Raimondo, MSc DipStats PhD *Paris VII*
Rosemary S Thompson, BSc *ANU* PhD

Lecturers
Emma Carberry, BSc *Monash* PhD *Prin*
Jennifer S Chan, BSc(Hons) DipEd MPhil *Hong Kong* PhD *NSW*
Rafal Kulik, MSc PhD *Wroclaw*
Adrian M Nelson, BSc PhD *Lond*
Michael I Stewart, BSc MA PhD
Qiying Wang, BSc *Anhui* MSc *S & T China* PhD *Woll*
Martin Wechselberger, MSc PhD *Vienna*
Jean Yee Hwa Yang, BSc PhD *Calif*

ARC Professorial Fellows
Gustav I Lehrer, BSc PhD *Warw* FAA
Leon Poladian, GradDipEd PhD *NE*

Postdoctoral Fellow
Anthony Henderson, BSc PhD *MIT*

Sesqui Postdoctoral Fellows
Sinead L Lyle, BA *Oxf* MSc *Edin* PhD *Lond*
Scott H Murray, BSc *ANU* SM PhD *Chic*

Research Fellows
Claus Fieker, DipMath *Heinrich-Heine* PhD *Berlin*
Georg Gottwald, Diploma *Dusseldorf* PhD *Monash*
Michael Harrison, BA (Hons) PhD *Camb*
Alan K Steel, BA

Senior Research Associates
Leslie Farnell, DipEd *Canberra* MA DPhil *Oxf*
William R Unger, PhD

Research Associates
Geoffrey M Bailey, BSc
Brian Day, BSc MSc PhD *NSW*
Andrew Docherty, PhD
Steve Donnelly, BSc *ANU* PhD *Georgia*
Christopher M Field, PhD *Leeds*
Whayne Padden, PhD
Samtry Sanjiban, BSc MSc *Calcutta*
Bartosz Trojan, PhD *Wroclaw*
Yuezhu Wu, MSc *Nankai*
Ramon Xulvi-Brunet, PhD *Humboldt*
Guanglian Zhang, BSc PhD *Tsinghua*

Research Assistants
Anne P Cannon, BA MPhil
Nicole J Sutherland, BSc *Macq*

Computing Manager
James S Richardson, MSc PhD *Warw*

Computer Systems Officers
Robert B Pearson, BIT *CSturt* ADipA *Mitchell CAE* BSc
Paul Szabo, BSc *Havana*
Michael R Wilson, BSc

Software Engineer
Damien K Fisher, BSc *NSW*

Administration Manager
Joan Buckley, BA(Hons) MBA *CSturt*

Finance Officer
Julie L Small

Administrative Assistants
Susan Liddell, BA
Sonia Morr

Student Services Manager
Chamreun Cheen, BSc BCA *Well*

Administrative Assistant, Student Services
Lucy Kennedy

Emeritus Professors
Gregory M Kelly, BA BSc PhD *Camb* FAA
Eugene Seneta, MSc *Adel* PhD *ANU*, FAA.
Gordon E Wall, BSc *Adel* PhD *Camb*, FAA
Peter R Wilson, BA MSc *Melb* PhD, FRAS

Visiting Professors
Richard Cowan, BSc PhD GradDip
Nicholas I Fisher, PhD *NCarolina* DSc

Honorary Reader
Donald W Barnes, DPhil *Oxf* DSc
Tzee-Char Kuo, BS *Natnl Taiwan* PhD *Chic*

Honorary Professor
Alfred J van der Poorten, AM BA BSc MBA PhD *NSW*

Honorary Associate Professors
Edward D Fackerell, MSc PhD
Terence M Gagen, BSc *Qld* PhD *ANU*
William G Gibson, MSc *Cant* PhD *NSW*
Ronald W James, BSc PhD
John M Mack, AM MA *Camb* BSc PhD
Malcolm P Quine, MSc *Lond* PhD *ANU*
Denis E Winch, MSc PhD, FRAS

Honorary Senior Lecturers
Koo-Guan Choo, BSc *Nan* MSc *Ott* PhD *BrCol*
Roger W Eyland, PhD *Camb* MSc
W Barrie Fraser, BSc ME *Cant* SM PhD *Harv*
Mary C Phipps, MSc
James N Ward, BSc PhD

Honorary Lecturers
Howard J D'Abrera, BSc PhD *Calif*
Humphrey M Gastineau-Hills, MSc PhD

Honorary Associates
Noelle Antony, PhD
Geoffrey R Ball, BA
A J Berrick, PhD
Greg Cave, PhD
Diana Combe, BSc MSc *Lond* PhD
Wen Dai, BSc *Yunnan* MSc *Beijing* PhD *ANU*
Volker Gebhardt, PhD
Martine Girard, LM MM PhD *Paris VII*
Stephen Goulter, PhD
John Graham, PhD
Brian Gray, BSc PhD *Manc*, FRACI FRSC
Joseph Hammer, PhD
Joachim Hempel, PhD
Hai Ho, PhD
Michael S Johnson, PhD
Otto Konstandatos, BSc LLB PhD
Stephen G Lack, BSc PhD *Camb*
Arjen Lenstra, MA PhD *Amsterdam*
Hugh C Luckock, BSc *Auck* PhD *Newcastle (UK)*, ASIA
Ben Martin, PhD
James Parkinson, PhD
Leanne Rylands, MSc PhD
Ross H Street, PhD FAA
Ilknur Tulunay, PhD
Greg Woodbury, PhD
Shusen Yan, BSc MSc PhD

Molecular and Microbial Biosciences

Biochemistry

Professor of Molecular Biology
Iain L Campbell, BSc PhD. Appointed 2004

Professor of Structural Biology
J Mitchell Guss, BSc PhD. Appointed 2006

Professor
Richard I Christopherson, BSc PhD *Melb* (Personal Chair). Appointed 1998

Professor
P Merlin Crossley, BSc *Melb* DPhil *Oxf*. Appointed 2005

McCaughey Professor and ARC Australian Professorial Fellow
Philip W Kuchel, BMedSc MB BS Adel PhD ANU, FAA. Appointed 1980

Associate Professors
Arthur D Conigrave, BSc(Med) MB BS MSc PhD, FRACP
Gareth S Denyer, MA DPhil *Oxf*
Alan R Jones, PhD *Manc*

Senior Lecturers
Charles A Collyer, BSc *Flin* PhD
Stuart J Cordwell, BSc PhD
Simon B Easterbrook-Smith, BSc *Well* PhD *Adel*

Lecturers
Dale P Hancock, BSc PhD
Jill M Johnston, BSc *Qld* DipEd *CatholicCE(Syd)*

Associate Lecturer
Vanessa Gysbers, BMedSc MSc(Med)

ARC Federation Fellow
Jill Trewhella, MSc *UNSW* PhD, FAAAS

Senior Research Fellow
William A Bubb, DIC *Lond* BSc PhD

NHMRC Senior Research Fellow
Joel P Mackay, BSc *Auck* PhD *Camb*

S&C Viertel Senior Research Fellow
Jacqueline M Matthews, BSc *NSW* PhD *Camb*

CJ Martin Fellow
Janet Deane, BMedSc PhD
Chu Kong Liew, BSc PhD
Anthea Newton, BSc PhD

Research Fellow
Bogdan E Chapman, BSc PhD *ANU*

Proteomics Research Fellow
Ben Crossett, BSc *Manc* PhD *Camb*

NHMRC RD Wright Research Fellow
Margaret Sunde, BSc *Cape Town* PhD *Camb*

Postdoctoral Fellows
Liza Cubbedu, BTech *Macq* PhD
David A Gell, BSc PhD *Camb*
Richard Grant, MA *Oxf* DPhil *Oxf*
Marcus Hofer, MD *Freiburg*
David Langley, BSc PhD
Jason A Lowry, BS *Case W Reserve* PhD *NCarolina State*
Suzanne M Mithieux, BSc *NSW*
Hee-Chang Mun, PhD
Christoph Naumann, PhD *UBC*
Hannah Nicholas, BMedSc DPhil *Oxf*
Richard C Pearson, BSc PhD *Lond*
Ronda Plummer, PhD *Qld*
Ursula Rodgers, MAppSc *NSW* BSc
Daniel Ryan, PhD
Alexis Verger, BSc PhD *Paris*
Belinda Westman, PhD
Steven Wise, BSc *WSyd* PhD

Senior Technical Officers
Robert T Czolij, BSc *Macq* BiolTechCert *STC*
Joseph Dimauro, MSc
William G Lowe, BiolTechCert *STC*
Ross I Taylor, FittMachCert ToolmakingCert *STC*

Technical Support Officer
Brian Francisco

Technical Officers
Cesar De La Paz
Margaret Espejel, AssocDipMedSc *Riverina CAE*
John C Foster, BSc *NSW* GradDip (EnvStud) *Macq*
Debra Phillips, QTACert *NZIMLT* (part-time)

Research Associates
Nancy Sue, BMedSc

Research Assistants
Camilla W-J Chan, BSc
Angela Connolly, BSc
Jaimee Duncan, BSc
Nicholas J Evershed, BSc
Katherine Grant, BSc *Open*
Chu Wai Liew, BSc
Rajihi Nagarajah, BSc MSc *Lincoln*
Virginia Post, BSc *Zurich*
Orsola M Regaglia, BSc *WSyd*
Regina Zabaras, BSc MSc(Hons) *WSyd*

Research Technician
Sue Ling Lim, BSc

Laboratory Manager / Research Officer
Margaret Streamer, BSc *UNSW* PhD *JamesCook*

Laboratory Assistants
Peter W Kerr
Ben Monaghan, DipHealthSc *TAFE NSW*

Glassware Cleaners
Joyce Menouhos (part-time)
Jun Wang

Apprentice Fitter & Machinist
James F Gibson

Honorary appointments

Emeritus Professors
Hans C Freeman, AM, MSc PhD, FAA FRACI FRSC CChem
Noel S Hush, DSc *Manc* MSc, FRS FAA FRACI
Robert G Wake, MSc PhD, FAA

Adjunct Professors
Robert C Baxter, PhD DSc, FAACB
Emma Whitelaw, BSc *ANU* DPhil *Oxf*

Clinical Associate Professors
Peter Stewart, MBBS MBA, FRACP FRCPA
David R Sullivan, MBBS, FRACP FRCPA

Adjunct Senior Lecturer
Stephen P Mulligan, MBBS *NSW* PhD, FRACP FRCPA

Adjunct Lecturer
Stephen D Lyons, BSc *Melb* PhD MBBS

Honorary Associates
Adrienne Adams, BSc PhD *Melb*

Nihal S Agar, MVetSci PhD *Agra*
Renze Bais, BSc PhD *Adel*
Larissa Belov, BSc *Qld* PhD *Macq*
Gheorghe Benga, MSc PhD MD *Cluj*
Leslie Burnett, BSc *Melb* MBBS PhD
Roderick JD Clifton-Bligh, BSc(Med) MB BS PhD *Camb*
Ivan Darvey, BSc PhD *NSW*
Anthony P Duff, BSc PhD *NSW*
Christopher J Garvey, MSc
Glenn F King, BSc PhD
Michael A Messer, MSc PhD *Melb*
Peter J Mulquiney, BSc PhD
Hossein Nouri-Sorkhabi, BSc *Tabriz* PhD *Wales*
Caroline Rae, BSc PhD
Michael Slaytor, MSc PhD
Allan H Torres, BSc *UPLB* PhD *Alberta*
Jamie I Vandenberg, PhD *Camb* BSc(Med) MBBS
Vivian KL Whittaker, MBBS *Qld* PhD *ANU*
Andrew E Whitten, BSc PhD *New England*
James S Wiley, BA *Oxf* MBBS MD

Human Nutrition Unit

Boden Professor of Human Nutrition
Ian D Caterson, AM, BSc MBBS PhD, FRACP
Appointed 1997

Professor
Janette C Brand-Miller, BSc PhD *NSW*, FAIFST (Personal Chair)
Appointed 2002

Associate Professor
Samir Samman, BSc PhD

Lecturer
Kim Bell-Anderson, BSc PhD *NSW*

Associate Lecturer
Beth Rohrlach, BSc DipNutrDiet, APD

NHMRC Research Fellow
Bing Wang, MD *Tianjin* PhD

Research Fellows
Anna M Rangan, BSc *Griff* DipNutrDiet *QIT* PhD *Curtin* (part-time)
Debra Hector, BSc *Southampton* PhD *Nottingham* MPH

Research Manager, IOTF
Timothy P Gill, BSc *Tas* BSc GradDipDiet PhD *Deakin*

Research Manager, SUGiRs
Fiona S Atkinson, BSc MND

Clinical Trials Administrator
Maree Connell

Clinical Trials Manager
Philippa V Lee

Clinical Educator
To be appointed

Nutritional Epidemiologist
Victoria Flood, BASc *Brisb* GradDipNutrDiet *Brisb* MPH *UNSW* PhD

Technical Officer
Jenny L Phuyal, AnimTechCert *TAFE NSW* (part-time)

Administrative Assistants
Marianne Alexander (part-time)
Violeta Birks, GradCertHRM DipHRM *TAFE NSW*
Joyce Calvitto

Emeritus Professor
A Stewart Truswell, AO, MB ChB MD *CapeT* DSc, FRCP FRACP FFPHM

Honorary appointments

Honorary Lecturer
Soumela Amanatidis, BSc DipNutrDiet, MPH, APD

Clinical Senior Lecturer
Tania P Markovic, MBBS PhD *NSW*

Clinical Lecturer
Margaret Nicholson, BSc DipNutrDiet DipEd MEd APD

Clinical Associate Lecturer
Fiona Simpson, BSc(Nutr) *Woll* MND APD

Honorary Associate Lecturer
Nicola Riley, BSc MNutrDiet

Honorary Clinical Supervisors
Caroline Adams, BSc DipNutrDiet *Deakin*
Susan Bloomfield-Stone, BAppSc(Nutr) MSc(NutrDiet)
Julie Bracks, BSc DipNutrDiet APD
Lisa Brearley, BSc *Melb* MSc(NutrDiet) *Woll* MHN *Deakin*
Meagan Byrne, BHlthSc(NutrDiet)
Jose Cabello, DipNutrDiet *Chile*
Michele Carroll, BHlthSc (NutrDiet) *Newcastle (NSW)*
Amande Carr-Thompson, BSc *Griff* MND *Griffith*
Andrew Davison, BHlthSc(NutrDiet) *Newcastle (NSW)*
Charlotte Denman, BSc DipNutrDiet *Deakin*
Barbara Dennison
Nikki Dowling
Debbie Edward, BSc HEc(NutrDiet) *MtStVin* GradDipEdStud
Lisa Eldridge, BSc MNutrDiet
Margaret Forbes, CertDiet RMH MBA *NTerritory*
Jane Ford, DipNutrDiet *Leeds*
Janet Franklin
Bernadette Galing-Aquino, BSc DipNutrDiet
Tanya Hazelwood, MSc(NutrDiet) *Woll*
Tracy Herlihy, BSc GradCertNutrDiet *QldUT* GradCertPaedNutr *Melb*
Roy Hoevenaars, BSc PhD *Monash* DipNutrDiet
Margaret Holyday, BSc DipNutrDiet
Michelle Hughes, BSc DipNutrDiet
Kieu Huynh, MHealthAdmin GradDipFoodTech *NSW* BSc MNutrDiet
Christine Josephson, BSc GradCertMgmt *Canada*
Meredith Kennedy, MSc(NutrDiet) *Woll*
Lyn Lace, BSc DipNutrDiet
Sharon Lamb, BSc MND
Robert Lange, BSc *Qld* GradDipNutrDiet
QldUT GradCertDiabetesEduc *Deakin*
Maria Loveday, BSc *Deakin* CertDiet *Vic*
Nasseem Malouf, MSc *Beirut* PhD DipNutrDiet
Jenny McDonnell, BSc DipNutrDiet
Jenny McQueen, BSc MHlthSc GradDipDiet GradDipInfoStud
Dean Mercurio
Lesley Miller, BSc DipNutrDiet
Radha Murthi, MNutrDiet *Madr*
Nola Patterson, BSc *Qld* DipNutrDiet
Tracey Patricks
Aditi Patwardhan, BSc MNutrDiet
Joanne Prendergast, BSc *Acad Pdt Montr* MHPEd *NSW*
Jennifer Ravens
Vanessa Richardson
Nicola Riley, BSc MNutrDiet
Selina Rowe, BHlthSc(NutrDiet) APD
Trish Ryan, BAppSc(FoodNutr) GradDipDiet *WAIT*
Elizabeth Scott, BSc DipNutrDiet
Marie Smith, MNutrDiet
Lydia Sutakowsky, BSc *Qld* DipNutrDiet *UTS*
Anne Swain, BSc DipNutrDiet PhD
Peter Talbot, BSc MSc(Med) DipNutrDiet
Peter Ticehurst
Scott Wagner, BSc DipNutrDiet GradCertPaedDiet
Bill Wedgwood, BSc GradDipDiet *Deakin*
Natalie Wilson, MSc(NutrDiet) *Woll*

Honorary Community Supervisors
Soumela Amanatidis, BSc DipNutrDiet MPH APD
Polly Antees
Alan Barclay
Rudy Bartl, BSc DipNutrDiet
Elizabeth Cant, BSc(Diet) *Edin* SRD APD
Kathy Chapman, BSc MNutrDiet
Jane Dibbs, BSc DipNutrDiet
Susan Dumbrell, BSc MNutrDiet
Rowena Duns, BNutrDiet *Woll*
Pam Gollow, BAppSc GradDipDiet *WAIT* MPH *NTerritory*
Trish Griffiths, GradDipCommM *UTS* BSc DipNutrDiet MPH
Louise Houtzager, MSc(NutrDiet) *Woll*
Alicia Kenyon, BHlthSc MND
Melissa Macdouall, BHlthSc(NutrDiet) *Newcastle (NSW)*
Melinda Morrison, MSc(NutrDiet) *Woll* GradCertDiabEd *Deakin*
Catherine Offner, BHthSc(NutrDiet) *Newcastle (NSW)*
Simon Sadler, BHthSc(NutrDiet) *Newcastle (NSW)* MPH
Leanne Scanes, BHlthSc(NutrDiet)
Lynette Stewart, BScAgr BA DipNutrDiet *Macq*
Helen Taylor, BSc(Nutr) *Leeds* CertEduc *Vic Manc*

Honorary Food Service Supervisors
Susan Burke, BSc DipFoodTech *NSW* DipNutrDiet
Gladys Hitchen, MSc(NutrDiet) *Lima*
Andrew Howie, BSc DipNutrDiet
Suzanne Kennewell
Maria Kokkinakos, BSc DipNutrDiet
Carmel Lazarus, BSc MNutrDiet GradDipBusAdmin *UTS*
Fifi Spechler, BSc DipNutrDiet
Jayne Taylor, MNutrDiet
Carol Zeuschner, BSc GCertHlthMgmt MSc(NutrDiet) *Woll*

Honorary Industry Supervisors
Rebecca Bousted, BSc MSc (NutrDiet) *Woll*
Yvonne Bowyer
Megan Cobcroft, BSc GradDipNutrDiet MPH&TM
Trish Guy, BHlthSc(NutrDiet) *Newcastle (NSW)*
Natalie Hayllar, BSc(Nutr&Psych) MSc(NutrDiet) *Woll*
Wendy Jeffrey
Gina Levy, BSc BNutrDiet PhD
Sharon Natoli, BSc BNutrDiet *Flin* GradDipBus *RMIT*
Penelope Small, BSc MSc(NutrDiet)
Kathy Usic, BEd MSc(NutrDiet) *Woll*

Microbiology

Professor
Peter Richard Reeves, BSc PhD *Lond*, FAA MASM. Appointed 1985

Reader
Thomas Ferenci, BSc *Lond* PhD *Leic*

Senior Lecturers
Deidre A Carter, BSc *Otago* PhD *Lond*
Andrew J Holmes, BSc PhD *Qld*

Lecturers
Helen M Agus, MSc *NSW*, MASM
Nicholas V Coleman, PhD

Teaching Assistant
Deborah Blanckenberg, BMedSc

NHMRC Principal Research Fellow
Ruth M Hall, PhD *Edin* DipEd *Monash* MSc

Postdoctoral Fellows
Shona Blair, BSc PhD (part-time)
Jocelyn D'Souza, BSc PhD
Liam Elbourne, PhD

Research Assistants
Tien M T Bui, BMedSc
Shona J Seeto, BSc
Gordon Stevenson, BSc *Adel*
Kate Wilson, BSc

Technical Officer
Vincent Lai, BMedSc

Glassware Cleaners
Ana M Julca (part-time)
Trudie T Smith (part-time)

Honorary appointments

Adjunct Senior Lecturer
Ruiting Lan, BScAgr *Jiangxi* PhD

Honorary Associates
Manuela Dieckelmann, BSc PhD *Griff*
John I Pitt, PhD *Calif*

Molecular Biotechnology

Professor
Anthony S Weiss, BSc PhD. Appointed 2003.

Associate Professor and Director
Kevin Downard, BSc PhD *Adel*

Lecturers
Rachel Codd, BSc *Macq* PhD
Neville Firth, BSc PhD *Monash*

Molecular Biotechnology Program Coordinator
Katy Wilson, BA

Honorary appointments

Adjunct Professor
Keith Williams, BAgSc *Melb* PhD *ANU*

School administrative staff

Professional Officer/School Laboratory Manager
Ziaul I Ahmad, MAppSc *UTS*

Information Technology Officer
Douglas J Chappell, BA BSc PhD DipEd

Computer Systems Manager
Jennifer Wong, BSc (part-time)

Senior Administrative Officer
Danielle Wells, BSc *NSW* (part-time)

Senior Finance Officer
Stephen P Conaghan

Administrative Officer – Student/Teaching Support
To be appointed

Administrative assistants
Annie Au
Michelle Dulanas, BA *Santo* MSCD *Newcastle (NSW)*
Bronwyn G Ferguson (part-time)
M Rashid Idris, MSc *Karachi*
Louise McLoughlin
Christopher Trott, BA *Car* (part-time)

Attendant
Max A Francis

Pathology

Professors
Nicholas H Hunt, BSc PhD *Aston*. Appointed 1989
Nicholas JC King, MB ChB *Cape T* PhD *ANU*
Appointed 2004
Georges Grau, MD PhD

Associate Professors
Brett D Hambly, BSc(Med) MBBS PhD
Izuru Matsumoto, MD PhD
Roger S Pamphlett, BSc(Med) MD ChB *Cape T*, FRACP MRCPath

Senior Lecturers
Shishan Bao, MB BS *Shanghai* PhD
Stuart Cordwell, BSc PhD

Executive Assistant
Lorraine Rhind

Pharmacology

Professor of Clinical Pharmacology
J Paul Seale, MBBS PhD *Lond*, FRACP. Appointed 1992

Professors
Judith L Black, MBBS PhD, FRACP. Appointed 1997
Graham A R Johnston, AM, MSc PhD *Camb*, CChem FRACI FTSE. Appointed 1980

Clinical Professor
Gillian M Shenfield, MA BCh DM *Oxf*, FRCP FRACP. Appointed 1993

Associate Professor and Head of Discipline
Ian Spence, BSc PhD *Monash*

Associate Professors
Robin D Allan, BSc *Qld* PhD *JamesCook*
Christopher Liddle, MBBS BSc(Med) *NSW* PhD, FRACP
Ewan J Mylecharane, BPharm *VIC* BSc PhD *Melb*
Robert J Vandenberg, BSc PhD

Senior Lecturers
Jasmine M Henderson, BSc DipNutrDiet PhD
Peter RA Johnson, BSc PhD
Hilary GE Lloyd, BSc *Brist* MSc PhD *Lond*

Clinical Senior Lecturers
Michael Kassiou, BSc PhD *NSW*

Lecturer
Jonathan C Arnold, BSc PhD
Brent McParland, PhD

Associate Lecturers
Robyn Billing, BSc
Tina Hinton, PhD
Stefanie Leung, BSc

Research Fellow
Janet K Burgess, BSc *Adel* PhD *NSW*

Postdoctoral Fellows
Colm Crean, BSc PhD *Dublin*
Ann Mitrovic, PhD

Adjunct Professor
Susan M Pond, AM, MBBS MD *NSW*, FRACP FTSE

Conjoint Associate Professor in Physiology and Pharmacology
Paul M Pilowsky, BMedSc BMBS PhD *Flin*

Honorary Associate Professors
Rosemarie Einstein, BSc PhD
Michael Roth, Dipl *Goethe* PhD *Basel*
Graham A Starmer, MSc *Manc* PhD

Honorary Associates
Sandra D Anderson, PhD *Lond* BSc
Gregory B Chesher, MSc PhD
L Bruce Cobbin, BSc *Melb* PhD
Gavin Dixon, PhD
Richard Donnelly, MB ChB MD *Birm* PhD *Glasgow*, MRCP FRACP
Peter Gray, BSc PhD
Annette S Gross, BPharm PhD
Herbert F Jelinek, BSc *NSW* GradDipNeurosci *ANU* PhD
Desmond J Maddalena, MAppSc DipTech *NSWIT* PhD
Karen McKay, BSc PhD
Jennifer Ong, BSc PhD *Adel*
Xianqin Qu, PhD
Diana M Temple, AM, BSc *WAust* MSc PhD
Christopher W Vaughan, BE MBiomedE *NSW* PhD
Sandra N Webb, BPharm *VIC* PhD *Strath*

Physics

Professor in Medical Physics
Clive Baldock, BSc *Sus* MSc PhD *Lond*

Professor in Physics (Material Physics)
David R McKenzie, BSc PhD *NSW*

Australian Professorial Fellow
Ross C McPhedran, BSc PhD *Tas*

Professor in Theoretical Physics
Martijn de Sterke, MEng *Delft* PhD *Roch*

Professor in Astrophysics
Richard W Hunstead, BSc PhD

Australian Professorial Fellow and University Chair
Donald B Melrose, BSc *Tas* DPhil *Oxf*

Associate Professor and Head of School
Anne Green, BSc *Melb* PhD

Associate Professors
Timothy R Bedding BSc PhD
Geraint Lewis, BSc *Lond* PhD *Camb*

Adjunct Professors
Russell Cannon, BSc MA PhD *Camb*
Matthew Colless, BSc PhD *Camb*
Richard N Manchester, BSc *Cant* PhD *Newcastle (NSW)*

Adjunct Associate Professors
John Drew, BSc *Adel* MAppSc *NSWIT*
Roger Fulton, PhD *UTS*
Lyn Oliver, MSc *Lond* PhD *UNSW*
Natalka Suchowerska, BSc *Birm* MSc *UTS* PhD
Robert Wilkins, BE MEngSc PhD

Senior Lecturers
Joseph Khachan, BSc PhD *NSW*
Serdar Kuyucak, BSc *METU* PhD *Yale*
Nigel Marks, BSc PhD
John W O'Byrne, BSc PhD
J Gordon Robertson, BSc *Adel* PhD
Manjula D Sharma, MSc DAPh *SPac*
Kevin E Varvell, BSc *WAust* DPhil *Oxf*
Michael S Wheatland, BSc PhD

Adjunct Senior Lecturer
Lois Holloway, BSc PhD *NSW*

Lecturers
Stephen Bartlett, BSc *Waterloo* MSc PhD *Toronto*
Nicholas Ekins-Daukes, MSc *StAnd* MSc PhD *Lond*
Zdenka Kuncic, BSc PhD *ANU*

Federation Fellows
Marcela M Bilek, BSc PhD *Camb* MBA *Roch*
Benjamin J Eggleton, BSc PhD
Bryan Gaensler, BSc PhD
Peter A Robinson, BSc PhD
Catherine Stampfl, BSc(Hons) PhD *LaTrobe*

Australian Professorial Fellows
Iver H Cairns, BSc PhD

Elaine M Sadler, BSc *Qld* PhD *ANU*
Sergei Vladimirov, MSc PhD *Mosc*

ARC Postdoctoral Research Fellows
David J Moss, BSc *Waterloo* MSc PhD *Toronto*
Nelson Ng, BSc PhD

Senior Research Fellows
Ian Litter, BSc *ANU* MBA *AGSM* PhD *Kaiserslautern*
Qinghuan Luo, BSc *NIHM* MSc *Heilonjiang* PhD
Eric Magi, BSc *ANU* PhD *NSW*
Oliver Warschkow, BSc PhD *Toronto*

ARC Queen Elizabeth II Research Fellows
Scott Croom, BSc (Hons) PhD *Durham*
Andrew Hopkins, BSc PhD
Kostyantyn Ostrikov, DSc *Kharkov*

Australian Research Fellow
Peter G Tuthill, BSc *Qld* BSc(Hons) *ANU* PhD *Camb*

Postdoctoral Fellows
Peter Barnes, BSc MSc PhD *Ill*
Turgut Bastug, MSc DSc *Kassel*
Jeremy Bolger, BSc *UWA* PhD *Heriot-Watt*
Julia J Bryant, PhD
James Canvin, MSc *Manc* DPhil *Oxf*
Shamibrata Chatterjee, BTech IIT *Madras* MSc PhD *Cornell*
Christopher Dey, PhD
Libin Fu, BS *Wuhan* MS PhD *Peking*
Naoki Fujisawa
Bee Kwan Gan, PhD
Rodrigo Gil-Merino, BSc *Laguna* PhD *Potsdam*
Helen M Johnston, PhD *CalifIT* BSc
Laszlo Kiss, DPhys PhD *Attila*
Alexey Kondyurin, PhD *Perm*
Boris T A Kuhlmey, PhD
Susan Law, PhD
Manfred Lenzen, PhD Dip *Bonn*
Bo L Li, MSc *Nankai* PhD *JCUNQ*
Sunnie Lim, BAppSci PhD *RMIT*
Peter Loxley, BSc *Murd* PhD *UWA* BSc
Christelle Monat PhD *Leom*, *CNRS*
Richard Morrow, BSc *Adel* PhD *Flin* BA
Tara Murphy, PhD *Edin* BSc
Stephen Ord, BSc *Leic* MSc *Sus* PhD *Manc*
Eduard N Tsoy, MSc *St Petersburg* PhD *Tashkent*
Paul Watson, BSc MSc *Waikato* PhD *Camb*
Jeanette I Weise, BSc PhD *Melb*
Yongbai Yin, MSc *Nankai* PhD

Professor Harry Messel Fellow
Vacant

Denison Research Fellows
Cenk Kocer, BSc *Monash* PhD
Dixon Kwok, BSc PhD *Camb*
Alexander A Samarian, MSc *Kiev* PhD *RAS (Mosc)*

Research Associates
Reda Adkim
Justin Blows
Hans Bruntt PhD *Aarhus*
Xiangyuan Carl Cui
Damien Carter
Peter Drysdale, BSc LLB PhD
Xiangmei Duan
Blanca Gallego
Christian E Grillet
Shiqiang Hao
Daniel F Hevia
Jong Won Kim
Ramzi Kutteh, BS *Toronto* MS *PolyInst NY Purdue*
Joy Murray
Neil Nosworthy
Swarma M Patra
Mark Pelusi, BE PhD *Melb*
Rebecca Powles
Robin Hongqing Shi
Aloysius Soon
Richard Tarrant, BA MSc PhD
Mira Todorova
Snjezana Tomljenovic-Hanic
Hyun Yoon
Xingqiu Yuan

Julius Sumner Miller Fellow
Karl Kruszelnicki, AM, BSc MBioMedE *NSW* MBBS

CUDOS Chief Operating Officer
Chris Walsh, PhD

Teaching Laboratory Support Staff
Marek Dolleiser
Amelita Napthali
Barry Napthali
Myo Win

Computing Staff
Sebastian Juraszek, PhD
Paul Leopardi, BSc MCom MSc *UNSW*
Anthony Monger, PhD
Guoliang George Shan

Technical Officers
Robert Davies
Phil Denniss
Barbara Piestrzynska
Lai Chun So

School Administration Manager
Paul Harbon, MBA DipMngmt *Deakin* DipMath *SQld* BSc

Science Communicator (Physics)
Phil Dooley, BSc PhD *ANU*

Student Support Office
Hyacinth Alfonso
Eve Teran, BSc

Finance Officer
Nelly Leh Hwa Liew

Finance Assistant
David Young

Human Resources and Administrative Officer
Chindy Praseuthsouk, DipHRMngmt *SIT* BA

Human Resources Assistant
Sang Huynh

Administrative Assistant
Jean Pierre Cheaib

Science Foundation Executive Officer
Chris Stewart, BSc *UQ* DipScComm *ANU* PhD *York*

Science Community Relations Manager
Alison Thorn

Science Foundation Administrative Assistant
Alex Viglienzone

Physics Workshop Technical Officers
Michael Paterson
Terry Pfeiffer

Molonglo Telescope Manager
Duncan Campbell-Wilson, BSc *ANU*

Molonglo Technical Officers
Adrian Blake
Tim Hubbard

Emeritus Professors
Richard Edward Collins, BSc PhD *NY*
John Davis, BSc PhD *Manc*
Harry Messel, AC, CBE, BSc *Qu* PhD *NUI*
Bernard Mills, AC, BSc BE ME DScEng FRS FAA

Honorary Professors
David J H Cockayne, MSc *Melb* DPhil *Oxf*
Lawrence E Cram, BSc BE PhD
Jak Kelly, BSc PhD *Reading* DSc *NSW*
Colin JR Sheppard, MA PhD *Camb* DSc *Oxf*
Barry S Thornton, AM, MSc PhD *NSW* DSc

Honorary Reader
Graham Derrick, BSc *Qld* PhD

Honorary Associate Professors
Dale Bailey, BAppSc *NSWIT* MAppSc *UTS* PhD *Surrey*
Rodney C Cross, PhD DipEd
Robert G Hewitt, PhD
Brian W James, BSc PhD
Ian D S Johnston, BSc *Qld* PhD
Brian McInnes, BSc PhD *Qld*
Lawrence S Peak, PhD
Murray Winn, BSc PhD *Birm*

Honorary Senior Lecturers
Roy Allen, BSc PhD *Manc*
Ian M Bassett, MSc PhD *Melb*
G Fergus Brand, MSc *Otago* PhD
Neil F Cramer, BSc PhD
David F Crawford, BSc PhD
Ian S Falconer, MSc *NZ* PhD *ANU*
Bruce McAdam, MSc *NZ* PhD *Camb*
James B T McCaughan, MSc PhD
Rosemary Millar, BSc *Qld* MEd
Ian Sefton, MSc
Robert Shobbrook, BSc *StAnd* PhD
William J Tango, BSc *Calif* PhD *Colorado*
Anthony J Turtle, BA PhD *Camb*
Juris Ulrichs, PhD

Honorary Associates
Gary Arthur, BA DipEd *Macq* ThL *ACT* MBiomedE *UNSW*
Ara Asatryan, MSc *Yerevan State Uni* PhD *Mosc*
Andrew Bakich, MSc
Joss Bland-Hawthorn, BSc *AU Birm* PhD *Sus & RGO*
Lindsay C Botten, BSc *Tas* PhD
Michael Breakspear, BA BSc MBBS
Ian J Cooper, BSc MPhys DipEd *NSW*
Carol Cogswell, BA MA MArch *Oregon*
Graham Derrick, PhD
Martin van Eijkelenborg, MSch PhD *Leiden*
Pal Fekete, PhD
Simon Fleming, PhD
Robert Fletcher, DipEd *UTS* BSc MSc PhD
Catherine Foley, BSc DipEd *Macq* PhD
Barney Foran, BAgSc *Qld* MAgSc *Natal*
Parameswaran Hariharan, BSc MSc *Travancore* PhD *Kevala*
Julienne I Harnett, BA *Macq* DipT *Tas CAE* PhD
Kirsten Hogg
Stuart Jackson
Natalie L James, BSc MBiomedE PhD *NSW*
David L Jauncey, PhD
Simon Johnston, BSc *Edin* PhD *Manc*
Stuart Knock, BSc Hons *UWA* PhD
Tim Langtry, BS PhD *NSW* MAppSc *UTS*
Maryanne Large, BSc PhD *Dub*
Daniel Lavan
James K Lowry, BA *Richmond* MA *William & Mary* PhD *Cant*
Bob Lucas, BSEE *Calif* MSc
Pamela McNamara, BSc *Swansea (Wales)*, MSc *Sheff* PhD *Bangor (Wales)*
David R Mills, BSc PhD *NSW*
Graham Morrison, BE PhD *Melb*
Bhaskar Mukherjee, BE *Calc* MSc PhD *Technisch*
Andrew R Parker, BSc *JM Liv*, PhD *Macq*
John Piggot
Mark Reinhard, BSc PhD *Woll*
Christopher Rennie, BSc *ANU* MBioEng *NSW*
Matthew Ryan
Michael Scholz, BSc *Tuebingen* MSc PhD *Hamburg*
Roya Sheikholesi, BSc *Kansas* MAppSc PhD *UBC*
Geoff Smith, MSc *Witw* PhD *NSW*
Lindsey Smith
Michael Steel, BSc PhD
Jocelyn Towson, BSc *UWA* BA *Camb* MSc *Lond*
Mark J Wardle, MSc *Auck* PhD *Prin*
Michael White
Andrew Willes, BSc PhD
Kin wah Wu, BSc *HK* MSc PhD *Louisiana*
Qui-Chu Zhang

Physiology

Professors
David Grant Allen, BSc MB BS PhD *Lond*. Appointed 1989
Roger AL Dampney, PhD DSc. Appointed 1997
Maxwell Richard Bennett, BE MSc PhD *Melb* DSc, FAA. Appointed 1983
David I Cook, BSc(Med) MB BS MSc (the University of Sydney Medical Foundation Fellow). Appointed 1997
Brian J Morris, BSc *Adel* PhD *Monash* DSc. Appointed 1999

Associate Professors
Simon Carlile, BSc PhD
Rebecca S Mason, MBBS PhD
Christopher O'Neill, BSc PhD *Newcastle (NSW)* (Clinical Associate Professor at Royal North Shore Hospital)
Paul Pilowsky, BMedSc BMBS PhD *Flin* (Principal Research Fellow at NHMRC)

Senior Lecturers
Margot Day, BSc PhD
Miriam Frommer, PhD *Lond* BSc
Ann Goodchild, BSc PhD
William D Phillips, BSc PhD

Lecturers
Stephen Assinder, BSc MSc PhD
Catherine Leamey, BSc PhD
Bronwyn McAllan
Meloni Muir, BSc *Purdue* PhD *McG*
Dario Protti, PhD *BAires*
Atomu Sawatari, PhD

Research Fellows
David Alais, PhD – ARC QEII Fellow
Anuwat Dinudom, MSc PhD – NHMRC

Postdoctoral Research Fellows
Fadi Charchar, BSc PhD – Howard Florey Centenary Research Fellow
Guo Jun Liu, MD *Changchun China* PhD *Gifu Japan*
Andrea Markus, BSc PhD *Mainz (Germany)*

Senior Research Officers
Vlado Buljan, PhD
Othon Gervasio, PhD
Jouji Horiuchi, BSc PhD *Yamanashi*

Yue-Kun Ju, MD *Xian* PhD *ANU*
Permsak Komwatana, MS *MCV* PhD *UVa*
Il Ha Lee, PhD
Elizabeth Millar, BSc
Nicholas Whitehead

Research Officers
Suzanne Killinger, BMedSc(Hons)

CJ Martin Fellows
David Adams, BSc *UTS* PhD *(Sanger Centre UK)*
Sam Solomon, BBiotech *Flin* PhD
Louise van der Weyden, BSc PhD *(Sanger Centre UK)*

Class Laboratory Staff
John F Cossey, BTC *STC* – Senior Technical Officer (in-charge)
Adel Mitry, BVSc *Cairo* ACC *STC* – Senior Technical Officer

Electronics Workshop Staff
Vincent HW Cheung, HND *HK Polytechnic*CEI Part 2 *UK* – Senior Technical Officer

Computing Staff
John WA Dodson, HNC *Lond* MIEEIE I Eng – Computer Network Manager
Li Jin
Joseph Pridham

Department Manager
Lali Jacob

Administrative Officers
Amy Cumarasingam
Louise Harrison
David Lawrey

Honorary Professors
William (Liam) Burke
Paul Korner
Anne Sefton
Allan Snyder

Honorary Associate Professors
David F Davey, BSc MScMed PhD McG
Barry S Gow, MDS PhD, FRACDS

Honorary Senior Lecturer
Annick Ansselin, BA *Macq* MSc PhD

Honorary Associates
Joseph FY Hoh, PhD *ANU* BSc(Med) MBBS DSc
Craig Jin, BSc *Stanford* MSc *Caltech* PhD
David le Couteur
Peter Maitz
Ainsley Marsh, BAdvSc
Elaine Mulcahy, PhD
Anne Nelson, PhD
Philip Poronnik, PhD
William Wang, MM BS

Psychology

Head of School
Sally Andrews, BA PhD *NSW*. Appointed 2002

Professor of Vestibular Function (Personal Chair)
Ian S Curthoys, BA PhD *Monash*. Appointed 1997

Professor of Clinical Psychology
Stephen W Touyz, BSc PhD *Cape T* BSc *Witw*. Appointed 1996

Professors
Alex Blaszczynski, MA PhD *NSW*. Appointed 2001
Phyllis Butow, MClinPsych *ANU* PhD. Appointed 2004
Iain McGregor, MA *Oxf* PhD

Associate Professors
Colin Clifford, MA *Camb* MSc *Sus* PhD *Lond*

Senior Lecturers
David Alais, BA PhD
Bruce Burns, BSc *Melb* MA PhD *Calif*
Margaret A Charles, BA PhD
Alan E Craddock, BA PhD
Irina Harris, BSc *NSW* MSc *Macq* PhD
Justin Harris, BSc PhD *NSW*
Alex Holcombe, BA *Virginia* PhD *Harvard*
Pauline Howie, BA PhD *NSW*
Caroline Hunt, BSc MPsychol PhD *NSW*
David J Livesey, BSc PhD *WAust*
Louise Sharpe, BA MPsych PhD *Lond*
Michael B Walker, BSc *UWA* BA *Adel* DPhil *Oxf*
Fiona White, BA PhD

Lecturers
Marie Abbott, BA MSc *WSyd* MClinPsych *Macq* PhD *NSW*
Damian Birney, BAppSc *USQ* PhD *UQ*
Michael Cavanagh, BA MClinPsych PhD *Macq*
Karen Croot, BA *Macq* PhD *Camb*
Marc de Rosney, BA BSc *Macq* DPhil *Oxf*
Anthony Grant, BA MA *Macq* PhD *Macq*
Fiona Hibberd, BA PhD
Ian Johnston, BSc PhD *NSW*
Sabina Kleitman, BA PhD
Sunny Lah, BA *Zagreb* MSc PhD *Macq*
Barbara Mullan, BA MA *Dublin* PhD *Open*
Caleb Owens, BSc PhD *NSW*
Elizabeth Rieger, BA MClinPsych*NSW*PhD
Tatjana Seizova-Cajic, MPsych *Belgrade* PhD *NSW*
Marianna Szabo, BA PhD *NSW*
Lisa Zadro, BSc PhD *NSW*

Associate Lecturers
David Horry, BSc PhD *Macq*

Postdoctoral Research Officers
Rachel Bond, BA PhD *NSW*
Ann Burgess, PhD
Paul Callaghan, BSc *Adel*
Barbara Griffin, BPsych *Macq* PhD
Ilona Juraskova, BA MPsych PhD
Juno Kim, BSc PhD
Leonora Long, BSc *Monash*
Hamish MacDougall, BSc PhD
Helen Paterson, BA *British Columbia* PhD *NSW*
Melanie Price, BSc PhD

Professional Officer
Sadhana Raju, BSc

Manager, Finance and Administration
Sandra Cheng, BBus *UTS* MCom, CPA

Manager, Teaching Administration
Anne Kwan, BA DipEd *CUHK*

Senior Clinical Psychologist
Chantal Braganza, BSc MPsych *NSW*

Administrative Officer
Belinda Ingram, BSc

Administrative Assistants
Julia Ashworth, BA *Peking* MComm
Alida Castelletto, BA *SCross*
Cindy Li, DipComSec *HKPU*
Hannah Jurd
Keiko Narushima, BSc BA

Head of Computer and Technical Services
John Holden

Manager of Computer Services
To be advised

Computer Systems Officers
Ethel Harris, DipEd *Karlstad*
Nenad Petkovski, BSc EE *Belgrade*

Senior Technical Officer
Raja Vijayenthiran

Technical Officer
Philip Leung, DipIT *NSyd TAFE*

Animal House Manager
Darek Figa, DipAppSc(Animal Technology) *SIT* MIAT *UK*

Animal House Attendants
Deborah Brookes

Honorary Professor
Robert Boakes, BA *Cant* PhD *Harvard*
Philip Ley, BA *Manc* DPsych *Lond* PhD *Liv*
Lazar Stankov, MA *Belgrade* PhD *Denver*

Honorary Associate Professors
David Grayson, BA PhD
Cyril R Latimer, BA PhD
Joel Michell, BA PhD

Honorary Senior Lecturers
Brian Crabbe, BA PhD
Olga Katchan, BA
Roslyn Markhan, BA MA PhD
Terence McMullen, BA PhD
George Oliphant, BA PhD
John Predebon, BA PhD

Honorary Clinical Senior Lecturers and Lecturers
Clive Allcock, BSc MBChB *Otago*, FRANZCP
Christopher Basten, BA *NSW* MA MClinPsych
Louise George, BSocSc MA *Durban* PhD *Surrey*
Sandra Heriot, BA *Wgtn* MA *Auck* PhD *Waikato*
Jean Hollis, MBBS(Hons), FRANZCP
Anna Mandalis, BBehSc(Hons) MClinPsych PhD *LaTrobe*
Naresh Mondraty
Philomena Renner, BA MA *Dublin* PhD *Woll*
Paul Rhodes, BSc *Lanc* MPsych PhD *Macq*
Reinhard Ronnebeck, BA *Mich* MA PhD *Houston*
Timothy Sharpe, BSc MPsych *NSW* PhD
Gillian Straker-Bryce, BA MClinPsych PhD *Wits*

Honorary Associates
Elizabeth Allworth, BA *ANU* MPsych(Appl) *NSW* PhD *Macq*
Simon Boag, BA(Hons) PhD
Robyn Boyle, BA(Hons) PhD *Macq*
Julie Braithwaite, BA MClinPsych *Macq*
Catherine Bray, BA(Hons) MPsych(Merit)
Kerri Brown, MA PhD *Woll*
Ruth Brundson, BA(Hons) *Macq* MScClinNeurophych *Macq* PhD *Macq*
Barney Casey, BA *Auck* MPsych PhD
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Jennifer Cornish, BSc(Hons) PhD *Monash*
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Mark Dadds, BSc DipEd *Melb* DipPsych PhD *Qld*
Carlie Dean, BSc MPsych
Elise Denshire, BA *Wash* MPsych
Angela Dixon, BSc *Melb* MA *Harv* MPsych
Emma Djukic, BA(Hons) MPsych
Gabrielle Duffy, BA(Hons) MPsych
Robert Duncan, MPsych *NSW*
Sarah Elders, BSc *Ulster* DClinPsych *Newcastle*
Rosemary Elliot, BA MPsych
Julie Erskine, BA(Hons) MPsych PhD *NSW*
Deborah A Finney, BSc MPsych PhD *NSW*
Gary Fulcher, BA *NSW* MA MPsych PhD
Eleanor Galt, BA(Hons) *Newcastle* DipPsych
Jonathon Gaston, BSc(Hons) MPsych *NSW*
Paul Gertler, BSc *Newcastle* MPsych
James Guinan, MSc MPsych *NSW* PhD
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Malcolm Huxter, BA *NE* MPsych *CSU*
Wendy Joung, BSc(Hons) PhD
Pamela Joy, BA MA MSc PhD *Macq*
Brian Kearney, BA MPsych
Meredith Kearney, BSc(Hons) MPsych *NSW*
Andrew Kemp, BSc(Hons) *Melb* PhD *Swinbourne*
Travis Kemp, BEd *SA* MA *Deakin* PhD *SA*
Deborah Koder, BSc *NSW* MPsych
Suzanna Kostrevska-Kirov, BSc *Newcastle* MPsych
Sonia Kram, BA *Macq* MPsych
Claire Lamplugh, BA(Hons) *Exeter* DCP *Southampton*
Daniel Le Grange, MA *Rand* PhD *Lond*
Glen Larner, BA(Hons) DipPsych
Tahn Le, BSc *NSW* MPsych *WS*
Sara Lucas, BSc *Adel* MPsych *Macq*
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Peter Mangioni, BSc *NSW* MClinPsych *NSW*
Claudine Martijn, BA(Psych) DocClinPsych/MSc
Katherine Martin, BSc MSc *Melb*
Wendy McCartney, BA *Open Uni* DipEd *MA*
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Richard McBride, BSc MPsych *NSW*
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Lesley Russell, BA(Hons) MPsych
Mark Sabaz, BSc PhD *Macq*
Thomas Schick, BA MPsych
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Fiona Wilkinson, BA *Macq* MPsych
Crista Wocadlo, BA *CIT* MA *Melb* PhD *ANU*
Wilson Wong, BA Psych (Hons) *Lond* Master of Health Law MPsych *Tas*
Robert Wood, BB *Curtin* PhD *Washington*

Conjoint Academic Title
Deborah Finney, BSc MPsych PhD *NSW*

Gambling Treatment Clinic
Archana Bhat, BA *Osmania* MA *Shreemati Nathibal Damodar*

Peggy Bracks, BSc PGDip *Macq*
Chantal Braganza, BSc MPsych *NSW*
Maree-Jo Coughlan, BSc *Woll* GDS (Psych)
Kristen Kreutzfeldt, MPsych *UWS*
Frances Low, BSc MA MPsych *Tas*
Kristen Shannon BA MA
Diana Sim BPsych PGDipEd *UWA*

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Australian Key Centre for Microscopy and Microanalysis

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Associate Professor and Deputy Director
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Senior Lecturer
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Lecturer
Lillian Soon, PhD

Research Associates
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Judith Field, PhD
Tomoyuli Honma, PhD
Alexandre La Fontaine, BE MSc *Uni Paris-Orsay*
Zhongwen Liu, PhD
Michael Moody, BSc(Hons) *Adel*, PhD *UniSA*
Timothy Petersen, PhD *RMIT*
Andrei Reztsov, PhD *Moscow*
Anya Salih, MSc *Khartoum* PhD
Naomi Tsafnat, BSc *SJSU*, PhD *UNSW*

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Toshi Arakawa
Shaun Bulcock, MSc *Melb*
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Don Page
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Sharon P Cummings, PhD
Juan Moreira Da Rocha, PhD *Vigo*
M Gabriela Palomo, PhD *Mar del Plata*
Daniel R Roberts, PhD *Woll*
Greg A Skilleter, PhD

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Jason Grossman, MA *Cantab* MPH
Michael Selgelid, BSE *Duke* MA PhD *Cal San Diego*

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Jason Grossman, BA MA *Camb* MPH
Julian Holland, BA DipMuseumStudies MScSoc
Ian Kerridge, BA BMedHons MPhil, FRACP FRCPA
Stephen Ross Leeder, BSc(Med) MB BS PhD, FRACP FFPHM FAFPHM
Roy MacLeod, AB *Harv* PhD *Cantab*, FAS FASSA FRHistS
John Miles Little, AM MD MS, FRACS
Gabrielle O'Sullivan, BSc *Dub* PhD *Lond*
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Key Centre for Polymer Colloids

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Hank De Bruyn, PhD
Marianne Gaborieau, PhD *Louis Pasteur*
Desislava Ganeva, PhD *Stell*
Yohann Guillaneuf, PhD *Provence*
Nirmesh Jain, BSc MSc PhD *SGU*
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Duc Ngoc Nguyen, PhD *W.Syd.*
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Peter J Cowell, BA PhD
Peter John Davies, BSc *Leic* PhD *Sheff*. Appointed 1991
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Honorary Associates
Philip Chapple, PhD
Douglas Cato, BSc MSc PhD
David Haddad, BSc DPhil *Oxf*
Alexa Troedson, BSc PhD
John You, PhD

33. Scholarships

These tables contain simplified details of some of the prizes and scholarships offered by the University. Further information regarding scholarships is available from the University scholarships website and from the Research Office website.

Additional criteria are attached to each award below and for full details you are advised to consult the administering unit. In particular, requirements of sufficient merit or of a higher year enrolment in particular subjects or degrees are common.The University may not offer an award every year. The values of the awards are indicative offer an award every year. The values of the awards are indicative only and may vary without notice.

The scholarships and prizes fall into two broad categories:
Prizes awarded on application – See the Scholarships Office and Research Office websites for more information. Applications usually close in September each year for the following year.

Prizes awarded automatically – Successful students are notified of these either by the Faculty or the Student Centre. Nearly all the prizes in these tables are awarded without application.

Undergraduate prizes and scholarships

Award	Value (pa)	Tenure (yrs)	Number	Brief description
Scholarships awarded by the Faculty to students entering first year.				
Science Alumni Entry Scholarship	$1000	5	up to 4	Awarded to highly ranked University of Sydney Undergraduate Scholarship applicants who do not obtain one of those scholarships. Minimum UAI 98. These scholarships may not be held concurrently with a University of Sydney Scholarship for Outstanding Achievement.
Science Entry Scholarship	$4000	1	up to 4	Awarded to highly ranked University of Sydney Undergraduate Scholarship applicants who do not obtain one of those scholarships. Minimum UAI 98. These scholarships may not be held concurrently with a University of Sydney Scholarship for Outstanding Achievement.
Science Alumni Achievement Scholarship	$1000	2	up to 7	Awarded to highly ranked University of Sydney Undergraduate Scholarship applicants who do not obtain one of those scholarships. Minimum UAI 95. These scholarships may not be held concurrently with a University of Sydney Scholarship for Outstanding Achievement.
Faculty of Science Olympiad Scholarship	1 x $3000 then 3 x $1000	4	varies	Awarded to highly ranked University of Sydney Undergraduate Scholarship applicants who do not obtain one of those scholarships. Applicants must be medallists in an International Olympiad in Biology, Chemistry, Informatics, Mathematics or Physics. Minimum UAI 95. These scholarships may not be held concurrently with a University of Sydney Scholarship for Outstanding Achievement.
Biology Entry Scholarship	$2000	1	2	Awarded automatically on the basis of academic merit in the HSC to intending BSc Biology majors. Cannot be held with other scholarships of equal or greater value.
Chemistry Entry Scholarship	$2000	1	2	Awarded automatically on the basis of academic merit in the HSC to intending BSc Chemistry majors. Cannot be held with other scholarships of equal or greater value.
Environmental Science Entry Scholarship	$2000	1	1	Awarded automatically on the basis of UAI to students entering the BSc (Environmental). Cannot be held with other scholarships of equal or greater value.
Geography Entry Scholarship	$2000	1	1	Awarded automatically on the basis of academic merit in the HSC to intending BSc Geography majors. Cannot be held with other scholarships of equal or greater value.
Information Technology Entry Scholarship	$2000	1	2	Awarded automatically on the basis of UAI to students entering the BSCT or BIT. Cannot be held with other scholarships of equal or greater value.
Liberal Studies Entry Scholarship	$2000	1	1	Offered jointly by the Faculties of Arts and Science. Awarded automatically on the basis of UAI to students entering the BLibStud. Cannot be held with other scholarships of equal or greater value.
Mathematics Entry Scholarship	$2000	1	2	Awarded automatically on the basis of academic merit in the HSC to intending BSc Mathematics majors. Cannot be held with other scholarships of equal or greater value.
Molecular Biology & Genetics Entry Scholarship	$2000	1	1	Awarded automatically on the basis of UAI to students entering the BSc (Molecular Biology and Genetics). Cannot be held with other scholarships of equal or greater value.
Medical Science Entry Scholarship	$2000	1	2	Offered jointly by the Faculties of Science and Medicine. Awarded automatically on the basis of UAI to students entering the BMedSc. Cannot be held with other scholarships of equal or greater value.
Psychology Entry Scholarship	$2000	1	2	Awarded automatically on the basis of UAI to students entering the BPsych. Cannot be held with other scholarships of equal or greater value.
Farrand Science Scholarships	$2500	1	11	Eleven scholarships for full time first year BSc students who have not undertaken previous tertiary study. Awarded automatically on the basis of academic merit in the HSC (or equivalent). May not be held with the Science Scholarship.
Liversidge Scholarship	$1000	3	2	Awarded automatically to the Chemistry student who, in the immediately preceding year, achieved the highest number of marks in HSC Chemistry.
Plumian Scholarship	$400	2	1	Awarded automatically for general proficiency at the HSC to a student enrolled in Biology, Geology or Geography in the candidate's first year.
Science Scholarships	$500	1	10	Awarded automatically to full time first year BSc students for academic merit in the HSC or equivalent and who have not previously enrolled in a degree course. May not be held with the Farrand Science Scholarship.
A.J. Shearsby Prize	$100	1	1	Awarded automatically to the Junior Geology student gaining the highest place in Earth and Environmental Science at the NSW HSC.
Scholarships and prizes awarded by the Scholarships Office to students entering first year in any faculty				
University of Sydney Scholarships Merit Award	$5000	5	50	Awarded on basis of application to the Scholarships Unit. Applications close 30 September in the year prior to enrolment. Selection based on academic merit and other achievements. Minimum UAI 95. For further information see www.usyd.edu.au/scholarships

Award	Value (pa)	Tenure (yrs)	Number	Brief description
University of Sydney Scholarships Entry Award	$5000	1	100	Awarded on basis of application to the Scholarships Unit. Applications close 30 September in the year prior to enrolment. Selection based on academic merit and other achievements. Minimum UAI 95. For further information see www.usyd.edu.au/scholarships
University of Sydney Scholarships for Outstanding Achievement	$5000	5	approx 35	Awarded to any student enrolling at the University of Sydney who scores a UAI of 100 or 99.95 in the NSW HSC or equivalent in the preceding year. For further information see www.usyd.edu.au/scholarships
University of Sydney Access Scholarships	$4000	5	approx 60	Access Scholarships assist new and continuing students who have been disadvantantaged in some way. They are available to students who have a competetive UAI and who also meet at least one of these criteria: financial disadvantage, disability or rural/remote area. Applications close 30 September. Apply through UAC - consult the UAC booklet or UAC website: www.uac.edu.au
Commonwealth Learning Scholarships	$2042 or $4084 (indexed)	4	approx 350	The Commonwealth Learning Scholarships program is a Commonwealth-funded scheme, open to undergraduate students at the University of Sydney. Applications close 30 September. Apply through UAC - consult the UAC booklet or UAC website: www.uac.edu.au
Bruton Educational Trust Scholarship	$10000	3	1	Scholarship to support candidate relocating from regional NSW to attend any degree at the University of Sydney. Awarded on the basis of the NSW HSC examination results, financial need and other criteria. Applications to the Scholarships Unit in the year preceding enrolment. For further information see www.usyd.edu.au/scholarships
Barker Scholarship No. III	$600	1	1	Awarded automatically after enrolment for proficiency in Mathematics in the HSC. Must enrol in 12 credit points of Mathematics in the Faculties of either Arts, Engineering or Science.
E. Trenchard Miller Memorial Scholarships	$1000	5	approx 8	Awarded automatically after enrolment for general proficiency in the HSC.
G.C. Halliday Scholarship	$200	3	1	Awarded for general proficiency in the HSC to a Sydney Grammar School student enrolling into the faculties of Arts, Law, Science, or Engineering.
Horner Exhibition	$500	1	1	Awarded automatically after enrolment for proficiency in Mathematics at the HSC, to candidates in the faculties of Science, Arts or Engineering. Must enrol in 12 credit points of Mathematics.
Killeen Prize	$190	1	1	Awarded on the recommendation of the Principal of the Fort Street High School to a student proceeding from that school to the University.
John West Medal	$400	1	1	Awarded automatically after enrolment for general proficiency in the HSC.
Faculty prizes and scholarships for continuing students				
Bachelor of Liberal Studies (International) Travelling Scholarship	$2000	1	up to 3	Awarded annually to Bachelor of Liberal Studies (International) students proceeding overseas to participate in the University's Exchange Program. May not be held with a CHASS Student Travel Scholarship, a Chancellor's Committee Scholarship, an International Office Exchange Scholarship or an International Office Exchange Bursary.
Helen Beh Award for Citizenship	$350	1	1	Awarded annually to the Science student who has contributed most to the Faculty's non-academic activities and interests. May not be held with the Dean's Award for Citizenship.
Dean's Award for Citizenship	$100	1	varies	Awarded annually to the Science student who has contributed most to the Faculty's non-academic activities and interests. May not be held with the Helen Beh award.
Dean's Honour List		1		Students of the Faculty of Science (including students in the Bachelor of Liberal Studies) earn a place on the Dean's Honours List if they achieve a WAM at the High Distinction level over at least 48 credit points in the given academic year.
Dean's Honour List Prize	$500	1	3	Highest WAM of all candidates in Junior, Intermediate and Senior years of study who have attempted at least 48 credit points in the year.
Dean's Scholarship in Science	$3000	1	3	Awarded on basis of academic merit to candidates enrolled full time for courses offered by the Faculty who have completed between 2 and 6 semesters and are not holders of a University of Sydney Undergraduate Scholarship.
Brian Rawson Memorial Prize	$250	1	1	Most improved performance from Junior to Intermediate Science.
Science Achievement Prize	$500	1	1	Highest WAM for all units of study to a student completing the requirements for a Faculty degree in six semesters.
USA Foundation Scholarship for Women in Science	$800	1	1	The scholarship shall be awarded on merit to a woman who is a citizen or permanent resident of Australia enrolling into an honours program in the Faculty of Science at the University of Sydney.
Scholarships Office prizes and scholarships for continuing students				
University of Sydney Access Scholarships	$4000	5	approx 60	Access Scholarships assist new and continuing students who have been disadvantantaged in some way. They are available to students who have a competetive UAI and who also meet at least one of these criteria: financial disadvantage, disability or rural/remote area. Applications close 30 September. Apply through UAC - consult the UAC booklet or UAC website: www.uac.edu.au
Commonwealth Learning Scholarships	$2042 or $4084 (indexed)	4	approx 350	The Commonwealth Learning Scholarships program is a Commonwealth-funded scheme, open to undergraduate students at the University of Sydney. Applications close 30 September. Apply through UAC - consult the UAC booklet or UAC website: www.uac.edu.au
Continuing Undergraduate Scholarship	$5000	1	100	Awarded without application to continuing undergraduate students in any Faculty on the basis of merit.
Honours Scholarship	$5000	1	50	Awarded on the basis of merit or equity and merit to students enrolled in an honours program at the University of Sydney. Equity applications to the Scholarships Unit usually close at the end of March in the year of candidature.
International Office scholarships for continuing students				
International Merit Scholarship		1	up to 8	Half fee scholarships awarded on academic merit to International students who have completed at least 36 credit points at the University of Sydney.
Scholarships and prizes awarded by Schools and Departments				
Anatomy and Histology				
J L Shellshear Memorial Prize	$120		1	Merit in practical Anatomy to a student in the Bachelor of Medical Science.
Grafton Elliot Smith Memorial Prize	$280		1	For merit in Anatomy to a Bachelor of Medical Science student.
J T Wilson Memorial Prize	$140		1	Proficiency in Neuroscience for a student in the Bachelor of Medical Science.
Biological Sciences				

Award	Value (pa)	Tenure (yrs)	Number	Brief description
Mary Besly Memorial Prize	$100		1	Merit in Intermediate or Senior invertebrate zoology.
Ilma Brewer Prize	$600		1	Excellence in botany or plant sciences honours.
G.S. Caird Scholarship in Botany	$650	1	1	Merit in Senior plant biology to a student proceeding to plant biology honours.
G.S. Caird Scholarship in Zoology	$650	1	1	Merit in Senior animal biology to a student proceeding to animal biology honours.
Eleanor Chase Memorial Prize	$200		1	Merit in Intermediate animal biology.
George Herbert Clarke Prize	$100		1	Merit in Intermediate plant morphology to a student born in Australia.
Collie Prize	$160		1	Awarded to the student enrolled in the Faculty of Science who obtains the highest aggregate mark for 12 credit points of Junior Biology.
William John Dakin Memorial Prize in Zoology	$250		1	For excellence in the subject of Zoology to a student gaining first class honours in Biology.
John H. Elliott Memorial Prize	$150			For merit in an honours thesis on animal biology.
Haswell Prize	$120		1	Proficiency in 24 credit points of Senior zoology.
McGraw-Hill Prize for Academic Excellence in Biology	$250		4	Awarded annually in the form of a book voucher to the most proficient student in each of four streams in First Year Biology. These four streams are: Concepts in Biology, Ecosystems to Genes, Living Systems, and Human Biology.
E.N. (Ted) O'Reilly Memorial Prize	$275		1	Merit in Senior plant physiology.
Eva Saunders Memorial Prize	$60		1	To a female student for merit in Intermediate or Senior plant biology.
Slade Prize in Junior Biology	$80		1	For proficiency in Junior biology practicals.
Professor Spencer Smith-White Prize	$200		1	For merit in genetics honours.
Gabriella Wittman Prize	$140		1	Proficiency in Senior genetics.
Chemistry				
Arthur Hollis Memorial Prize	$150		1	For excellence in mainstream Intermediate Chemistry.
Australia-USA Foundation Prize	$250		1	Greatest improvement between Junior and Intermediate Chemistry.
C.H. Wilson Prize	$70		1	Highest grade in Organic Chemistry Honours.
Charles E. Fawsitt Prize	$120		1	Proficiency in Junior Chemistry.
Chemistry Summer Undergraduate Scholarship	varies	6 weeks	varies	This scholarship aims to encourage further study in chemistry and to provide experience in chemical research laboratory. Awarded on the basis of academic merit and an assessment of details provided on an application form to Australian citizens and permanent residents proceeding into Senior Chemistry.
Edna Maude Goulston Prize in Organic Chemistry	$275		1	Awarded annually to the Chemistry Honours student gaining the highest mark in the Organic coursework module, provided that the student's work is of sufficient merit.
Frank E. Dixon Scholarship	$650	1	1	Merit in Senior Chemistry for a student proceeding to Honours.
G.S. Caird Scholarships (in Chemistry)	$800	1	3	Merit in Senior Chemistry for a student proceeding to Honours.
Hush Prize in Theoretical Chemistry	$350		1	Merit in Senior Theoretical Chemistry for a student proceeding to Honours in Theoretical Chemistry.
Inglis Hudson Scholarships	1 x $300 & 2 x $150	1	3	Merit in Senior Chemistry for a student proceeding to Organic Chemistry Honours.
Iredale Prize	$95		1	For merit in mainstream Intermediate Chemistry.
Janet Elspeth Crawford Prize In Chemistry	$1400		1	To a female graduate for merit in Chemistry Honours.
Levey Scholarship No. 2	$525	1	1	For merit in Junior Chemistry for a student proceeding to Intermediate Chemistry.
Levey Scholarship No. 3	$300	1	1	For merit in Junior Chemistry for a student proceeding to Intermediate Chemistry.
RJW Le Fevre-DAASN Rao Prize in Physical Chemistry	$350		1	For merit in Senior Physical Chemistry to the student entering Physical Chemistry Honours.
Slade Prize in Intermediate Chemistry Practical	$80		1	Awarded for proficiency in the practical component of both a Semester 1 and a Semester 2 Intermediate Chemistry unit of study.
Walter Burfitt Scholarship No 1	$750	1	1	Merit in Senior Chemistry to a student proceeding to Honours in Chemistry.
Geosciences				
AusIMM: Charles Marshall Thesis Prize			1	Proficiency in Honours in a mining related field.
AusIMM: Mining and Metallurgical Bursaries	$500 + $100 book voucher		1	Awarded annually by the New South Wales and ACT Branch of the Australian Institute of Mining and Metallurgy for the best intermediate, senior and honours students in a geoscience, mining or extractive metallurgical engineering department in NSW and the ACT. Application forms become available in March each year. Completed forms must be submitted to the Head of School of Geosciences by the end of April each year.
Olga Marian Browne Prize	$50		1	For merit in Intermediate Geology fieldwork.
G.S. Caird Scholarship (in Geography)	$650	1	1	For merit in Senior Geography.
Leo A. Cotton Prize in Exploration Geophysics	$80		1	For proficiency in Senior year studies in the field of Exploration Geophysics.
Deas-Thomson Scholarship in Mineralogy	$1000	1	1	For proficiency in Senior Geology to a student who proceeds to Honours in Geology and/or Geophysics.
Earth Resources Foundation First Year Scholarships	$600	1	4	Merit in first semester Junior Geology.
Earth Resources Foundation Second Year Scholarships	$800	1	4	For merit in Junior Geology to students proceeding to Intermediate Geology.
Earth Resources Foundation Third Year Scholarships	$1000	1	3	For merit in Intermediate Geology to students proceeding to Senior Geology and/or Geophysics.

Award	Value (pa)	Tenure (yrs)	Number	Brief description
Earth Resources Foundation Honours Year Scholarships	$1000	1	2	For merit in Senior Geology and/or Geophysics to students proceeding to honours in these areas.
Edgeworth David Prize for Palaeontology	$60		1	For proficiency in Senior palaeontology.
Elliston Medal	Medal		1	For proficiency in Geology Honours.
Edgar Ford Memorial Scholarship	$275	1	1	For proficiency in Senior Geography to the student who proceeds to Geography Honours.
Fugro Geophysics Prize	$1000		1	For proficiency in Senior Geophysics for a student proceeding to geophysics honours.
Geological Society of Australia Prize			1	For proficiency in Senior Geophysics for a student proceeding to geology honours. The prize consists of one year's student membership of the Geological Society of Australia and subscription to the Australian Journal of Earth Sciences.
Roy Lindseth Bursary	$180	1	1	Awarded to a candidate for a bachelor's degree enrolled in a unit of study or units of study in Geology and/or Geophysics who requires financial assistance to meet student expenses and who has demonstrated academic merit.
Jack Mahoney Memorial Prize	$90		1	Proficiency in the practical component of Junior Geology.
C.E. Marshall Scholarship	$525	1	1	Proficiency in Junior Geology to a student proceeding to Intermediate Geology.
Professor Griffith Taylor Prize	$100		1	Awarded to the woman student who gains the highest marks in the GEOG 1001 and 1002 examinations in the Faculty of Science.
Professor James Macdonald Holmes Prize	$100		1	Awarded to the degree student who gains the highest marks in the GEOG 1001 and 1002 examinations, provided the student's work is of sufficient merit.
W.H. Maze Prize in Intermediate Geography	$250		1	Awarded to the most proficient student in two units of study from GEOG 2001, 2002, 2101, 2102, 2201 and 2202 if the student's work is of sufficient merit.
Rev. A.S. McCook Memorial Scholarship	$700	1	1	Awarded for merit in Senior Geography to a student proceeding to Geography or Geomorphology honours, to assist in the expenses for field work connected with the thesis.
Sheila Mitchell Swain Memorial Prize	$210		1	Awarded to the Senior Geology student who submits the best field report.
Quodling Testimonial Prize	$200		1	Awarded to a student in Senior Geology and/or Geophysics who has shown proficiency in petrology.
Ken Richards Memorial Scholarship	$1250	1	1	For an honours student with interest and aptitude in applied geosciences.
Slade Prize in Junior Geology Practical	$100		1	Proficiency in Junior Geology practicals.
Slade Prize in Intermediate Geology Practical	$80		1	Proficiency in Intermediate Geology practicals.
University Prize for Geology	$10		1	Awarded to the first year student who gains the highest marks in the class examination in Geology.
History and Philosophy of Science				
Dr G.A.M. Heydon Prize	$100		1	Merit in Intermediate History and Philosophy of Science.
Ian Langham Memorial Prize	$150		1	Merit in Senior History and Philosophy of Science.
Information Technologies				
Accenture Prize	$1000		1	The prize will be shared equally by the students in that group which is judged to have performed its project in ISYS3400 Information Systems Project at the highest professional standard.
Allan Bromley Prize	$500		1	Established in 2002 by the School of Information Technologies, Friends and Colleagues to commemorate the life and work of Associate Professor Allan Bromley, this prize is awarded annually to the student who achieves the highest mark for an Honours thesis, provided that the candidate's work is of sufficient merit.
G.S. Caird Scholarship (in Computer Science)	$650	1	1	Awarded for proficiency in Intermediate Computer Science. The scholar is required to attend Senior Computer Science during tenure of the scholarship.
CISCO Prize	$500		1	The prize will be awarded annually to the student with the best overall result in the Senior unit of study Networks & Distributed Systems.
Foundation for Information Technology Prizes	$300 and $200		2	One prize, valued at $300, shall be awarded annually to the most proficient student in Junior Computer Science and the other prize, valued at $200, shall be awarded to the next most proficient student, provided that the work is of sufficient merit.
Foundation for Information Technology Portfolio Entry Prizes	$300 and $250		2	Awarded annually to the two students who enrol in the BIT, BCST or BCST (Adv), who have submitted the highest quality portfolios of their programming work as an additional selection criterion. $300 (first prize), $250 (second prize).
Ian Jackson Memorial Prize	$50		1	Awarded for proficiency in Senior (Third year) Computer Science, provided that the work is of sufficient merit.
Information Technology Entry International Scholarship	$2000	1	2	Up to two Scholarships for first year international candidates for the BCST, BCST (Advanced) or BIT.
Professor John Rosenberg Prize for Excellence in Computer Science	$550		1	The prize will be awarded to the student with the most outstanding performance in Senior systems units of study.
Microsoft Research Asia Prize for Junior Software Development Projects	$250		1	Established in 2006 by a donation from Microsoft Research Asiathis prize is awarded annually to the students in that group which is judged to have produced the best system among those carried out in the first year programming unit, provided the work is of sufficient merit.
Microsoft Research Asia Prize for Multimedia Technologies	$500		1	Established in 2006 by a donation from Microsoft Research Asia, this prize is awarded annually to the student with the most outstanding performance in Senior units of study in the field of multimedia technologies, provided the work is of sufficient merit.
Microsoft Research Asia Prize for Senior Software Development Projects	$1000		1	Established in 2006 by a donation from Microsoft Research Asia, this prize is awarded annually to the students in that group which is judged to have produced the best system among those carried out in senior project units involving software development, provided the work is of sufficient merit.
Microsoft Research Asia Scholarship in IT	$5000	4	1	Established in 2005 by a donation from Microsoft Research Asia, the purpose of the scholarship is to encourage excellence in the field of information technology. The scholarship is open to all students enrolling in the Bachelor of Computer Science and Technology, Bachelor of Computer Science and Technology (Adv), or Bachelor of Information Technology degrees, and will be awarded based on academic merit, assessment of details provided on an application form, and performance in an interview. The scholarship holder shall be required, if selected, to take part in an industry placement at Microsoft Research Asia, Beijing.

Award	Value (pa)	Tenure (yrs)	Number	Brief description
Soprano Software Engineering Prize	$1000		1	Established in 2000 by the offer of an annual donation by Soprano Design Pty Ltd., the prize is to encourage excellence in software engineering. Each year the best Computer Science and/or Information Systems Honours students will be invited to present their projects to a committee comprising the Head of the School of Information Technologies and the Management Team of Soprano Design, provided their work is of sufficient merit. The prize shall be awarded to one of these students on the recommendation of the committee.
Marine Science				
Great Barrier Reef Research Foundation Telstra Country Wide Prize	$750	1	1	Awarded annually to the Bachelor of Science (Marine Science) student who has completed their degree requirements and who has obtained the highest grades in 12 to 18 credit points of NTMP units of study.
Prize in Marine Sciences	$100			Merit in Senior Marine Science
Mathematics and Statistics				
George Allen Scholarship	$400 each	1	3	Three scholarships: one to a student proceeding to honours in Applied Mathematics, one to a student proceeding to honours in Mathematical Statistics and one to a student proceeding to honours in Pure Mathematics, each one of whom has shown proficiency in at least 24 credit points of Senior units of study in the School of Mathematics & Statistics.
The MJ and M Ashby Prize for Mathematics in Science	$250		1	For the best essay, submitted by a student in the Faculty of Science, that forms part of the requirements of Pure Mathematics Honours, Applied Mathematics Honours or Mathematical Statistics Honours.
Applied Probability Trust Prize	$150		1	Awarded annually to the student enrolled in STAT3911 Stochastic Processes and Time Series (Advanced) who demonstrates the greatest proficiency.
Australian Federation of University Women (NSW) Prize in Mathematics	$100		1	Awarded to the most distinguished woman candidate for the degree of Bachelor of Arts or Bachelor of Science who graduates with first class honours in Applied Mathematics, Pure Mathematics or Mathematical Statistics.
Barker Prize	$375		1	Awarded at the fourth (honours) year examination for proficiency in Pure Mathematics, Applied Mathematics or Mathematical Statistics.
Barker Scholarship, No. I	$750	1	1	Awarded for proficiency in Intermediate Mathematics. The scholar is required to have attended 30 credit points of Senior units of study in the School of Mathematics and Statistics by the end of the year of the tenure of the scholarship.
Barker Scholarship, No. II	$750	1	1	Awarded for proficiency in Junior Mathematics. The scholar is required to attend 24 credit points of Intermediate units of study in the School of Mathematics and Statistics during the tenure of the scholarship.
Tim Brown Prize No. 1	$130		1	For proficiency in 12 credit points of Intermediate Statistics.
Tim Brown Prize No. 2	$210		1	For proficiency in 24 credit points of Senior Statistics.
K.E. Bullen Memorial Prize	$650		1	To the most proficient student in Applied Mathematics Honours.
K E Bullen Scholarships Nos. I & II	$1250	1	2	Proficiency in Senior Mathematics and Statistics to the student who enrol full-time in Applied Mathematics Honours.
K.E. Bullen Scholarship No III	$1000	1	1	Proficiency in Senior Mathematics and Statistics to the woman student who enrols full-time in Applied Mathematics Honours, provided that the candidate has not received any other K E Bullen Scholarship.
David G A Jackson Prize	$200		1	Awarded for creativity and originality in any undergraduate Pure Mathematics unit of study.
Joye Prize in Mathematics	$5000 & medal		1	To the most outstanding student completing fourth year Honours in Applied Mathematics, Pure Mathematics or Mathematical Statistics
Norbert Quirk Prizes	$225		4	For the best essay on a given mathematical subject by a student enrolled in a Junior, Intermediate, Senior and Honours units of study in Mathematics (Pure Mathematics, Applied Mathematics or Mathematical Statistics),
Veronica Thomas Prize	$100		1	For proficiency in General Statistical Methods
Thomson Learning Publishers Prize No.1	$125		1	Established in 1981 by the offer of Wadsworth Publishing Company (Australasia) to establish a prize for Junior Mathematics, this prize is awarded annually to a student for proficiency in Advanced level units of study in Junior Mathematics by the annual donation of a book voucher.
Thomson Learning Publishers Prize No.2	$125		1	Established in 1981 by the offer of Wadsworth Publishing Company (Australasia) to establish a prize for Junior Mathematics, this prize is awarded annually to a student for proficiency in normal level units of study in Junior Mathematics by the annual donation of a book voucher.
Medical Sciences				
Korner Prize	$500	1	1	Awarded for proficiency in the Intermediate year of the Bachelor of Medical Science degree.
Molecular and Microbial Biosciences				
Allman Prize	$300	1	1	Awarded annually to the student in the clinical stream of the Honours year in the BSc (Nutrition) who obtains the top aggregate mark in NUTR 4001 and NUTR 4002.
G.S. Caird Scholarship (in Biochemistry)	$650	1	1	Awarded for greatest proficiency in the units of study MBLG 2071 or MBLG 2971 and BCHM 2072/2972, provided that the student's work is of sufficient merit.
Roslyn Flora Goulston Prize	$530		1	Awarded for greatest proficiency in 24 credit points of Senior Biochemistry (taken from BCHM3071/3971; BCHM3081/3981; BCHM3072/3972; BCHM3082/3982; BCHM3092/3992) to an undergraduate in science who intends proceeding to a BSc degree with honours in that subject.
Mannatech Australia Prize in Modern Metabolic Biochemistry	$1000		1	Established in 2005 by annual donation from Mannatech Australia, this prize is awarded annually by the School of Molecular and Microbial Biosciences to the student who attains the highest performance in their Honours year in the School, in the field of modern metabolic biochemistry, provided the work is of sufficient merit.
Sigma-Aldrich Molecular Biotechnology Third Year Award	$500	1	1	The award recognises the best overall grade performance in MOBT 3102 by a student enrolled in the BSc (Molecular Biotechnology) undergraduate degree. Students must receive a minimum Distinction average in this unit of study.
Slade Prize in Intermediate Biochemistry	$80		1	Awarded for proficiency in the units of study MBLG2071 or MBLG2971 and either BCHM2072 or BCHM2972.
Neville Whiffen Scholarship	varies		1	Established in 2004 by a bequest left as a legacy to the Nutrition Research Foundation by Neville Whiffen US Medal of Freedom, FSTC FRSC FRACI FIE Aust FI ChemE FAIM who was a Life Governor of the Foundation, this scholarship is awarded annually or bi-annually by the Nutrition Research Foundation on the recommendation of the Head of the Human Nutrition Unit to a student in the Human Nutrition Unit to attend a conference in Australia or overseas.

Award	Value (pa)	Tenure (yrs)	Number	Brief description
Pharmacology				
Dorothy Thorp Prize in Science Communication	$200		1	Merit in Pharmacology Honours.
Roland H. Thorp Prize	$200		1	Merit in Senior Pharmacology.
Physics				
Australian Institute of Physics (N.S.W. Branch) Prize in Physics	$200		1	To the student graduating with the degree of Bachelor of Science with Honours in Physics who shows greatest proficiency.
Geoffrey Builder - AWA Prize	$250	1	1	Awarded annually to a student for proficiency in practical work in Intermediate Physics.
Walter Burfitt Scholarship No. II	$750		1	Awarded annually for proficiency in Senior Physics in the Faculty of Science.
Deas-Thomson Scholarship in Physics	$6500	1	1	To the student in either the Faculty of Arts or the Faculty of Science who demonstrates the greatest proficiency in Senior Physics, provided the student's work is of sufficient merit. The student is required to enrol in Physics Honours at the University.
Henry Chamberlain Russell Prize	$1400	1	1	Awarded for an essay, a thesis or research report on an astronomical subject written by a student enrolled for a degree within the University.
Levey Scholarship No. 1	$825	1	1	Awarded for proficiency in Junior Physics to a student in the Faculty of Arts, Science or Engineering who enrols in at least 12 credit points of Intermediate Physics.
School of Physics Outstanding Achievement Scholarship	1 x $2000 then 3 x $1000	4	1	Awarded automatically on the basis of academic merit in the HSC to intending BSc Physics majors. Cannot be held with other scholarships awarded by the Faculty of Science or University of Sydney.
Science Foundation for Physics Scholarships No. 1	$700	1	5	Up to five scholarships for proficiency in Junior Physics, provided that the student's work is of sufficient merit and that the student enrols in at least 12 credit points of Intermediate Physics.
Science Foundation for Physics Scholarships No. 2	$800	1	5	Up to five scholarships for proficiency in Intermediate Physics, provided that the student's work is of sufficient merit and that the student enrols in 24 credit points of Senior Physics.
Science Foundation for Physics Scholarships No. 3	$3000	1	5	Up to five scholarships for proficiency in Senior Physics, provided that the student's work is of sufficient merit and that the student enrols in Physics Honours.
Shiroki Prize	$500		1	Awarded to the student who submits the best project in Physics Honours provided the candidate's work is of sufficient merit.
School of Physics Honours Scholarship	$3000	1	1	Awarded to a student who has completed a major in Physics or equivalent and has achieved a result of at least Distinction in Senior Physics.
School of Physics - Julius Sumner Miller Scholarships for Academic Excellence No. 1	$700	1	2	To the most proficient students in Junior Physics provided that their work is of sufficient merit and they enrol in at least 12 credit points of Intermediate Physics.
School of Physics - Julius Sumner Miller Scholarships for Academic Excellence No. 2	$800	1	2	To the most proficient students in Intermediate Physics provided that their work is of sufficient merit and they enrol in 24 credit points of Senior Physics.
School of Physics - Julius Sumner Miller Scholarships for Academic Excellence No. 3	$3000	1	2	To the most proficient students in Senior Physics provided that their work is of sufficient merit and they enrol in Physics Honours.
Slade Prize in Intermediate Physics	$350		1	Proficiency in Intermediate Experimental Physics.
Smith Prize	$200		1	Awarded to the best undergraduate in Junior Experimental Physics.
W.I.B. Smith Prize	$300		1	Awarded to the student who best combines the characteristics of experimental skill, proficiency and exceptional motivation in the Senior laboratory classes.
Malcolm Turki Memorial Scholarship	$1700	1	1	To encourage and assist an outstanding student within the School of Physics in the completion of Physics Honours who might not otherwise be able to do so due to insufficient financial support.
Physiology				
Claude Bernard Prize	$150		1	Proficiency in PHSI 3003/3903.
Colin Dunlop Prize	$100		1	Merit in Physiology Honours.
Frank Cotton Memorial Prize	$250		1	For merit in the Human Cellular Physiology units of study (PHSI3005 or 3905) and (PHSI3006 or 3906)
Intermediate Physiology Merit Award	$300		1	For merit in the units of study PHSI2005 or PHSI2905 and PHSI2006 or PHSI2906
Y E Knight Neuroscience Essay Prize	$100		1	For the best essay or report in NEUR3001 or NEUR3901 and NEUR3002 or NEUR3902
David J. Monk Adams Award	$600		1	Travel assistance for a student enrolled in Physiology Honours.
Psychology				
Australian Psychological Society Prize in Psychology	$200		1	For distinction in Psychology Honours. As well as the cash prize, the winner will have the opportunity to present a paper to the annual APS conference, with substantial costs covered.
Blanka Buring Prize	$400		1	Awarded to the student enrolled in Arts who demonstrates the greatest proficiency in a minimum of 24 credit points of Psychology 3000 level units of study.
Dick Champion Prize	$200		1	Awarded to the Psychology 4 Honours student who presents the best Empirical Thesis in the areas of learning or motivation, providing the thesis is of sufficient merit.
Dick Thomson Prize	$200		1	Awarded to the best student in Psychology Honours, provided the performance is of sufficient merit.
Frank Albert Prize in Psychology	$200		1	For merit in Intermediate Psychology.
Lithgow Scholarship No. V	$1000	1	1	Awarded for proficiency in Psychology 1001 and 1002. The scholar is required to attend PSYC 2011 and 2012, PSYC 2013 and 2014 during the tenure of the scholarship.
Lithgow Scholarship No. VI	$1000	1	1	Awarded for proficiency in PSYC 2011 and 2012, PSYC2013 and 2014. The scholar is required to attend a minimum of 24 credit points of Psychology 3000 level units of study during the tenure of the scholarship.
Lithgow Scholarship No. VII	$1000	1	1	Awarded for proficiency in a minimum of 32 credit points of Psychology 3000 level units of study. The scholar is required to attend Fourth Year Psychology (Honours or GDS).
O'Neil Prize in Psychology 4 Honours	$200		1	The prize may be awarded to the student who shows greatest proficiency in the theoretical thesis in Psychology Honours.

Award	Value (pa)	Tenure (yrs)	Number	Brief description
Winifred O'Neill Sydney University Undergraduate Scholarship	$2500	Up to 3	1	For full-time students in Psychology who achieve the best results in the first or second years of study in Psychology, and who enrol in either 16 credit points of intermediate or 32 credit points of senior units of study in Psychology in the following year. Preference is to be given to students who are blind or who are visually impaired. The scholarship may be awarded to a student who has a different disability.
Westmead Institute for Cancer Research				
WICR Scholarship	$5000	1		Awarded by application following advertisement to the Westmead Institute for Cancer Research to an Honours student in the Bachelor of Science or Bachelor of Medical Science undertaking cancer research. Applications close with the Director, Westmead Institute for Cancer Research, Westmead Hospital on 30 September each year.

Prize compositions

Details of these may be obtained from the Scholarships Office with which applications generally close in the third week of second semester.

Bursaries

Bursaries are awarded on the combined grounds of financial need and academic merit. Applications to the Financial Assistance Office usually close at the end of April.

Postgraduate Prizes and Scholarships

Research Office – Postgraduate and intending postgraduate research students are advised to consult the Research Office website for comprehensive information on a wide range of scholarships available.

Postgraduate Travelling Scholarships – Each year the University offers five or six travelling scholarships with a closing date in March.

Generally, applicants need to have a first class Honours degree approaching medal standard to be considered. Applications for the major travelling scholarships offered by external bodies generally close in August or September. All postgraduate scholarships are advertised in the Bulletin Board, which is available in departments or from the Research Office in the Quadrangle.

Award	Value (p.a.)	Tenure (yrs)	Number	Brief description
Scholarships and prizes awarded by the University				
Australian Postgraduate Awards (APAs)	$18837	3.5 max	varies	For local students enrolling into a higher research degree at the University. Applications close 31 October each year. Applications from the Research Office or web site: http://www.usyd.edu.au/su/reschols/welcome.html.
University of Sydney Postgraduate Awards (UPAs)	Same as APA	3.5 max	varies	For local students enrolling into a higher research degree at the University. Applications close 31 October each year. Applications from the Research Office or web site: http://www.usyd.edu.au/su/reschols/welcome.html.
Henry Chamberlain Russell Prize	$1400	1	1	Essay, thesis or research report on Astronomy.
Scholarships awarded by the International Office				
International Postgraduate Research Scholarships		up to 3	approx 25	For International students enrolling into a higher research degree at the University. Applications open between 1 May and 31 August each year. Scholarship covers tuition fees, a living allowance of approx. $16,700 p.a. and health cover. Application forms from the International Office.
Scholarships and prizes awarded by Faculty, Schools and Departments				
Biological Sciences				
Jabez King Heydon Memorial Prize	$700		1	For the most meritorious PhD in the preceding 12 months in the School of Biological Sciences.
Postgraduate Excellence Prize in Biological Sciences	$500-$3000			For research students in the School of Biological Sciences. Awarded after application and seminar to the student who best communicates the aims of their research, its contribution to its field and its likelihood of timely completion.
Chemistry				
Agnes Campbell Prizes	Varies			For excellence in Organic Chemistry in either an Honours year or in a research Masters or PhD.
Bruce Veness Chandler Research Support Scholarship in Food Chemistry	Varies	1	Varies	For research support for postgraduate candidates working in the area of food Chemistry.
John A Lamberton Research Scholarships	Varies	Up to 3	varies	Awarded to a meritorious candidate for the degree of Doctor of Philosophy or Master of Science in the area of natural products, or chemical understanding of the brain
C.G. and R.J.W. Le Fevre Postgraduate Student Lectures	$130		up to 3	Awarded to postgraduate students of Chemistry on the recommendation of the Council of the Sydney University Chemistry Society.
Dr Joan R Clark Research Scholarship	Varies	0.5	1	Awarded to a PhD student in Inorganic Chemistry to assist with costs of travel and subsistence while pursuing their research at a leading overseas university for a period of between 6 and 26 weeks.
George Harris Scholarships	$400	1	3	Awarded to a meritorious candidate for the degree of Doctor of Philosophy in Chemistry.
RJW Le Fevre Research Travelling Scholarship	$2500		1	Assists an outstanding female postgraduate research student to present a paper or poster at a major international conference.
Surface Coatings Association Australia Scholarship	$1500	1	1	Awarded to a meritorious candidate for the degree of Doctor of Philosophy or Master of Science in the area of surface coatings (including pigments, polymers, corrosion, weathering, adhesion and methods of manufacture).
Faculty of Science				
John Coutts Scholarship	$2750	3	1	Awarded to the top Honours student in the Faculty of Science proceeding to postgraduate study at the University the following year.
Science Centenary Fund Scholarship	$2500	1	1	Awarded to the Honours student from the Faculty of Science who is ranked highest over four years and proceeds to a postgraduate research degree in the Faculty.
Geosciences				
Deas-Thomson Scholarship in Geology	$6500	1	1	For proficiency in Geology Honours to the student who proceeds to postgraduate study with the School of Geosciences.

Award	Value (p.a.)	Tenure (yrs)	Number	Brief description
George Harris Scholarships	$1200	1	1	Awarded to a candidate for the degree of Doctor of Philosophy in Geology and Geophysics.
L.A. Richardson Memorial Prize	$3000		1	For the most outstanding thesis in the field of exploration geophysics in either Geophysics Honours or Geology Honours by a student who enrols as a full-time research student in the following year.
School of Information Technologies				
Master of Information Technology Half-fee Semester Scholarship	Varies		varies	A limited number of One Semester Half-Fee Scholarships are available to new students commencing full-time studies in the MIT and MITM courses in 2006. The scholarships are awarded on the basis of academic merit. Students are assessed on their academic performance in their first full-time semester in the MIT or MITM course. Those students selected for a Scholarship will receive an amount equivalent to 50% of the tuition fee for their second full-time semester of study in the MIT or MITM.
Mathematics and Statistics				
T G Room Medal	Medal		1	For a PhD thesis in Pure Mathematics which is considered of outstanding merit.
Molecular and Microbial Biosciences				
The Jo Rogers Memorial Prize	Varies		1	Awarded annually to the top student in the final year of the Master of Nutrition and Dietetics course at the University of Sydney.
Bruce Veness Chandler Research Support Scholarship in Food Chemistry No.2	varies		varies	Established in 2004 by a bequest from the residual estate of Bruce Veness Chandler, this scholarship provides funding for research support for postgraduate or post-doctorate candidates working in the field of Food Chemistry applied to any aspect of food. Applicants must submit a proposal setting out the details of the research support sought and its importance to the applicant's research.
Physics				
PhD Bridging Award	same as APA	0.5	varies	Established in 2002 by the School of Physics, the purpose of the award is to provide a six-month living allowance to full-time PhD students commencing mid-year in the School of Physics at the University of Sydney. Applicants must meet the eligibility conditions for the Australian Postgraduate Award (APA/UPA), and must apply for an APA/UPA in their first semester of candidature.
Denison Postgraduate Award	same as APA	3	varies	To the most academically-able new PhD student who has met eligibility criteria for the APA/UPA awards. Scholarship holders must be enrolled for a full time Doctoral postgraduate research degree at the University of Sydney.
International Denison Postgraduate Award	same as APA	3	varies	Established in 2005 by the School of Physics, the purpose of the award is to provide a living allowance to international students who are undertaking full-time research towards a Masters or PhD in Physics. The award may be offered to incoming international research students with a first class honours degree, or equivalent. Applicants must make a formal application to the School using the advertised contact details.
Denison Postgraduate Conversion Award	same as APA	3	varies	Established in 2004 by the School of Physics, the purpose of the award is to provide a living allowance to recently upgraded full-time PhD students undertaking research in the School of Physics. Applicants must not be eligible for the Australian Postgraduate Award (APA), University Postgraduate Award or the Denison Postgraduate Award (DPA), must have been previously enrolled in the MSc by research in the School of Physics, in the year prior to application, and must have made a formal application to the Faculty of Science for an upgrade to PhD candidature.
Denison Merit Award	varies	3	varies	This award is a supplementary scholarship for full-time PhD students with First Class Honours and a University medal.
International Denison Merit Award	varies	3	varies	This award is a supplementary scholarship for full-time PhD international students with First Class Honours and a University medal.
Relocation Scholarship	Up to $3000 each	-	varies	To assist outstanding incoming PhD students from outside the Sydney metropolitan area who may otherwise be deterred from studying at the University of Sydney by the high cost of relocation. Evidence of relocation costs must be supplied.
Psychology				
Lucy Firth Sydney University Postgraduate Scholarship	$10000	3	1	Scholarship holders must be enrolled for a full time Doctoral postgraduate research degree at the University of Sydney. They must be Australian citizens or permanent residents with a Class 1 or high Class II Honours degree.
A.H. Martin Scholarship	$550	1	1	Awarded to the candidate for the degree of Doctor of Clinical Psychology who performs best in Part I of the course, preferably in the fields of vocational guidance and vocational selection or a related field.
Martin and Elizabeth Jane Simmat Prize No 1	$350		1	The prize shall be awarded to the candidate most distinguished in meeting requirements for the award of the Graduate Diploma in Science (Psychology).
Martin and Elizabeth Jane Simmat Prize No.2	$350		1	Awarded to the student with the best performance in Part II of the Doctor of Clinical Psychology course.
Margaret Stewart Fund Scholarship	Same as APA	up to 4	1	The scholarship is open to suitably qualified graduates in Psychology of the University of Sydney or any other university who wish to undertake research into ethics and behaviour, towards a higher degree.
School of Psychology Prize for Year 3 DCP/DCN	300		1	This prize is awarded annually to the candidate who performs best across the group of students enrolled in either the Doctor of Clinical Psychology or Doctor of Clinical Neuropsychology in year 3, provided the performance is of sufficient merit.
H. Tasman Lovell Memorial Medallion	Medal		1	The medallion is awarded to the candidate who submits the best thesis for the degree of Doctor of Philosophy in the School of Psychology, provided the thesis is of sufficient merit.
Winifred O'Neill Sydney University Undergraduate Scholarship	2500	1-3	1	Established in 1997 from the estate of Dr Gregory John Lamb O'Neill who was a medical practitioner in Chatswood, NSW, this scholarship is open to full-time postgraduate students in Psychology at the University of Sydney and will be based on meritorious performance in Undergraduate Psychology. Preference is given to students who are visually impaired or, if there is no visually impaired applicant, to students with other disability.

The Sydney Summer and Winter Schools

2007	Dates
Summer School	December 2006–February 2007
Winter School	July 2007

The Summer School

The Summer School is a full fee-paying, intensive program offering high quality undergraduate and postgraduate units of study from most faculties. These units of study are the same as those offered in Semesters One and Two, but are taught as an intensive program over summer. Some classes commence in December, others commence in January and continue into February (including the exam week). Some units of study run for seven weeks others are shorter. Students can take a maximum of two units of study.

The Winter School

The Winter School is held every July during the academic year. The Winter School is a smaller, more intensive three week program.

Advantages

Attending classes at Sydney University during summer offers many advantages. You can

- use this time to accelerate your academic career and to finish your degree sooner
- devote your full attention to a single area of study
- take courses that might be outside your normal degree
- reduce your workload throughout the rest of the year
- repeat units of study in which you may have been unsuccessful
- combine study with a field trip in Australia or a tour overseas.

For high school graduates, you can

- sample a university program
- get a head start on your degree.

How to apply

Applications will only be accepted online. Our website is www.summer.usyd.edu.au

Some units have limited places and fill very quickly. All places are filled strictly on a first in first served basis so it is recommended that you apply early.

Applications open on 27 September 2006.

Applications close on 15 December 2006.

Census dates – Summer School 2007

Students can withdraw from their unit of study without academic penalty and receive a full refund until the census date. However, a late withdrawal fee may apply. As classes start throughout December to February there are three census dates for the Summer School. These are based on when the class commences.

ID	Session name	Classes begin	Census date
42*	Summer Dec	11 December	2 January
43	Summer Main	4 January	12 January
44**	Summer Late	12 January	6 February

**42 Summer Dec: Allows for a unit to run for 3–9 weeks, provided that the 20 per cent criterion is met.*
***44 Summer Late: Last exam must be held by 1 March.*

Withdrawal and Refund policy

- For classes commencing in **December 2006**, students withdrawing from a Summer School unit of study from 28 November 2006 to 2 January 2007, will receive a refund of tuition fees but will be liable for a $500 late withdrawal fee.
- For classes commencing after **4 January 2007**, students withdrawing from a Summer School unit of study from 16 December 2006 to 12 January 2007, will receive a refund of tutition fees but will be liable for a $500 late withdrawal fee.
- For classes commencing after **12 January 2007**, students withdrawing from a Summer School unit of study from 16 December 2006 to 6 February 2007, will receive a refund of tutition fees but will be liable for a $500 late withdrawal fee.
- Students may withdraw from their Summer School unit(s) of study up until 4pm on the last day of the Teaching Period for that particular unit of study. However, there may be an academic penalty (please refer to our website).The Teaching Period for purposes of this policy is defined in hours of published classes from the first day through to the last day of classes, excluding any final examination or assessment.
- Students withdrawing from a Summer School unit of study after 4pm on the relevant census date will receive no refund of their tuition fee.

Transferring between Summer School units

There will be no penalty if a student changes between units of study in the Summer School before the commencment of class. However NO transfers will be allowed after the commencement of the class.

Summer School scholarships

Merit scholarships

Only four merit scholarships are available and are automatically awarded to the top four students who achieve the highest results in their Summer School unit of study.

Educational/Financial Disadvantage scholarships

Partial or full Summer School scholarships are available to local undergraduate students for the Summer School with a good academic record. To be eligible for consideration you will need to provide evidence of long-term and serious educational disadvantage based on two or more criteria, one of which must be financial hardship. Please check our website for further details. Applications close on 27 October 2006.

For more information

Web: www.summer.usyd.edu.au
Email: info@summer.usyd.edu.au
Phone: +61 2 9351 5542
Fax: +61 2 9351 5888

University of Sydney (Coursework) Rule 2000 (as amended)

Approved by: Senate on 4 December 2000
Date of effect: 1 January 2001

Latest amendment approved by: Senate on 3 December 2001
Date of effect: 1 January 2002

[Section 1]

University Coursework Rule

Preliminary

Rules relating to Coursework Award Courses

Division 1 Award course requirements, credit points and assessment

Division 2 Enrolment

Division 3 Credit, cross-institutional study and their upper limits

Division 4 Progression

Division 5 Discontinuation of enrolment and suspension of candidature

Division 6 Unsatisfactory progress and exclusion

Division 7 Exceptional circumstances

Division 8 Award of degrees, diplomas and certificates

Division 9 Transitional provisions

Preliminary

1. **Commencement and purpose of Rule**

1.1 This Rule is made by the Senate pursuant to section 37(1) of the *University of Sydney Act 1989* for the purposes of the *University of Sydney By-Law 1999*.

1.2 This Rule comes into force on 1 January 2001.

1.3 This Rule governs all coursework award courses in the University. It is to be read in conjunction with the *University of Sydney (Amendment Act) Rule 1999* and the Resolutions of the Senate and the faculty resolutions relating to each award course in that faculty.

Rules relating to coursework award courses

1. **Definitions In this Rule:**

1.1 **award course** means a formally approved program of study which can lead to an academic award granted by the University.

1.2 **coursework** means an award course not designated as a research award course. While the program of study in a coursework award course may include a component of original, supervised research, other forms of instruction and learning normally will be dominant. All undergraduate award courses are coursework award courses.

1.3 **credit** means advanced standing based on previous attainment in another award course at the University or at another institution. The advanced standing is expressed as credit points granted towards the award course. Credit may be granted as specific credit or non-specific credit.

1.3.1 **specific credit** means the recognition of previously completed studies as directly equivalent to units of study;

1.3.2 **non-specific credit** means a 'block credit' for a specified number of credit points at a particular level. These credit points may be in a particular subject area but are not linked to a specific unit of study; and

1.3.3 **credit points** means a measure of value indicating the contribution each unit of study provides towards meeting award course completion requirements stated as a total credit point value.

1.4 **dean** means the dean of a faculty or the director or principal of an academic college or the chairperson of a board of studies.

1.5 **degree** means a degree at the level of bachelor or master for the purpose of this Rule.

1.6 **embedded courses/programs** means award courses in the graduate certificate/graduate diploma/master's degree by coursework sequence which allow unit of study credit points to count in more than one of the awards.

1.7 **faculty** means a faculty, college board, a board of studies or the Australian Graduate School of Management Limited as established in each case by its constitution and in these Rules refers to the faculty or faculties responsible for the award course concerned.

1.8 **major** means a defined program of study, generally comprising specified units of study from later stages of the award course.

1.9 **minor** means a defined program of study, generally comprising units of study from later stages of the award course and requiring a smaller number of credit points than a major.

1.10 **postgraduate award course** means an award course leading to the award of a graduate certificate, graduate diploma, degree of master or a doctorate. Normally, a postgraduate award course requires the prior completion of a relevant undergraduate degree or diploma.

1.11 **research award course** means an award course in which students undertake and report systematic, creative work in order to increase the stock of knowledge. The research award courses offered by the University are: higher doctorate, Doctor of Philosophy, doctorates by research and advanced coursework, and certain degrees of master designated as research degrees. The systematic, creative component of a research award course must comprise at least 66 per cent of the overall award course requirements.

1.12 **stream** means a defined program of study within an award course, which requires the completion of a program of study specified by the award course rules for the particular stream, in addition to the core program specified by award course rules for the award course.

1.13 **student** means a person enrolled as a candidate for a course.

1.14 **testamur** means a certificate of award provided to a graduate, usually at a graduation ceremony.

1.15 **transcript** or **academic transcript** means a printed statement setting out a student's academic record at the University.

1.16 **unit of study** means the smallest stand-alone component of a student's award course that is recordable on a student's transcript. Units of study have an integer credit point value, normally in the range 3–24.

1.17 **undergraduate award course** means an award course leading to the award of an associate diploma, diploma, advanced diploma or degree of bachelor.

2. **Authorities and responsibilities**

2.1 Authorities and responsibilities for the functions set out in this Rule are also defined in the document *Academic Delegations of Authority.* The latter document sets out the mechanisms by which a person who has delegated authority may appoint an agent to perform a particular function.

2.1 The procedures for consideration of, and deadlines for submission of, proposals for new and amended award courses will be determined by the Academic Board.

Division 1: Award course requirements, credit points and assessment

3. **Award course requirements**

3.1 To qualify for the award of a degree, diploma or certificate, a student must:

3.1.1 complete the award course requirements specified by the Senate for the award of the degree, diploma or certificate concerned;

3.1.2 complete any other award course requirements specified by the Academic Board on the recommendation of the faculty and published in the faculty resolutions relating to the award course;
3.1.3 complete any other award course requirements specified by the faculty in accordance with its delegated authority and published in the faculty resolutions relating to the award course; and
3.1.4 satisfy the requirements of all other relevant by-laws, rules and resolutions of the University.

4. **Units of study and credit points**

4.1.1 A unit of study comprises the forms of teaching and learning approved by a faculty. Where the unit of study is being provided specifically for an award course which is the responsibility of another faculty, that faculty must also provide approval.
4.1.2 Any faculty considering the inclusion of a unit of study in the tables of units available for an award course for which it is responsible may review the forms of teaching and learning of that unit, may consult with the approving faculty about aspects of that unit and may specify additional conditions with respect to inclusion of that unit of study.
4.2 A student completes a unit of study if the student:
4.2.1 participates in the learning experiences provided for the unit of study;
4.2.2 meets the standards required by the University for academic honesty;
4.2.3 meets all examination, assessment and attendance requirements for the unit of study; and
4.2.4 passes the required assessments for the unit of study.
4.3 Each unit of study is assigned a specified number of credit points by the faculty responsible for the unit of study.
4.4 The total number of credit points required for completion of an award course will be as specified in the Senate resolutions relating to the award course.
4.5 The total number of credit points required for completion of award courses in an approved combined award course will be specified in the Senate or faculty resolutions relating to the award course.
4.6 A student may, under special circumstances, and in accordance with faculty resolutions, be permitted by the relevant dean to undertake a unit or units of study other than those specified in the faculty resolutions relating to the award course and have that unit or those units of study counted towards fulfilling the requirements of the award course in which the student is enrolled.

5. **Unit of study assessment**

5.1 A student who completes a unit of study will normally be awarded grades of high distinction, distinction, credit or pass, in accordance with policies established by the Academic Board. The grades high distinction, distinction and credit indicate work of a standard higher than that required for a pass.
5.2 A student who completes a unit of study for which only a pass/fail result is available will be recorded as having satisfied requirements.
5.3 In determining the results of a student in any unit of study, the whole of the student's work in the unit of study may be taken into account.
5.4 Examination and assessment in the University are conducted in accordance with the policies and directions of the Academic Board.

6. **Attendance**

6.1 A faculty has authority to specify the attendance requirements for courses or units of study in that faculty. A faculty must take into account any University policies concerning modes of attendance, equity and disabled access.
6.2 A faculty has authority to specify the circumstances under which a student who does not satisfy attendance requirements may be deemed not to have completed a unit of study or an award course.

Division 2: Enrolment

7. **Enrolment restrictions**

7.1 A student who has completed a unit of study towards the requirements of an award course may not re-enrol in that unit of study, except as permitted by faculty resolution or with the written permission of the dean. A student permitted to re-enrol may receive a higher or lower grade, but not additional credit points.
7.2 Except as provided in section 7.1, a student may not enrol in any unit of study which overlaps substantially in content with a unit that has already been completed or for which credit or exemption has been granted towards the award course requirements.
7.3 A student may not enrol in units of study additional to award course requirements without first obtaining permission from the relevant dean.
7.4 Except as prescribed in faculty resolutions or with the permission of the relevant dean:
7.4.1 a student enrolled in an undergraduate course may not enrol in units of study with a total value of more than 32 credit points in any one semester, or 16 credit points in the summer session; and
7.4.2 a student enrolled in a postgraduate award course may not enrol in units of study with a total value of more than 24 credit points in any one semester, or 12 credit points in the summer session.

Division 3: Credit, cross-institutional study and their upper limits

8. **Credit for previous studies**

8.1 Students may be granted credit on the basis of previous studies.
8.2 Notwithstanding any credit granted on the basis of work completed or prior learning in another award course at the University of Sydney or in another institution, in order to qualify for an award a student must:
8.2.1 for undergraduate award courses, complete a minimum of the equivalent of two full-time semesters of the award course at the University; and
8.2.2 for postgraduate award courses, complete at least 50 per cent of the requirements prescribed for the award course at the University.

These requirements may be varied where the work was completed as part of an embedded program at the University or as part of an award course approved by the University in an approved conjoint venture with another institution.

8.3 The credit granted on the basis of work completed at an institution other than a university normally should not exceed one third of the overall award course requirements.
8.4 A faculty has authority to establish embedded academic sequences in closely related graduate certificate, graduate diploma and master's degree award courses. In such embedded sequences, a student may be granted credit for all or some of the units of study completed in one award of the sequence towards any other award in the sequence, irrespective of whether or not the award has been conferred.
8.5 In an award course offered as part of an approved conjoint venture the provisions for the granting of credit are prescribed in the Resolutions of the Senate and the faculty resolutions relating to that award course.

9. **Cross-institutional study**

9.1 The relevant dean may permit a student to complete a unit or units of study at another university or institution and have that unit or those units of study credited to the student's award course.
9.2 The relevant dean has authority to determine any conditions applying to cross-institutional study.

Division 4: Progression

10. **Repeating a unit of study**

10.1 A student who repeats a unit of study shall, unless granted exemption by the relevant dean:
10.1.1 participate in the learning experiences provided for the unit of study; and
10.1.2 meet all examination, assessment and attendance requirements for the unit of study.
10.2 A student who presents for re-assessment in any unit of study is not eligible for any prize or scholarship awarded in connection with that unit of study without the permission of the relevant dean.

11. **Time limits**

11.1 A student must complete all the requirements for an award course within ten calendar years or any lesser period if specified by resolution of the Senate or the faculty.

Division 5: Discontinuation of enrolment and suspension of candidature

12. **Discontinuation of enrolment**

12.1 A student who wishes to discontinue enrolment in an award course or a unit of study must apply to the relevant dean and will be presumed to have discontinued enrolment from the date of that application, unless evidence is produced showing:

12.1.1 that the discontinuation occurred at an earlier date; and

12.1.2 that there was good reason why the application could not be made at the earlier time.

12.2 A student who discontinues enrolment during the first year of enrolment in an award course may not re-enrol in that award course unless:

12.2.1 the relevant dean has granted prior permission to re-enrol; or

12.2.2 the student is reselected for admission to candidature for that course.

12.3 No student may discontinue enrolment in an award course or unit of study after the end of classes in that award course or unit of study, unless he or she produces evidence that:

12.3.1 the discontinuation occurred at an earlier date; and

12.3.2 there was good reason why the application could not be made at the earlier time.

12.4 A discontinuation of enrolment may be recorded as 'Withdrawn (W)' or 'Discontinued – not to count as failure (DNF)' where that discontinuation occurs within the time-frames specified by the University and published by the faculty, or where the student meets other conditions as specified by the relevant faculty.

13. **Suspension of candidature**

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

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

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

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

Division 6: Unsatisfactory progress and exclusion

14. **Satisfactory progress**

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

15. **Requirement to show good cause**

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

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

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

16. **Exclusion for failure to show good cause**

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

16.1 exclude the student from the relevant course; or

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

16.2.1 completion of a unit or units of study within a specified time;

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

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

17. **Applying for re-admission after exclusion**

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

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

18. **Appeals against exclusion**

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

18.2.1.1 A student who has been excluded in accordance with this Rule may appeal to the Appeals Committee.

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

18.2.2 The Appeals Committee shall comprise:

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

18.2.2.2 the Chair and Deputy Chairs of the Academic Board;

18.2.2.3 two student Fellows; and

18.2.2.4 up to four other Fellows.

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

18.2.3.1 *ex officio* member;

18.2.3.2 Chair or Deputy Chair of the Academic Board;

18.2.3.3 student Fellow; and

18.2.3.4 other Fellows.

18.2.4 Three members shall constitute a quorum for a meeting of the Appeals Committee or a subcommittee.

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

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

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

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

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

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

Division 7: Exceptional circumstances

19. **Variation of award course requirements in exceptional circumstances**

19.1 The relevant dean may vary any requirement for a particular student enrolled in an award course in that faculty where, in the opinion of the dean, exceptional circumstances exist.

Division 8: Award of degrees, diplomas and certificates

20. **Classes of award**

20.1 Undergraduate diplomas may be awarded in five grades – pass, pass with merit, pass with distinction, pass with high distinction or honours.

20.2 Degrees of bachelor may be awarded in two grades – pass or honours.

20.3 Graduate diplomas and graduate certificates may be awarded in one grade only – pass.

20.4 Degrees of master by coursework may be awarded three grades – pass, pass with merit or honours.

21. **Award of the degree of bachelor with honours**

21.1 The award of honours is reserved to indicate special proficiency. The basis on which a student may qualify for the award of honours in a particular award course is specified in the faculty resolutions relating to the course.

21.2 Each faculty shall publish the grading systems and criteria for the award of honours in that faculty.

21.3 Classes which may be used for the award of honours are:

21.3.1 First Class

21.3.2 Second Class/Division 1

21.3.3 Second Class/Division 2

21.3.4 Third Class

21.4 With respect to award courses which include an additional honours year:

21.4.1 a student may not graduate with the pass degree while enrolled in the honours year;

21.4.2 on the recommendation of the head of the department concerned, a dean may permit a student who has been awarded the pass degree at a recognised tertiary institution to enrol in the honours year in that faculty;

21.4.3 faculties may prescribe the conditions under which a student may enrol part-time in the honours year;

21.4.4 a student who fails or discontinues the honours year may not re-enrol in it, except with the approval of the dean.

22. **University Medal**

22.1 An honours bachelor's degree student with an outstanding academic record throughout the award course may be eligible for the award of a University Medal, in accordance with Academic Board policy and the requirements of the faculty resolutions relating to the award course concerned.

23. **Award of the degree of master with honours or merit**

23.1 The award of honours or pass with merit is reserved to indicate special proficiency or particular pathways to completion. The basis on which a student may qualify for the award of honours or the award with merit in a particular degree is specified in the Faculty Resolutions relating to that degree.

24. **Transcripts and testamurs**

24.1 A student who has completed an award course or a unit of study at the University will receive an academic transcript upon application and payment of any charges required.

24.2 Testamurs may indicate streams or majors or both as specified in the relevant faculty resolutions.

Division 9: Transitional provisions

25. **Application of this Rule during transition**

25.1 This Rule applies to all candidates for degrees, diplomas and certificates who commence candidature after 1 January 2001.

25.2 Candidates who commenced candidature prior to this date may choose to proceed in accordance with the resolutions of the Senate in force at the time they enrolled, except that the faculty may determine specific conditions for any student who has re-enrolled in an award course after a period of suspension.

University of Sydney (Doctor of Philosophy (PhD)) Rule 2004

University of Sydney (Doctor of Philosophy (PhD)) Rule 2004

Please also see the University of Sydney (Authority Within Academic Units) Rule 2003 (as amended)

Part 1 – Preliminary

Part 2 – Admission to candidature

Part 3 – Supervision

Part 4 – Candidature

Part 5 – Submission of thesis

Part 1 – Preliminary

1. **Citation and commencement**

1.1 *Citation*

1.1.1 This Rule is made by the Senate of the University of Sydney pursuant to section 37(1) of the University of Sydney Act 1989 for the purposes of the University of Sydney By-law 1999.

1.2 *Commencement*

1.2.1 This Rule commences on the day after it is made in accordance with Chapter 2 of the University of Sydney By-law 1999.

2. **Purpose**

2.1 This Rule:

2.1.1 repeals and replaces Part 10, Division 4 of the University of Sydney (Amendment Act) Rule 1999 in its entirety; and

2.1.2 deals with matters relating to the degree of Doctor of Philosophy.

Part 2 – Admission to candidature

3. **Heads of department**

3.1 A head of department may delegate to a specified member of the academic staff his or her responsibilities under these Rules by countersigning a specific recommendation in respect of a particular candidature or by making, and forwarding to the Registrar, a written statement of delegation of those powers.

4. **Admission to candidature**

4.1 An applicant for admission as a candidate for the degree shall, except as provided in 4.2 and 4.3 below, hold or have fulfilled all the requirements for:

4.1.1 the degree of master, or

4.1.2 the degree of bachelor with first or second class honours.

4.2 A faculty may admit as a candidate for the degree an applicant holding the degree of bachelor without first or second class honours after the applicant has passed a qualifying examination at a standard equivalent to the bachelor's degree with first or second class honours, provided that a faculty may exempt an applicant from the qualifying examination if the applicant has obtained a high distinction or distinction in the highest course available in the subject or subjects relevant to the proposed course of advanced study and research.

4.3 The Academic Board has endorsed an interpretation of the qualifying examination as including completion of a period of relevant full-time or part-time advanced study and research towards a master's degree in the University of Sydney, at such a standard as would demonstrate to the satisfaction of the faculty that the candidate is suitably prepared in the particular field of study to undertake candidature for the degree of Doctor of Philosophy.

4.4 The Academic Board may, in accordance with this Rule, admit as a candidate for the degree an applicant holding qualifications which, in the opinion of the faculty concerned and of the Academic Board, are equivalent to those prescribed in 4.1 or 4.2 above and such candidate shall proceed to the degree under such conditions as the Academic Board may prescribe.

4.5 An applicant for admission to candidature shall submit to the faculty concerned:

4.5.1 a proposed course of advanced study and research, approved by the head of the department in which the work is to be carried out, to be undertaken by the applicant in a department of the University, and

4.5.2 satisfactory evidence of adequate training and ability to pursue the proposed course.

4.6 The faculty may require a candidate, as part of the evidence of the candidate's training and ability to pursue the proposed course, to pass a special examination.

4.7 A reference in this section to a department includes a reference to one or more departments, one or more schools, an interdepartmental committee and an interschool committee.

5. **Probationary acceptance**

5.1 A candidate may be accepted by a faculty on a probationary basis for a period not exceeding one year and upon completion of this probationary period, the faculty shall review the candidate's work and shall either confirm the candidate's status or terminate the candidature.

5.2 In the case of a candidate accepted on a probationary period under 5.1 above, the candidature shall be deemed to have commenced from the date of such acceptance.

6. **Control of candidature**

6.1 Each candidate shall pursue his or her course of advanced study and research wholly under the control of the University.

6.2 Where a candidate is employed by an institution other than the University, the faculty or college board may require a statement by that employer acknowledging that the candidature will be under the control of the University.

7. **Other studies during the candidature**

7.1 A candidate may be required by the head of department or the supervisor to attend lectures, seminar courses or practical work courses or to undertake courses and, if required, the assessment for such courses, subject to the approval of any other head of department concerned.

8. **Credit for previous studies**

8.1 A candidate who, at the date of admission to candidature, has completed not less than six months as a candidate for the degree of master in any faculty or board of studies of the University of Sydney, may be permitted by the faculty concerned to be credited for the whole or any part of the period of candidature completed for the degree of master as a period of candidature completed for the degree of Doctor of Philosophy, provided that the period of candidature for the degree of master for which credit is sought shall have been a course of full-time or part-time advanced study and research under a supervisor appointed by the faculty or board of studies concerned and directly related to the candidate's proposed course of advanced study and research for the degree of Doctor of Philosophy.

8.2 A candidate who, at the date of admission has completed not less than six months as a candidate for a higher degree in another university or institution may be permitted by the Academic Board, on the recommendation of the faculty concerned, to be credited for the whole or any part of the period of candidature completed as a period completed for the degree of Doctor of Philosophy of the University of Sydney, provided that:

8.2.1 at the date of admission to candidature for the higher degree of the other university or institution concerned the candidate shall have fulfilled the requirements of admission to candidature set out in section 3 above;

8.2.2 the period of candidature for the higher degree of the other university or institution concerned for which credit is sought shall have been a course of full-time or part-time advanced study and research under a supervisor appointed by the

other university or institution concerned and directly related to the candidate's proposed course of advanced study and research in the University of Sydney;

8.2.3 the candidate shall have abandoned candidature for the higher degree of the other university or institution concerned for which credit is sought;

8.2.4 the amount of credit which may be so granted shall not exceed one year; and

8.2.5 no candidate who has been granted credit shall present a thesis for examination for the degree earlier than the end of the second year after acceptance.

8.3 The Faculty of Medicine may grant credit not exceeding one year to a candidate for the degree of Doctor of Philosophy in that Faculty who has submitted documented evidence of having previously completed supervised study towards the degree of Doctor of Medicine of the University of Sydney.

Part 3 – Supervision

9. **Appointment and qualifications of supervisors and associate supervisors**

9.1 The faculty or college board, on the recommendation of the head of department concerned, shall appoint a suitably qualified supervisor and associate supervisors for each candidate to take primary responsibility for the conduct of the candidature and to be responsible for the progress of the candidature to the head of department and the faculty or college board concerned in accordance with policy established by the Academic Board.

Part 4 – Candidature

10. **Location**

10.1.1 Subject to the annual approval of the supervisor, head of department and faculty or college board, the candidate shall pursue the course of advanced study and research either:

10.1.1.1 within the University including its research stations and teaching hospitals;

10.1.1.2 on fieldwork either in the field or in libraries, museums or other repositories;

10.1.1.3 within industrial laboratories or research institutions or other institutions considered by the faculty or college board concerned to provide adequate facilities for that candidature; or

10.1.1.4 within a professional working environment;

10.1.2 and shall attend at the University for such consultation with the supervisor and shall participate in such departmental and faculty or college seminars as shall annually be specified.

10.2.1 A candidate pursuing candidature outside Australia must also complete a minimum of two semesters of candidature within the University [but not necessarily immediately before submission, not necessarily as a continuous two-semester period] before submission of the thesis.

10.2.2 The corresponding period for candidates for whom the minimum length of candidature is four semesters is a minimum of one semester.

10.3 When recommending the detailed annual conditions for each candidate's particular course of advanced study and research the supervisor and head of department must indicate whether they are satisfied that the proposed supervision arrangements will be satisfactory.

11. **Progress**

11.1 At the end of each year each candidate shall provide evidence of progress and attend a progress review interview to the satisfaction of the supervisor and head of department concerned and any Departmental or Faculty Postgraduate Review Committee.

11.2 On the basis of evidence provided and the interview, the head of department shall recommend the conditions of candidature to apply for the following year and may require the candidate to provide further evidence of progress at the end of one semester or such other period as the head of department considers appropriate.

11.3 If a candidate fails to submit evidence of progress or if the head of department concerned considers that the evidence submitted does not indicate satisfactory progress, the faculty or college board may, on the head's recommendation, call upon that candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the degree and where, in the opinion of the faculty or college board, the candidate does not show good cause the faculty or college board may terminate that candidature or may impose conditions on the continuation of that candidature.

Part 5 – Submission of thesis

12. **The thesis**

12.1.1 On completing the course of advanced study and research, a candidate shall present a thesis embodying the results of the work undertaken, which shall be a substantially original contribution to the subject concerned.

12.1.2 The candidate shall state, generally in the preface and specifically in notes, the sources from which the information is derived, the animal and human ethical approvals obtained, the extent to which the work of others has been made use of, and the portion of the work the candidate claims as original.

12.2 A candidate may also submit in support of the candidature any publication of which the candidate is the sole or joint author. In such a case the candidate must produce evidence to identify satisfactorily the sections of the work for which the candidate is responsible.

12.3 Except where the candidature has been governed by an approved cotutelle agreement, a candidate may not present as the thesis any work which has been presented for a degree or diploma at this or another university, but the candidate will not be precluded from incorporating such in the thesis, provided that, in presenting the thesis, the candidate indicates the part of the work which has been so incorporated.

12.4 Theses shall be written in English, except that:

12.4.1 in the case of a candidature governed by an approved cotutelle agreement, the thesis may be written in English or in another language; and

12.4.2.1 in the Faculty of Arts, in the case of language departments, theses may be written either in English or in their target language as determined by the department, unless a department has specified by means of a Faculty resolution that it will consider applications to submit the thesis in a language other than:

12.4.2.1.1 English; or

12.4.2.1.2 a target language of the department.

12.4.2.2 Such applications should be made in writing; and approved by the head of department concerned and the Dean of the Faculty, before the commencement of candidature.

12.4.2.3 In considering applications a head of department shall take into account arrangements for supervision and examination.

12.5 A candidate shall submit to the Registrar four copies of the thesis in a form prescribed by resolution of the Academic Board and four copies of a summary of about 300 words in length.

12.6 The thesis shall be accompanied by a certificate from the supervisor stating whether, in the supervisor's opinion, the form of presentation of the thesis is satisfactory.

13. **Earliest date for submission**

13.1 Except as provided below, a candidate may not submit a thesis for examination earlier than the end of the sixth semester of candidature.

13.2 A faculty or college board may permit a candidate holding any of the following qualifications of the University of Sydney or from such other institution as the faculty or college board may approve, to submit a thesis for examination not earlier than the end of the fourth semester of candidature:

13.2.1 a degree of master completed primarily by research;

13.2.2 both the degrees of Bachelor of Dental Surgery with honours and Bachelor of Science (Dental) with honours;

13.2.3 both the degrees of Bachelor of Medicine with honours and Bachelor of Science (Medical) with honours; or

13.2.4 both the degrees of Bachelor of Veterinary Science with honours and Bachelor of Science (Veterinary) with honours.

13.3 Notwithstanding 13.1 and 13.2 above, a faculty may, on the recommendation of the head of department and supervisor concerned, permit a candidate to submit a thesis for examination up to one semester earlier than prescribed if, in the opinion of the faculty, evidence has been produced that the candidate has made exceptional progress in his or her candidature.

13.4.1 Notwithstanding 13.1, 13.2 and 13.3 above, the Chair of the Academic Board may, on the recommendation of the dean

of the faculty in which the candidate is enrolled, permit a candidate to submit a thesis for examination earlier than prescribed if, in the opinion of the Chair of the Academic Board, evidence has been produced that the candidate has made exceptional progress in his or her candidature.

13.4.2 The Chair of the Academic Board may take advice from the Chair of the Graduate Studies Committee and shall report any applications under this provision and the action taken to the next meeting of the Academic Board.

14. **Latest date for submission**

14.1 Except as provided in 14.1 to 14.3 below, a candidate shall submit the thesis for examination not later than the end of the eighth semester of candidature.

14.2 A candidate whose candidature has been part-time throughout shall submit the thesis for examination not later than the end of the 16th semester of candidature.

14.3 The time limits set out in 14.1 to 14.2 above, apply to candidates who commence candidature after 31 December 2000. Candidates who commenced candidature prior to this date may choose to proceed in accordance with the Rules in force at the time when they commenced candidature.

14.4 The relevant dean may permit a candidate to submit the thesis for examination after a period of time greater than the maximum periods specified.

15. **Examination**

15.1 The procedures for examination shall be prescribed by the Academic Board.

General University information

For further information or advice, please feel free to call our Helpline on **1300 362 006**.

Accommodation Service
Admissions Office
Applying for a course
Assessment
Careers Centre
Casual Employment Service
Centre for Continuing Education
Centre for English Teaching
Child Care
Client Services, Information and Communications Technology (ICT)
The Co-op Bookshop
Counselling Service
Disability Services
Email
Enrolment
Environmental Policy
Examinations
Fees
Financial Assistance Office
Freedom of Information
Graduations Office
(Grievances) Appeals
HECS and Fees Office
HELP
Information and Communications Technology
International Office
International Student Support Unit
Koori Centre and Yooroang Garang
Learning Centre
Library
Mathematics Learning Centre
Multimedia and Educational Technologies in Arts (META) Resource Centre
MyUni Student Portal
Part-time, full-time
Policy online
Privacy
Scholarships for undergraduates
Services for Students
Student Centre
Student Identity Cards
Student Services
The Sydney Summer School
The University of Sydney Foundation Program
Timetabling Unit
University Health Service

Accommodation Service

The Accommodation Service helps students find off-campus accommodation. The service maintains extensive databases of share accommodation, rental properties, and full board accomodation. Currently enrolled students can access the database online through the MyUni student portal, or the accommodation website via your MyUni student portal or the Services for Students website.

Level 7, Education Building A35
University of Sydney
NSW 2006 Australia

Phone: +61 29351 3312
Fax: +61 2 9351 8262
Email: accomm@stuserv.usyd.edu.au
Web: http://www.usyd.edu.au/accom

Admissions Office

The Admissions Office, located in the Student Centre, is responsible for overseeing the distribution of offers to undergraduate applicants through the Universities Admission Centre (UAC). They can advise prospective local undergraduate students on admission requirements. Postgraduate students should contact the appropriate faculty. If you are an Australian citizen or a permanent resident but have qualifications from a non-Australian institution phone +61 2 9351 4118 for more information. For enquiries regarding special admissions (including mature-age entry) phone +61 2 9351 3615. Applicants without Australian citizenship or permanent residency should contact the International Office.

Student Centre
Ground Floor, Carslaw Building F07
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 4117 or +61 2 9351 4118
Fax: +61 2 9351 4869
Email: admissions@records.usyd.edu.au
Web: http://www.usyd.edu.au/studentcentre

Applying for a course

Domestic applicants for undergraduate courses and programs of study

For the purpose of admission and enrolment 'domestic applicant' refers to citizens and permanent residents of Australia and citizens of New Zealand. If you are in this group and wish to apply for admission into an undergraduate course, you would generally apply through the Universities Admissions Centre (UAC). The deadline for application is the last working day of September in the year before enrolment. Go to the UAC website for more information.

Note that some faculties, such as Pharmacy, the Sydney Conservatorium of Music and Sydney College of the Arts, have additional application procedures.

Domestic applicants for postgraduate courses and programs of study

For the purpose of admission and enrolment 'domestic applicant' refers to citizens and permanent residents of Australia and citizens of New Zealand. Application is direct to the faculty which offers the course that you are interested in. Application forms for postgraduate coursework, postgraduate research and the master's qualifying or preliminary program and for non-award postgraduate study can be found at http://www.usyd.edu.au/studentcentre.

Please note that some faculties use their own specially tailored application forms for admission into their courses. Please contact the relevant faculty.

International applicants for all course types (undergraduate and postgraduate)

'International applicants' refers to all applicants other than Australian citizens, Australian permanent residents and citizens of New Zealand. In the majority of cases international applicants apply for admission

through the University's International Office (IO). All the information international applicants need, including application forms, is available from the IO website.

Assessment

For assessment matters refer to the relevant department or school.

Careers Centre

The Careers Centre will help you with careers preparation and gradutate recruitment.

Careers Centre
Ground Floor, Mackie Building K01
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 3481
Fax: +61 2 9351 5134
Email: info@careers.usyd.edu.au
Web: http://www.careers.usyd.edu.au

Casual Employment Service

The Casual Employment Service helps students find casual and part-time work during their studies and during University vacations. The service maintains a database of casual employment vacancies. Currently enrolled students can access the database online through the MyUni student portal, or the casual employment website via your MyUni student portal, or the Services for Students website.

Level 7, Education Building A35
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 8714
Fax: +61 2 9351 8717
Email: ces@stuserv.usyd.edu.au
Web: http://www.usyd.edu.au/cas_emp

Centre for Continuing Education

The Centre for Continuing Education offers a wide range of short courses for special interest, university preparation and professional development.

Centre for Continuing Education
160 Missenden Rd
Newtown NSW 2042

Postal address:
Locked Bag 2020
Glebe NSW 2037

Ph: +61 2 9036 4789
Fax: +61 2 9036 4799
Email: info@cce.usyd.edu.au
Web: http://www.cce.usyd.edu.au

Subject areas include: history and culture, creative arts, social sciences, languages, IT, business and overseas study tours. Courses are open to everyone.

Centre for English Teaching (CET)

The Centre for English Teaching (CET) offers English language and academic study skills programs to students from overseas and Australian residents from non-English speaking backgrounds who need to develop their English language skills to meet academic entry requirements.

Camperdown Campus G01
University Of Sydney
NSW 2006 Australia

Phone: +61 2 9351 0760
Fax: +61 2 9351 0710
Email: info@cet.usyd.edu.au
Web: http://www.usyd.edu.au/cet

Child care

Contact the Child Care Information Officer for information about child care for students and staff of the University who are parents. For details of centres, vacation and occasional care see the child care website via your MyUni student portal or the Services for Students Website

Child Care Information Officer
Level 7, Education Building A35
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 5667
Fax: +61 2 9351 7055
Email: childc@stuserv.usyd.edu.au
Web: http://www.usyd.edu.au/childcare

Client Services, Information and Communications Technology (ICT)

Client Services are responsible for the delivery of many of the computing services provided to students. Students can contact Client Services by phoning the ICT Helpdesk on 9351 6000, through the IT Assist website (http://www.itassist.usyd.edu.au) or by visiting the staff at one of the University Access Labs.
The access labs on the Camperdown and Darlington campuses are located in:

- Fisher Library (Level 2);
- Carslaw Building (Room 201);
- Education Building (Room 232);
- Christopher Brennan Building (Room 232);
- Engineering Link Building (Room 222); and
- Pharmacy and Bank Building (Room 510).

Other labs are available at the Law, Westmead Hospital and Cumberland campuses.

The labs provide students free access to computers including office productivity and desktop publishing software.

Services are available on a fee for service basis which include Internet access, printing facilities and the opportunity to host their own non-commercial website.

Each student is supplied with an account, called a 'Unikey' account, which allows access to a number of services including:

- free email (http://www-mail.usyd.edu.au);
- access to the Internet from home or residential colleges (http://www.itassist.usyd.edu.au/services.html);
- student facilities via the MyUni student portal (http://myuni.usyd.edu.au), including exam results, enrolment variations and timetabling; and
- free courses in basic computing (such as MS Office; basic html and excel) that are run by Access Lab staff in the week following orientation week. To register contact the Access Lab Supervisor on +61 2 9351 6870.

Client Services, Helpdesk
University Computer Centre, H08
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 6000
Fax: +61 2 9351 6004
Email: support@usyd.edu.au
Web: http://www.itassist.usyd.edu.au

The Co-op Bookshop

The Co-op Bookshop is a one-stop bookshop for:

- textbooks
- general books
- reference books
- DVDs
- flash drives; and
- software at academic prices.

Lifetime membership costs $20.00 and gives great discounts on purchases (conditions apply).

Sports and Aquatic Centre Building G09

Phone: +61 2 9351 3705
Fax: +61 2 9660 5256
Email: sydu@coop-bookshop.com.au
Web: http://www.coop-bookshop.com.au

Counselling Service

The Counselling Service aims to help students fulfil their academic, individual and social goals through professional counselling. The Service provides short-term, problem-focused counselling to promote psychological wellbeing and to help students develop effective and realistic coping strategies. International students can access counselling assistance through the International Students Support Unit (ISSU). Each semester the Counselling Service runs a program of workshops designed to assist students master essential study and life management skills. Workshops are available to all local and international students. For details of workshops, activities and online resources provided by the service see the Counselling Service website via your MyUni student portal or the Services for Students website. Phone to make an appointment. Daily walk-in appointments are also available between 11am and 3pm.

Camperdown and Darlington campuses

Level 7, Education Building A35
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 2228
Fax: +61 2 9351 7055
Email: counsell@mail.usyd.edu.au
Web: http://www.usyd.edu.au/counsel

Cumberland Campus

Ground Floor, A Block, Cumberland Campus C42
University of Sydney
East Street
Lidcombe
NSW 2141 Australia

Phone: +61 2 9351 9638
Fax: +61 2 9351 9635
Email: CS_Cumberland@fhs.usyd.edu.au
Web: http://www.usyd.edu.au/counsel

Disability Services

Disability Services is the principal point of contact for advice on assistance available for students with disabilities. Students with a disability need to register with Disability Services to recieve support and assistance. Disability Services works closely with academic and administrative staff to ensure that students receive reasonable accommodations in their areas of study. Assistance available includes the provision of note taking, interpreters and negotiation with academic staff regarding assessment and course requirement modifications where appropriate. For details on registering with the Service including documentation required and online resoures see the Disability Services website via your MyUni student portal or
http://www.usyd.edu.au/disability.

Camperdown and Darlington campuses

Level 7, Education Building A35
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 7040
Fax: +61 2 9351 3320
TTY: +61 2 9351 3412
Email: disserv@stuserv.usyd.edu.au
Web: http://www.usyd.edu.au/disability

Cumberland Campus

Ground Floor, A Block, Cumberland Campus C42
University of Sydney
East Street
Lidcombe
NSW 2141 Australia

Phone: +61 2 9351 9638
Fax: +61 2 9351 9635
Email: DS_Cumberland@fhs.usyd.edu.au
Web: http://www.usyd.edu.au/disability

Equity Support Services

Equity Support Services, located within Student Services, brings together a number of student support services that produce practical assistance and information to support students in meeting their academic and personal goals while at University. Services include Accommodation Service, Casual Employment Service, Childcare Information Officer, Disability Services and the Financial Assistance Officer. For details of these services and online resources provided see their individual entry in this Handbook or go to the MyUni student portal or the Services for Students website.

Email

See Client Services, Information and Communications Technology

Enrolment

Students entering first year

Details of enrolment procedures will be sent to you with your UAC offer of enrolment. Enrolment takes place at a specific time and date, usually during the last week of January.

All other students

A pre-enrolment package is sent to all enrolled students in late September and contains instructions on the procedure for web-based pre-enrolment.

Environmental Policy

The University of Sydney's Environmental Policy promotes sustainable resource and product use; and encourages the practice of environmental stewardship by staff and students. The policy is supported by the University wide Sustainable Campus Program.

Enquiries can be directed to the Manager, Environmental Strategies
Phone: +61 2 93512063
Email: sustainable@usyd.edu.au
or go to http://www.usyd.edu.au/sustainable where you can find out what the University is doing and how you can get involved, make suggestions or receive the Sustainable Campus Newsletter.

Examinations

The Examinations and Exclusions Office looks after the majority of examination arrangements and student progression. Some faculties, such as the Sydney Conservatorium of Music, make all examination arrangements for the units of study that they offer.

Examinations and Exclusions Office
Student Centre
Level 1, Carslaw Building F07
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 4005 or +61 2 9351 4006
Fax: +61 2 9351 7330
Email: exams.office@exams.usyd.edu.au

Fees

The Fees Office provides information on how to pay fees, where to pay fees and if payments have been received. The office also has information on obtaining a refund for fee payments.

Fees Office
Margaret Telfer Building K07
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 5222
Fax: +61 2 9351 4202
Email: feespay@usyd.edu.au

Financial Assistance Office

The University of Sydney has a number of loan and bursary funds to assist students experiencing financial difficulties. Loan assistance is available for undergraduate and postgraduate students enrolled in degree and diploma courses at the University. The assistance is not intended to provide the principle means of support but to help enrolled students in financial need with expenses such as housing bonds and rent; phone and electricity bills; medical expenses; buying textbooks and course equipment. Loans are interest free and are repayable usually within one year. Bursaries may be awarded depending on financial need and academic merit and are usually only available to local full-time undergraduate students. Advertised bursaries, including First Year Bursaries, are advertised through the MyUni student portal in January each year. For details of types of assistance and online resources provided by the service see the Financial Assistance website via your MyUni student protal or the Services for Students website

Level 7, Education Building A35
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 2416
Fax: +61 2 9351 7055
Email: fao@stuserv.usyd.edu.au
Web: http://www.usyd.edu.au/fin_assist

Freedom of Information

The University of Sydney falls within the jurisdiction of the *NSW Freedom of Information Act, 1989*. The act:

- requires information concerning documents held by the University to be made available to the public;
- enables a member of the public to obtain access to documents held by the University; and
- enables a member of the public to ensure that records held by the University concerning his or her personal affairs are not incomplete, incorrect, out of date or misleading.

(Note that a 'member of the public' includes staff and students of the University.)

It is a requirement of the act that applications be processed and a determination made within a specified time period, generally 21 days. Determinations are made by the University's Registrar.

While application may be made to access University documents, some may not be released in accordance with particular exemptions provided by the act. There are review and appeal mechanisms which apply when access has been refused.

The University is required to report to the public on its freedom of information (FOI) activities on a regular basis and to produce two documents: a *Statement of Affairs* (annually) and a *Summary of Affairs* (every six months). The *Statement of Affairs* contains information about the University, its structure, function and the kinds of documents held. The *Summary of Affairs* identifies the University's policy documents and provides information on how to make an application for access to University documents.

Further information and copies of the current Statement and Summary may be found at http://www.usyd.edu.au/arms/foi

While application may be made to access University documents, some may not be released in accordance with particular exemptions provided by the act. There are review and appeal mechanisms which apply when access has been refused.

The University is required to report to the public on its freedom of information (FOI) activities on a regular basis and to produce two documents: a *Statement of Affairs* (annually) and a *Summary of Affairs* (every six months). The *Statement of Affairs* contains information about the University, its structure, function and the kinds of documents held. The *Summary of Affairs* identifies the University's policy documents and provides information on how to make an application for access to University documents.

Further information and copies of the current Statement and Summary may be found at http://www.usyd.edu.au/arms/foi

Graduations Office

The Graduations Office is responsible for organising graduation ceremonies and informing students of their graduation arrangements.

Student Centre
Carslaw Building F07
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 3199, +61 2 9351 4009
Protocol: +61 2 9351 4612
Fax: +61 2 9351 5072

(Grievances) Appeals

You may consider that a decision affecting your candidature for a degree or other activities at the University has not taken into account all relevant matters.

In some cases the by-laws or resolutions of the Senate (see the University Calendar) provide for a right of appeal against particular decisions; for example, there is provision for appeal against academic decisions, disciplinary decisions and exclusion after failure.

A document outlining the current procedures for appeals against academic decisions is available at the Student Centre, at the SRC, and on the University's policy online website (click on 'Study at the University', then click on 'Appeals' – see the Academic Board and Senate resolutions).

For assistance or advice regarding an appeal contact:
Students' Representative Council
Level 1, Wentworth Building G01
University of Sydney
NSW 2006 Australia

Phone: +61 2 9660 5222

HECS and Fees Office

Student Centre
Ground Floor, Carslaw Building F07
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 5659, +61 2 9351 5062, +61 2 9351 2086
Fax: +61 2 9036 6111

HELP

See HECS and Fees Office

Information and Communications Technology

See Client Services, Information and Communications Technology

International Office

The International Office provides assistance with application, admission and enrolment procedures for international students. The International Office also includes units responsible for international marketing, government relations, international scholarships, including AusAID scholarships, and compliance with government regulations related to international students. The Study Abroad and Exchange unit assists both domestic and international students who wish to enrol for study abroad or exchange programs.

International Office

Services Building G12
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 4079
Fax: +61 2 9351 4013
Email: info@io.usyd.edu.au
Web: http://www.usyd.edu.au/internationaloffice

Study Abroad

Phone: +61 2 9351 3699
Fax: +61 2 9351 2795
Email: studyabroad@io.usyd.edu.au
Web: http://www.usyd.edu.au/studyabroad

Student Exchange

Phone: +61 2 9351 3699
Fax: +61 2 9351 2795
Email: exchange@io.usyd.edu.au
Web: http://www.usyd.edu.au/studentexchange

International Student Support Unit

The International Student Support Unit assists international students through the provision of orientation, counselling and welfare services to both students and their families. ISSU aims to help international students cope successfully with the challenges of living and studying in a unfamiliar culture, to achieve success in their studies and to make the experience of being an international student rewarding and enjoyable. For details of orientation activities, counselling and welfare services provided to both students and their families and online resources, see the MyUni student portal or the Services for Students website http://www.usyd.edu.au/stuserv. International students also have access to all University student support services.

Camperdown and Darlington campuses

Ground Floor, Services Building G12
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 4749
Fax: +61 2 9351 6818
Email: info@issu.usyd.edu.au
Web: http://www.usyd.edu.au/issu

Cumberland Campus

Ground Floor, A Block, Cumberland Campus C42
University of Sydney
East Street, Lidcombe
NSW 2141 Australia

Phone: +61 2 9351 9638
Fax: +61 2 9351 9635
Email: ISSU_Cumberland@fhs.usyd.edu.au
Web: http://www.usyd.edu.au/issu

Koori Centre and Yooroang Garang

Islander people in all aspects of tertiary education at the University of Sydney. The Cadigal Special Entry Program assists Indigenous Australians to enter undergraduate study across all areas of the University.

As well as delivering block-mode courses for Indigenous Australian students, the Koori Centre teaches Indigenous Australian Studies in various mainstream courses. In addition the Centre provides tutorial assistance, and student facilities such as: computer lab, Indigenous research library and study rooms for Indigenous Australian students across the University.
In particular the Koori Centre aims to increase the successful participation of Indigenous Australians in undergraduate and postgraduate degrees, develop the teaching of Aboriginal Studies, conduct research in the field of Aboriginal education, and establish working ties with schools and communities.

The Koori Centre works in close collaboration with Yooroang Garang: School of Indigenous Health Studies in the Faculty of Health Sciences at the University's Cumberland Campus. Yooroang Garang provides advice, assistance and academic support for Indigenous students in the faculty, as well as preparatory undergraduate and postgraduate courses.

Koori Centre

Ground Floor, Old Teachers College A22
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 2046 (general enquiries)
Toll Free: 1800 622 742
Community Liaison Officer: +61 2 9351 7003
Fax: +61 2 9351 6923
Email: koori@koori.usyd.edu.au
Web: http://www.koori.usyd.edu.au

Yooroang Garang

T Block, Level 4, Cumberland Campus C42
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 9393
Toll Free: 1800 000 418
Fax: +61 2 9351 9400
Email: yginfo@fhs.usyd.edu.au
Web: http://www.yg.fhs.usyd.edu.au

Learning Centre

The Learning Centre helps students develop the generic learning and communication skills that are necessary for university study and beyond. The centre is committed to helping students achieve their academic potential throughout their undergraduate and postgraduate studies. The centre's program includes a wide range of workshops on study skills, academic reading and writing, oral communication skills and postgraduate writing and research skills. Other services include an individual learning program, faculty-based workshops, computer-based learning resources, publications of learning resources and library facilities. For details of programs, activities and online resources provided by the centre see the website via your MyUni student portal or the Services for Students website.

Camperdown and Darlington campuses

Level 7, Education Building A35
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 3853
Fax: +61 2 9351 4865
Email: lc@stuserv.usyd.edu.au
Web: http://www.usyd.edu.au/lc

Cumberland Campus

Ground Floor, A Block, Cumberland Campus C42
University of Sydney
East Street
Lidcombe
NSW 2141 Australia

Phone: +61 2 9351 9638
Fax: +61 2 9351 9635
Email: LC_Cumberland@fhs.usyd.edu.au
Web: http://www.usyd.edu.au/lc

Library

The University of Sydney Library, the largest academic library in the Southern Hemisphere, is a network of 17 libraries located on nine campuses. The Library website provides access to services and resources, anywhere at anytime. The locations, opening hours and subject specialities of the libraries are listed on the website.

Over five million items are available via the Library catalogue, including more than 68,000 electronic journals and 281,000 electronic books. Past exam papers are also available online. Enrolled students are entitled to borrow from any of the University Libraries. More information is available at http://www.library.usyd.edu.au/borrowing.

Reading list items are available via the reserve service. Increasingly, reading list material is becoming available in electronic form. For details see the reserve service website.

Library staff are always available to support students in their studies. 'Ask a Librarian' in person, by email, or by using an online chat service.

A specialist librarian is available for all discipline areas and will provide training in finding high quality information. Courses cover a range of skills including research methodology, database searching, effective use of the Internet and the use of reference management software. See the subject contact page.

Library facilities include individual and group study spaces, computers, printers, multimedia equipment, photocopiers and adaptive technologies. Check the 'Libraries' link on the home page to find out about services and facilities in specific libraries.

The *Client Service Charter* describes the Library's commitment to supporting students' learning, including those with special needs. See the *Client Service Charter* online.

Your comments and suggestions are always welcome.

University of Sydney Library F03
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 2993 (general enquiries)
Fax: +61 2 9351 2890 (administration)
+61 2 9351 7278 (renewals)
Email: loanenq@library.usyd.edu.au (loan enquiries),
udd@library.usyd.edu.au (document delivery enquiries)
Web: http://www.library.usyd.edu.au

Mathematics Learning Centre

The Mathematics Learning Centre assists undergraduate students to develop the mathematical knowledge, skills and confidence that are needed for studying first level mathematics or statistics units at university. The Centre runs bridging courses in mathematics at the beginning of the academic year (fees apply). The centre also provides on-going support to eligible students during the year through individual assistance and small group tutorials. For details of activities and online resources provided by the centre see the website via your MyUni student portal or the Services for Students website.

Level 4, Carslaw Building F07
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 4061
Fax: +61 2 9351 5797
Email: mlc@stuserv.usyd.edu.au
Web: http://www.usyd.edu.au/mlc

Multimedia and Educational Technologies in Arts (META) Resource Centre (Languages and E-Learning)

The centre provides access to recorded lectures, classwork and interactive self-paced learning materials for students of languages other than English (LOTE) and English as a second language (ESL). The self study room provides interactive computer assisted learning and access to live multilingual satellite television broadcasts. Computer access labs provide Internet, email and word processing access. The centre also provides teaching rooms with state-of-the-art multimedia equipment, language laboratories and video conferencing facilities for Faculty of Arts courses.

Level 2, Brennan Building (opposite Manning House)
University of Sydney
NSW 2006 Australia

Phone: Library enquiries +61 2 9351 2683
For all other enquiries +61 2 9351 6781
Fax: +61 2 9351 3626
Email: For Library enquiries meta.library@arts.usyd.edu.au
For all other enquiries meta@arts.usyd.edu
Web: http://www.arts.usyd.edu.au/centres/meta

MyUni Student Portal

The MyUni student portal is the starting point and 'one-stop' environment for students to access all their web-based University information and services. MyUni automatically tailors what a student sees based on their login-in and offers students the option of further personalising content. Most importantly, MyUni allows students to complete tasks online that would previously have required attendance in person. The following are examples of MyUni services and information:

- support services for students in health, counselling, child care, accommodation, employment and wellbeing;
- student administration systems for obtaining exam results, enrolment and variations, timetabling, email services and links to courses and units of study information;
- links to the University's e-learning systems;
- library services;
- important messages and student alerts;
- information technology and support services;
- information for local, indigenous and international students; and
- campus maps, with descriptions of cultural, sporting and campus facilities.

Website: http://myuni.usyd.edu.au

Part-time, full-time

Undergraduate students

Undergraduate students are usually considered full-time if they have a student load of at least 0.375 each semester. Anything under this amount is considered a part-time study load.

Note that some faculties have minimum study load requirements for satisfactory progress.

Postgraduate students (Coursework)

For postgraduate coursework students part-time or full-time status is determined by credit-point load. Enrolment in units of study which total at least 18 credit points in a semester is classed as full-time. Anything under this amount is a part-time study load.

Please note that classes for some coursework programs are held in the evenings (usually 6–9pm).

Postgraduate students (Research)

Full-time candidates for research degrees do not keep to the normal semester schedule, instead they work continuously throughout the year with a period of four weeks recreation leave. There is no strict definition of what constitutes full-time candidature but if you have employment or other commitments that would prevent you from devoting at least the equivalent of a 35-hour working week to your candidature (including attendance at the University for lectures, seminars, practical work and consultation with your supervisor) you should enrol as a part-time candidate. If in doubt you should consult your faculty or supervisor.

International students

Student visa regulations require international students to undertake full-time study. International students on visas other than student visas may be permitted to study part-time.

Policy online

In addition to the resolutions covering specific courses there are a number of University policies that apply to students. These include:

- The code of conduct for students
- Academic honesty in coursework
- Student plagiarism: Coursework assessment and examination of coursework

All of these policies can be accessed from the University's Policy online website.

Privacy

The University is subject to the *NSW Privacy and Personal Information Protection Act 1998* and the *NSW Health Records and Information Privacy Act 2002*. Central to both acts are the sets of information protection principles (IPPs) and health privacy principles which regulate the collection, management, use and disclosure of personal and health information. In compliance with the *Privacy and Personal Information Protection Act* the University developed a *Privacy Management Plan* which includes the *University Privacy Policy*. The *Privacy Management Plan* sets out the IPPs and how they apply to functions and activities carried out by the University. Both the plan and the *University Privacy Policy* were endorsed by the Vice-Chancellor on 28 June 2000.

Further information and a copy of the plan may be found at http://www.usyd.edu.au/arms/privacy.

Any questions regarding the *Freedom of Information Act*, the *Privacy and Personal Information Protection Act*, the *Health Records and Information Privacy Act* or the *Privacy Management Plan* should be directed to:

Tim Robinson: +61 2 9351 4263, or
Anne Picot: +61 2 9351 7262
Email: foi@mail.usyd.edu.au

Scholarships for undergraduates

Scholarships Unit
Room 147, Ground Floor, Mackie Building KO1
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 2717
Fax: +61 2 9351 5134
Email: scholarships@careers.usyd.edu.au
Web: http://www.usyd.edu.au/scholarships

Services for Students

See Student Services

Student Centre

Ground Floor, Carslaw Building F07
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 3023 (general enquiries)
Academic records: +61 2 9351 4109
Discontinuation of enrolment: +61 2 9351 3023
Handbooks: +61 2 9351 5057
Prizes: +61 2 9351 5060
Fax: +61 2 9351 5081, +61 2 9351 5350 (academic records)
Web: http://www.usyd.edu.au/studentcentre

Student Identity Cards

The student identity card functions as a library borrowing card, a transport concession card (when suitably endorsed) and a general identity card. The card must be carried at all times on the grounds of the University and must be shown on demand.

Student Services

The University provides personal, welfare, administrative and academic support services to facilitate your success at University. Many factors can impact on your wellbeing while studying at university and student services can assist you in managing and handling these more effectively. For details of services and online resources provided see your MyUni student portal or the Services for Students website: http://www.usyd.edu.au/stuserv.

The Sydney Summer School

Most faculties at the University offer units of study from undergraduate degree programs during summer. There are also some units of study available for postgraduate coursework programs from some faculties. As the University uses its entire quota of Commonwealth supported places in first and second semester, these units are full fee-paying for both local and international students and enrolment is entirely voluntary. However, Summer School units enable students to accelerate their degree progress, make up for a failed unit or fit in a unit which otherwise would not suit their timetables. New students may also gain a head start by completing subjects before they commence their degrees. Units start at various times from late November and run for up to six weeks (followed by an examination week). Notice of the units available is on the Summer School website and is usually circulated to students with their results notices. A smaller Winter School is also run from the Summer School office. It commences on 3 July and runs for up to three weeks (followed by an examination week). It offers mainly postgraduate and a few undergraduate units of study.

Information can be found on the Summer School website: http://www.summer.usyd.edu.au.

The University of Sydney Foundation Program (USFP)

The University of Sydney offers its foundation program to international students as a preparation for undergraduate degrees at several Australian universities.
The Foundation Program is conducted by Taylors College on behalf of Study Group Australia and the University of Sydney. The Foundation Program allows both first and second semester entry to undergraduate courses at the University of Sydney and other universities within Australia.

Phone: +61 2 8263 1888
Fax: +61 2 9267 0531

Email: info@io.usyd.edu.au
Web: http://www.usyd.edu.au/foundationprogram

College Address
The University of Sydney Foundation Program
Taylors College
965 Bourke St
Waterloo NSW 2017

Phone: +61 2 8303 9700
Fax: +61 2 8303 9777

Timetabling Unit

The Timetabling Unit in the Student Centre is responsible for producing students' class and tutorial timetables. Semester One timetables are available from the Wednesday of O Week through the MyUni website.

University Health Service

The University Health Service provides a full experienced general practitioner service and emergency medical care to all members of the University community. You can consult a doctor either by appointment or on a walk-in basis (for more urgent matters only). The Health Service bills Medicare or your overseas student health care provider (Worldcare or Medibank Private) directly for the full cost of most consultations.

Email: director@unihealth.usyd.edu.au
Web: http://www.unihealth.usyd.edu.au
Fax: +61 2 9351 4110

University Health Service (Holme)

University Health Service (Holme)]]
Holme Building A09
Science Rd
University of Sydney
NSW 2006 Australia

Opening Hours: 8:30am–5pm, Mon–Fri
Phone: +61 2 9351 4095

University Health Service (Wentworth)

Level 3, Wentworth Building G01
University of Sydney
NSW 2006 Australia

Opening Hours: 8:30am–5:30pm, Mon–Fri
Phone: +61 2 9351 3484
Holme Building A09
Science Rd
University of Sydney
NSW 2006 Australia

Opening Hours: 8:30am–5pm, Mon–Fri
Phone: +61 2 9351 4095

See also the Glossary for administrative information relating to particular terms.

Student organisations and International students

Student organisations

Students' Representative Council

The Students' Representative Council (SRC) advances and defends the interests of Sydney University undergraduate students at Sydney University and in the comunity. SRC members receive free advocacy and advice and a discount at the SRC shop.

Level 1, Wentworth Building G01
University of Sydney
NSW 2006 Australia

Phone: + 61 2 9660 5222
Fax: +61 2 9660 4260
SRC Shop: +61 2 9660 4756
Email: info@src.usyd.edu.au
Web: www.src.usyd.edu.au

Sydney University Postgraduate Representative Association (SUPRA)

SUPRA is an independent representative association providing advice, advocacy and support services for the postgraduate student community. SUPRA is your postgraduate student association and is here to help you.

Raglan Street Building G10
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 3715
Freecall: 1800 249 950
Fax: +61 2 9351 6400
Email: admin@supra.usyd.edu.au
Web: www.supra.usyd.edu.au

Sydney University Sport

Sydney University Sport provides opportunities for participation in a range of sporting and recreational activities along with first class facilities.

University Sports and Aquatic Centre G09
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 4960
Fax: +61 2 9351 4962
Email: admin@susport.usyd.edu.au
Web: www.susport.com

University of Sydney Union

The University of Sydney Union (USU) is the main provider of catering facilities, retail services, welfare programs and social and cultural events for the University community on the Camperdown and Darlington campuses and at many of the University's affiliated campuses.

University of Sydney Union
Level 1, Manning House A23
University of Sydney
NSW 2006 Australia

Phone: 1800 013 201 (switchboard)
Fax: +61 2 9563 6109
Email: info@usu.usyd.edu.au
Web: www.usuonline.com

International students

The following information is for international students studying onshore on an Australian Student Visa.

Full-time study

International students must maintain full-time enrolment at all times (a minimum of 18 credit points). However, in the following limited circumstances, part-time study is permitted:

- students studying in Australia on a different type of visa that does not carry study restrictions;
- students in their final semester who are required to take additional units to complete their course;
- cross-institutional students enrolled full-time at their home institution;
- students enrolled in an approved joint delivery program that involves enrolment at two institutions.

Satisfactory academic progress

The University is required to report to the Department of Immigration and Multicultural Affairs (DIMA) any International Student who fails to maintain satisfactory academic progress. This may result in automatic visa cancellation. It is important that International Students contact the International Office if they are experiencing academic difficulties.

Distance/web-based study

International students studying onshore in Australia are not permitted to enrol in distance or web-based courses. However, a small number of web-based units within a course taught largely in face-to-face mode are allowed. Contact the faculty to discuss enrolment options.

Work permits

International students with a work permit are permitted to work for up to 20 hours during semester and full-time during the University's official vacation periods. Contact the International Office for more information.

Change of address

International Students must notify the University of their residential address within seven days of arrival and notify any change of address within seven days. This may be done via the University's MyUni Web portal.

Course transfers

Sponsored students will need permission from their sponsors before transferring courses. Australian Government sponsored students (AusAID, Endeavour) and Asia Development Bank (ADB) sponsored students should contact the International Office in the early stages of considering a course transfer.

Suspension/discontinuation

The University is required to report to DIMA international students who discontinue or suspend their studies. Students who suspend their studies for severe medical or compassionate reasons should contact the International Office urgently.

Overseas student health cover

Australian Student Visa holders must maintain overseas health cover for the duration of their stay. The International Office arranges health cover for the first year but it is the individual student's responsibility to maintain health cover for each subsequent year.

Additional information

For more information related to international students, please see the Glossary in this handbook.

Abbreviations

For a glossary of terms, describing the terminology in use at the University of Sydney, please see the glossary section.

Listed below are the more commonly used acronyms that appear in University documents and publications.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A	
AARNet	Australian Academic Research Network
AAUT	Australian Awards for University Teaching
AAM	Annual Average Mark
ABC	Activity Based Costing
ABSTUDY	Aboriginal Study Assistance Scheme
ACER	Australian Council for Educational Research
AGSM	Australian Graduate School of Management
ANZAAS	Australian and New Zealand Association for the Advancement of Science
APA	Australian Postgraduate Awards
APAC	Australian Partnership for Advanced Computing
APAI	Australian Postgraduate Awards (Industry)
APA-IT	Australian Postgraduate Awards in Information Technology
APDI	Australian Postdoctoral Fellowships Industry
APEC	Asia-Pacific Economic Cooperation
APF	Australian Postdoctoral Fellowship
AQF	Australian Qualifications Framework
ARC	Australian Research Council
ARTS	Automated Results Transfer System
ASDOT	Assessment Fee Subsidy for Disadvantaged Overseas Students
ATN	Australian Technology Network
ATP	Australian Technology Park
ATPL	Australian Technology Park Limited
AUQA	Australian Universities Quality Agency
AusAID	Australian Agency for International Development
AUTC	Australian Universities Teaching Committee
AVCC	Australian Vice-Chancellors Committee

B	
BAA	Backing Australia's Ability
BAC	Budget Advisory Committee
BITLab	Business Intelligence Lab
BLO	Business Liaison Office
BOTPLS	Bridging for Overseas Trained Professionals Loans Scheme

C	
CAF	Cost Adjustment Factor
CAUT	Committee for Advancement of University Teaching
CDP	Capital Development Program
CEP	Country Education Profile
CEQ	Course Experience Questionnaire
CES	Casual Employment Service
CFO	Chief Financial Officer
CHASS	College of Humanities and Social Sciences
CHESSN	Commonwealth Higher Education System Student Number
CHS	College of Health Sciences
CIO	Chief Information Officer
COE	Confirmation of Enrolment
CPSU	Community and Public Sector Union

C	
CRC	Cooperative Research Centre
CREO	Centre for Regional Education, Orange
CRICOS	Commonwealth Register of Institutions and Courses for Overseas Students
CRRI	Centre for Rural and Regional Innovation
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CST	College of Sciences and Technology
CULT	Combined Universities Language Test
CUTSD	Committee for University Teaching and Staff Development

D	
DAC	Data Audit Committee
DEST	Commonwealth Department of Education, Science and Training
DET	NSW Department of Education and Training
DIMA	Department of Immigration and Multicultural Affairs
D-IRD	Discovery-Indigenous Researchers Development Program
DVC	Deputy Vice-Chancellor

E	
EB	Enterprise Bargaining
EFTSU	Equivalent Full-Time Student Unit
EFTSL	Equivalent Full-Time Student Load
EIP	Evaluations and Investigations Program
ELICOS	English Language Intensive Course of Study
EMU	Electron Microscope Unit
ESOS Act	Education Services for Overseas Student Act

F	
FFT	Fractional Full-Time (Equivalent Staff)
FlexSIS	Flexible Student Information System
FHS	Faculty of Health Sciences
FMO	Facilities Management Office
FOS	Field of Study
FTE	Full-Time Equivalent (Staff)
FRM	Faculty of Rural Management

G	
GATS	General Agreement on Trade in Services
GCCA	Graduate Careers Council of Australia
GDS	Graduate Destination Survey
GPOF	General Purpose Operating Funds
GSA	Graduate Skills Assessment
GSG	Graduate School of Government
GWSLN	Greater Western Sydney Learning Network

H	
HDR	Higher Degree Research
HECS	Higher Education Contribution Scheme
HEEP	Higher Education Equity Program

H	
HEFA	Higher Education Funding Act 1988
HEIMS	Higher Education Information Management System
HEIP	Higher Education Innovation Program (DEST)
HELP	Higher Education Loan Program
HEO	Higher Education Officer
HEP	Higher Education Provider
HERDC	Higher Education Research Data Collection
HESA	Higher Education Support Act
HOD	Head of Department

I	
IAF	Institutional Assessment Framework (This is a new name for what was previously the DEST Profile process.)
IAS	Institute of Advanced Studies
ICT	Information and Communication Technology
ICTR	Information and Communication Technology Resources
IELTS	International English Language Testing Scheme
IGS	Institutional Grants Scheme (DEST)
IO	International Office
IP	Intellectual Property
IPRS	International Postgraduate Research Scholarships
IREX	International Researcher Exchange Scheme
ISFP	Indigenous Support Funding Program
ISIG	Innovation Summit Implementation Group
ISSU	International Student Services Unit
ITC	Information Technology Committee
ITL	Institute for Teaching and Learning
ITS	Information Technology Services

J	
JASON	Joint Academic Scholarships Online Network

L	
LBOTE	Language Background Other Than English

M	
MBA	Master of Business Administration
MISG	Management Information Steering Group
MNRF	Major National Research Facilities Scheme
MOU	Memorandum of Understanding
MPG	Major Projects Group
MRB	Medical Rural Bonded Scholarship Scheme

N	
NBCOTP	National Bridging Courses for Overseas Trained Program
NCG	National Competitive Grant
NESB	Non-English-Speaking Background
NHMRC	National Health and Medical Research Council
NOIE	National Office for the Information Economy
NOOSR	National Office for Overseas Skill Recognition
NRSL	Non-Recent School Leaver
NSW VCC	New South Wales Vice-Chancellors' Conference
NTEU	National Tertiary Education Industry Union

O	
OECD	Organisation for Economic Cooperation and Development
OLA	Open Learning Australia
OLDPS	Open Learning Deferred Payment Scheme

O	
OPRS	Overseas Postgraduate Research Scholarships

P	
PELS	Postgraduate Education Loans Scheme
PSO	Planning Support Office
PVC	Pro-Vice-Chancellor

Q	
QA	Quality Assurance
QACG	Quality Advisory and Coordination Group

R	
R&D	Research and Development
R&R	Restructuring and Rationalisation Program
RC	Responsibility Centre
REG	Research and Earmarked Grants
REP	Research Education Program
RFM	Relative Funding Model
RIBG	Research Infrastructure Block Grant (DEST)
RIEF	Research Infrastructure Equipment and Facilities Scheme
RISF	Restructuring Initiatives Support Fund
RMO	Risk Management Office
ROA	Record of Achievement
RQ	Research Quantum
RQU	Recognition Quality Unit (Higher Education Division – DEST)
RRTMR	Research and Research Training Management Reports
RSL	Recent School Leaver
RTS	Research Training Scheme (DEST)

S	
SCA	Sydney College of the Arts
SCEQ	Sydney Course Experience Questionnaire
SCM	Sydney Conservatorium of Music
SCR	Science Capability Review
SDF	Strategic Development Fund
SEG	Senior Executive Group
SES	Socioeconomic Status
SI	Scholarship Index
SLE	Student Learning Entitlement
SNA	Safety Net Adjustment
SPIRT	Strategic Partnerships with Industry – Research and Training Scheme
SPR	Student Progress Rate
SRC	Students' Representative Council
SSR	Student/Staff Ratio
STABEX	Study Abroad Exchange (database)
SUPRA	Sydney University Postgraduate Students' Representative Association
SUSport	Sydney University Sport

T	
TAFE	Technical and Further Education
TOEFL	Test of English as a foreign language
TPI	Teaching Performance Indicator

U	
UAC	Universities Admissions Centre
UMAP	University Mobility in Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organisation

U	
UPA	University Postgraduate Awards

V	
VCAC	Vice-Chancellor's Advisory Committee
VET	Vocational Education and Training

W	
WAM	Weighted Average Mark
WRP	Workplace Reform Program
WTO	World Trade Organization

Y	
YFE	Year of First Enrolment

Glossary

For a table of the more commonly used acronyms and abbreviations that appear in University documents and publications please see the abbreviations section.

This glossary describes terminology in use at the University of Sydney.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

Academic Board
The senior academic body within the University. In conjunction with faculties, the Academic Board has responsibility for approving, or recommending to Senate for approval, new or amended courses and units of study and policy relating to the admission and candidature of students. (For further information, see the University Calendar.)

Academic cycle
The program of teaching sessions offered over a year. Currently the cycle runs from the enrolment period for Semester One through to the completion of the processing of results at the end of Semester Two. (See also Stage.)

Academic dishonesty
Academic dishonesty occurs when a student presents another person's ideas, findings or written work as his or her own by copying or reproducing them without due acknowledgement of the source and with intent to deceive the examiner. Academic dishonesty also covers recycling, fabrication of data, engaging another person to complete an assessment or cheating in exams. (See also Plagiarism.)

Academic record
The complete academic history of a student at the University. It includes, among other things: personal details; all units of study and courses taken; assessment results (marks and grades); awards and prizes obtained: infringements of progression rules; approvals for variation in course requirements and course leave; thesis and supervision details.
Access to a student's academic record is restricted to authorised University staff and is not released to a third party without the written authorisation of the student. (See also Academic transcript.)

Academic transcript
A printed statement setting out a student's academic record at the University. There are two forms of academic transcript: external and internal. (See also External transcript, Internal transcript.)

Academic year
The current calendar year in which a student is enrolled.
(See also Academic cycle, Stage.)

Admission
Governed by the University's admission policy, this is the process for identifying applicants eligible to receive an initial offer of enrolment in a course at the University. Admission to most courses is based on performance in the HSC, with applicants ranked on the basis of their UAI. Other criteria such as a portfolio, interview, audition, or results in standard tests may also be taken into account for certain courses.

Admission basis
The main criteria used by a faculty in assessing an application for admission to a course. The criteria used include, among other things, previous secondary, TAFE or tertiary studies; work experience; special admission; and the Universities Admission Index (UAI).

Admission (Deferment)
An applicant who receives an offer of admission to a course may apply to defer enrolment in that course for one semester or one academic cycle.

Admission mode
A classification based on how a student was admitted to a course, for example 'UAC' or 'direct'.

Admission period
The period during which applications for admission to courses are considered.

Admission year
The year the student expects to begin the course (see also Commencement date.)

Advanced diplomas
(See Award course.)

Advanced standing
(See Credit.)

Advisor
A member of academic staff appointed in an advisory role for some postgraduate coursework students. (See also Associate supervisor, Instrumental supervisor/teacher, Research supervisor, Supervision.)

Aegrotat
In exceptional circumstances involving serious illness or death of a student prior to completion of their course, the award of aegrotat and posthumous degrees and diplomas may be conferred.

Alumni sidneiensis
A searchable database of graduates of the University from 1857 to 30 years prior to the current year.

Annual average mark (AAM)
The average mark over all units of study attempted in a given academic year (equivalent to the calendar year).

The formula for this calculation is:

$$AAM = \frac{\sum (marks \times credit\ point\ value)}{\sum (credit\ point\ value)}$$

(sums over all units of study completed in the selected period)
Where the mark is the actual mark obtained by the student for the unit of study, or in the case of a failing grade with no mark – 0. Pass/fail assessed subjects and credit transfer subjects (from another institution) are excluded from these calculations; however, the marks from all attempts at a unit of study are included.

Annual progress report
A form which is used to monitor a research student's progress each year. The form provides for comments by the student, the supervisor, the head of the department and the dean (or their nominee). The completed form is attached to the student's official file.

Appeals
Students may lodge an appeal against academic or disciplinary decisions. An academic appeal (e.g. against exclusion) is managed by the Student Centre – Exclusions Office while it is under consideration and a record of the outcome of the appeal will be retained.

Assessment
The process of measuring the performance of students in units of study and courses. Performance may be assessed by examinations, essays, laboratory projects, assignments, theses, treatises or dissertations. (See also Result processing, Result processing schedule.)

Formative assessment
Formative assessment is used principally to provide students with feedback on their progress in learning. It reinforces successful learning, and is an opportunity for students to expose the limitations in their knowledge and understanding.

Summative assessment
Summative assessment is used to certify competence, or to arrange students in a rank order of merit. It certifies the attainment of a standard, and is used as the basis for progression to the next part of a program, or to graduation.

Associate supervisor
A person who is appointed in addition to the supervisor of a research student, who can provide the day-to-day contact with the candidate or provide particular expertise or additional experience in supervision. (See also Advisor, Instrumental supervisor/teacher, Research supervisor, Supervision.)

Assumed knowledge
For some units of study, a student is assumed to have passed a relevant subject at the HSC and this is called assumed knowledge. While students are generally advised against taking a unit of study for which they do not have the assumed knowledge, they are not prevented from enrolling in the unit of study. (See also Prerequisite.)

Attendance pattern
Attendance pattern is classified as full-time, part-time or external, this is dependant on the student's mode of attendance and the student load.

Attendance mode
A Department of Education, Science and Technology (DEST) classification defining the manner in which a student is undertaking a course, i.e. internal, external, mixed or offshore.

Australian Qualifications Framework (AQF)
The framework for recognition and endorsement of qualifications established by the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA).

AUSTUDY
Austudy provides financial help to students who are aged 25 years or more who meet the required criteria, and are undertaking an approved full-time course at an approved institution. (See also Youth Allowance.)

Automated Results Transfer System (ARTS)
This system was developed by the Australasian Conference of Tertiary Admissions Centres (ACTAC) to allow the electronic academic record of a student to be accessed, via an admission centre, by tertiary institutions.

Award course
(See Course.)

B

Bachelor's degree
The highest undergraduate award offered at the University. A bachelor's degree course normally requires three or four years of full-time study or the part-time equivalent. (See also Award course.)

Barrier
An instruction placed on a student's record that prevents the student from re-enrolling or graduating. (See also Deadlines (fees), Suppression of results.)

Board of Studies
An academic body which supervises a course or courses, and which is similar to a faculty except that it is headed by a chair rather than a dean and does not supervise PhD candidates.

Bursaries
Financial award made to a student, based primarily on need. (See also Scholarships.)

C

Calendar
The annual University publication which provides general and historical information about the University of Sydney, the statutes and regulations under which it operates and the Senate resolutions relating to constitutions and courses in each faculty.

Cadigal program
A program, named in recognition of the Aboriginal people of the land on which the University is located, designed to increase the successful participation of Aboriginal and Torres Strait Islander people in degree courses in all faculties at the University of Sydney.

Campus
The grounds on which the University is situated. There are 10 campuses of the University of Sydney:

- Burren Street (Institute of Transport Studies)
- Camperdown
- Darlington
- Camden (Agriculture and Veterinary Science)
- Conservatorium (Sydney Conservatorium of Music)
- Cumberland (Health Sciences)
- Mallett Street (Nursing)
- Rozelle (Sydney College of the Arts)
- St James (Law)
- Surry Hills (Dentistry)

Cancellation
Where enrolment is cancelled for non-payment of fees.

Candidature
Candidature commences when a student is admitted to a course of study leading to the award of a degree, diploma or certificate. There are maximum periods and in some cases minimum periods of candidature depending on the award course and whether the candidate is a full-time or part-time student.

Census date
The date at which a student's enrolment, load and HECS liability are finalised before this information is reported to DEST. (See also Commonwealth-supported Student, HECS-HELP.)

Ceremony
(See Graduation ceremony.)

Chancellor
The non-executive head of the University. An honorary position, the Chancellor presides over meetings of the University's governing body, the Senate, and important ceremonial occasions such as graduations.

Clinical experience
Students undertake clinical placements in a professional environment as part of their course requirements. Many require University approved supervision. In order to undertake clinical placements a student may be required to fulfil additional requirements.

College of Health Sciences
Consists of the Faculties of Dentistry; Health Sciences; Medicine; Nursing; and Pharmacy.

College of Humanities and Social Sciences (CHASS)
Consists of the Faculties of Arts; Economics and Business; Education; Law; the Sydney College of the Arts; and the Sydney Conservatorium of Music.

College of Sciences and Technology (CST)
Consists of the Faculties of Agriculture, Food and Natural Resources; Architecture; Engineering; Rural Management; Science, and Veterinary Science.

Combined course
A course which leads to two awards. For example the Arts/Law course leads to the separate awards of Bachelor of Arts and Bachelor of Laws.

Combined degree
A combined degree is a single program with a single set of course resolutions leading to the award of two degrees (unless otherwise specified in the resolutions). (See also Combined course.)

Commencement date
The date a student commences candidature.

Commonwealth-supported student
Most of the students who study at the University of Sydney are Commonwealth supported. These students have most of the cost of their education paid by the government but must also contribute towards this cost themselves (their student contribution).

Compulsory subscriptions
Each enrolled student is liable to pay annual (or semester) subscriptions, as determined by the Senate, to the student organisations at the University. There are different organisations for undergraduate and postgraduate students.

The student organisations are specific to different campuses. The organisations at campuses other than Camperdown and Darlington include: the Conservatorium Student Association, the Cumberland Student Guild, the Orange Agricultural College Student Association and the Student Association of Sydney College of the Arts. (See also Compulsory subscription exemption, Joining fee, Life membership.)

Compulsory subscription exemption
Students of a certain age or those with disabilities or medical conditions may be exempt from the subscription to the sports body. Conscientious objectors to the payment of subscriptions to unions of any kind may apply to the Registrar for exemption. The Registrar may permit such a student to make the payment to the Jean Foley Bursary Fund instead. (See also Compulsory subscriptions.)

Confirmation of Enrolment form (COE)
This form is issued to each student after enrolment, showing the course and the units of study in which the student is enrolled, together with the credit point value of the units of study and the HECS weights. Until all fees are paid, it is issued provisionally. A new confirmation of enrolment form is produced every time a student's enrolment is varied.

Conjoint ventures
Two or more institutions cooperate to provide a unit or course of study to postgraduate coursework students. Arrangements exist between individual departments at the University of Sydney and individual departments at the University of New South Wales (UNSW) and the University of Technology Sydney (UTS), whereby students enrolled for a degree at one institution complete one or more units of study at the other institution to count towards the award program at their 'home' institution.

Continuing professional education
A process which provides a number of programs of continuing education courses for professionals as they move through their career. These programs are presently administered by the Centre for Continuing Education and a number of departments and foundations across the University. This process supports the whole of life learning concept and involves the maintenance of a long term relationship between the student and the University.

Convocation
The body comprising all graduates of the University.

Core unit of study
A unit of study that is compulsory for a particular course or subject area. (See also Unit of study.)

Corequisite
A unit of study which must be taken in the same semester or year as a given unit of study (unless it has already been completed). These are determined by the faculty or board of studies concerned, published in the faculty handbook and shown in FlexSIS. (See also Prerequisite, Waiver.)

Cotutelle Scheme
Agreement between the University and any overseas university for joint supervision and examination of a PhD student as part of an ongoing cooperative research collaboration. If successful, the student receives a doctorate from both universities with each testamur acknowledging the circumstances under which the award was made.

Course
An undertaking of study at the University of Sydney.

Award course
A formal course of study that will see attainment of a recognised award. Award courses are approved by Senate, on the recommendation of the Academic Board. The University broadly classifies courses as undergraduate, postgraduate coursework or postgraduate research. (See also Bachelor's degree, Course rules, Diploma, Doctorate, Major, Master's degree, Minor, PhD, Stream.)

Non-award course
Studies undertaken by students who are not seeking an award from the University. (See also Cross-institutional enrolment.)

Coursework
An award course not designated as a research award course. While the program of study in a coursework award course may include a component of original, supervised, other forms of instruction and learning normally will be dominant.

Research
A course in which at least 66 per cent of the overall course requirements involve students in undertaking supervised research, leading to the production of a thesis or other piece of written or creative work, over a prescribed period of time.

Course alias
A unique five character alpha-numeric code which identifies a University course.

Course code
(See Course alias.)

Course enrolment status
A student's enrolment status in a course is either 'enrolled' or 'not enrolled'. 'Not enrolled' reasons include: cancelled; suspended; under examination; or terminated. (See also Cancellation, Candidature, Course leave, Enrolment, Enrolment variation, Terminated, Under examination.)

Course leave
Students are permitted to apply for a period away from their course without losing their place. Course leave is formally approved by the supervising faculty for a minimum of one semester. Students on leave are regarded as having an active candidature, but they are not entitled to a student card. At undergraduate level, leave is not counted towards the total length of the course. Students who are absent from study without approved leave may be discontinued and may be required to formally reapply for admission. (See also Progression.)

Course rules
Rules which govern the allowable enrolment of a student in a course. Course rules may be expressed in terms of types of units of study taken, length of study, and credit points accumulated, e.g. a candidate

may not enrol in units of study having a total value of more than 32 credit points per semester. Course rules also govern the requirements for the award of the course, e.g. a candidate must have completed a minimum of 144 credit points. (See also Award course, Corequisite, Prerequisite.)

Course suspension
(See Course leave.)

Course transfer
A transfer occurs when a student changes from one course in the University to another course in the University without the requirement for an application and selection process (e.g. from a PhD to a master's program in the same faculty).

Credit
The recognition of previous studies successfully completed at this University, or another university or tertiary institution recognised by the University of Sydney, as contributing to the requirements of the course to which the applicant requesting such recognition has been admitted. Credit may be granted as specified credit or non-specified credit.

Specified credit
The recognition of previously completed studies as directly equivalent to units of study.

Non-specified credit
A 'block credit' for a specified number of credit points at a particular level. These credit points may be in a particular subject area but are not linked to a specific unit of study. (See also AAM – Annual average mark, Waiver, Weighted average mark (WAM).)

Credit points
The value of the contribution each unit of study provides towards meeting course completion requirements. Each unit of study will have a credit point value assigned to it. The total number of credit points required for completion of award courses will be specified in the Senate Resolutions relevant to the award course.

Cross-institutional enrolment
An enrolment in units of study at one university to count towards an award course at another university. Cross-institutional enrolments incur a student-contribution liability (see Commonwealth-supported student) or tuition fee charge at the institution at which the unit of study is being undertaken. (See also Non-award course).

D

Data Audit Committee (DAC)
The Data Audit Committee's role is to oversee the integrity and accuracy of the course and unit of study data as strategic University data. It also advises the Academic Board on suggested policy changes related to course and unit of study data. A subcommittee of the VCAC Enrolment Working Party, it is chaired by the Registrar, with membership including the deans, the Student Centre, FlexSIS and the Planning Support Office.

Deadlines (Enrolment variations)
(See Enrolment variation.)

Deadlines (Fees)
The University has deadlines for the payment of fees (e.g. HECS, compulsory subscriptions, course fees). Students who do not pay fees by these deadlines may have their enrolment cancelled or they may have a barrier placed on the release of their record. (See also Barrier, Cancellation.)

Dean
The head of a faculty, or the principal or director of a college (such as the Sydney Conservatorium of Music or the Sydney College of Arts).

Dean's certificate
A statement from the Dean certifying that all requirements, including fieldwork and practical work, have been met and that the student is eligible to graduate. Not all faculties use Dean's Certificates. In faculties that do, qualified students have 'Dean's Certificate' noted on their academic record.

Deferment (Deferral)
(See Admission (deferment), Course leave.)

Degree
(See also Award course, Bachelor's degree.)

Delivery mode
Indicates how students receive the instruction for a unit of study. The delivery mode must be recorded for each unit as distinct from the attendance mode of the student, i.e. an internal student may take one or more units by distance mode and an external student may attend campus for one or more units.

Distance education
Where subject matter is delivered in a more flexible manner, such as correspondence notes, and student may only attend campus if required. (See also Extended semester, Distance education, International – off shore.)

Intensive on campus
Core content is delivered with support learning in an intensive (one or more days) format on campus. Participation is usually compulsory. Previously this may have been called residential, block mode, or weekend workshop.

On campus (normal)
Attendance of scheduled lectures, tutorials etc at a campus of the University.

Department
(See School.)

Department of Education, Science and Training (DEST)
The Commonwealth Government department responsible for higher education.

Differential HECS
(See Higher Education Contribution Scheme (HECS).)

Diploma
The award granted following successful completion of diploma course requirements. A diploma course usually requires less study than a degree course. (See also Award course.)

Direct admissions
For some courses, applications may be made directly to the University. Applications are received by faculties or the International Office, and considered by the relevant department or faculty body. Decisions are recorded and letters are forwarded to applicants advising them of the outcome. (See also Admission, UAC.)

Disability information
Students may inform the University of any temporary or permanent disability which affects their life as a student. Disability information is recorded but it is only available to particular authorised users because of its sensitive nature.

Disciplinary action
Undertaken as the result of academic or other misconduct, e.g. plagiarism, cheating, security infringement, criminal activity.

Discipline
A defined area of study, for example, chemistry, physics, economics.

Discipline group
A DEST code used to classify units of study in terms of the subject matter being taught or being researched.

Discontinuation (course)
(See Enrolment variation.)

Discontinuation (unit of study)
(See Enrolment variation.)

Dissertation
A written exposition of a topic which may include original argument substantiated by reference to acknowledged authorities. It is a required unit of study for some postgraduate award courses in the faculties of Architecture and Law.

Distance education
Where a student does not attend campus on a daily basis for a given course or unit of study. (See also Delivery mode, Extended semester.)

Doctorate
A high-level postgraduate award. A doctorate course normally involves research and coursework; the candidate submits a thesis that is an original contribution to the field of study. Entry to a doctorate course often requires completion of a master's degree course. Note that the doctorate course is not available in all departments at the University. (See also Award course, PhD.)

Domestic Student
A student who is not an international student. (See also Local student.)

Double degree
A double degree is a program where students are permitted by participating faculties (and/or by specific resolutions within a single award) to transfer between courses in order to complete two awards.

Downgrade
Where a student enrolled in a PhD reverts to a master's by research, either on the recommendation of the University on the basis that the research they are undertaking is not at an appropriate level for a PhD; or at the student's own request, for personal or academic reasons.

E

Equivalent full-time student unit (EFTSU)
The equivalent full-time student unit (EFTSU) is a measure of student load based on the workload for a student undertaking a full year of study in a particular course. A student is then recorded as having generated one EFTSU. (See also Load, Stage.)

Equivalent full-time student load (EFTSL)
The equivalent full-time student load (EFTSL) for a year. It is a measure, in respect of a course of study, of the study load for a year of a student undertaking that course of study on a full-time basis (effective 1 January 2005).

Embedded courses
Award courses in the graduate certificate, graduate diploma and master's degree by coursework sequence which allow unit of study credit points to count in more than one of the awards, e.g. the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology and Master of Information Technology.

Enrolment
A student enrols in a course by registering with the supervising faculty in the units of study to be taken in the coming year, semester or session.

Commencing
An enrolment is classified as commencing if a student has enrolled in a particular degree or diploma for the first time.

Continuing
Students already in a course at the University re-enrol each year or semester. Most continuing students are required to pre-enrol. (See also Pre-enrolment.)

Enrolment list
A list of all currently enrolled students in a particular unit of study. (See also Unit of study.)

Enrolment status
(See Course enrolment status.)

Enrolment Variation
Students may vary their enrolment at the beginning of each semester. Each faculty determines its deadlines for variations, but HECS liability depends on the HECS census date. (See also HECS.)

Examination
A set of questions or exercises evaluating on a given subject given by a department or faculty. (See Examination period, Assessment.)

Examination period
The time set each semester for the conduct of formal examinations.

Examiner (Coursework)
The person assessing either the written/oral examination, coursework assignments, presentations, etc of a student or group of students.

Exchange student
Either a student of the University of Sydney who is participating in a formally agreed program involving study at an overseas university or an overseas student who is studying here on the same basis. The International Office provides administrative support for some exchanges.

Exclusion
A faculty may ask a student whose academic progress is considered to be unsatisfactory to 'show good cause' why the student should be allowed to re-enrol. If the faculty deems the student's explanation unsatisfactory, or if the student does not provide an explanation, the student may be excluded either from a unit of study or from a course or faculty. An excluded student may apply to the faculty for permission to re-enrol. Normally, at least two years must have elapsed before such an application would be considered.

University policy relating to exclusion is set out in the University Calendar. (See also Progression, Senate appeals.)

Exemption
A decision made at a sub-unit of study level to allow a student to complete a unit of study without also completing all the prescribed components of coursework and/or assessment. (See also Credit, Waiver.)

Expulsion
The ultimate penalty of disciplinary action is to expel the student from the University. The effect of expulsion is:

- the student is not allowed to be admitted or to re-enrol in any course at the University;
- the student does not receive their results;
- the student is not allowed to graduate; and
- the student does not receive a transcript or testamur.

Extended semester
A distance-learning student may be allowed more time to complete a module or program if circumstances beyond the student's control, e.g. drought, flood or illness, affect the student's ability to complete the module or program in the specified time. (See also Distance education.)

External
(See Attendance mode, Distance education.)

External transcript
A certified statement of a student's academic record printed on official University security paper. It includes the student's name, any credit granted, all courses the student was enrolled in and the final course result and all units of study attempted within each course together with the result. It also acknowledges prizes the student has received.

Marks can be included or omitted, as required. (See also Academic transcript, Internal transcript.)

F

Faculty
A formal part of the University's academic governance structure, consisting mainly of academic staff members and headed by a dean, which is responsible for all matters concerning the award courses that it supervises. Usually, a faculty office administers the faculty and student or staff inquiries related to its courses. The University Calendar sets out the constitution of each of the University's faculties. (See also Board of Studies, Supervising faculty.)

Faculty handbook
The annual University publication for each faculty which provided detailed information about the faculty and its courses.

FEE-HELP Loan
Fee-paying students who are Australian citizens or holders of a Permanent Humanitarian Visa can gain assistance in paying their fees through the Commonwealth Government's FEE-HELP program. There is a $50,000 limit to the amount students can borrow and a 20 per cent loan fee on the amounts borrowed through FEE-HELP.

Fee-paying students
Students who pay tuition fees to the University and are not liable for HECS.

Fellows of Senate
Members of the governing body of the University.

Flexible learning
(See Delivery mode, Distance education.)

Flexible start date
Full fee-paying distance students are not restricted to the same enrolment time frames as campus-based or HECS students.

Flexible Student Information System (FlexSIS)
The computer-based Flexible Student Information System at the University of Sydney. FlexSIS holds details of courses and units of study being offered by the University and the complete academic records of all students enrolled at the University.

Formative assessment
(See Assessment.)

Full-time student
(See also Attendance pattern, EFTSU.)

G

Grade
The outcome for a unit of study linked with a mark range. For example, a mark in the range 85–100 attracts the grade 'high distinction' ('HD'). (See also Mark.)

Grade	Description	Comment
HD	High distinction	A mark of 85–100.
D	Distinction	A mark of 75–84.
CR	Credit	A mark of 65–74.
P	Pass	A mark of 50–64.
R	Satisfied requirements	This is used in pass/fail only outcomes.
UCN	Unit of study continuing	Used at the end of semester for units of study that have been approved to extend into a following semester. This will automatically flag that no final result is required until the end of the last semester of the unit of study.
PCON	Pass (concessional)	A mark of 46–49. Use of this grade is restricted to those courses that allow for a concessional pass of some kind to be awarded. A student may re-enrol in a unit of study for which the result was PCON. Each faculty will determine and state in its course regulations what proportion, if any, may count – e.g. "no more than one sixth of the total credit points for a course can be made up from PCON results".
F	Fail	A mark of 0–49. This grade may be used for students with marks of 46–49 in those faculties which do not use PCON.
AF	Absent fail	Includes non-submission of compulsory work (or non-attendance at compulsory labs, etc) as well as failure to attend an examination.
W	Withdrawn	Not recorded on an external transcript. This is the result that obtains where a student applies to discontinue a unit of study by the HECS census date (i.e. within the first four weeks of enrolment).
DNF	Discontinued not to count as failure	Recorded on external transcript. This result applies automatically where a student discontinues after the HECS census date but before the end of the seventh week of the semester (or before half of the unit of study has run, in the case of units of study which are not semester-length). A faculty may determine that the result of DNF is warranted after this date if the student has made out a special case based on illness or misadventure.
INC	Incomplete	This result is used when examiners have grounds (such as illness or misadventure) for seeking further information or for considering additional work from the student before confirming the final result. Except in special cases approved by the Academic Board, this result will be converted to a normal permanent passing or failing grade either: by the dean at the review of examination results conducted pursuant to section 2(4) of the Academic Board policy 'Examinations and Assessment Procedures'; or automatically to an AF grade by the third week of the immediately subsequent academic session. Deans are authorised to approve the extension of a MINC grade for individual students having a valid reason for their incomplete status.
UCN	Incomplete	A MINC or INC grade is converted, on the advice of the dean, to UCN when all or many students in a unit of study have not completed the requirements of the unit. The students may be engaged in practicum or clinical placements, or in programs extending beyond the end of semester (e.g. honours).

Graduand
A student who has completed all the requirements for an award course but has not yet graduated. (See also Graduation, Potential graduand.)

Graduate
A person who holds an award from a recognised tertiary institution. (See also Graduand, Graduation.)

Graduate Certificate
(See Award course.)

Graduate Diploma
(See Award course.)

Graduate entry degree
A bachelor's, or undergraduate degree, that requires another undergraduate degree as a prerequisite of entry. Examples of graduate entry degrees at the University of Sydney include: the Medical Program; Graduate Law and the Bachelor of Dentistry.

Graduation
The formal conferring of awards either at a ceremony or in absentia. (See also In absentia, Potential graduand.)

Graduation ceremony
A ceremony where the Chancellor confers awards upon graduands.

Group work
Means a formally established project to be conducted by a number of students in common, resulting in a single piece of assessment or a number of associated pieces of assessment. (See also Legitimate cooperation.)

Grand Weighted Average Mark (GWAM)
Is the WAM calculated over all units of study undertaken in a degree course (except those "Discontinued – Not to count as failure" and those with only a "Satisfied Requirements" result), weighted according to credit point value and the year-levels (1, 2, 3 or 4) of the units of study. The GWAM may be expressed as:

$$GWAM = \frac{\sum (Mark \times Credit\ Points \times Year)}{\sum (Credit\ Points \times Year)}$$

H

Handbook
(See Faculty handbook.)

Head of department (HOD)
The head of the academic unit which has responsibility for the relevant unit of study, or equivalent program leader.

Higher doctorates
(See Award course.)

HECS (Higher Education Contribution Scheme)
Higher Education Contribution Scheme (HECS)
The Higher Education Contribution Scheme (HECS) was the previous Commonwealth Government student loan scheme. It ceased to operate on 1 January, 2005 and was replaced by HECS-HELP (see below).

HECS-HELP Loan
Commonwealth supported students who are Australian citizens or holders of a Permanent Humanitarian Visa can choose to pay their contributions upfront or to obtain a HECS-HELP loan from the Commonwealth. A HECS-HELP loan is repaid through the tax system once the student is working and their income reaches a threshold (currently around $35 000). Students who choose to pay their student contribution upfront receive a 20 per cent discount. The student's contribution is calculated twice a year (before each semester).

Honorary degrees
A degree *honoris causa* (translated from the Latin as 'for the purpose of honouring') is conferred on a person whom the University wishes to honour. Long-standing full-time members of the University's academic staff who are not graduates of the University may be considered by Senate, upon their retirement, for admission ad eundem gradum, to an appropriate degree of the University.

Honours
Some degrees may be completed 'with Honours'. This may involve either the completion of a separate honours year or additional work in the later years of the course or meritorious achievement over all years of the course. Honours are awarded in a class (Class I, Class II – which may have two divisions or, Class III).

NSW Higher School Certificate (HSC)
The NSW Higher School Certificate (HSC), which is normally completed at the end of year 12 of secondary school. The UAI (Universities Admission Index) is a rank out of 100 that is computed from a student's performance in the HSC.

I

In absentia
Latin for 'in the absence of'. Awards are conferred in absentia when graduands do not, or cannot, attend the graduation ceremony scheduled for them. Those who have graduated in absentia may later request that they be presented to the Chancellor at a graduation ceremony. (See also Graduation.)

Instrumental supervisor/teacher
All students at the Sydney Conservatorium of Music and BMus students on the Camperdown Campus have an instrumental teacher appointed. (See also Advisor, Associate supervisor, Research supervisor, Supervision.)

Internal mode
(See Attendance mode.)

Internal transcript
A record of a student's academic record for the University's own internal use. It includes the student's name, student identifier (SID), address, all courses in which the student was enrolled and the final course result, and all units of study attempted within each course together with the unit of study result. (See also Academic transcript, External transcript.)

International student
Any student who is not an Australian or New Zealand citizen or a permanent resident of Australia is an international student. An international student is required to hold a visa that allows study in Australia and may be liable for international tuition fees.

Fee-paying
A private International Student who is liable to pay tuition fees for their studies with the University.

Fee-paying – Outgoing exchange
An international fee-paying student undertaking short term study at a recognised overseas institution with which the University has a student exchange agreement. Exchange study counts towards the student's University of Sydney award and students remain enrolled in their University of Sydney course during the period of exchange.

International – cross-institutional
An international fee paying student undertaking non-award study at the University on a cross-institutional basis. They are liable to pay fees for the study they undertake at the University, but there is no compliance reporting requirement, which rests with their 'home' institution.

International – Sponsored
A private international student who is fully sponsored for his/her tuition; his/her sponsorship may also cover Overseas Health Cover and Compulsory Subscriptions.

Offshore studies
International offshore students undertake their program of study at one of the University's offshore campuses and hence do not enter Australia; therefore they do not require a visa. The are distinct from international students who are on outbound exchange programs as they never enter Australia during their program of study.

Short course
An international fee-paying student undertaking a short course with the University of Sydney comprising such programs as international development programs, executive training or study visits. The study undertaken by these students is non-award and generally a student visa is not required.

Sponsored award
An international student sponsored by the Australian government, undertaking a program of study at the University. Currently Australian Development Scholarships holders, funded by AusAID, are the only students in this category. These students are fully sponsored for their tuition and other costs such as travel and health cover, and are paid a stipend.

Study Abroad
An international student who is undertaking short-term study at the

University under the Study Abroad scheme. Study Abroad students must have completed at least one year of study towards a degree at a recognised institution in their home country and are continuing towards the degree of their home institution. (See also Local student, Student type.)

J

Joining fee
Students enrolling for the first time pay a joining fee in addition to the standard subscription for the University of Sydney Union or equivalent student organisation. (See also Compulsory subscription.)

L

Learning Entitlement
Each student has a seven year full-time period during which they can remain Commonwealth supported. This seven year period is called their 'learning entitlement'.

Leave
See Course leave.

Legitimate cooperation
Any constructive educational and intellectual practice that aims to facilitate optimal learning outcomes through interaction between students. (See also Group work.)

Life membership
Under some circumstances (e.g. after five full-time years of enrolments and contributions) students may be granted life membership of various organisations. This means they are exempt from paying yearly fees. (See also Compulsory subscriptions.)

Load
The sum of the weights of all the units of study in which a student is enrolled. The weight is determined by the proportion of a full year's work represented by the unit of study in the degree or diploma for which the student is a candidate. Student load is measured in terms of Equivalent full-time student units (EFTSU). (See also Equivalent full-time student units (EFTSU).)

Local Student
Either an Australian or New Zealand citizen or Australian permanent resident. New Zealand citizens are required to pay their Higher Education Contribution Scheme (HECS) fees upfront. (See also Commonwealth-supported student, Domestic student, International student.)

M

Major
A field of study, chosen by a student, to represent their principal interest. this would consist of specified units of study from later stages of the award course. Students select and transfer between majors by virtue of their selection of units of study. One or more majors may be awarded upon the graduand's assessment of study. (See also Award course, Minor, Stream.)

Major timetable clash
The term used when a student attempts to enrol in units of study which have so much overlap in the teaching times that it has been decided that students must not enrol in the units simultaneously.

Mark
An integer (rounded if necessary) from 0 to 100 indicating a student's performance in a unit of study. (See also Grade.)

Master's degree
A postgraduate award. Master's degree courses may be offered by coursework, research only or a combination of coursework and research. Entry to the course often requires completion of an honours year at an undergraduate level. (See also Award course.)

Method of candidature
A course is either a research course or a coursework course and so the methods of candidature are 'research' and 'coursework'. (See also Course – Coursework, Course – Research.)

Minor
Studies undertaken to support a Major. Requiring a smaller number of credit points than a major students select and transfer between minors (and majors) by virtue of their selection of units of study. One or more minors may be awarded upon the graduand's assessment of study. (See also Award course, Major, Stream.)

Mixed mode
(See Attendance mode.)

MPhil
The Master of Philosophy (MPhil) is a master's by research degree offered by some (but not all) of the University's faculties. (See also Award course, Master's degree.)

Mutually exclusive units of study
(See Prohibited combinations of units of study.)

MyUni
The University of Sydney's student portal system. It provides students with access to information about the University and its courses, including access to email, library services, student support services, student self-administration and e-learning software such as Blackboard and WebCT.

N

Non-award course
(See Course.)

Non-standard session
A teaching session other than the standard February and August sessions – e.g. Summer School, in which units of study are delivered and assessed in an intensive mode during January. (See also Semester, Session.)

O

Orientation Week
Orientation or 'O Week', takes place in the week before lectures begin in Semester One. During O Week, students can join various clubs, societies and organisations, register for courses with departments and take part in activities provided by the University of Sydney Union.

P

Part-time student
(See Attendance mode, Attendance pattern, Equivalent full-tme student units (EFTSU).)

Permanent home address
The address used for all official University correspondence with a student, both inside and outside of semester time (e.g. during semester breaks), unless the student provides a different overridden by semester address for use during the semester. (See also Semester address.)

PhD
The Doctor of Philosophy (PhD) and other doctorate awards are the highest awards available at the University. A PhD course is normally purely research-based; the candidate submits a thesis that is an original contribution to the field of study. (See also Award course, Doctorate.)

Plagiarism
Presenting another person's ideas, findings or work as one's own by copying or reproducing them without the acknowledgement of the source. (See also Academic dishonesty.)

Postgraduate
A term used to describe a course leading to an award such as graduate diploma, a master's degree or PhD which usually requires prior completion of a relevant undergraduate degree (or diploma) course. A 'postgraduate' is a student enrolled in such a course. (See also Course – Coursework, Course – Research.)

Postgraduate Education Loans Scheme (PELS)
An interest-free loans facility for eligible students who are enrolled in fee-paying, postgraduate non-research courses. It is similar to the deferred payment arrangements available under the Higher Education Contribution Scheme (HECS). This scheme was replaced by the FEE-HELP scheme on 1 January 2005. (See FEE-HELP Loan.)

Potential graduand
A student who has been identified as being eligible to graduate on the satisfactory completion of their current studies. (See also Graduand, Graduation.)

Pre-enrolment
Pre-enrolment – also known as provisional re-enrolment – takes place in October, when students indicate their choice of unit of study enrolment for the following year. After results are approved, pre-enrolment students are regarded as enrolled in those units of study for which they are qualified. Their status is 'enrolled' and remains so provided they pay any money owing and comply with other requirements by the due date. Students who do not successfully pre-enrol in their units of study for the next regular session are required to attend the University on set dates during the January/February enrolment period. (See also Enrolment.)

Prerequisite
A unit of study that is required to be successfully completed before another unit of study can be attempted. Prerequisites can be mandatory (compulsory) or advisory. (See also Assumed knowledge, Corequisite, Waiver, Qualifier.)

Prizes
Awarded in recognition of outstanding performance, academic achievement or service to the community or University.

Probationary candidature
A student who is enrolled in a postgraduate course on probation for a period of time up to one year. The head of department is required to consider the candidate's progress during the period of probation and make a recommendation for normal candidature or otherwise to the faculty.

Professional practice
Students undertake placement in a professional practice as a part of their course requirements. May require University approved supervision. Professional placements are located in a wide range of professional practices environments, and may not require additional criteria to be fulfilled.

Progression
Satisfactory progression is satisfying all course and faculty rules (normally assessed on an annual basis) to enable the completion of the chosen award within the (maximum) completion time allowed. (See also Exclusion.)

Prohibited combinations of units of study
When two or more units of study contain a sufficient overlap of content, enrolment in any one such unit prohibits enrolment in any other identified unit. (See also unit of study.)

Provisional re-enrolment
(See Pre-enrolment.)

Q

Qualification
An academic attainment recognised by the University.

Qualifier
A mandatory (compulsory) prerequisite unit of study which must have a grade of pass or better. (See also Assumed knowledge, Corequisite, Prerequisite, Waiver.)

R

Recycling
The submission for assessment of one's own work, or of work which substantially the same, which has previously been counted towards the satisfactory completion of another unit of study, and credited towards a university degree, and where the examiner has not been informed that the student has already received credit for that work.

Registration
In addition to enrolling with the faculty in units of study, students must register with the department responsible for teaching each unit. This is normally done during Orientation Week. Note that unlike enrolment, registration is not a formal record of units attempted by the student.

Research course
(See Course – Research.)

Research supervisor
A supervisor is appointed to each student undertaking a research postgraduate degree. The supervisor will be a full-time member of the academic staff or a person external to the University recognised for their association with the clinical teaching or the research work of the University. A research supervisor is commonly referred to as a supervisor. (See also Advisor, Associate supervisor, Instrumental supervisor/teacher, Supervision.)

Result processing
Refers to the processing of assessment results for units of study. For each unit of study, departments tabulate results for all assessment activities and assign preliminary results. (See also Assessment, Formative assessment, Examination period, Summative assessment.)

Result processing schedule
The result processing schedule will be determined for each academic cycle. All departments and faculties are expected to comply with this schedule. (See also Assessment, Examination period, Result processing.)

Result
The official statement of a student's performance in each unit of study attempted as recorded on the academic transcript, usually expressed as a mark and grade. (See also Grade, Mark.)

Research Training Scheme (RTS)
The RTS provides Commonwealth-funded higher degree by research (HDR) students with an 'entitlement' to a HECS exemption for the duration of an accredited HDR course, up to a maximum period of four years full-time equivalent study for a doctorate by research and two years full-time equivalent study for a master's by research.

S

Scholarships
Financial or other form of support made available to enable students to further their studies. (See also Bursaries.)

School
A school or academic unit shall encourage and facilitate teaching, scholarship and research and coordinate the teaching and examining duties of members of staff in the subjects or courses of study with which it is concerned.

Semester
A half-yearly teaching session whose dates are determined by the Academic Board. Normally all undergraduate sessions will conform to the semesters approved by the Academic Board. Any offering of an undergraduate unit not conforming to the semester dates (non-standard session) must be given special permission by the Academic Board. (See also Session, Non-standard session.)

Semester address
The address to which all official University correspondence is sent during semester time, if it is different to the permanent address.

Senate
The governing body of the University. (See the University Calendar for more details of its charter and powers.)

Senate appeals
Senate appeals are held for those students who, after being excluded by a faculty from a course, appeal to the Senate for readmission. While any student may appeal to the Senate against an academic decision, such an appeal will normally be heard only after the student has exhausted all other avenues, i.e. the department, faculty, board of study and, in the case of postgraduates, the Committee for Graduate Studies. (See also Exclusion.)

Session
Any period of time during which a unit of study is taught. A session differs from a semester in that it need not be a six-month teaching period, but it cannot be longer than six months. Each session maps to either Semester One or Two for DEST reporting purposes. Session offerings are approved by the relevant dean, taking into account all the necessary resources, including teaching space and staffing. The Academic Board must approve variation to the normal session pattern. (See also Semester, Non-standard teaching period.)

Session address
(See Semester address.)

Short course
A fee paying student undertaking a short course with the University of Sydney comprising professional development, executive training etc. The study undertaken by these students is a non-award course.

Show cause
(See Progression, Exclusion.)

Special consideration
Candidates who suffer serious illness or misadventure which may affect performance in any assessment, may request that they be given special consideration in relation to the determination of their results.

Sponsorship
Financial support of a student by a company or government body.

Stage
A normal full-time course of study taken in a year. (See also Course rules, EFTSU, Progression.)

Stream
A defined award course, which requires the completion of set units of study as specified by the course rules for the particular stream, in addition to the core program specified by the course rules. A stream will appear with the award course name on testamurs, e.g. Bachelor of Engineering in Civil Engineering (Construction Management). (See also Award course, Major, Minor.)

Student
Student means a person enrolled as a candidate for an award course or unit of study.

Student identifier (SID)
A nine-digit number which uniquely identifies a student at the University.

Student ID Card
All students who enrol are issued with an identification card. The card includes the student's name, SID, the course code, a library borrower's bar code and a passport-style photo. The card identifies the student as eligible to attend classes and must be displayed at formal examinations. It must be presented to secure student concessions and to borrow books from all sections of the University Library.

Student progress rate (SPR)
A calculation which measures the rate at which load undertaken is passed annually in each award program.

Student type
Student type identifies whether a student is local or international and the type of study the student is undertaking. (See also International student, Domestic student, Exchange student.)

Study Abroad program
A scheme administered by the International Office which allows international students who are not part of an exchange program to take units of study at the University of Sydney, but not towards an award program. In most cases the units of study taken here are credited towards an award at their home institution. (See also Exchange student.)

Subject area
A unit of study may be associated with one or more subject areas. The subject area can be used to define prerequisite and course rules, e.g. the unit of study 'History of Momoyama and Edo Art' may count towards the requirements for the subject areas 'Art History and Theory' and 'Asian Studies'.

Summative assessment
See Assessment.

Summer School
(See Sydney Summer School.)

Supervising faculty
The faculty which has the responsibility for managing the academic administration of a particular course, i.e. the interpretation and administration of course rules, approving students' enrolments and variations to enrolments. Normally the supervising faculty is the faculty offering the course. However, in the case of combined courses, one of the two faculties involved will usually be designated the supervising faculty. Further, in the case where one course is jointly offered by two or more faculties (e.g. the Liberal Studies course), a joint committee may make academic decisions about candidature and the student may be assigned a supervising faculty for administration.

Supervision
Refers to a one-to-one relationship between a student and a nominated member of the academic staff or a person specifically appointed to the role. (See also Advisor, Associate supervisor, Instrumental supervisor/teacher, Research supervisor.)

Suppression of results
Results for a particular student can be suppressed by the University when the student has an outstanding debt to the University; or the student is facing disciplinary action. A student may also request a suppression for personal reasons.

Suspension
(See Course leave.)

Sydney Summer School
A program of accelerated, intensive study running for approximately six weeks during January and February each year. Both undergraduate and postgraduate units are offered. Summer School provides an opportunity for students at Sydney and other universities to catch up

on needed units of study, to accelerate completion of a course or to undertake a unit that is outside their award course. All units attract full fees and enrolled students are also liable for compulsory subscriptions. Some fee-waiver scholarships are available.

Semester Weighted Average Mark (SWAM)
Is the WAM calculated over all units of study undertaken in a semester (except those 'Discontinued – Not to count as failure' and those with only a 'Satisfied Requirements' result), weighted according to credit point value. The SWAM may be expressed as:

$$SWAM = \frac{\sum (Mark \times Credit\ points)}{\sum (Credit\ points)}$$

T

Teaching department
(See School.)

Teaching end date
Official finish date of formal timetabled classes.

Teaching start date
Official commencement date of formal timetabled classes.

Terminated
Term used when a student's candidature has been officially closed because they are not able to complete the Course requirements. (See also Candidature.)

Testamur
A certificate of award provided to a graduand, usually at a graduation ceremony. The Award conferred will be displayed along with other appropriate detail.

Thesis
A major work that is the product of an extended period of supervised independent research. (See also Course – Research.)

Timetable
The schedule of lectures, tutorials, laboratories and other academic activities that a student must attend.

Transcript
(See Academic transcript.)

Transfer
(See Course transfer.)

Tuition fees
Tuition fees may be charged to students in designated tuition fee-paying courses. Students who pay fees are not liable for HECS.

U

Universities Admissions Centre (UAC)
The UAC receives and processes applications for admission to undergraduate courses at recognised universities in NSW and the ACT. Most commencing, local undergraduate students at the University apply through the UAC.

Universities Admission Index (UAI)
A measure of overall academic achievement in the HSC that assists universities in ranking applicants for university selection. The UAI is based on the aggregate of scaled marks in ten units of the HSC, and is a number between 0.00 and 100.00 with increments of 0.05.

Under examination
Indicates that a research student has submitted their written work (thesis) for assessment, and is awaiting the finalisation of the examiners' outcome and recommendation.

Undergraduate
A term used to describe both a course leading to a diploma or bachelor's degree and a student enrolled in such a course.

Unit of study
Unit of study or unit means a stand-alone component of an award course. Each unit of study is the responsibility of a department. (See also Prohibited combinations of unit of study.)

Unit of study enrolment status
The enrolment status indicates whether the student is still actively attending the unit of study (i.e. currently enrolled) or is no longer enrolled. (See also Discontinuation or Cancellation.)

Unit of study level
Units of study are divided into Junior, Intermediate, Senior, Honours, Year 5, and Year 6. Most majors consist of 32 Senior credit points in a subject area (either 3000 level units of study or a mix of 2000 and 3000 level units of study).

University
Unless otherwise indicated, University in this document refers to the University of Sydney.

University Medal
A faculty may recommend the award of a University Medal to a student qualified for the award of an undergraduate honours degree (or some master's degrees), whose academic performance is judged to be outstanding.

Upgrade
Where a student enrolled in a master's by research course is undertaking research at such a standard that either the University recommends that the student upgrade their degree to a PhD, or the student seeks to upgrade to a PhD and this is supported by the University.

USYDnet
The University of Sydney's intranet system. It provides access to other services such as directories (maps, staff and student, organisations), a calendar of events (to which staff and students can submit entries), and a software download area.

V

Variation of enrolment
(See Enrolment variation.)

Vice-Chancellor and Principal
The chief executive officer of the University, responsible for its leadership and management. The Vice-Chancellor and Principal is head of both academic and administrative divisions.

W

Waiver
In a prescribed course, a faculty may waive the prerequisite or corequisite requirement for a unit of study or the course rules for a particular student. Unlike credit, waivers do not involve a reduction in the number of credit points required for a course. (See also Credit, Exemption.)

Winter School
An intensive session offered by the University during the mid-year break.

Weighted average mark (WAM)
This mark uses the unit of study credit point value in conjunction with an agreed 'weight'. The formula for this calculation is:

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

Where Wc is the weighted credit point value – ie, the product of the credit point value and the level of weighting of 1, 2, 3, or 4 for a first, second, third or fourth year unit of study respectively; and where Mc is the greater of 45 or the mark out of 100 for the unit of study.

The mark is the actual mark obtained by the student for the unit of study, or in the case of a failing grade with no mark – 0. Pass/fail assessed subjects and credit transfer subjects (from another institution) are excluded from these calculations; however, the marks from all attempts at a unit of study are included. (Effective from 1 January 2004.)

In addition, faculties may adopt other average mark formulae for specific progression or entry requirements. If such a formula is not specified in the faculty resolutions, the formula outlined above is used. (See also WAM weight.)

WAM weight
A weight assigned to each unit of study to assist in the calculation of WAMs.

Y

Year of first enrolment (YFE)
The year in which a student first enrols at the University. (See also Commencement date.)

Youth Allowance
Youth Allowance is payable to a full-time student or trainee aged 16–24 years of age who is enrolled at an approved institution such as a school, college, TAFE or university, and undertaking at least 15 hours a week face-to-face contact.

Index of units of study

A

ACCT1003 Financial Accounting Concepts, **118, 128**
ACCT1004 Management Accounting Concepts, **118, 128**
AGCH2003 Rural Environmental Chemistry (Intro), **48, 159**
AGCH3024 Chemistry and Biochemistry of Foods, **48, 159**
AGCH3025 Chemistry and Biochemistry of Foods A, **48, 160**
AGCH3026 Chemistry and Biochemistry of Foods B, **48, 160**
AGCH3030 Rural Environmental Chemistry A, **48, 93, 160**
AGCH3031 Rural Environmental Chemistry B, **48, 93, 160**
AGCH4021 Agricultural Chemistry Honours A, **262**
AGCH4022 Agricultural Chemistry Honours B, **262**
AGCH4023 Agricultural Chemistry Honours C, **262**
AGCH4024 Agricultural Chemistry Honours D, **262**
AGRO3002 Agronomy 3, **85, 252**
AMME2200 Thermodynamics and Fluids, **120**
AMME2301 Mechanics of Solids, **120**
AMME2302 Materials 1, **120**
AMME2500 Engineering Dynamics, **120**
AMME3500 System Dynamics and Control, **121, 122**
ANAT2008 Principles of Histology, **48, 162**
ANAT2009 Comparative Primate Anatomy, **48, 163**
ANAT2010 Concepts of Neuroanatomy, **48, 77, 163**
ANAT3004 Cranial and Cervical Anatomy, **48, 49, 163**
ANAT3006 Forensic Osteology, **48, 163**
ANAT3007 Visceral Anatomy, **48, 163**
ANAT3008 Musculoskeletal Anatomy, **48, 49, 163**
ANAT4011 Anatomy Honours A, **109, 262**
ANAT4012 Anatomy Honours B, **109, 262**
ANAT4013 Anatomy Honours C, **109, 262**
ANAT4014 Anatomy Honours D, **109, 262**
ARIN1000 Digital Communication and Culture, **128, 136**
ARIN2100 Web Tools, **31**
ARIN2610 Web Production, **129**
ARIN3000 Technocultures, **31**

B

BACH5061 Statistical Analysis With SPSS, **373**
BACH5180 Stress and Illness: Management Issues, **372**
BACH5268 Developing A Research Project, **372**
BACH5300 Action Research, **373**
BCHM2071 Protein Biochemistry, **50, 166**
BCHM2072 Human Biochemistry, **50, 166**
BCHM2971 Protein Biochemistry (Advanced), **50, 166**
BCHM2972 Human Biochemistry (Advanced), **50, 166**
BCHM3072 Human Molecular Cell Biology, **50, 69, 169**
BCHM3082 Medical and Metabolic Biochemistry, **50, 55, 69, 169**
BCHM3092 Proteomics and Functional Genomics, **50, 51, 169**
BCHM3972 Human Molecular Cell Biology (Advanced), **50, 55, 69, 169**
BCHM3982 Medical and Metabolic Biochemistry (Adv), **50, 55, 69, 169**
BCHM3992 Proteomics and Functional Genomics (Adv), **50, 51, 169**
BCHM4011 Biochemistry Honours A, **109, 262**
BCHM4012 Biochemistry Honours B, **109, 262**
BCHM4013 Biochemistry Honours C, **109, 262**
BCHM4014 Biochemistry Honours D, **109, 262**
BETH5000 Core Concepts in Bioethics, **291**
BETH5101 Introduction to Ethical Reasoning, **291**
BETH5102 Philosophy of Medicine, **291**
BETH5103 Biomedicine and Society, **291**
BETH5104 Bioethics, Law and Society, **291**
BETH5201 Ethics and Biotech: Genes and Stem Cells, **291, 349**
BETH5202 Human and Animal Research Ethics, **291**
BETH5203 Ethics and Public Health, **291**
BETH5204 Clinical Ethics, **291**
BETH5301 Research Project A, **291**
BETH5302 Research Project B, **291**
BINF3101 Bioinformatics Project, **51, 58, 91, 140, 170**
BINF5002 Bioinformatics Research Project A, **295**
BINF5003 Bioinformatics Research Project B, **295**
BIOL1001 Concepts in Biology, **51, 170**
BIOL1002 Living Systems, **51, 170**
BIOL1003 Human Biology, **51, 171**
BIOL1101 Biology - Ecosystems to Genes, **51, 170**
BIOL1901 Biology - Ecosystems to Genes (Advanced), **51, 170**
BIOL1902 Living Systems (Advanced), **51, 170**
BIOL1903 Human Biology (Advanced), **52, 171**
BIOL2011 Invertebrate Zoology, **52, 171, 172**
BIOL2012 Vertebrates and their Origins, **52, 171, 172**
BIOL2016 Cell Biology, **52, 171, 172**
BIOL2017 Entomology, **53, 171, 172**
BIOL2911 Invertebrate Zoology (Advanced), **52, 171**
BIOL2912 Vertebrates and their Origins (Advanced), **52, 171, 172**
BIOL2916 Cell Biology (Advanced), **52, 172**
BIOL2917 Entomology (Advanced), **53, 171, 172**
BIOL3006 Ecological Methods, **53, 58, 71, 93, 95, 172, 173, 213**
BIOL3007 Ecology, **54, 71, 95, 173, 213**
BIOL3008 Marine Field Ecology, **54, 71, 96, 173, 174, 213**
BIOL3009 Terrestrial Field Ecology, **54, 85, 173, 174, 251**
BIOL3010 Tropical Wildlife Biology and Management, **53, 174, 175**
BIOL3011 Ecophysiology, **53, 71, 96, 172, 175, 213**
BIOL3012 Animal Physiology, **53, 172, 175**
BIOL3013 Marine Biology, **53, 71, 96, 172, 175, 213**
BIOL3017 Fungi in the Environment, **53, 85, 172, 175, 251**
BIOL3018 Applications of Recombinant DNA Tech, **54, 69, 172, 176**
BIOL3026 Developmental Genetics, **54, 69, 173, 176**
BIOL3027 Bioinformatics and Genomics, **50, 54, 58, 69, 130, 140, 172, 176, 178**
BIOL3906 Ecological Methods (Advanced), **53, 58, 72, 95, 173**
BIOL3907 Ecology (Advanced), **54, 72, 95, 173**
BIOL3908 Marine Field Ecology (Advanced), **54, 72, 96, 174**
BIOL3909 Terrestrial Field Ecology (Advanced), **54, 85, 174, 251**
BIOL3911 Ecophysiology (Advanced), **53, 72, 96, 175**
BIOL3912 Animal Physiology (Advanced), **53, 175**
BIOL3913 Marine Biology (Advanced), **54, 72, 96, 175**

BIOL3917 Fungi in the Environment (Advanced), **53, 85, 176, 251**
BIOL3918 Applications of Recombinant DNA Tech Adv, **54, 69, 176**
BIOL3926 Developmental Genetics (Advanced), **54, 69, 176**
BIOL3927 Bioinformatics and Genomics (Advanced), **51, 54, 58, 69, 178**
BIOL4009 Communicating Research in Biology, **109, 262**
BIOL4011 Biology Honours A, **110, 262**
BIOL4012 Biology Honours B, **110, 262**
BIOL4013 Biology Honours C, **110, 262**
BIOL5001 Molecular Genetics and Inheritance, **295**
BIOL5002 Bioinformatics: Sequences and Genomes, **296**
BMED2801 Cell Structure and Function, **109, 226**
BMED2802 Molecular Basis of Medical Sciences, **109, 227**
BMED2803 Cardiac, Respiratory and Renal Function, **109, 227**
BMED2804 Digestion, Absorption and Metabolism, **109, 227**
BMED2805 Hormones, Reproduction and Development, **109, 227**
BMED2806 Sensory and Motor Functions, **109, 227**
BMED2807 Microbes and Body Defences, **109, 229**
BMED2808 Disease in Society, **109, 229**

C

CHEM1001 Fundamentals of Chemistry 1A, **56, 120, 178**
CHEM1002 Fundamentals of Chemistry 1B, **56, 178**
CHEM1101 Chemistry 1A, **56, 178**
CHEM1102 Chemistry 1B, **35, 56, 178**
CHEM1108 Chemistry 1A Life Sciences, **101, 178**
CHEM1109 Chemistry 1B Life Sciences, **101, 179**
CHEM1901 Chemistry 1A (Advanced), **56, 178, 179**
CHEM1902 Chemistry 1B (Advanced), **56, 178, 179**
CHEM1903 Chemistry 1A (Special Studies Program), **56, 178, 179**
CHEM1904 Chemistry 1B (Special Studies Program), **56, 179**
CHEM2401 Molecular Reactivity and Spectroscopy, **56, 181**
CHEM2402 Chemical Structure and Stability, **56, 181**
CHEM2403 Chemistry of Biological Molecules, **56, 181**
CHEM2404 Forensic and Environmental Chemistry, **56, 181**
CHEM2912 Chemical Structure and Stability (Adv), **57, 181**
CHEM2913 Chemistry of Biological Molecules (Adv), **57, 181**
CHEM2916 Chemical Structure and Stability (SSP), **57, 181**
CHEM3110 Biomolecules: Properties and Reactions, **57, 181**
CHEM3111 Organic Structure and Reactivity, **57, 181**
CHEM3112 Materials Chemistry, **57, 76, 181**
CHEM3113 Catalysis and Sustainable Processes, **57, 181**
CHEM3114 Metal Complexes: Medicine and Materials, **57, 183**
CHEM3115 Synthetic Medicinal Chemistry, **57, 183**
CHEM3116 Membranes, Self Assembly and Surfaces, **57, 76, 183**
CHEM3911 Organic Structure and Reactivity (Adv), **57, 183**
CHEM3912 Materials Chemistry (Adv), **57, 76, 183**
CHEM3913 Catalysis and Sustainable Process (Adv), **57, 183**
CHEM3915 Synthetic Medicinal Chemistry (Adv), **57, 183**
CHEM4011 Chemistry Honours A, **262**
CHEM4012 Chemistry Honours B, **262**
CHEM4013 Chemistry Honours C, **262**
CHEM4014 Chemistry Honours D, **262**
CHNG2801 Conservation and Transport Processes, **120**
CHNG2802 Applied Maths for Chemical Engineers, **120**
CHNG2805 Industrial Systems and Sustainability, **120**
CHNG3801 Process Design, **121**
CHNG3802 Operating/Improving Industrial Systems, **121**
CHNG3805 Product Formulation and Design, **121**
CHNG3806 Management of Industrial Systems, **121**
CIVL2110 Materials, **120, 121**
CIVL2201 Structural Mechanics, **120, 121**
CIVL2230 Intro to Structural Concepts and Design, **120**
CIVL2410 Soil Mechanics, **120, 121, 184**
CIVL2611 Fluid Mechanics, **121, 184**
CIVL2810 Engineering Construction and Surveying, **121**
CIVL3010 Engineering and Society, **118**
CIVL3205 Concrete Structures 1, **121**
CIVL3411 Foundation Engineering, **121**
CIVL3612 Environmental and Fluids Engineering, **121**
CIVL3812 Project Appraisal, **121**
CLAW1001 Commercial Transactions A, **128**
CLAW1002 Commercial Transactions B, **128**
CLAW2206 Legal Issues for e-Commerce, **129**
COMP2160 Data Structures, **60, 128, 135, 136, 138, 140, 203**
COMP2860 Data Structures (Advanced), **60, 128, 203**
COMP3308 Introduction to Artificial Intelligence, **60, 131, 135, 141, 204**
COMP3309 Algorithms, **60, 131, 135, 137, 141, 204**
COMP3310 Theory of Computation, **61, 131, 135, 204**
COMP3608 Intro. to Artificial Intelligence (Adv), **60, 131, 204**
COMP3609 Algorithms (Advanced), **60, 131**
COMP3610 Theory of Computation (Advanced), **61, 131, 204**
COMP4045 Computational Geometry, **133, 135, 207, 262, 326, 329, 339**
COMP4046 Statistical Natural Language Processing, **133, 136, 141, 207, 262, 326, 329, 339**
COMP4048 Information Visualisation, **133, 136, 137, 207, 262, 326, 329, 339**
COMP5028 Object-Oriented Analysis and Design, **296, 320, 329**
COMP5114 Digital Media Fundamentals, **319, 320, 323, 326, 329, 331, 337, 339**
COMP5116 Internet Protocols, **133, 208, 263, 319, 320, 323, 326, 329, 331, 337, 339**
COMP5126 Distributed Systems Programming, **133, 208, 263, 296, 331**
COMP5138 Relational Database Management Systems, **133, 135, 136, 207, 208, 263, 296, 322, 326, 329, 331, 337, 339, 377**
COMP5206 Introduction to Information Systems, **296, 320, 322, 337**
COMP5211 Algorithms, **296, 320**
COMP5212 Software Construction, **319, 320**
COMP5213 Computer and Network Organisation, **296, 320, 323, 337**
COMP5214 Software Development in Java, **296, 319, 320**
COMP5318 Knowledge, Discovery and Data Mining, **133, 135, 207, 263, 296, 329**
COMP5338 Advanced Data Models, **133, 136, 208, 263, 326, 331, 339, 377**
COMP5347 e-Commerce Technology, **133, 208, 263, 326, 331, 339**
COMP5348 Enterprise Scale Software Development, **133, 208, 263, 326, 331, 339**
COMP5415 Multimedia Authoring and Production, **326, 331, 339**
COMP5416 Advanced Network Technologies, **133, 208, 263, 326, 331, 339**
COMP5424 Information Technology in Biomedicine, **133, 208, 263, 326, 331, 339**
COMP5426 Network Based High Performance Computing, **133, 208, 263, 296, 326, 331, 339**
COMP5702 IT Research Project A, **322, 323, 327, 337, 340**
COMP5703 Information Technology Project, **323, 327, 337, 340**
COMP5704 IT Research Project B, **322, 323, 327, 337, 340**
COSC1001 Computational Science in Matlab, **58, 121, 128, 129, 184**
COSC1002 Computational Science in C, **58, 128, 187**

COSC1901 Computational Science in Matlab (Adv), **58, 128, 184**
COSC1902 Computational Science in C (Adv), **58, 128, 187**
COSC3011 Scientific Computing, **58, 83, 130, 140, 187**
COSC3911 Scientific Computing (Advanced), **58, 83, 130, 187**
COSC4001 Computational Science Honours A, **262**
COSC4002 Computational Science Honours B, **262**
COSC4003 Computational Science Honours C, **262**
COSC4004 Computational Science Honours D, **262**
CPAT3201 Pathogenesis of Human Disease 1, **55, 69, 178**
CPAT3202 Pathogenesis of Human Disease 2, **55, 69, 178**
CPAT4011 Cell Pathology Honours A, **110, 263**
CPAT4012 Cell Pathology Honours B, **110, 263**
CPAT4013 Cell Pathology Honours C, **110, 263**
CPAT4014 Cell Pathology Honours D, **110, 263**

D

DECO1008 3D Modelling, **118**
DECO1100 Digital Design Studio, **119**
DECO1200 Interaction Design Studio, **119**
DECO2010 Collaborative Virtual Environments, **119, 129**
DECO2011 Design Programming, **119**
DECO2012 Sound Design and Sonification, **119**
DECO2013 Generative Design Systems, **119, 129**
DECO2102 Interactive Multimedia Design, **119, 129**
DECO2103 3D Modelling, **129**
DECO2204 Principles of AutoCAD, **119**
DECO2205 Principles of ArchiCAD, **120**
DECO2606 Real Time 3D Multimedia, **120, 129**
DECO3003 Design Computing Research Opportunity, **120, 131**
DECO3005 Advanced Interactive Multimedia Design, **120, 131**
DECO3006 Principles of 3D Animation, **120, 131**
DECO3007 Designing Tangible Computing, **120, 131**
DECO3100 Information Visualisation Design Studio, **120**
DECO3200 Human-Computer Experience Des Stdo, **120**

E

EBUS3003 e-Business System Design, **131, 138**
EBUS3004 e-Business Programming, **131, 134, 138, 140, 334**
EBUS4001 e-Business Engineering, **133, 139, 331**
EBUS5003 e-Commerce Systems, **133, 327, 331, 339**
ECON6004 Regulating e-Business, **323, 337**
EDUF1018 Education, Teachers and Teaching, **118**
EDUF1019 Human Development and Education, **118**
ELEC1101 Foundations of Computer Systems, **122, 129, 131, 137, 139**
ELEC1103 Professional Electronic Engineering, **119, 121, 128, 129**
ELEC1601 Professional Computer Engineering, **119, 122, 128, 129, 131, 137, 139**
ELEC2104 Electronic Devices and Basic Circuits, **121, 122, 129, 131**
ELEC2302 Signals and Systems, **121, 122, 129**
ELEC2602 Digital System Design, **122, 129, 131, 134, 137, 139, 140, 332**
ELEC3204 Power Electronics and Drives, **122**
ELEC3304 Control, **122**
ELEC3305 Digital Signal Processing, **122, 131, 139**
ELEC3404 Electronic Circuit Design, **122, 131, 134, 139, 331**
ELEC3405 Comunications Electronics and Photonics, **122, 131**
ELEC3505 Communications, **122, 131, 133, 134, 137, 138, 331, 332**
ELEC3506 Data Comunications and the Internet, **131**
ELEC3605 Engineering Software Requirements, **131, 138, 139**
ELEC3606 Software Project Management, **131, 139**
ELEC3607 Embedded Computing, **122, 131, 133, 134, 137, 138, 139, 140, 331, 332, 334**
ELEC3608 Digital Systems Design, **122, 129, 133, 134, 137, 138, 139, 140, 332**
ELEC3702 Management for Engineers, **131**
ELEC3802 Fundamentals of Biomedical Engineering, **122**
ELEC4505 Digital Communication Systems, **133, 134, 138, 332**
ELEC4605 Computer Engineering, **133, 134, 138, 139, 140, 334**
ELEC4706 Project Management, **134**
ELEC5303 Computer Control System Design, **134, 327, 331, 339**
ELEC5402 Digital Integrated Circuit Design, **134, 139, 327, 331, 339**
ELEC5403 Radio Frequency Engineering, **134**
ELEC5507 Error Control Coding, **134, 138, 327, 331, 339**
ELEC5508 Wireless Engineering, **134, 138, 327, 331, 339**
ELEC5509 Advanced Communication Networks, **134, 138, 327, 331, 339**
ELEC5510 Satellite Communication Systems, **134, 138, 327, 332, 339**
ELEC5511 Optical Communication Systems, **134, 138, 327, 332, 339**
ELEC5512 Optical Networks, **134, 138, 327, 332, 339**
ELEC5513 Network Management and Queuing Theory, **134, 327, 332**
ELEC5613 Image Processing and Computer Vision, **134, 137, 140, 327, 332, 339**
ELEC5614 Real Time Computing, **134, 139, 327, 332, 339**
ELEC5615 Advanced Computer Engineering, **134, 140, 327, 334, 339**
ELEC5616 Computer and Network Security, **134, 140, 334**
EMHU3001 Electron Microscopy and Imaging/Theory, **49, 163**
EMHU3002 Electron Microscopy and Imaging/Prac, **49, 164**
ENGG1800 Engineering Disciplines (Intro) Stream A, **119**
ENGG1802 Engineering Mechanics, **120**
ENGG1803 Professional Engineering 1, **119**
ENGG4061 Innovation/Technology Commercialisation, **118**
ENGG5601 Greenhouse Gas Mitigation, **311**
ENGL1000 Academic Writing, **118, 211**
ENGL1007 Language, Texts and Time, **213**
ENVI1002 Geomorphic Environments, **93**
ENVI2111 Conservation Biology and Applied Ecology, **52, 61, 93, 171, 187**
ENVI2112 Atmospheric Processes and Climate, **62, 93, 187**
ENVI2911 Conservation Biology (Advanced), **52, 62, 93, 187**
ENVI3111 Environmental Law and Ethics, **62, 93, 187**
ENVI3112 Environmental Assessment, **62, 93, 187**
ENVI3113 Environmental Economics and Planning, **62, 93, 187**
ENVI3114 Energy and the Environment, **62, 93, 187**
ENVI5501 Environmental Research Project, **308, 310**
ENVI5705 Ecolog Principles for Environ Scientists, **309, 310**
ENVI5707 Energy - Sources, Uses and Alternatives, **308, 310**
ENVI5708 Introduction to Environmental Chemistry, **302, 308, 310**
ENVI5803 Law and the Environment, **302, 310**
ENVI5805 The Urban Environment and Planning, **311**
ENVI5808 App Ecology for Environmental Scientists, **309, 310**
ENVI5903 Sustainable Development, **302, 310**
ENVI5904 Understanding Environmental Uncertainty, **302, 310, 311**
ENVI5905 Management of Parks, **302, 311**

G

GEOG2321 Fluvial and Groundwater Geomorphology, **64, 189**
GEOG3521 Sustainable Cities, **65, 194**

GEOG3522 Globalisation and Regions in Transition, **62**
GEOG3921 Sustainable Cities (Adv), **65, 196**
GEOG4011 Geography Honours A, **263**
GEOG4012 Geography Honours B, **263**
GEOG4013 Geography Honours C, **263**
GEOG4014 Geography Honours D, **263**
GEOG5001 Geographic Information Science A, **302, 308, 311, 377**
GEOG5002 Geographic Information Science B, **302, 308, 311, 377**
GEOG5004 Environmental Mapping and Monitoring, **311, 377**
GEOL1501 Engineering Geology 1, **189**
GEOL4011 Geology Honours A, **263**
GEOL4012 Geology Honours B, **263**
GEOL4013 Geology Honours C, **263**
GEOL4014 Geology Honours D, **263**
GEOP4011 Geophysics Honours A, **263**
GEOP4012 Geophysics Honours B, **263**
GEOP4013 Geophysics Honours C, **264**
GEOP4014 Geophysics Honours D, **264**
GEOS1001 Earth, Environment and Society, **61, 64, 66, 189**
GEOS1002 Introductory Geography, **61, 64, 189**
GEOS1003 Introduction to Geology, **61, 66, 189**
GEOS1901 Earth, Environment and Society Advanced, **61, 64, 66, 189**
GEOS1902 Introductory Geography (Advanced), **61, 64, 189**
GEOS1903 Introduction to Geology (Advanced), **61, 66, 189**
GEOS2111 Natural Hazards: a GIS Approach, **62, 64, 66, 189**
GEOS2112 Economic Geography of Global Development, **64, 66, 189**
GEOS2113 Making the Australian Landscape, **62, 64, 189**
GEOS2114 Volcanoes, Hot Rocks and Minerals, **66, 190**
GEOS2121 Environmental and Resource Management, **62, 64, 66, 190**
GEOS2122 Urban Geography, **62, 64, 190**
GEOS2124 Fossils and Tectonics, **64, 66, 190**
GEOS2911 Natural Hazards: a GIS Approach Advanced, **62, 64, 66, 190**
GEOS2912 Economic Geography of Global Dev. Adv., **64, 66, 190**
GEOS2914 Volcanoes, Hot Rocks and Minerals Adv, **66, 191**
GEOS2922 Urban Geography (Advanced), **62, 64, 191**
GEOS2924 Fossils and Tectonics (Advanced), **65, 66, 191**
GEOS3003 Dynamics of Continents and Basins, **58, 67, 71, 96, 194, 213**
GEOS3004 Geophysics, Imaging, Oil/Ore Production, **59, 67, 194**
GEOS3007 Remote Sensing: Imaging the Earth, **59, 67, 194**
GEOS3008 Field Geology and Geophysics, **67, 194**
GEOS3014 GIS in Coastal Management, **62, 65, 67, 71, 93, 96, 132, 194, 213**
GEOS3015 Environmental Geomorphology, **65, 194**
GEOS3018 Rivers: Science, Policy and Management, **62, 65, 72, 97, 194**
GEOS3053 Asia-Pacific Field School-Assessment A, **65, 194**
GEOS3054 Asia-Pacific Field School-Assessment B, **65, 194**
GEOS3511 Understanding Australia's Regions, **62, 65, 194**
GEOS3512 Contemporary Global Geographies, **65, 194**
GEOS3522 Cities and Citizenship, **65, 194**
GEOS3904 Geophysics, Imaging, Oil/Ore Prod (Adv), **59, 67, 195**
GEOS3907 Remote Sensing: Imaging the Earth (Adv), **59, 67, 195**
GEOS3908 Field Geology and Geophysics (Advanced), **67, 195**
GEOS3909 Coastal Environments and Processes (Adv), **65, 67, 72, 96, 195**
GEOS3911 Understanding Australia's Regions (Adv), **62, 65, 196**
GEOS3912 Contemporary Global Geographies (Adv), **65, 196**
GEOS3914 GIS in Coastal Management (Advanced), **62, 65, 67, 72, 96, 132, 195**
GEOS3915 Environmental Geomorphology (Advanced), **65, 195**
GEOS3916 Seafloor Processing and Imaging (Adv), **59, 66, 67, 72, 96, 195**
GEOS3917 Global Energy Exploration (Advanced), **66, 67, 72, 97, 196**
GEOS3918 Rivers: Science and Management (Adv), **62, 66, 68, 72, 97, 196**
GEOS3922 Cities and Citizenship (Advanced), **66, 196**
GEOS3953 Asia-Pacific Field School-A (Adv), **66, 196**
GEOS3954 Asia-Pacific Field School-B (Adv), **66, 196**

H

HIMT5057 Introduction to Health Informatics, **327, 334, 339**
HIMT5058 Health Informatics Applications, **327, 334, 339**
HIMT5060 Integration of Health Informatics, **327, 334, 339**
HIMT5069 Health Care Systems, **327, 334, 339**
HORT3004 Postharvest Biology and Technology, **85, 251**
HORT3005 Production Horticulture, **85, 251**
HPSC1000 Bioethics, **68, 118, 197**
HPSC1900 Bioethics (Advanced), **68, 197**
HPSC2100 The Birth of Modern Science, **68, 197**
HPSC2101 What Is This Thing Called Science?, **68, 197**
HPSC2900 The Birth of Modern Science (Advanced), **68, 197**
HPSC3002 History of Biological/Medical Sciences, **68, 198**
HPSC3015 History and Philosophy of Physics, **68**
HPSC3016 The Scientific Revolution, **68, 198**
HPSC3021 Philosophy and Sociology of Biology, **68**
HPSC3022 Science and Society, **68, 198**
HPSC3024 Science and Ethics, **68, 118, 198**
HPSC4101 Philosophy of Science, **199, 264, 315**
HPSC4102 History of Science, **199, 264, 315**
HPSC4103 Sociology of Science, **199, 264, 315**
HPSC4104 Recent Topics in HPS, **199, 264, 315**
HPSC4105 HPS Research Methods, **199, 264, 315, 317**
HPSC4201 HPS Research Project 1, **199, 200, 264**
HPSC4202 HPS Research Project 2, **199, 200, 264**
HPSC4203 HPS Research Project 3, **199, 200, 264**
HPSC4204 HPS Research Project 4, **199, 200, 264**
HSTO3003 Cells and Development: Theory, **49, 55, 164**
HSTO3004 Cells and Development: Practical (Adv), **49, 55, 164**

I

IMMU2101 Introductory Immunology, **68, 200**
IMMU3102 Molecular and Cellular Immunology, **69, 201**
IMMU3202 Immunology in Human Disease, **68, 69, 201**
IMMU4011 Immunology Honours A, **110, 264**
IMMU4012 Immunology Honours B, **110, 264**
IMMU4013 Immunology Honours C, **110, 264**
IMMU4014 Immunology Honours D, **110, 264**
INFD3012 Infectious Diseases, **109, 229**
INFD4011 Infectious Diseases Honours A, **110**
INFD4012 Infectious Diseases Honours B, **110**
INFD4013 Infectious Diseases Honours C, **110**
INFD4014 Infectious Diseases Honours D, **110**
INFO1003 Foundations of Information Technology, **59, 70, 119, 128, 136, 202**
INFO1903 Foundations of Information Tech (Adv), **59, 70, 128, 202**
INFO2110 Systems Analysis and Modelling, **60, 70, 127, 135, 136, 137, 138, 139, 140, 203**

INFO2120 Database Systems 1, **60, 70, 128, 136, 138, 203, 205**
INFO2810 Systems Analysis and Modelling (Adv), **60, 70, 127, 203**
INFO2820 Database Systems 1 (Advanced), **60, 70, 128, 203**
INFO3402 Management of IT Projects and Systems, **70, 131, 136, 139, 204**
INFO3404 Database Systems 2, **61, 64, 71, 131, 135, 136, 141, 205**
INFO3504 Database Systems 2 (Adv), **61, 64, 71, 131, 205**
INFO3600 Major Development Project, **134**
INFO4010 IT Advanced Topic A, **134, 208, 263**
INFO4011 IT Advanced Topic B, **134, 209, 263**
INFO4990 IT Research Methods, **134, 209, 263, 323, 326, 334, 339**
INFO4991 IT Research Thesis A, **134, 209, 263**
INFO4992 IT Research Thesis B, **134, 209, 263**
INFO4999 Computer Science Honours Result, **134, 209, 263**
INFO5990 Professional Practice in IT, **321, 322, 326, 334, 337, 339**
INFO5991 IT Professional Services, **321, 322, 326, 334, 337, 339**
INFO5992 Understanding IT Innovations, **321, 322, 337**
INFO6007 Project Management in IT, **323, 327, 334, 337, 339**
INFS1000 Business Information Systems Foundations, **128**
INFS2030 e-Commerce Business Models, **130**
INFS3030 BIS Assurance and Control, **131**
INFS3040 Enterprise Systems, **131**
INFS3050 Supporting Business Intelligence, **132**
INFS3060 Managing BIS Projects, **132**
INFS3080 Business Information Systems Project, **134**
INFS6000 Business Information Systems, **324, 326, 329, 337, 339**
INFS6001 BIS Management, **324, 327, 334, 337, 339**
INFS6002 BIS Strategy, **324, 327, 334, 337, 339**
INFS6004 BIS Change Management, **324, 327, 334, 337, 339**
INFS6012 Business Process Integration, **324, 327, 334, 337, 339**
INFS6013 Risk Management and BIS Assurance, **324, 334**
INFS6014 BIS Project Management, **324, 327, 334, 337, 339**
INFS6014 IT Project Management, **323, 334**
INFS6015 Business Process Management, **324, 327, 334, 337, 339**
INFS6016 Technology Enabled Business Innovation, **325, 334**
INFS6018 Business Intelligence Systems, **325**
ISYS2140 Information Systems, **70, 128, 136, 203**
ISYS3400 Information Systems Project, **71, 132, 134, 136, 205, 404**
ISYS3403 IT Systems in Arts and Humanities, **71, 132, 136, 205**
ISYS4050 Knowledge Management Systems, **134, 136, 209, 263, 323, 337**
ISYS4301 Information Systems Honours A, **264**
ISYS4302 Information Systems Honours B, **264**
ISYS4303 Information Systems Honours C, **264**
ISYS4304 Information Systems Honours D, **264**

L

LAWS1006 Foundations of Law, **148, 209**
LAWS1010 Torts, **148, 209**
LAWS1012 Torts, **148, 210**
LAWS1013 Legal Research I, **148, 210**
LAWS1014 Processes of Justice, **148, 210**
LAWS1015 Contracts, **148, 210**
LAWS1016 Criminal Law, **148, 210**
LAWS2008 Contracts, **148, 211**
LAWS2009 Criminal Law, **148, 211**
LAWS3000 Federal Constitutional Law, **148**
LAWS3002 Law, Lawyers and Justice, **148**
LAWS3003 Federal Constitutional Law, **211**
LAWS3004 Law, Lawyers and Justice, **211**
LAWS6041 Environmental Dispute Resolution, **305, 308**
LAWS6042 Environmental Economics, **305, 308**
LAWS6043 Environmental Impact Assessment Law, **308**
LAWS6044 Environmental Law and Policy, **305, 308**
LAWS6045 Environmental Planning Law, **308**
LAWS6055 Heritage Law, **308**
LAWS6061 International Environmental Law, **308**
LAWS6081 Natural Resources Law, **308**
LAWS6082 Pollution Law, **308**
LAWS6154 Sustainable Development Law in China, **308**
LAWS6163 Energy Law, **308**
LAWS6165 Biodiversity Law, **308**
LAWS6191 Water Law, **308**
LAWS6257 Public Policy, **308**
LNGS1001 Structure of Language, **140, 213**
LNGS2601 Phonetics and Phonology, **141**
LNGS2602 Syntax, **141**
LNGS2603 Functional Grammar, **141**
LNGS2604 Discourse Analysis, **141**
LNGS3601 Semantics and Pragmatics, **141**

M

MARS2005 Global Oceans (Introduction), **71, 95, 213**
MARS2006 Marine Ecosystems and Geomorphology, **71, 95, 213**
MARS2007 Marine Science Field School, **95, 213**
MARS2905 Global Oceans (Introduction) (Advanced), **71, 95, 213**
MARS2906 Marine Ecosystems and Geomorphology Adv, **71, 95, 213**
MARS2907 Marine Science Field School (Advanced), **71, 95, 213**
MARS4011 Marine Sciences Honours A, **264**
MARS4012 Marine Sciences Honours B, **265**
MARS4013 Marine Sciences Honours C, **265**
MARS4014 Marine Sciences Honours D, **265**
MARS5001 Coastal Processes and Systems, **301, 308, 311**
MARS5005 Coastal Management Project, **285, 303**
MARS5006 Coral Reefs, Science and Management, **301**
MARS5007 Coral Reefs, Energy and Climate Change, **301**
MATH1001 Differential Calculus, **63, 73, 121, 128, 129, 136, 216**
MATH1002 Linear Algebra, **63, 73, 121, 128, 129, 136, 216**
MATH1003 Integral Calculus and Modelling, **63, 73, 129, 136, 216**
MATH1004 Discrete Mathematics, **73, 129, 140, 216**
MATH1005 Statistics, **63, 73, 129, 135, 136, 138, 140, 216**
MATH1011 Life Sciences Calculus, **73, 104, 129, 146, 216**
MATH1013 Differential and Difference Equations, **73, 129, 216**
MATH1014 Introduction to Linear Algebra, **73, 129, 216**
MATH1015 Life Science Statistics, **73, 129, 216**
MATH1111 Introduction to Calculus, **73, 129, 214**
MATH1901 Differential Calculus (Advanced), **63, 73, 129, 216, 217**
MATH1902 Linear Algebra (Advanced), **63, 73, 129, 216**
MATH1903 Integral Calculus and Modelling Advanced, **63, 73, 129, 216**
MATH1904 Discrete Mathematics (Advanced), **73, 129, 217**
MATH1905 Statistics (Advanced), **63, 73, 129, 217**
MATH1906 Mathematics (Special Studies Program) A, **73, 217**
MATH1907 Mathematics (Special Studies Program) B, **73, 217**
MATH2061 Linear Mathematics and Vector Calculus, **73, 120, 121, 130, 218**
MATH2063 Math Computing and Nonlinear Systems, **73, 130, 218**
MATH2065 Partial Differential Equations (Intro), **73, 130, 218**
MATH2068 Number Theory and Cryptography, **73, 130, 219**

MATH2069 Discrete Mathematics and Graph Theory, **73, 130, 135, 219**
MATH2070 Optimisation and Financial Mathematics, **63, 73, 130, 219**
MATH2916 Working Seminar A (SSP), **73, 130, 217**
MATH2917 Working Seminar B (SSP), **74, 130, 217**
MATH2962 Real and Complex Analysis (Advanced), **73, 130, 218**
MATH2965 Partial Differential Equations Intro Adv, **74, 130, 218**
MATH2968 Algebra (Advanced), **74, 130, 219**
MATH3019 Signal Processing, **121, 129**
MATH3061 Geometry and Topology, **74, 219, 220**
MATH3062 Algebra and Number Theory, **74, 132, 220**
MATH3065 Logic and Foundations, **74, 132, 135, 219, 221**
MATH3067 Information and Coding Theory, **64, 74, 132, 135, 137, 219, 221**
MATH3068 Analysis, **74, 219, 221**
MATH3075 Financial Mathematics, **63, 74, 219, 222**
MATH3076 Mathematical Computing, **58, 64, 74, 132, 140, 187, 219, 222**
MATH3078 PDEs and Waves, **59, 64, 74, 140, 219, 224**
MATH3961 Metric Spaces (Advanced), **74, 219, 220**
MATH3962 Rings, Fields and Galois Theory (Adv), **74, 132, 219, 220**
MATH3964 Complex Analysis with Applications (Adv), **74, 219, 221**
MATH3966 Modules and Group Representations (Adv), **74, 219, 221**
MATH3968 Differential Geometry (Advanced), **74, 221**
MATH3974 Fluid Dynamics (Advanced), **74, 219, 222**
MATH3975 Financial Mathematics (Advanced), **63, 74, 222**
MATH3976 Mathematical Computing (Advanced), **58, 64, 74, 132, 187, 219, 222**
MATH3978 PDEs and Waves (Advanced), **59, 64, 74, 220, 224**
MATH4301 Pure Mathematics Honours A, **265**
MATH4302 Pure Mathematics Honours B, **265**
MATH4303 Pure Mathematics Honours C, **265**
MATH4304 Pure Mathematics Honours D, **265**
MATH4401 Applied Mathematics Honours A, **265**
MATH4402 Applied Mathematics Honours B, **265**
MATH4403 Applied Mathematics Honours C, **265**
MATH4404 Applied Mathematics Honours D, **265**
MATH4431 Advanced Option Pricing, **327, 337, 340**
MATH4433 Interest Rate Modelling, **327, 337, 340**
MBLG1001 Molecular Biology and Genetics (Intro), **76, 232**
MBLG2071 Molecular Biology and Genetics A, **76, 77, 232**
MBLG2072 Molecular Biology and Genetics B, **76, 77, 171, 232**
MBLG2971 Molecular Biology and Genetics A (Adv), **76, 77, 232**
MBLG2972 Molecular Biology and Genetics B (Adv), **76, 77, 232**
MCAN5006 Electron Microscopy, **345**
MCAN5102 Biological Specimen Preparation, **346**
MCAN5103 Materials Preparation and Microscopy, **346**
MCAN5104 Image Analysis, **297, 346**
MCAN5110 Nanostructural Analysis of Materials, **346**
MCAN5111 Microscopy of Biomolecular Processes, **346**
MCAN5112 Advances in Modern Microscopy, **346**
MCAN5201 Project and Report A, **346, 347**
MCAN5202 Project and Report B, **347**
MCAN5203 Project and Report Part C, **347**
MCAN5210 Research Methodology, **346, 347**
MECH2400 Mechanical Design 1, **121**
MECH3260 Thermal Engineering, **121**
MECH3261 Fluid Mechanics, **121**
MECH3361 Mechanics of Solids 2, **77, 121**
MECH3362 Materials 2, **77**
MECH3460 Mechanical Design 2, **121**
MECH3800 Systems Control, **122**
MECO1001 Australian Media Studies, **225**
MECO1003 Principles of Media Writing, **225**
MECO2601 Radio Broadcasting, **225**
MECO3601 Video Production, **225**
MECO3602 Online Media, **225**
MECO3603 Media, Law and Ethics, **225, 226**
MECO3605 Media Globalisation, **226**
MECO3671 Media and Communications Internship, **226**
MECO3672 Internship Project, **226**
MICR2021 Introductory Microbiology, **75, 229**
MICR2022 Microbes in Society, **75, 229**
MICR2024 Microbes in the Environment, **75, 230**
MICR2921 Introductory Microbiology (Advanced), **75, 229**
MICR2922 Microbes in Society (Advanced), **75, 230**
MICR3011 Microbes in Infection, **55, 69, 75, 230**
MICR3012 Molecular Biology of Pathogens, **55, 75, 230**
MICR3022 Microbial Biotechnology, **55, 75, 230**
MICR3911 Microbes in Infection (Advanced), **55, 70, 75, 230**
MICR3912 Molecular Biology of Pathogens (Adv), **55, 75, 230**
MICR3922 Microbial Biotechnology (Advanced), **55, 75, 232**
MICR4011 Microbiology Honours A, **110, 265**
MICR4012 Microbiology Honours B, **110, 265**
MICR4013 Microbiology Honours C, **110, 265**
MICR4014 Microbiology Honours D, **110, 265**
MOBT2102 Molecular Biotechnology 2, **101, 233**
MOBT3101 Molecular Biotechnology 3A, **101, 233**
MOBT3202 Molecular Biotechnology 3B Project, **101, 233**
MOBT5101 Applied Molecular Biotechnology A, **349, 350**
MOBT5102 Applied Molecular Biotechnology B, **349**
MOBT5201 Applied Molecular Biotech A (Theory), **297**
MOBT5303 Applied Molecular Biotech C (Project), **349**
MULT3306 Multimedia Computing and Processing, **59, 60, 132, 135, 137, 141, 205**
MULT3307 Interactive Multimedia Systems, **61, 132, 135, 137, 139, 140, 141, 205**
MULT3607 Interactive Multimedia Systems (Adv), **61, 132, 207**

N

NETS2150 Fundamentals of Networking, **128, 134, 137, 138, 331**
NETS2850 Fundamentals of Networking (Advanced), **128**
NETS3007 Network Protocols, **134, 138, 331**
NETS3304 Operating System Internals, **61, 132, 137, 139, 207**
NETS3305 Computer and Network Security, **60, 132, 137, 139, 207**
NETS3604 Operating Systems Internals (Advanced), **61, 132, 207**
NETS3605 Computer and Network Security (Advanced), **60, 132, 207**
NETS4040 Advanced Networking Technologies, **138**
NETS4041 Network-Based High Performance Computing, **138**
NETS4047 Pervasive Computing, **134, 138, 209, 263, 327, 331, 339**
NEUR3001 Neuroscience: Special Senses, **48, 78, 83, 247**
NEUR3003 Cellular and Developmental Neuroscience, **49, 78, 84, 247**
NEUR3004 Integrative Neuroscience, **49, 78, 84, 165**
NEUR3901 Neuroscience: Special Senses (Advanced), **48, 78, 83, 247**
NEUR3904 Integrative Neuroscience (Advanced), **49, 78, 84, 165**
NEUR5001 Neuroscience Library Project, **354**

NEUR5002 Neuroscience Laboratory Project A, **354**
NEUR5003 Neuroscience Laboratory Project B, **354**
NEUR5004 Neuroscience Laboratory Project C, **354**
NTDT5305 Food Service Management, **359**
NTDT5306 Introduction to Food Service, **360**
NTDT5307 Clinical Nutrition and Dietetics, **359**
NTDT5308 Community and Public Health Nutrition, **359**
NTDT5309 Communication, **359**
NTDT5310 Nutrition Research Project, **359**
NTDT5311 Nutrition Practice, **359**
NTDT5313 Nutritional Science Research A, **360**
NTDT5314 Nutritional Science Research B, **360**
NTDT5315 Scientific Methodology in Nutrition, **360**
NTDT5501 Nutritional Science, **357**
NTDT5502 Food Science, **357**
NTDT5504 Communications A, **359**
NTDT6014 Surgical Gastroenterology (Clinical), **289**
NTMP3001 Coral Reef Ecosystems, **97, 213**
NTMP3003 Fisheries Biology and Management, **97, 214**
NTMP3004 Aquaculture, **97, 214**
NTMP3005 Coastal Management, **97, 214**
NTMP5005 Tropical Coastal Management, **302**
NURS5024 Cancer Nursing Practice, **373**
NURS5026 Health Promotion in Cancer Recovery, **373**
NURS6010 Clinical Qualitative Research, **373**
NUTR2911 Food Science Introductory (Advanced), **103, 145, 234**
NUTR2912 Nutritional Science Introductory (Adv), **103, 145, 234**
NUTR3911 Nutritional Assessment Methods, **104, 146, 234**
NUTR3912 Community and Public Health Nutrition, **104, 146, 235**
NUTR3921 Methods in Nutrition Practice, **104, 146, 235**
NUTR3922 Nutrition and Chronic Disease, **104, 146, 235**
NUTR4001 Clinical Nutritional Science A, **235**
NUTR4002 Clinical Nutritional Science B, **235**

P

PCOL2011 Pharmacology Fundamentals, **77, 79, 235**
PCOL2012 Pharmacology: Drugs and People, **77, 79, 236**
PCOL2555 Essentials of Pharmacology, **236**
PCOL3011 Toxicology, **79, 236**
PCOL3012 Drug Design and Development, **79, 236**
PCOL3021 Drug Therapy, **79, 236**
PCOL3022 Neuropharmacology, **77, 79, 237**
PCOL3911 Toxicology (Advanced), **79, 236**
PCOL3912 Drug Design and Development (Adv), **79, 236**
PCOL3921 Drug Therapy (Advanced), **79, 236**
PCOL3922 Neuropharmacology (Advanced), **77, 79, 237**
PCOL4011 Pharmacology Honours A, **110, 265**
PCOL4012 Pharmacology Honours B, **110, 265**
PCOL4013 Pharmacology Honours C, **110, 265**
PCOL4014 Pharmacology Honours D, **110, 265**
PHIL1010 Society, Knowledge and Reason, **118**
PHSI2005 Integrated Physiology A, **77, 83, 245**
PHSI2006 Integrated Physiology B, **83, 245**
PHSI2905 Integrated Physiology A (Advanced), **77, 83, 245**
PHSI2906 Integrated Physiology B (Advanced), **83, 245**
PHSI3005 Human Cellular Physiology: Theory, **56, 70, 83, 247**
PHSI3006 Human Cellular Physiology: Research, **56, 70, 83, 247**
PHSI3007 Heart and Circulation: Normal Function, **84, 247**
PHSI3008 Heart and Circulation: Dysfunction, **84, 248**
PHSI3905 Human Cellular Physiology (Adv): Theory, **56, 70, 83, 247**
PHSI3906 Human Cellular Physiology (Ad): Research, **56, 70, 83, 247**
PHSI4011 Physiology Honours A, **110, 265**
PHSI4012 Physiology Honours B, **110, 265**
PHSI4013 Physiology Honours C, **110, 265**
PHSI4014 Physiology Honours D, **110, 265**
PHYS1001 Physics 1 (Regular), **79, 237**
PHYS1002 Physics 1 (Fundamentals), **79, 237**
PHYS1003 Physics 1 (Technological), **79, 238**
PHYS1500 Astronomy, **79, 237, 238**
PHYS1901 Physics 1A (Advanced), **79, 238**
PHYS1902 Physics 1B (Advanced), **79, 238**
PHYS2011 Physics 2A, **79, 238**
PHYS2012 Physics 2B, **79, 239**
PHYS2013 Astrophysics and Relativity, **80, 239**
PHYS2911 Physics 2A (Advanced), **79, 239**
PHYS2912 Physics 2B (Advanced), **80, 239**
PHYS2913 Astrophysics and Relativity (Advanced), **80, 239**
PHYS3015 Topics in Senior Physics A, **80, 240**
PHYS3025 Topics in Senior Physics B, **80, 240**
PHYS3055 Nanoscience/Plasma/Thermodynamics, **80, 241**
PHYS3056 Nanoscience/Optics/Thermodynamics, **76**
PHYS3057 Nanoscience/Thermodynamic/Biol.Phys, **77, 80, 241**
PHYS3059 Plasma/Thermodynamics/Biol. Physics, **80, 241**
PHYS3079 Cond. Matter/High Energy/Astrophysics, **81, 243**
PHYS3080 Optics/Cond.Matter/High Energy Physics, **81, 244**
PHYS3081 Optics/Cond. Matter/Astrophysics, **81, 244**
PHYS3082 Optics/High Energy/Astrophysics, **81, 244**
PHYS3915 Topics in Senior Physics A (Advanced), **81, 240**
PHYS3925 Topics in Senior Physics B (Advanced), **81, 240**
PHYS3955 Nanoscience/Plasma/Thermodynamics (Adv), **81, 241**
PHYS3956 Nanoscience/Optics/Thermodynamics (Adv), **76**
PHYS3957 Nanoscience/Thermodynamic/Biol.Phys(Adv), **77, 81, 241**
PHYS3959 Plasma/Thermodynamics/Biol.Physics (Adv), **82, 241**
PHYS3979 Cond. Matter/High Energy/Astrophys (Adv), **82, 243**
PHYS3980 Optics/Cond.Matter/High Energy Phys(Adv), **82, 244**
PHYS3981 Optics/Cond. Matter/Astrophysics (Adv), **82, 244**
PHYS3982 Optics/High Energy/Astrophysics (Adv), **82, 244**
PHYS4011 Physics Honours A, **265**
PHYS4012 Physics Honours B, **265**
PHYS4013 Physics Honours C, **265**
PHYS4014 Physics Honours D, **265**
PHYS5001 Radiation Physics, **342**
PHYS5002 Anatomy and Physiology, **342**
PHYS5003 Instrumentation, **342**
PHYS5004 Radiation Dosimetry, **342**
PHYS5005 Radiotherapy Physics, **342**
PHYS5006 Medical Imaging Physics, **342**
PHYS5007 Image Processing, **342**
PHYS5008 Radiation Biology and Health Physics, **342**
PHYS5009 Research Methodology, **342**
PHYS5010 Project, **342**
PLNT2001 Applied Plant Biochemistry, **171**
PLNT2001 Plant Biochemistry and Molecular Biology, **52, 84, 248**
PLNT2002 Aust Flora: Ecology and Conservation, **52, 85, 171, 249**
PLNT2003 Plant Form and Function, **53, 85, 171, 249**
PLNT2901 Applied Plant Biochemistry (Advanced), **171**

PLNT2903 Plant Form and Function (Advanced), **53, 85, 171, 249**
PLNT3001 Plant, Cell and Environment, **85, 249**
PLNT3002 Plant Growth and Development, **85, 250**
PLNT3003 Systematics and Evolution of Plants, **85, 250, 251**
PLNT3901 Plant, Cell and Environment (Advanced), **85, 250**
PLNT3902 Plant Growth and Development (Advanced), **85, 250**
PLNT3903 Systematics and Evolution of Plants Adv, **85, 250**
PPAT3003 Plant Disease, **85, 251**
PSYC1001 Psychology 1001, **86, 252**
PSYC1002 Psychology 1002, **86, 252**
PSYC2011 Brain and Behaviour, **86, 252**
PSYC2013 Cognitive and Social Psychology, **86, 253**
PSYC2014 Personality and Differential Psychology, **86, 253**
PSYC3010 Advanced Statistics for Psychology, **86, 253, 363**
PSYC3011 Learning and Behaviour, **78, 86, 253**
PSYC3012 Cognition, Language and Thought, **86, 253**
PSYC3013 Perceptual Systems, **78, 86, 253**
PSYC3014 Behavioural and Cognitive Neuroscience, **78, 86, 254**
PSYC3015 Intelligence and Human Reasoning, **86, 254**
PSYC3016 Developmental Psychology, **86, 254**
PSYC3017 Social Psychology, **86, 254**
PSYC3018 Abnormal Psychology, **78, 86, 254**
PSYC3019 Communication and Counselling, **86, 254**
PSYC4011 Psychology Honours A, **265**
PSYC4012 Psychology Honours B, **266**
PSYC4013 Psychology Honours C, **266**
PSYC4014 Psychology Honours D, **266**
PSYC4500 Research Project (A), **364, 365**
PSYC4501 Psychological Research Methods, **364, 365**
PSYC4502 Ethics, **364, 365**
PSYC4503 Special Fields Topic, **364, 365**
PSYC4505 Research Project (B), **364, 365**
PSYC4506 Health and Safety Psychology Issues, **364, 366**
PSYC4507 Counselling Psychology, **364, 366**
PSYC4508 Psychology of Addiction, **364, 366**
PSYC4509 Problem Gambling, **365**
PSYC4722 Fundamentals of Coaching Practice, **369**
PSYC4723 Socio-cognitive Issues in Coaching Psych, **369**
PSYC4725 Assessment and Selection, **369, 371**
PSYC4727 Coaching in Organisations, **369, 371**
PSYC4729 Groups, Teams and Systems, **369, 371**
PSYC4730 Personal and Work/Life Coaching, **369, 371**
PSYC5010 Health Psychology in Clinical Practice, **371**
PSYC5011 Applying Models of Health Behaviour, **371**
PSYC5012 Advanced Communication Skills, **372**
PSYC5013 Coping and Adjustment to Illness, **372**
PSYC5014 Developments in Health Psychology, **373**
PSYC5015 Research Project, **372**
PSYC6003 Clinical Internship 1, **272**
PSYC6004 Ethics and Professional Practice, **272**
PSYC6005 Research 1, **272**
PSYC6009 Case Seminars 2, **273**
PSYC6010 Research 2, **273**
PSYC6014 Case Seminars 3, **273**
PSYC6015 Research 3, **273**
PSYC6029 Case Seminars 1, **272, 273**
PSYC6031 Family Therapy, **275**
PSYC6032 Adult Health Psychology, **273**
PSYC6049 Child Psychological Disorders, **273**
PSYC6051 Adult Psychological Disorders, **273**
PSYC6054 Neuropsychopathology, **275**
PSYC6055 Advanced Adult Psychological Disorders, **273**
PSYC6056 Advanced Seminars, **275**
PSYC6058 Clinical Internship and Case Seminars 6, **275, 276**
PSYC6061 Clinical Internship and Case Seminars 5, **275**
PSYC6064 Paediatric and Developmental Disorders, **275**
PSYC6065 Psychological Assessment, **272**
PSYC6066 Clinical Internship and Case Seminars 4, **275**
PSYC6067 Clinical Internship 2, **273**
PSYC6068 Clinical Internship 3, **273**
PUBH5010 Epidemiology Methods and Uses, **373**
PUBH5018 Introductory Biostatistics, **371**

S

SCEL5106 Science Elective - Neuroscience, **354**
SCEL5206 Science Elective - Neuroscience, **354**
SLSS1001 Introduction to Socio-Legal Studies, **118**
SOFT1001 Software Development 1, **59, 119, 127, 135, 136, 137, 138, 139, 140, 202**
SOFT1002 Software Development 2, **60, 119, 127, 131, 135, 136, 137, 138, 139, 140, 202**
SOFT1901 Software Development 1 (Adv), **59, 127, 202**
SOFT1902 Software Development 2 (Adv), **60, 127, 202**
SOFT2004 Software Development Methods 1, **131, 134, 137, 138, 139, 140, 332**
SOFT2130 Software Construction 1, **60, 127, 135, 136, 137, 138, 139, 141, 204**
SOFT2830 Software Construction 1 (Adv), **60, 127, 204**
SOFT3300 Software Development Project, **51, 61, 132, 134, 135, 137, 138, 207**
SOFT3301 Software Construction 2, **51, 60, 133, 138, 141, 207**
SOFT3302 Software Quality Assurance, **61, 133, 138, 141, 207**
SOFT3600 Software Development Project (Advanced), **51, 61, 133, 135, 207**
SOFT3601 Software Construction 2 (Advanced), **51, 60, 133, 207**
SOFT3602 Software Quality Assurance (Adv), **61, 133, 207**
SOFT4042 Enterprise-Scale Software, **139**
SOIL2003 Soil Properties and Processes, **86, 160**
SOIL2004 The Soil Resource, **86, 161**
SOIL3005 Field and Laboratory Soil Physics, **87, 161**
SOIL3006 Field and Laboratory Pedology, **87, 161**
SOIL3007 Environmental Soil Chemistry, **87, 162**
SOIL3008 Rural Spatial Information Systems, **87, 162**
SOIL4021 Soil Science Honours A, **266**
SOIL4022 Soil Science Honours B, **266**
SOIL4023 Soil Science Honours C, **266**
SOIL4024 Soil Science Honours D, **266**
STAT2011 Statistical Models, **63, 87, 130, 141, 224**
STAT2012 Statistical Tests, **63, 87, 104, 130, 146, 224**
STAT2911 Probability and Statistical Models (Adv), **63, 87, 130, 224**
STAT2912 Statistical Tests (Advanced), **63, 87, 130, 224**
STAT3011 Stochastic Processes and Time Series, **59, 63, 87, 133, 140, 141, 224**
STAT3012 Applied Linear Methods, **51, 59, 63, 87, 133, 140, 224**
STAT3013 Statistical Inference, **63, 87, 133, 224**
STAT3014 Applied Statistics, **51, 63, 87, 133, 224**
STAT3911 Stochastic Processes and Time Series Adv, **59, 63, 87, 133, 224**
STAT3912 Applied Linear Methods Advanced, **51, 59, 63, 87, 133, 224**
STAT3913 Statistical Inference Advanced, **63, 87, 133, 224**

STAT3914 Applied Statistics Advanced, **51, 63, 87, 133, 224, 225**
STAT4201 Mathematical Statistics Honours A, **266**
STAT4202 Mathematical Statistics Honours B, **266**
STAT4203 Mathematical Statistics Honours C, **266**
STAT4204 Mathematical Statistics Honours D, **266**
STAT5001 Applied Statistics for Bioinformatics, **297**

V

VIRO3001 Virology, **70, 75, 232**
VIRO3002 Medical and Applied Virology, **70, 75, 76, 232**
VIRO3901 Virology (Advanced), **70, 75, 232**

W

WILD5001 Australasian Wildlife: Introduction, **308, 311, 379**
WILD5002 Australasian Wildlife: Field Studies, **308, 312, 379**
WILD5003 Wildlife Health, **381**
WILD5004 Vertebrate Pest Management, **381**
WILD5005 In Situ Wildlife Management, **381**
WILD5006 Ex Situ Wildlife Management, **381**
WILD5007 Sustainable Wildlife Use and Stewardship, **312, 381**
WILD5009 Research Project, **381**
WORK6003 People, Management and Technology, **325, 337**
WORK6026 Organisational Change and Development, **322, 325, 337**

2007 handbook

maps

Quick links:
www.facilities.usyd.edu.au/maps/index.shtml
Campuses
Bicycle map
Precincts
Disability access
Parking layout

The University of Sydney

Set a course for Handbooks online … visit www.usyd.edu.au/handbooks

Camperdown and Darlington campuses

University buildings

O6 Aeronautical Engineering Building
J4 Anderson Stuart Building
G3 Badham Building
H3 Bank Building
L2 Baxter's Lodge
L8 Biochemistry and Microbiology Building
E6 Blackburn Building
E7 Bosch Building 1A
E7 Bosch Building 1B
H3 Brennan MacCallum Building
E6 Bruce Williams Pavilion
L6 Carslaw Building
F4 Chaplaincy
M8 Chemical Engineering Building
J5 Chemistry Building
N8 Civil Engineering Building
N9 Civil Engineering Workshop
K10 Clark Building
J9 Darlington Centre
J10 Darlington House
K9 Darlington Road Terraces
L10 Demountables
K5 Eastern Avenue Auditorium & Lecture Theatre Complex
L9 Economics and Business Building
H2 Edgeworth David Geology Building
G4 Education Building
G4 Education Building Annexe
H5 Edward Ford Building
N7 Electrical Engineering Building
N7 Engineering Link Building
C3 Evelyn Williams Building
K3 Fisher Library
K4 Fisher Library Stack
G2 Footbridge Theatre
C3 Gatekeeper's Lodge
J7 Gatekeeper's Lodge (City Road)
M8 Gordon Yu-Hoi Chui Building
J2 Great Hall
G3 Griffith Taylor Building
D4 HK Ward Gymnasium
F2 Heydon-Laurence Building
G2 Holme Building
N5 Information Technologies
K8 Institute Building
N5 International House
F2 JRA McMillan Building
D3 JD Stewart Building
F3 John Woolley Building
F1 Mackie Building
H3 MacLaurin Hall
H2 Macleay Building
G1 Margaret Telfer Building
J6 Madsen Building
H4 Manning House
H4 Manning Squash Courts
D3 McMaster Annexe
D3 McMaster Building
O6 Mechanical Engineering Building
A2 Medical Foundation Building
K8 Merewether Building
E1 No.1–3 Ross Street
M7 Old School Building
F4 Old Teachers' College
H3 Pharmacy Building
H6 Physics Annexe
G5 Physics Building
N8 PNR Building
E6 Queen Elizabeth II Research Institute
H5 RC Mills Building
F2 RD Watt Building
D4 RMC Gunn Building
M9 Raglan Street Building
N7 Rose Street Building
E2 Ross Street Building
G2 Science Road Cottage
E1 Selle House
M10 Services Building
N6 Seymour Centre
K10 Shepherd Centre
O6 Shepherd Street Carpark
K9 Storie Dixson Wing
F5 The Arena Sports Centre
J3 The Quadrangle
J5 Transient Building
L10 University Computing Centre
J10 University Garage
M9 University Sports & Aquatic Centre
D3 Veterinary Science Conference Centre
E6 Victor Coppleson Building
F3 Wallace Theatre
K7 Wentworth Building
E7 Western Avenue Carpark
M6 WH Maze Building
M6 Wilkinson Building

Academic colleges (offices)

H5 Health Sciences
F4 Humanities and Social Sciences
N8 Sciences and Technology

Childcare centres

K11 Boundary Lane
F9 Carillon Avenue
H1 Laurel Tree House
N9 Union

Colleges and residential accommodation

J10 Darlington House
K9 Darlington Road Terraces
N5 International House
L10 Mandelbaum House
A4 Sancta Sophia College
C8 St Andrew's College
B5 St John's College
L6 St Michael's College
G7 St Paul's College
E1 Selle House
D10 Sydney University Village
F7 Wesley College
G8 Women's College

Computer access centres

H3 Brennan
G4 Education
K3 Fisher
N7 Link
L6 McGrath (Carslaw)
H3 Pharmacy

Cultural venues

H2 Macleay Museum
J3 Nicholson Museum
N6 Seymour Centre
K7 Sir Hermann Black Gallery
M6 Tin Sheds Gallery
J2 War Memorial Art Gallery Faculties (offices)
F2 Agriculture, Food and Natural Resources
M6 Architecture
H3 Arts
K8 Economics & Business
G4 Education and Social Work
N7 Engineering
H5 Medicine
H3 Pharmacy
L6 Science
D3 Veterinary Science

Libraries

M6 Architecture
G3 Badham
H5 Burkitt-Ford
K3 Curriculum Resources
N8 Engineering
K3 Fisher
J6 Madsen
L6 Mathematics
E7 Medical
N6 Music
H6 Physics
H5 Schaeffer Fine Arts

Retail

H3 Australia Post Office
J9 Darlington Centre
G2 Holme Building
H4 Manning House
F5 The Arena Sports Centre
M9 University Copy Centre
K7 University Health Service
M9 University Sports & Aquatic Centre
M9 University Co-op Bookshop
C3 Valentine Charlton Cat Centre
C3 Veterinary Hospital & Clinic
K7 Wentworth Building

Security

M10 Emergency Services
M10 Lost Property
M10 Traffic & Parking

Sports and recreational venues

K2 Fisher Tennis Courts
D4 HK Ward Gymnasium
H5 Lawn Tennis Courts
H4 Manning Squash Courts
F5 The Arena Sports Centre
G5 The Square
E5 University Oval No1
E3 University Oval No2
M9 University Sports & Aquatic Centre

Unions and associations (offices)

K7 Students' Representative Council (SRC)
M9 Sydney University Postgraduate Representative Association (SUPRA)
M9 Sydney University Sport
G2 University of Sydney Union

University administration and Services

M10 Advancement Services
H3 Alumni Relations Office
F3 Business Liaison Office
F1 Careers Centre
G1 Cashier
D10 Centre for Continuing Education
H3 Chancellor
L10 Computing Centre
H2 Executive Offices
J3 Information Centre
L10 Information and Communications Technology
L9 International Office
K8 Office of Development
G1 Personnel
M10 Printing Services (UPS)
H2 Publications Office
H3 Research Office
M10 Room Bookings & Venue Management
F1 Scholarships Unit
L5 Student Centre
M10 Student Housing
G4 Student Services Unit
K8 Summer School
H3 University Relations (Vice Principal)
C3 Veterinary Hospital & Clinic
H2 Vice-Chancellor

Course planner

Year	Semester	Unit of study 1 & credit points		Unit of study 2 & credit points		Unit of study 3 & credit points		Unit of study 4 & credit points		Total credit points
1	1									
	2									
2	summer									
	1									
	winter									
	2									
3	summer									
	1									
	winter									
	2									
4	summer									
	1									
	winter									
	2									
5	summer									
	1									
	winter									
	2									
								Total credit points		