



The University of Sydney

Faculty of Science Handbook 2002

University semester and vacation dates 2002

Summer School

| | |
|--------------------|---------------------|
| Lectures begin | Wednesday 2 January |
| Summer School ends | Friday 1 March |

Semester 1

| | |
|----------------------------------|-------------------|
| Lectures begin | Monday 4 March |
| Easter recess: | |
| Last day of lectures | Thursday 28 March |
| Lectures resume | Monday 8 April |
| Study vacation: 1 week beginning | Monday 17 June |
| Examinations commence | Monday 24 June |
| Semester 1 ends | Saturday 6 July |

Semester 2

| | |
|----------------------------------|---------------------|
| Lectures begin | Monday 29 July |
| Mid-semester recess: | |
| Last day of lectures | Friday 27 September |
| Lectures resume | Tuesday 8 October |
| Study vacation: 1 week beginning | Monday 11 November |
| Examinations commence | Monday 18 November |
| Semester 2 ends | Saturday 7 December |

Last dates for withdrawal or discontinuation 2002

Semester 1 units of study

| | |
|---|-----------------|
| Last day to add a unit | Friday 15 March |
| Last day for withdrawal | Friday 29 March |
| Last day to discontinue without failure (DNF) | Friday 26 April |
| Last day to discontinue (Discontinued - Fail) | Friday 14 June |

Semester 2 units of study

| | |
|---|---------------------|
| Last day to add a unit | Friday 9 August |
| Last day for withdrawal | Friday 30 August |
| Last day to discontinue without failure (DNF) | Friday 13 September |
| Last day to discontinue (Discontinued - Fail) | Friday 8 November |

Full Year units of study

| | |
|---|-------------------|
| Last day for withdrawal | Friday 29 March |
| Last day to discontinue with permission (DNF) | Friday 2 August |
| Last day to discontinue (Discontinued - Fail) | Friday 8 November |

Academic year information (Academic Board policy and dates 1998-2002) is available at:

www.usyd.edu.au/su/planning/policy/acad/3_0aca.html.

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

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Photo on page viii courtesy School of Information Technologies. It shows the opening of the University's first computer, SILLIAC, in 1956.

Modelled on ILLIAC at the University of Illinois in the US, the computer contained 2800 valves and 20 km of wire. It was partly paid for by the Melbourne Cup winnings of University benefactor Adolph Bassar.

Contents

| | | | |
|--|-------------|------------|--|
| Introduction | vi | | |
| Message from the Dean | vii | | |
| A brief history of the Faculty | viii | | |
| 1. Faculty of Science | 1 | | |
| Departments and schools | 1 | | |
| Units and centres | 2 | | |
| 2. Study in the Faculty of Science | 3 | | |
| Departmental and Faculty advisers | 3 | | |
| Recommended junior combinations in the BSc | 4 | | |
| Centres | 5 | | |
| Mathematics Learning Centre | 5 | | |
| The Australian Key Centre for Microscopy and Microanalysis | 5 | | |
| The Key Centre for Polymer Colloids | 5 | | |
| Map Collection | 6 | | |
| Marine Studies Centre | 6 | | |
| Faculty life and representation | 6 | | |
| Employment for graduates in Science | 6 | | |
| Careers Centre | 7 | | |
| Summer School | 7 | | |
| Science disciplines and subject areas | 7 | | |
| 3. Undergraduate degree requirements | 10 | | |
| Discontinuation and re-enrolment | 11 | | |
| University of Sydney (Coursework) Rule | 11 | | |
| Restrictions upon re-enrolment | 11 | | |
| University of Sydney (Coursework) Rule | 11 | | |
| Faculty resolutions | 12 | | |
| Bachelor of Science (BSc) degree program | 13 | | |
| Bachelor of Science units of study | 38 | | |
| Aerospace, Mechanical and Mechatronic Engineering | 38 | | |
| Department of Agricultural Chemistry and Soil Science | 38 | | |
| Agricultural Chemistry | 38 | | |
| Soil Science | 40 | | |
| Department of Anatomy and Histology | 41 | | |
| School of Biological Sciences | 43 | | |
| Biology Intermediate units of study | 44 | | |
| Biology Senior units of study | 47 | | |
| Department of Pathology | 51 | | |
| Chemical Engineering | 51 | | |
| School of Chemistry | 51 | | |
| Chemistry Junior units of study | 51 | | |
| Chemistry Intermediate units of study | 53 | | |
| Chemistry Senior units of study | 53 | | |
| Civil Engineering | 55 | | |
| Computational Science | 55 | | |
| School of Information Technologies | 56 | | |
| Computer Science and Information Systems Junior units of study | 56 | | |
| Computer Science and Information Systems Intermediate units of study | 57 | | |
| Computer Science and Information Systems Senior units of study | 58 | | |
| School of Geosciences | 63 | | |
| Geography | 63 | | |
| Geography Junior units of study | 64 | | |
| Geography Intermediate units of study | 64 | | |
| Geography Senior units of study | 65 | | |
| Geology and Geophysics | 66 | | |
| Geology Junior units of study | 66 | | |
| Geology Intermediate units of study | 66 | | |
| Geology Senior units of study | 67 | | |
| History and Philosophy of Science | 69 | | |
| History and Philosophy of Science Senior units of study | 69 | | |
| Immunology | 70 | | |
| Immunobiology Major | 71 | | |
| Marine Science | 71 | | |
| Marine Science Senior units of study | | 71 | |
| School of Mathematics and Statistics | | 73 | |
| Mathematics Junior units of study | | 74 | |
| Mathematics Intermediate units of study | | 76 | |
| Statistics Intermediate units of study | | 79 | |
| Mathematics Senior units of study | | 79 | |
| Statistics Senior units of study | | 83 | |
| Medicinal Chemistry | | 84 | |
| Molecular Biology and Genetics | | 84 | |
| School of Molecular and Microbial Biosciences | | 85 | |
| Biochemistry | | 85 | |
| Biochemistry Intermediate units of study | | 85 | |
| Biochemistry Senior units of study | | 86 | |
| Microbiology | | 88 | |
| Microbiology Intermediate units of study | | 88 | |
| Microbiology Senior units of study | | 88 | |
| Nanoscience and Technology | | 89 | |
| Neuroscience | | 89 | |
| Department of Pharmacology | | 89 | |
| School of Physics | | 91 | |
| Physics Junior units of study | | 91 | |
| Physics Intermediate units of study | | 92 | |
| Physics Senior units of study | | 93 | |
| Department of Physiology | | 95 | |
| Department of Psychology | | 97 | |
| Bachelor of Science (Advanced) degree program | | 101 | |
| Bachelor of Science (Advanced Mathematics) degree program | | 101 | |
| Bachelor of Science (Bioinformatics) degree program | | 102 | |
| Bachelor of Science (Environmental) degree program | | 103 | |
| Bachelor of Science (Environmental) units of study | | 104 | |
| Bachelor of Science (Environmental) Junior units of study | | 104 | |
| Bachelor of Science (Environmental) Intermediate units of study | | 104 | |
| Bachelor of Science (Environmental) Senior units of study | | 104 | |
| Bachelor of Science (Marine Science) degree program | | 106 | |
| Bachelor of Science (Marine Science) units of study | | 107 | |
| Marine Science Senior units of study | | 107 | |
| Tropical Marine Network Program | | 109 | |
| Bachelor of Science (Molecular Biology and Genetics) degree program | | 111 | |
| Bachelor of Science (Molecular Biology and Genetics) units of study | | 112 | |
| Bachelor of Science (Molecular Biotechnology) degree program | | 115 | |
| Bachelor of Science (Molecular Biotechnology) units of study | | 116 | |
| Bachelor of Science (Nutrition) degree program | | 118 | |
| Bachelor of Science (Nutrition) units of study | | 119 | |
| Combined Science/Law degrees (BSc/LLB) BSc (Advanced)/LLB and BSc (Advanced Mathematics)/LLB | | 121 | |
| Law units of study | | 122 | |
| Combined Science/Arts & Arts/Science degrees | | 124 | |
| Combined Engineering/Science degrees | | 124 | |
| Combined Science/Engineering degrees | | 124 | |
| Combined Science/Commerce degrees | | 125 | |
| Combined Nursing/Science degrees | | 125 | |
| Combined Education/Science degrees | | 126 | |
| Bachelor of Liberal Studies (BLibStud) degree program | | 127 | |
| Bachelor of Science (Liberal Studies) units of study | | 128 | |
| Bachelor of Computer Science and Technology (BCST) degree program | | 129 | |
| Bachelor of Computer Science and Technology (Advanced) degree program | | 129 | |
| Bachelor of Information Technology (BIT) degree program | | 129 | |

| | | | |
|--|------------|---|-----|
| Bachelor of Medical Science (BMedSc) degree program | 141 | Information Technology units of study | 198 |
| Combined Engineering/Medical Science degrees | 141 | Foundational units of study | 198 |
| Bachelor of Science (Medical Science) units of study | 148 | Specialist units of study | 199 |
| Bachelor of Medical Science Junior units of study | 148 | IT project units | 202 |
| Bachelor of Medical Science Intermediate Core units of study | 148 | Graduate Certificate in Applied Information Technology | 203 |
| Bachelor of Medical Science Intermediate Elective units of study | 150 | Graduate Diploma in Applied Information Technology | 203 |
| Bachelor of Medical Science Senior Core units of study | 151 | Master of Applied Information Technology | 203 |
| Bachelor of Medical Science Intermediate and Senior Elective units of study | 151 | Applied Information Technology units of study | 205 |
| Bachelor of Science in Media and Communications (BScMediaCommun) degree program | 153 | Elementary units | 205 |
| Bachelor of Science in Media and Communications units of study | 154 | Marine Ecology | 206 |
| Bachelor of Psychology (BPsych) degree program | 156 | Graduate Certificate in Quantitative Marine Ecology | 206 |
| Honours in the Faculty of Science | 157 | Graduate Diploma in Quantitative Marine Ecology | 206 |
| 4. Talented student program | 163 | Master of Quantitative Marine Ecology | 206 |
| 5. Undergraduate degree regulations | 165 | Mathematics | 208 |
| University of Sydney (Coursework) Rule 2000 | 165 | Master of Science (coursework) | 208 |
| Rules relating to coursework award courses | 165 | Microscopy and Microanalysis | 208 |
| Bachelor of Science | 168 | Graduate Certificate in Science (Microscopy and Microanalysis) | 208 |
| Resolutions of the Senate | 168 | Graduate Diploma in Science (Microscopy and Microanalysis) | 208 |
| Resolutions of the Faculty | 169 | Master of Science (Microscopy and Microanalysis) | 210 |
| Combined degrees | 170 | Nutrition and Dietetics | 210 |
| Specific glossary for the BSc | 173 | Master of Nutrition and Dietetics | 210 |
| Bachelor of Computer Science and Technology | 173 | Master of Nutritional Science | 211 |
| Resolutions of the Senate | 173 | Psychology | 211 |
| Resolutions of the Faculty | 173 | Graduate Diploma in Psychology | 211 |
| Specific glossary for the BCST | 175 | Graduate Diploma in Science (Psychology) | 212 |
| Bachelor of Information Technology | 175 | Master of Psychology | 213 |
| Resolutions of the Senate | 175 | Units of study available for 2002 | 213 |
| Resolutions of the Faculty | 175 | Coursework degrees in Applied Science | 213 |
| Specific glossary for the BIT | 176 | Graduate Certificate in Applied Science | 213 |
| Bachelor of Medical Science | 177 | Graduate Diploma in Applied Science | 213 |
| Resolutions of the Senate | 177 | Master of Applied Science | 213 |
| Resolutions of the Faculty | 177 | Environmental Science | 213 |
| Specific glossary for the BMedSc | 178 | Graduate Certificate in Applied Science (Environmental Science) | 213 |
| Bachelor of Psychology | 178 | Graduate Diploma in Applied Science (Environmental Science) | 213 |
| Resolutions of the Senate | 178 | Master of Applied Science (Environmental Science) | 213 |
| Resolutions of the Faculty | 179 | Environmental Science Optional units | 215 |
| Specific glossary for the BPsych | 180 | Informatics and Communication | 215 |
| Bachelor of Liberal Studies | 180 | Graduate Certificate in Applied Science (Informatics and Communication) | 215 |
| Resolutions of the Senate | 180 | Graduate Diploma in Applied Science (Informatics and Communication) | 215 |
| Resolutions of the Faculties of Arts and Science | 180 | Molecular Biotechnology | 216 |
| Specific glossary for the BLibStud | 182 | Graduate Certificate in Applied Science (Molecular Biotechnology) | 216 |
| Bachelor of Science in Media and Communications | 182 | Graduate Diploma in Applied Science (Molecular Biotechnology) | 216 |
| Resolutions of the Senate | 182 | Master of Applied Science (Molecular Biotechnology) | 216 |
| Resolutions of the Faculty of Science | 183 | Neuroscience | 216 |
| Specific glossary for the BScMediaCommun | 184 | Graduate Certificate in Applied Science (Neuroscience) | 216 |
| Generic glossary for the BSc, BCST, BIT, BMedSc, BPsych, BLibStud & BScMediaCommun | 184 | Graduate Diploma in Applied Science (Neuroscience) | 216 |
| 6. Postgraduate degree requirements | 186 | Master of Applied Science (Neuroscience) | 216 |
| Research degrees | 186 | Photonics | 218 |
| Doctor of Science (DSc) | 186 | Graduate Certificate in Applied Science (Photonics) | 218 |
| Doctor of Philosophy (PhD) | 186 | Graduate Diploma in Applied Science (Photonics) | 218 |
| Master of Science (MSc) | 186 | Master of Applied Science (Photonics) | 218 |
| Master of Science (Environmental Science) | 186 | Psychology of Coaching | 219 |
| Presentation of theses | 187 | Graduate Certificate in Applied Science (Psychology of Coaching) | 219 |
| Coursework/research degrees | 187 | Surface Coatings | 219 |
| Doctor of Clinical Psychology / Master of Science | 187 | Graduate Certificate in Applied Science (Surface Coatings) | 219 |
| Doctor of Clinical Psychology / Doctor of Philosophy | 187 | Graduate Diploma in Applied Science (Surface Coatings) | 219 |
| Units not available in 2002 | 189 | Wildlife Health and Population Management | 220 |
| Coursework degrees | 189 | Graduate Certificate in Applied Science (Wildlife Health and Population Management) | 220 |
| Coursework degrees in Science | 190 | Graduate Diploma in Applied Science (Wildlife Health and Population Management) | 220 |
| Graduate Diploma in Science | 190 | Master of Applied Science (Wildlife Health and Population Management) | 220 |
| Environmental Science and Law | 190 | Wildlife Health and Population Management optional units of study | 221 |
| Master of Environmental Science and Law | 190 | | |
| History and Philosophy of Science | 192 | | |
| Graduate Certificate in Science (History and Philosophy of Science) | 192 | | |
| Information Technology | 193 | | |
| Graduate Certificate in Information Technology | 193 | | |
| Graduate Diploma in Information Technology | 193 | | |
| Master of Information Technology | 193 | | |

| | | | |
|--|------------|---|------------|
| 7. Postgraduate degree regulations | 222 | Physiology | 247 |
| Degrees of Doctor | 222 | Psychology | 248 |
| Doctor of Science (DSc) | 222 | Other units | 249 |
| Doctor of Philosophy (PhD) | 222 | Australian Key Centre for Microscopy and Microanalysis | 249 |
| Doctor of Clinical Psychology/Doctor of Philosophy (DCP/PhD) | 222 | Centre for Research on Ecological Impacts of Coastal Cities | 249 |
| Doctor of Clinical Psychology/Master of Science (DCP/MSc) | 224 | Coastal Studies Unit | 249 |
| Degrees of Master | 225 | History and Philosophy of Science Unit | 249 |
| Master of Science (MSc) | 225 | Immunology Unit | 249 |
| Master of Science (Environmental Science) (MSc(EnvironSc)) | 226 | Key Centre for Polymer Colloids | 250 |
| Master of Science (Microscopy and Microanalysis) (MSc(Micr&An)) | 227 | Marine Studies Centre | 250 |
| Master of Information Technology (MInfTech) | 227 | Ocean Drilling Program | 250 |
| Master of Applied Information Technology (MApplIT) | 228 | Ocean Sciences Institute | 250 |
| Master of Nutrition and Dietetics (MNutrDiet) | 228 | 9. General University information | 251 |
| Master of Nutritional Science (MNutrSc) | 229 | Student organisations | 255 |
| Master of Psychology (MPsych) | 229 | Glossary | 257 |
| Master of Psychology/PhD (MPsych/PhD) | 230 | Index | 267 |
| Master of Environmental Science and Law (MEnviSciLaw) | 230 | Map of main campus | 278 |
| Graduate diplomas | 231 | | |
| Graduate Diploma in Science (GradDipSc) | 231 | | |
| Graduate Diploma in Science (Microscopy and Microanalysis) (GradDipSc(Micr&An)) | 231 | | |
| Graduate Diploma in Science (Psychology) (GradDipSc(Psych)) | 231 | | |
| Graduate Diploma in Science (Microscopy and Microanalysis) (GradDipSc(Micr&An)) | 232 | | |
| Graduate Diploma in Science (Psychology) (GradDipSc(Psych)) | 232 | | |
| Graduate Diploma in Information Technology (GradDipInfTech) | 233 | | |
| Graduate Diploma in Applied Information Technology (GradDipApplIT) | 233 | | |
| Graduate Diploma in Psychology (GradDipPsych) | 233 | | |
| Graduate certificates | 234 | | |
| Graduate Certificate in Science (History and Philosophy of Science) | 234 | | |
| Graduate Certificate in Science (Microscopy and Microanalysis) (GradCertSc(Micr&An)) | 234 | | |
| Graduate Certificate in Information Technology (GradCertInfTech) | 235 | | |
| Graduate Certificate in Applied Information Technology (GradCertAppUT) | 235 | | |
| Articulated programs | 235 | | |
| Quantitative Marine Ecology | 235 | | |
| Graduate Certificate in Quantitative Marine Ecology (GradCertQuantMarEcol) | 235 | | |
| Graduate Diploma in Quantitative Marine Ecology (GradDipQuantMarEcol) | 235 | | |
| Master of Quantitative Marine Ecology (MQuantMarEcol) | 235 | | |
| Applied Science | 236 | | |
| Graduate Certificate in Applied Science (GradCertApplSc) | 236 | | |
| Graduate Diploma in Applied Science (GradDipApplSci) | 236 | | |
| Master of Applied Science (MApplSc) | 236 | | |
| Resolutions of the Faculty | 237 | | |
| 8. Staff | 239 | | |
| Faculty of Science | 239 | | |
| Agricultural Chemistry and Soil Science | 239 | | |
| Anatomy and Histology | 239 | | |
| Biological Sciences | 240 | | |
| Chemistry | 241 | | |
| Geosciences | 242 | | |
| Infectious Diseases | 242 | | |
| Information Technologies | 243 | | |
| Mathematics and Statistics | 243 | | |
| Molecular and Microbial Biosciences | 244 | | |
| Biochemistry | 244 | | |
| Human Nutrition Unit | 245 | | |
| Microbiology | 245 | | |
| Pathology | 246 | | |
| Pharmacology | 246 | | |
| Physics | 246 | | |

Introduction

This is the Faculty of Science handbook. In it you will find a store of information about things you are likely to need to know about the Faculty. In particular, it will help you to find out who the people in your Faculty are, the requirements for degrees in the Faculty and the ways that these can be satisfied. When making up your mind about your undergraduate course of study look at chapter 3, which describes how to get a degree, and also read the Resolutions that apply to the degree (chapter 5). If you would like help in deciding on the best unit of study for you to take, talk to a Faculty or departmental adviser (chapters 1 and 2).

When deciding about your postgraduate course of study, look at chapter 6, which describes how to get a degree, and also read the Resolutions that apply to the degree (chapter 7). Before you apply for a postgraduate course, especially a research degree, it is advisable to discuss your plans with a departmental graduate adviser (chapters 1 and 2).

General Faculty information is listed in chapter 2. General University information telling you the 'who' and 'where' of the campus can be found at the back of the handbook, with a glossary of some common terms.

Once you have selected the departments you will be studying in, you will then enrol. At undergraduate enrolment there will be departmental advisers present to give you advice about your choice of units of study, but you should have a rough idea of your plans before you attend.

In subsequent years, each October, you will have the chance to pre-enrol for the following year. Take time to get the latest information from the Faculty, and select your units carefully. Getting your pre-enrolment right can save you enrolling in person in February.

Information and advice

Faculty Office

Matters relating to your enrolment in units of study and progress with your degree are dealt with at the Faculty Office. Faculty staff can give advice relating to enrolment matters, but not academic advice. In certain cases, an Associate Dean or Pro-Dean may have to be consulted, and appointments may be made at the counter. The Faculty Office is located on Level 2 of the Carlaw Building. The Dean of the Faculty of Science is located on Level 4 of the Carlaw Building.

Departmental advisers or Head of Department or section

Any special advisers for departments are set out in chapter 2. For questions about particular units of study or subjects consult the relevant department.

Beginning studies in the Faculty of Science - frequently asked questions

How do I qualify for the pass degree of Bachelor of Science?

You complete 144 credit points, normally over three years, including a major in at least one Science area.

What is meant by 'credit points'?

Credit points are allotted to each unit of study. A unit of study is a semester-length course in a particular subject area, requiring between four and twelve hours per week of class attendance. The number of credit points allotted to a unit of study is 3, 4, 6, 8 or 12.

What is meant by a 'major'?

A major is a sequence of study that delivers expertise in a certain area. Most majors are defined as 24 credit points in a single subject area at the Senior level. This does vary and you should read carefully the Tables of units of study associated with your degree, where majors are most commonly defined. In the Bachelor of Science you have a choice of majors. In some other degree programs, your Senior study is predetermined and you cannot choose.

Should I read the Resolutions?

Definitely. The Resolutions, which control undergraduate and postgraduate degrees, are collected in chapters 5 and 7 respectively. The information in those chapters has precedence over all other information in this handbook.

How do I qualify for the Bachelor of Science with Honours?

You complete the requirements for the pass degree, followed by a fourth year of advanced study in a single Science discipline area. *What is the difference between 'junior', 'intermediate' and 'senior' units of study?*

Junior units of study are normally taken in your first year; Intermediate units of study have the completion of junior units of study as entry requirements. Senior units of study have Intermediate units of study as entry requirements.

How many junior credit points must I complete?

Usually you will complete at least 36 junior credit points. Many of the degrees have an upper limit of Junior credit points you may count. You should check the degree resolutions for your degree. *Are there compulsory elements in the BSc degree?*

You must complete at least 12 credit points in Mathematics and Statistics. These are generally taken at the junior level.

What are the tables of units of study?

The tables, published in the Faculty handbook, list all the units of study which can be counted to a particular degree, including their enrolment code, official title, credit point value and entry requirements. The tables for undergraduate units of study are set out in chapter 3 of this handbook.

How can I get advice about selecting units of study?

First, you should read the unit of study descriptions and tables. When enrolling you will be able to talk to representatives of the departments and schools. The Faculty Office staff can help you plan the structure of your degree at any time.

Can I count units of study not listed in the table?

Usually yes. Your degree may allow you to take units of study from other faculties or even other universities. However, there is usually a limit, and you should think carefully how these fit into your degree plan.

I have studied at a tertiary institution already. Can previous studies be credited?

In general previous university studies can be credited, provided that they are recent. You must complete a credit application form, which must be submitted to the Faculty Office together with original academic transcripts and descriptions of the units that you wish to have credited.

I have other commitments (family, employment) - can I take the degree part-time?

Yes, but you must indicate this when enrolling. Day-time attendance at lectures and laboratory classes is required for most science units of study.

Is there a time limit?

You must complete all the degree requirements within ten years from the date of admission to candidature (eg, if you started in 2002, you must have completed by the end of 2011). If you have credit points from previous study, the time is reduced appropriately.

Can I interrupt my studies to travel?

You can suspend for a year (usually this is for travel or in order to earn some money by full time work). If necessary, you can apply for a further year of suspension, but after this the candidature usually is considered to have lapsed.

If I do well, can I get into another degree program with a higher entry mark?

Yes, but this will be competitive. It is realistic to assume you will be completing the degree in which you first enrol.

What are my chances of success?

Excellent. You have received an offer because the University believes you are qualified to complete the degree. Problems could arise if you are unable or unwilling to give your studies some priority over other interests, commitments and worries. Even if you have these problems, there are many ways in which you can find help and support within the University (these are publicised during Orientation Week). It is worth emphasizing here that if your first language is not English, or if you have specific learning problems, you should consult the Learning Assistance Centre.

Message from the Dean

The early part of the 21st century offers exciting opportunities and challenges for science. New inter-disciplinary approaches are evolving to solve a wide range of environmental, marine, health and technology related problems. In the post-genomic era, with access to advanced computing facilities, and many new research techniques, science is seen as the source for major technological developments. Science is also addressing the human side of these developments. There are many challenges for those who choose a science or a science-related career now. Opportunities also exist to combine science with commerce, arts, education, engineering, law and nursing, giving a new angle to a career in science.

Science has a key role to play in the sustainable development and the protection of our planet from further degradation, and its restoration. Science must also tackle the problems of the conservation of existing energy sources and the development of new ones as well as the control of disease and the promotion of health. Science is critical to understanding human behaviour, computers and systems in society, and how these interact with the biological and physical environment. Who in 1900 would have imagined the scientific advances of the 20th century? And who can predict where science will take us in the next 100 years? Just as the past 100 years have seen a revolution in transport and information technology, there will be many (as yet unimaginable) developments in these areas and in other areas such as biotechnology, information science and neuroscience during the next decades.

Science impacts on all areas of our life. Scientists study the small electrical potentials of the brain as well as the massive electrical charges generated in the upper atmosphere. Science is concerned with the structure of the universe, the structure of a butterfly wing, as well as the structure of an atom. It is concerned with thinking and theorising as well as with applying knowledge in all sorts of inventive ways.

Adaptable, well-trained, critical and creative scientists will always be at a premium. The degree programs offered in science at The University of Sydney are of exceptional quality and produce scientists and science-based professionals of the highest calibre. Many of our academic staff have won excellence in teaching awards, and the Faculty has exceptional research strength. The science degree programs at The University of Sydney are designed to offer challenges and excitement at a range of different levels, including the Talented Students' Program, Advanced Science degree and the BSc with its specialist streams that provide more directed science training, including in some cases, opportunities for industry placements. The Faculty of Science has excellent links with industry and a wide range of employers and will provide opportunities throughout your degree to explore career options.

In designing the degree programs we have been particularly careful to ensure that you can specialise if you wish, but that you don't have to make that decision before having completed a general first year in Science. 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. The variety of innovative teaching methods used across the Faculty help ensure that you will 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 aim to help you expand your interest in finding out how things function, develop lifelong strategies for learning new approaches, and gain skills to explore and use information in a wide range of contexts.



Beryl Hesketh

Beryl Hesketh, Dean

A brief history of the Faculty

On 17 April 1882 there was a special meeting of the University Senate to receive a report from the By-laws and Curriculum Committee. The adoption of this report was moved by Mr Rolleston; it recommended:

1. There shall be four Faculties in the University - viz, Arts, Science, Medicine and Law.
2. All undergraduates shall attend first year Arts and after satisfactory examination at the end of first year 'may elect which of the following Faculties, whether Arts, Science or Medicine, they will graduate in, and after the Second Year examination' they may elect to graduate in Law.

After deciding upon the regulations for the Faculty of Arts the meeting was adjourned to the following day. It was then (18 April 1882) that regulations for the Faculty of Science were formulated. Two degrees, BSc and DSc, were established. The course of study in the bachelor's degree was as follows:

- First Year Arts: Latin; one of Greek, French or German; mathematics; elementary chemistry; elements of natural philosophy.
- Second Year: chemistry; physics; natural history; mathematics; French or German.
- Third Year: At least three of: chemistry; physics; mathematics; mineralogy; geology and palaeontology; zoology and botany.

This, then, was the formal beginning of the Faculty. It was not the beginning of the teaching of science in the University. The first professors, all based in the Faculty of Arts, arrived in 1852; they were the Rev. Dr John Woolley (Classics), MB Pell (Mathematics and Natural Philosophy) and John Smith (Chemistry and Experimental Philosophy (ie, Physics)). In 1853 there were suggestions that chairs in geology and natural history be established; however, no appointments were made. There was evidently some pressure for academic studies in geology and mineralogy and in 1866, AM Thomson was appointed reader in geology and mineralogy and demonstrator in practical chemistry. In 1870 he became professor of geology.

In 1880 two events occurred that were to have a profound influence upon the development of the University: the Public Instruction Act, framed by Sir Henry Parkes, was passed by the NSW Parliament; and John Henry Challis died. The Public Instruction Act meant that a much wider group of children received a secondary education and formed a reservoir for increased university enrolments. And upon the death of Challis, a prosperous businessman who had earlier endowed the remarkable Royal Window in the Great Hall, it was revealed that he had left his fortune to the University. This money, a colossal sum for the then financially struggling institution, was to accrue for five years after the death of Mrs Challis, and when finally received in 1889-90 amounted to more than £250 000. At that time the annual governmental funding was around £5000-10,000 and by 1902 had risen to only £14,000. The knowledge of these riches-to-come gave the Senate a sense of financial security for the first time; hitherto, apart from fees charged, the University had been completely dependent upon the Government of New South Wales. There was an air of optimism; the University could expand instead of merely survive.

On 26 July 1882 the draft of a Bill went to Parliament entitled 'A Bill for attending the Faculties and Schools in The University of Sydney and for other purposes in relation thereto'. The Senate was empowered to establish the Faculty of Science, the government providing the money required until the Challis bequest should be received. In 1882 the chair of geology was replaced by a chair in natural history, and JS Stephens was appointed to it. He also doubled as professor of classics from 1884, when the Rev. Dr Charles Badham died, until a new appointment was made. The chair of chemistry and experimental philosophy was divided, Smith retaining chemistry, the new chair of physics being filled by R Threlfall. He insisted upon the introduction of practical work and designed and supervised the construction of a physical laboratory. The names of the first graduates in science appeared in the Calendar for 1885. They



were Frank Leverrier and Clarence E Wood. By 1890 there were nine graduates, including the first woman, Fanny E Hunt (1888).

In 1890 the obligatory year of Arts for entry to the Faculty of Science was dropped. Entry became by means of an Arts degree, a pass in Arts I or a pass in the Senior Public Examination (equivalent to today's HSC) or equivalent examination in the following subjects: Latin; one of Greek, French or German; and three of arithmetic, algebra, geometry, trigonometry, elementary surveying and astronomy, mechanics, and applied mechanics. There was now a three-year course in science (the fourth year for honours came in 1922) and all first year students took biology, chemistry, mathematics, physics and physiography.

In 1932, when the Faculty was 50-years-old, there were six chairs: physics, chemistry, zoology, geology and physical geography, botany, and chemistry (pure and applied). There were 353 undergraduates. In 1982 (the centenary year) there were 31 chairs; many of these were in new disciplines, and some disciplines had several professors. The number of students had grown to 2500.

At the end of the Second World War, the Commonwealth Reconstruction Training Scheme provided entry to the University for many ex-servicemen and ex-servicewomen. The increased numbers of students required additional facilities; the staff was enlarged and several temporary buildings (some of which are still in use) were put up. The next period of expansion came in 1951 when the then Prime Minister, RG Menzies, announced the entry of the Commonwealth Government into University financing. This led to the expansion of the University into the Darlington area and the erection of many new buildings: Carslaw, Chemistry, Geology and Geophysics, and Biochemistry, to name a few.

In 1954 a donation from Adolph Basser enabled the University to buy its first computer; in 1956 an electron microscope was purchased. These items of major equipment opened up many new fields of research and teaching.

Undergraduates have come to play an increasing part in the activities and operation of the Faculty. In 1904 the Science Society was established, which eventually became the Sydney University Science Association, and in 1971 the first students were elected to the Faculty of Science.

In 1985 the Faculty celebrated the centenary of its first graduates. A series of lectures, exhibitions, films and social events was held. A history book, *Ever Reaping Something New* was published. A film about the Faculty, entitled *A Century of Science*, was also produced and broadcast nationally by the ABC.

In 2000 there were in excess of 4500 students enrolled in the Faculty.

1 Faculty of Science

Information in this section is accurate as at 6 December 2001.

The Faculty of Science

Carslaw Building, F07
The University of Sydney
NSW 2006

Counter hours

Mon-Thu, 10.30 a.m - 12.30 pm and 1.30-3.30 pm
Fri 10.30 am-1.00 pm
Phone: (02) 9351 3021
Fax: (02) 9351 4846

Email: facsci@scifac.usyd.edu.au

Web: www.scifac.usyd.edu.au

■ Departments and schools

Department of Agricultural Chemistry and Soil Science

Room 215, Ross St Building, A03

Phone: (02) 9351 2439

Fax: (02) 9351 5108

Email: admin@acss.usyd.edu.au

Web: www.usyd.edu.au/su/agric/ACSS/

Head of Department: Professor Alex McBratney

Department of Anatomy and Histology

Room S254, Anderson Stuart Building, F13

Phone: (02) 9351 2497

Fax: (02) 9351 2813

Email: enquiries@anatomy.usyd.edu.au

Web: www.anatomy.usyd.edu.au

Head of Department: Associate Professor Bill Webster

School of Biological Sciences

Science Road Cottage, A10

Phone: (02) 9351 2848

Fax: (02) 9351 2558

Email: office@bio.usyd.edu.au

Web: www.bio.usyd.edu.au

Head of School: Associate Professor Rosalind T Hinde

School of Chemistry

School of Chemistry, F11

Phone: (02) 9351 4504

Fax: (02) 9351 3329

Email: enquiries@chem.usyd.edu.au

Web: www.chem.usyd.edu.au

Head of School: Professor Peter A Lay

School of Geosciences

Geology and Geophysics: Edgeworth David Building, F05

Geography: Room 470, Madsen Building, F09

Phone: (02) 9351 2912

Fax: (02) 9351 0184

Email: admin@es.usyd.edu.au

Web: www.es.usyd.edu.au

Head of School: Professor John Connell

Department of Infectious Diseases

Room 676, Blackburn Building, D06

Phone: (02) 9351 2412

Fax: (02) 9351 4731

Email: charbour@infdis.usyd.edu.au

Web: www.usyd.edu.au/su/infdis

Head of Department: Associate Professor Colin Harbour

School of Information Technologies

Room G71, Madsen Building, F09

Phone: (02) 9351 3423

Fax: (02) 9351 3838

Email: admin@cs.usyd.edu.au

Web: www.cs.usyd.edu.au

Head of School: Professor Peter Eades

School of Mathematics and Statistics

Carslaw Building, F07

Phone: (02) 9351 4533

Fax: (02) 9351 4534

Email: firstyear@maths.usyd.edu.au, enq@maths.usyd.edu.au,
statenq@maths.usyd.edu.au

Web: www.maths.usyd.edu.au

Head of School: Professor J Robinson

School of Molecular and Microbial Biosciences

Web: www.mmb.usyd.edu.au

Head of School: Professor Richard I Christopherson

Biochemistry

Room 633, Biochemistry/Microbiology Building, G08

Phone: (02) 9351 2597

Fax: (02) 9351 4726

Email: hod@biochem.usyd.edu.au

Web: www.biochem.usyd.edu.au

Microbiology

Room 501, Biochemistry/Microbiology Building, G08

Phone: (02) 9351 2536

Fax: (02) 9351 4571

Email: hod.micro@microbio.usyd.edu.au

Web: www.microbio.usyd.edu.au

Virtual Department of Molecular Biotechnology

Room 615, Biochemistry/Microbiology Building, G08

Phone: (02) 9351 8680

Fax: (02) 9351 8685

Email: j.harley@biotech.usyd.edu.au

Web: www.biotech.usyd.edu.au

Director: Associate Professor Anthony Weiss

Department of Pathology

Room 501, Blackburn Building, D06

Phone: (02) 9351 2414/2600

Fax: (02) 9351 3429

Email: fi@pathology.usyd.edu.au

Web: www.med.usyd.edu.au/path/

Head of Department: Professor Nicholas H. Hunt

Department of Pharmacology

Room 211, Blackburn Building, D06

Phone: (02) 9351 2408

Fax: (02) 9351 3868

Email: virginia@med.usyd.edu.au

Web: www.usyd.edu.au/su/pharmacology/

Head of Department: Professor Macdonald Christie

School of Physics

Room 216A, School of Physics, A28

Phone: (02) 9351 2537

Fax: (02) 9351 7726

Email: physics@physics.usyd.edu.au

Web: www.physics.usyd.edu.au

Head of School: Professor Donald B Melrose

Department of Physiology

Room E212, Anderson Stuart Building, F13

Phone: (02) 9351 2509

Fax: (02) 9351 2058

Email: enquiries@physiol.usyd.edu.au

Web: www.physiol.usyd.edu.au

Head of Department: Professor Roger Dampney

Department of Psychology
 Room 410, Griffith Taylor Building, A19
 Phone: (02) 9351 2872
 Fax: (02) 9351 2603
 Email: enquiries@psych.usyd.edu.au
 Web: www.psych.usyd.edu.au
 Head of Department: Professor Ian Curthoys

■ Units and centres

Australian Key Centre for Microscopy and Microanalysis

Room LG21, Madsen Building, F09
 Phone: (02) 9351 3178
 Fax: (02) 9351 7682
 Email: kcentre@emu.usyd.edu.au
 Web: www.kcmm.usyd.edu.au

Director: Associate Professor Simon Ringer

Centre for Heavy Metals Research

Rooms 408/410, School of Chemistry, F11
 Phone: (02) 9351 4400/2757
 Fax: (02) 9351 7067
 Email: l.lindoy@chem.usyd.edu.au
 Web: www.chem.usyd.edu.au

Director: Professor Leonard F Lindoy

Centre for Research on Ecological Impacts of Coastal Cities

Old Geology Building, A1 1
 Phone: (02) 9351 4835
 Fax: (02) 9351 6713
 Email: aju@bio.usyd.edu.au
 Web: www.eicc.bio.usyd.edu.au

Director: Professor Antony J Underwood

Coastal Studies Unit

Madsen Building, F09
 Phone: (02) 9351 3625
 Fax: (02) 9351 3644
 Email: a.short@csu.usyd.edu.au
 Web: www.usyd.edu/geography/csu/csuweb/

Director: Associate Professor Andrew D Short

Coral Reef Research Institute

Heydon-Laurance Building, A08
 Phone: (02) 9351 5636
 Fax: (02) 9351 4119
 Email: crri@bio.usyd.edu.au
 Web: www.bio.usyd.edu.au/CRRRI/crri-ind.html

Director: Associate Professor Maria Byrne

Fruit Fly Research Centre

Old Geology Building, A1 1
 Phone: (02) 9351 2541
 Fax: (02) 9351 7504
 Email: mrobson@bio.usyd.edu.au
 Web: www.bio.usyd.edu.au/fruitfly/index.htm

Chair: Associate Professor Christopher B Gillies

History and Philosophy of Science Unit

Room 441, Carslaw Building, F07
 Phone: (02) 9351 4226
 Fax: (02) 9351 4124
 Email: hps@scifac.usyd.edu.au
 Web: www.usyd.edu.au/su/hps/

Director: Dr Rachel Ankeny

Human Nutrition Unit

Biochemistry/Microbiology Building, G08
 Phone: (02) 9351 3757
 Fax: (02) 9351 6022
 Email: i.hopwood@biochem.usyd.edu.au

Boden Professor of Human Nutrition: Professor Ian D Caterson

Immunology Unit

Blackburn Building, D06
 Phone: (02) 9351 7308
 Fax: (02) 9351 3968
 Email: hbriscoe@med.usyd.edu.au

Web: www.med.usyd.edu.au/medicine/immunology

Unit Head: Professor W J Britton

Institute for Biomedical Research

Room E214, Anderson Stuart Building, F13
 Phone: (02) 9351 2841
 Fax: (02) 9351 2058
 Email: ibr-gm@ibr.usyd.edu.au
 Web: www.ibr.usyd.edu.au

Director: Professor Cristobal dos Remedios

Key Centre for Polymer Colloids

Phone: (02) 9351 6968
 Fax: (02) 9351 8651
 Email: gilbert@chem.usyd.edu.au
 Web: www.kcpc.usyd.edu.au

Director: Professor Robert G Gilbert

Marine Studies Centre

Room 430, Madsen Building, F09
 Phone: (02) 9351 2972
 Fax: (02) 9351 3644
 Email: craigb@mail.usyd.edu.au
 Web: www.usyd.edu.au/su/marine

Director: Associate Professor Andrew Short

Ocean Studies Institute

Edgeworth David Building, F05
 Phone: (02) 9351 5548
 Fax: (02) 9351 4067

Director: Professor Peter J Davies

2 Study in the Faculty of Science

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

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

This chapter provides a broad orientation to the Faculty for undergraduates and postgraduates alike. What to study and where to find advice; how to structure your studies; how to get involved in the life of the Faculty and how to prepare for a career when your studies are complete, and a comprehensive subject guide to help you find the people who have similar interests to your own.

Chapters 3, 4 and 5 contain information directly concerning undergraduate study, including unit of study tables and descriptions, information about the Talented Student Program and degree Resolutions. Honours information is located at the end of chapter 3.

The details of postgraduate study are discussed in chapters 6 and 7. Chapter 6 describes degree requirements, including unit of study descriptions for coursework degrees, and some practical advice for research students. Chapter 7 contains postgraduate degree Resolutions.

Undergraduate units of study available

The Faculty offers units of study in the following subject areas:

- Agricultural Chemistry
- Anatomy and Histology
- Biochemistry
- Biology
- Cell Pathology
- Chemistry
- Computer Science
- Computational Science
- Environmental Science
- Geography
- Geology
- Geophysics
- History and Philosophy of Science
- Immunology
- Information Systems
- Marine Science
- Mathematics
- Mathematical Statistics
- Microbiology
- Molecular Biology and Genetics
- Molecular Biotechnology
- Nutritional Science
- Tropical Marine Science
- Pharmacology
- Physics
- Physiology
- Psychology
- Soil Science
- Statistics.

Some of the above units of study are available only in certain degree programs, like the Bachelor of Medical Science, BSc(Environmental), BSc(Marine Science), BSc(Molecular Biology and Genetics), BSc(Molecular Biotechnology) and BSc(Nutrition). Students in the Bachelor of Liberal Studies especially are also referred to the Faculty of Arts Handbook, for available Arts units. Many of the Science units are available at the Advanced level, intended for students with a high level of achievement in a given subject area, or as part of Advanced degree programs. Unit of study descriptions can be found in chapter 3.

Combined degree programs are also available with the Faculties of Arts, Economics, Education, Engineering, Law and Nursing.

■ Departmental and Faculty advisers

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

All first year students will have the opportunity to discuss particular units of study and any academic problems, with one of the Departmental advisers concerned, during the enrolment period. You may seek advice from the advisers at any time in the academic year, should the need arise. Advisers should not, however, be regarded as coaches dealing with detailed instruction.

The Associate Deans or Pro-Deans of the Faculty are better available to give advice regarding progress within your degree and problems you may be experiencing with your enrolment, or study at the University. Appointments may be made at the Faculty Office. The Faculty Staff themselves are able to answer most questions regarding the status of your enrolment and structure of your degree, but will refer you to an Associate Dean or Pro-Dean where necessary.

Honours and intending postgraduate students are encouraged to discuss their planned program of study with a graduate adviser, or potential supervisor, before lodging an application to enrol. Most academic problems during the course of an enrolment should be dealt with by your supervisor or course coordinator. The Faculty Office is there for matters of enrolment, and if the need to see an Associate Dean arises.

Bachelor degree program coordinators

BSc(Advanced Maths): A/Prof Don Taylor
BSc(Bioinformatics): A/Prof Ian Spence
BSc(Environmental): Dr Craig Barnes, Dr Gavin Birch
BSc(Marine Science): Dr Craig Barnes, A/Prof Andrew Short
BSc(Molecular Biology and Genetics): Professor Peter Lay
BSc(Molecular Biotechnology): A/Prof Anthony Weiss
BSc(Nutrition): Prof Jennie Brand Miller
BMedSc: A/Prof Ian Spence
BCST: A/Prof Jeff Kingston
BIT: A/Prof Alan Fekete

Departmental advisers

Agricultural Chemistry

Undergraduate: Dr Edith M. Lees
Graduate Adviser: Dr Edith M. Lees

Anatomy

Undergraduate: Dr John Mitrofanis, A/Prof Jan Provis
Postgraduate Coordinator: Dr John Mitrofanis

Biochemistry

Intermediate year: Dr Gareth S Denyer
Senior year: Dr Simon B Easterbrook-Smith
4th year: Dr Merlin Crossley
Graduate Adviser: Professor Richard Christopherson

Biological Sciences

Junior year adviser: Dr Susan Franklin
Intermediate year: Dr Jan Marc, Dr Kathy Raphael (Molecular Biology and Genetics), A/Prof Michael Thompson
Senior year: A/Prof Bill Allaway, Dr Murray Henwood, Professor Ian Hume, A/Prof Mike Kingsford, Dr Bruce Lyon, Dr Ben Oldroyd
4th year: Dr Chris Dickman
Graduate Adviser: A/Prof Robyn Overall

Cell Pathology

See Pathology

Chemistry

Junior year: Dr Adrian George

Intermediate year: Dr Rob Baker

Senior year: A/Prof Scott Kable

4th year: A/Prof Damon Ridley

Graduate Adviser: Dr George Bacskay

Computational Science

Professor Peter Robinson

Geography

Junior year: Dr Bill Pritchard

Intermediate year: Dr Peter Cowell

Senior year: Dr David Chapman

4th year: Dr Phil McManus

Graduate Adviser: A/Prof Deirdre Dragovich

Geology and Geophysics

Junior year: Tom Hubble

Intermediate year: Dr Derek Wyman

Intermediate year Environmental Geology: Dr Gavin Birch

Senior year: Dr Michael Hughes

4th year Geology: Dr Geoffrey L. Clarke

4th Year Geophysics: Professor Iain Mason

Graduate Adviser: Dr Gavin Birch

Histology

A/Prof Christopher R. Murphy, Dr Maria Byrne

History and Philosophy of Science

Undergraduate: Dr Rachel Ankeny

Graduate Adviser: Dr Katherine Neal

Infectious Diseases

A/Prof Colin Harbour

Information Technologies

Undergraduate (Junior, intermediate & senior years): A/Prof Jeff Kingston

4th year: Dr Ian Parkin

Graduate Adviser Coursework: A/Prof Jesse Jin

Graduate Adviser Research: Professor Peter Eades

Immunology

Dr Helen Briscoe

Marine Sciences

Undergraduate Adviser: Dr Craig Barnes

Graduate Adviser: A/Prof Andrew Short

Mathematics and Statistics

Junior year: First-year Office Sandra Britton

Intermediate year: Dr D Ivers and Dr R Thompson (Applied Mathematics), Mrs Mary Phipps (Mathematical Statistics), Dr Karl Wehrhahn (Pure Mathematics)

Senior year: Dr David Galloway (Applied Mathematics), Dr Marc Raimondo (Mathematical Statistics) and Ms Jenny Henderson (Pure Mathematics)

4th year: Dr Chris Cosgrove (Applied Mathematics), Dr M. Shelton Peiris (Mathematical Statistics) and Dr Jonathan Hillman (Pure Mathematics)

Graduate Adviser: A/Prof Neville Weber

Medical Science

Intermediate year: Franciose Janod-Groves (Physiology), Helen Agus (Microbiology)

Microscopy and Microanalysis

A/Prof Simon Ringer

Molecular and Microbial Biosciences

Biochemistry

Intermediate year: Dr Dale Hancock (Biochemistry), A/Prof Emma Whitelaw (Molecular Biology and Genetics)

Senior year: Dr Simon B. Easterbrook-Smith

4th year: Dr Merlin Crossley

Graduate Adviser: A/Prof Alan Jones

Microbiology

Intermediate year: Mrs Ilze Dalins

Senior year: Dr Dee Carter

4th year: Dr Tom Ferenci

BMedSc: Mrs Helen Agus

BSc (Molecular Biology and Genetics): Dr Dee Carter

Graduate Adviser: Dr Tom Ferenci

Nutrition

Intermediate year: Dr Diane Volker

Senior Year: Dr Samir Samman

4th year: Professor Jennie Brand Miller

Graduate Adviser: Isa Hopwood

Pathology

Undergraduate Advisers: Professor Nicholas Hunt,

A/Prof Nicholas King

Graduate Adviser: Dr John Gibbins

Pharmacology

Intermediate year: Dr Hilary Lloyd

Senior year: A/Prof Ian Spence, Professor Graham Johnston

4th year: A/Prof Rosemarie Einstein

Graduate Coordinator: Dr Robert Vandenberg

Physics

Junior year: Dr John O'Byrne

Intermediate year: Dr Neil Cramer

Senior year: Dr Bill Tango

4th year: Dr Anne Green

Graduate Adviser: Dr Mike Wheatland

Physiology

Intermediate year: Dr Miriam Frommer

Senior year: Dr Joseph Hoh, Dr Paul Martin

4th year: A/Prof Dave Davey

Postgraduate Coordinator: Professor M. Bennett

Psychology

Junior year: Dr Gavin Faunce

Intermediate year: Dr Joel Michell

Senior year: Dr Joel Michell

Honours year: Dr Pauline Howie

Graduate Advisers: Dr Alan Craddock (Graduate Diploma in Science (Psych)), Dr Caroline Hunt (Doctor of Clinical Psych), Dr David Grayson (postgraduate adviser)

Soil Science

Intermediate year: Dr Stephen Cattle

Senior and Honours year: Professor Alexander B. McBratney

Graduate Adviser: Dr Edith Lees

■ Recommended junior combinations in the BSc

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

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

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

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

Schools or departments, and recommended junior level combinations

Refer to Table I in chapter 3 for specific qualifying, prerequisite and corequisite units of study.

Agricultural Chemistry'

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'

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

Biochemistry'

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

Biology

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

1. Major Science subject area beginning at intermediate level.

*Cell Pathology*²

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

Chemistry

12 credit points of junior units of study in each of Chemistry + Mathematics + 24 credit points from other areas of study selected in consultation with an adviser.

Computational Science

COSC 1001 + 1002 + SOFT 1001 + SOFT 1002 + 12 credit points of junior Mathematics + 18 credit points selected in consultation with an adviser.

Computer Science

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

Geography

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

Geology

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

*Geophysics*²

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

*Immunobiology*¹

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

Information Systems

ISYS 1000 + 12 credit points of junior Mathematics units of study + 24 credit points selected in consultation with an adviser.

*Marine Sciences*¹

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

*Mathematical Statistics*¹

MATH 1001 or 1901 or 1906 + MATH 1002 or 1902 + MATH 1003 or 1903 or 1907 + MATH 1005 or 1905 or 1015 + 36 other junior credit points.

Mathematics

MATH 1001 or 1901 or 1906 + MATH 1002 or 1902 + MATH 1003 or 1903 or 1907 + MATH 1004 or 1904 or 1005 or 1905 + 36 other junior credit points.

*Medicinal Chemistry*²

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

*Microbiology*¹

12 credit points of junior Biology + 12 credit points of junior Chemistry including 1102 or 1902 or 1904 + 12 credit points of junior Mathematics MATH 1001 or 1011 or 1901 + MATH 1005 or 1015 or 1905.

*Nanoscience and Technology*²

12 credit points in each of Chemistry, Mathematics and Physics + MECH 2300 + 8 credit points chosen in consultation with an adviser.

Neuroscience

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*¹

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

Physics

12 credit points of junior units of study in each of Physics + Chemistry + MATH 1001 or 1901 + MATH 1002 or 1902 + MATH 1003 or 1903 + MATH 1005 or 1905 + 12 credit points of other junior units of study selected in consultation with an adviser. Science subject area beginning at senior level.

*Physiology*¹

6 credit points of junior Chemistry + 30 credit points from junior Chemistry, Biology, Physics, Psychology, Mathematics

Psychology

12 credit points of junior units of study in each of Psychology + Mathematics + 24 other junior credit points.

*Soil Science*¹

12 credit points of junior units of study in each of Chemistry + Physics or Mathematics or Computer Science

Selection of units of study in second year of attendance

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

Centres**Mathematics Learning Centre***Lecturer-in-charge: Ms Jacqueline M. Nicholas*

The Mathematics Learning Centre offers help to students who enter the University with insufficient preparation in mathematics to enable them to cope either with the normal first year mathematics units of study or with the mathematical requirements of other subjects.

Many university units of study assume that students have a certain level of knowledge of mathematics. These include junior units of study in chemistry, computer science, economics and physics and many intermediate and senior units of study, among them biology, physiology, psychology and some options in marine sciences. You should check your faculty handbook carefully to see what is assumed in the units of study you have chosen. If you know that you lack the assumed knowledge, or if you are doubtful whether you are well enough prepared for a unit of study, you should contact the Mathematics Learning Centre.

At the centre we can advise you about your choice of units of study, and help you decide which topics you need to do extra work on. We provide resources for individual study, with guidance from lecturers, and we also arrange small supplementary tutorials for students who are having difficulties. Introductory and bridging courses in mathematics and statistics are organised during the summer.

The centre is located on the 4th floor of the Carslaw Building (Room 441). Any student seeking assistance should call at the centre, or phone (02) 9351 4061.

The Australian Key Centre for Microscopy and Microanalysis*Director: Associate Professor Simon Ringer*

The Australian Key Centre for Microscopy and Microanalysis is established and supported under the Australian Research Council's Research Centre Program and focuses on industry interaction, educational development and innovative research. It has access to unparalleled infrastructure and expertise in optical and electron microscopies and microanalysis.

The teaching and research programs are undertaken by staff of the Electron Microscope Unit, School of Physics and local and overseas visiting academics.

The Key Centre offers Graduate Certificate, Graduate Diploma, Masters and PhD programs which provide students with the knowledge and skills required to become practical microscopists and microanalysis. For further information call (02) 9351 3178, [see www.kcmm.usyd.edu.au](http://www.kcmm.usyd.edu.au), or visit LG21 Madsen Building (F07).

The Key Centre for Polymer Colloids*Director: Professor Robert G. Gilbert*

The Key Centre for Polymer Colloids is established and supported under the Australian Research Council's Key Centres Program. It has a wide range of expertise for teaching and research within the polymer colloid field, with specialisation in the synthesis of artificial polymer colloids, the characterisation of polymer colloids, structure-property relations, free-radical polymerisation, surfactant effects, rheology, and polymerisation reactor engineering. This expertise has been built up with the aid of state-of-the-art equipment for the determination of particle

size, molecular weight, structure and composition in polymer colloid systems.

The teaching and research programs are undertaken by staff within the School of Chemistry and the Departments of Agricultural Chemistry and Soil Science, Chemical Engineering, and Mechanical and Mechatronic Engineering.

The Key Centre offers Short Courses in aspects of Polymer Colloids which can be articulated to comprise a Graduate Certificate or Diploma by coursework. For further information contact Professor Gilbert, (02) 9351 3366, gilbert@chem.usyd.edu.au, see www.kcpc.usyd.edu.au, or visit the Key Centre on the 3rd floor of the Chemistry Building.

Map Collection

The Map Collection within the Division of Geography in the Madsen Building is open to all faculties and departments in the University. The collection offers world coverage with 45 complete topographic series produced by agencies within the various countries, together with geological, regional, thematic and specialist maps. There are also a number of maps of historic interest. Atlases are held in the Geosciences Library close by.

Among the local holdings of the library are the Australian topographic series of 1:100,000 and 1:250,000, as well as maps produced by the Departments of Lands and Mineral Resources, the Forestry Commission, conservation and planning establishments, census departments, and most other map producing agencies throughout Australia.

The Map Collection, which contains over 80,000 maps, is open from 8.30 am to 4.30 pm on weekdays. Its comprehensive collection of wall maps is available for lecture use throughout the University. In other respects the collection is for reference only, map identity being obtained from a visual index or catalogue. The map custodian is the chief cartographer of the Division of Geography.

Marine Studies Centre

Director: Associate Professor Andy Short

The Marine Studies Centre integrates and coordinates undergraduate teaching and supervision of postgraduate students in all aspects of marine sciences. Membership of the Centre is open to academic staff and research students working in marine studies. The Centre is run by the Director and the Board which oversees coursework and research initiatives. Operation of the One Tree Island Research Station on the Great Barrier Reef is a responsibility of the Centre. The Centre also facilitates contact from the public about, and advises the University on, all matters of research and teaching in marine sciences and related environmental and resource issues.

Further information is available from the Director, Marine Studies Centre, (02) 9351 3625, a.short@csu.usyd.edu.au, or www.usyd.edu.au/su/marine.

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

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

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

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

Sydney University Science Association

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

The Association holds a number of activities throughout the year, including barbecues and the Annual Science Ball. The Science Association appoints sports directors who help organise interfaculty sport.

The association runs a stall during orientation week, where T-shirts are sold and you can find out more about what the association does. The Science Bulletin (official publication of SUSS) which heralds information concerning the activities of SUSS and Science departmental societies, is produced weekly and can be found on official departmental noticeboards. The postal address is Box 270, Wentworth Building, University of Sydney, 2006.

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

Member societies

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

■ Employment for graduates in Science

The field of employment for science graduates is extraordinarily wide, ranging from the dedicated research scientist in a university or research laboratory to the managing director of a large corporation, the school teacher, the technical representative, the laboratory bench worker, the production superintendent, the consultant geologist, the bird banding biologist, the actuary, the computer sales representative, the beachcomber... the list is endless. Many science graduates choose to undertake further study to prepare themselves for employment. There is a wide range of graduate diplomas and coursework master's degrees available. Some of these are: biotechnology, food technology, computers and control, electronics, nutrition and dietetics, and the better known ones such as education and librarianship.

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

It is prudent to plan your course with a career in mind, or a couple of careers if possible. For example, even though you might be sure you want to teach mathematics, you might include some computer science in your course so that if you did not like teaching you would have another choice of career. Alternatively, you might have your heart set on being a biologist, but as an insurance policy in case you could not get a job as a biologist, you might consider majoring in biochemistry, microbiology or chemistry to widen the scope. This is not to say you should give up too easily if you want to be a biologist. In areas where jobs are not too plentiful you have to start right at the beginning of your course to prepare to secure that job on graduation. Some suggestions are to learn scuba-diving, join the bush-walking or

speleological clubs, work in the vacation for one of the national parks-for nothing if necessary-and make as many personal contacts as you can. Such evidence of keenness and initiative impresses an employer. As you will have understood, it is not only your academic ability an employer looks at but also your personality, evidence of a sense of responsibility and activities beyond the set curriculum.

Similarly, if you want a job related to chemistry, physics, geology, computer science, biochemistry, etc, do your best to obtain a vacation job that will enable you to claim relevant experience when applying for your first job. These vacation jobs are hard to get, admittedly, but the extra leg-work and initiative involved in finding one will pay off in the long run. Some undergraduate degrees, such as the BSc(Molecular Biotechnology) feature in-industry 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.

■ Careers Centre

The Careers Centre can help you throughout your course. Visit it as often as you like. Some of the areas in which the Careers Centre might be of assistance to you are: to help you plan a science course that fits in with your personal aptitudes and interests and that keeps as many career options open for you as possible; to answer any queries you may have about careers (the Careers Centre has a careers library that you can browse in whenever you feel like it); to let you know about job prospects for any subject you wish to major in; to help you find employment on graduation; and last but not least, the Careers Centre's Student Employment Section is able to offer you vacation employment and part-time jobs throughout the year.

You will need to make an appointment to talk with one of the advisers about careers, but you do not need one to use the careers library or the Student Employment Section.

The Careers Centre is in the Mackie Building, Arundel Street, Forest Lodge, cross the Parramatta Road footbridge at the Holme Building, turn left, and it is the first building you come to.

■ Summer School

Most faculties at the University offer units of study from degree programs during January/February. As the University uses all of its HECS quota in first and second semester, these units are full fee-paying and 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 requisite subjects before they commence their degrees. Units start in the first week of January and run for up to six weeks (followed by an examination week). Notice of the Units available is contained in the various faculty Handbooks and is usually circulated to students with their results notices. This section is concerned specifically with the Faculty of Science. For further details about the University (its organisation, examinations, child care facilities, assistance for disabled students, housing, health, counseling, financial assistance, and a range of other matters) see the General University information chapter, or the separate publication *University of Sydney Diary*, available free from the Student Centre or from University of Sydney Union outlets.

■ Science disciplines and subject areas

Abnormal Psychology *see* Psychology

Acoustics *see* Physics

Algebra *see* Mathematics and Statistics

Analysis *see* Mathematics and Statistics

Animal Physiology *see* Biological Sciences, BMedSc, Physiology

Analytical Chemistry *see* Agricultural Chemistry and Soil Science, Chemistry

Applied Mathematics *see* Mathematics and Statistics

Applied Physics *see* Physics

Artificial Intelligence *see* Computer Science

Astronomy *see* Physics

Astrophysics *see* Physics

Atomic Physics *see* Physics

Bacteriology *see* Biochemistry, Biological Sciences, BMedSc, Microbiology

Beach Dynamics *see* Marine Studies, Geography

Biodegradation *see* Microbiology, Agricultural Chemistry and Soil Science

Biological Chemistry *see* Agricultural Chemistry and Soil Science, Biochemistry, Chemistry

Bioinformatics *see* Biological Science, Computer Science, Microbiology, BSc (Bioinformatics)

Bioremediation *see* Biological Sciences, Microbiology, Agricultural Chemistry and Soil Science

Biotechnology *see* Biochemistry, Biological Sciences, Chemistry, Microbiology, Physiology

Behavioural Genetics *see* Biological Sciences

Behavioural Science *see* Psychology

Biostatistics *see* Mathematics and Statistics

Biophysical Chemistry *see* Biochemistry, Chemistry

Botany *see* Biological Sciences

Carbohydrate Chemistry *see* Agricultural Chemistry and Soil Science, Biochemistry, Chemistry

Catalysis *see* Biochemistry, Chemistry

Category Theory *see* Mathematics and Statistics

Cancer *see* Biochemistry, BMedSc, Cell Pathology, Immunology, Physiology

Cardiovascular disease *see* Cell Pathology

Cardiovascular therapeutics *see* Pharmacology, BMedSc

Cell Biology *see* Biochemistry, Biological Sciences, BMedSc, Cell Pathology, Histology, Immunology, Microbiology, Physiology

Chaos *see* Physics, Mathematics and Statistics

Chemotherapy *see* Biochemistry, Chemistry, Microbiology, Pharmacology

Clay Mineralogy *see* Agricultural Chemistry and Soil Science

Coastal Morphodynamics *see* Marine Studies, Geography

Coastal Zone Management *see* Marine Studies, Geography

Cognitive Science *see* Psychology

Colloid Science *see* Chemistry, Key Centre for Polymer Colloids

Communicating Science *see* History and Philosophy of Science

Communication *see* Psychology

Communications Technology *see* Computer Science

Computational Biology *see* Bioinformatics

Computer-aided Drug Design *see* Biochemistry, BMedSc, Chemistry, Pharmacology

Computational Algebra *see* Mathematics and Statistics

Computational Chemistry *see* Chemistry

Computational Physics *see* Physics

Computer Design *see* Computer Science

Computer Graphics *see* Computer Science

Computer Cartography *see* Geography

Computer Networks *see* Computer Science

Computer Programming *see* Computer Science

Condensed Matter Physics *see* Physics

Conservation *see* Biological Sciences, Geography, Geology and Geophysics

Cosmology *see* Physics, Mathematics and Statistics

Counselling Psychology *see* Psychology

Cryptography *see* Mathematics and Statistics

Crystallography *see* Biochemistry, Chemistry, Geology and Geophysics

Data Analysis *see* Mathematics and Statistics, Physics

Databases *see* Computer Science

Developmental Biology *see* Biological Sciences, BMedSc, Histology

Developmental Psychology *see* Psychology

Dietetics *see* Biochemistry, BMedSc, BSc(Nutrition), Postgraduate study: MNutrSc and MNutrDiet

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

Drugs *see* Biochemistry, BMedSc, Chemistry, Pharmacology

DNA Technology *see* Biochemistry, Biological Sciences, BMedSc, Physiology

Earth Evolution *see* Geology and Geophysics, Geography

Ecology *see* Biological Sciences, Microbiology

Economic Geology *see* Geology and Geophysics

Electrochemistry *see* Chemistry

Electromagnetism *see* Physics

Electron Microscopy *see* Histology, GradDipSc (Microscopy and Microanalysis), MSc (Microscopy and Microanalysis), Physics

- Embryology** *see* Histology
- Endocrinology** *see* Biochemistry, BMedSc, Physiology
- Energy Conservation** *see* Chemistry, Physics
- Energy Science** *see* Chemistry, Physics
- Entomology** *see* Biological Sciences
- Environmental Pollution** *see* Agricultural Chemistry and Soil Science, BSc(Environmental), Chemistry, Geography, Marine Sciences, Microbiology
- Environmental Science** *see* Agricultural Chemistry and Soil Science, Biological Sciences, BSc (Environmental), Graduate Applied Science (Environmental), MSc (Environmental), Chemistry, Geography, Geology and Geophysics, Microbiology, Physics
- Enzymes** *see* Agricultural Chemistry and Soil Science, Biochemistry
- Epidemiology** *see* Mathematics and Statistics, Microbiology
- Evolution** *see* Biological Sciences, Geology and Geophysics
- Expert Systems** *see* Computer Science
- Financial Mathematics** *see* Mathematics and Statistics
- Fish Biology** *see* Biological Sciences
- Fisheries Biology** *see* Marine Sciences
- Fluvial Systems** *see* Geography
- Food Science** *see* Agricultural Chemistry and Soil Science, Biochemistry, Chemistry, Key Centre for Polymer Colloids, Microbiology, BSc(Nutrition), MNutrSc and MNutrDiet
- Forensic Science** *see* Biochemistry, Biology, BMedSc, Cell Pathology, Chemistry
- Fungal Biology** *see* Biological Sciences
- General Relativity** *see* Physics, Mathematics and Statistics
- Genetics** *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biology and Genetics), Cell Pathology, Microbiology
- Genetic Engineering** *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biology and Genetics), Microbiology
- Geochemistry** *see* Chemistry, Geography, Geology and Geophysics
- Geographical Information Systems (GIS)** *see* Agricultural Chemistry and Soil Science, Geography
- Geomagnetism** *see* Mathematics and Statistics
- Geometry** *see* Mathematics and Statistics
- Geomorphology** *see* Geography
- Geostatistics** *see* Agricultural Chemistry and Soil Science, Mathematics and Statistics
- Geophysics** *see* Geology and Geophysics
- Haematology** *see* Histology, BMedSc, Immunology, Physiology
- Histochemistry** *see* Histology, BMedSc
- History and Philosophy of Psychology** *see* Psychology
- History of Science** *see* BMedSc, History and Philosophy of Science
- Human Life Sciences** *see* Anatomy, Biochemistry, Biological Sciences, BMedSc, Cell Pathology, Histology, Immunology, Physiology
- Human Nutrition** *see* Biochemistry, Master of Nutritional Science, Master of Nutrition and Dietetics
- Hydrology** *see* Agricultural Chemistry and Soil Science, BSc (Environmental), Geography
- Image Processing** *see* Physics
- Immunology** *see* Biochemistry, Biological Sciences, BMedSc, Cell Pathology
- Individual Differences** *see* Psychology
- Industrial Chemistry** *see* Chemistry
- Infectious Diseases** *see* BMedSc, Cell Pathology, Immunology, Microbiology
- Inflammation** *see* Cell Pathology, Immunology
- Information Systems** *see* Computer Science
- Information Technology** *see* Computer Science
- Instrumentation** *see* Physics
- Inorganic Chemistry** *see* Chemistry
- Intelligence** *see* Psychology
- Intertidal Ecology** *see* Biological Sciences, Marine Sciences
- Invertebrate Zoology** *see* Biological Sciences
- Land Resources** *see* Agricultural Chemistry and Soil Science, Geography
- Lasers** *see* Physics
- Learning and Motivation** *see* Psychology
- Macromolecular Structure** *see* Biochemistry, Key Centre for Polymer Colloids
- Magnetic Resonance** *see* Chemistry
- Imaging** *see* Biochemistry, BMedSc
- Mammalian Biology** *see* Biological Sciences
- Marine Biology** *see* Biological Sciences, Marine Studies
- Marine Ecology** *see* Biological Sciences, Marine Sciences
- Marine Geology** *see* Geology and Geophysics
- Marine Geophysics** *see* Geology and Geophysics
- Marine Science** *see* Biological Sciences, Chemistry, Geography, Geology and Geophysics, Marine Studies
- Materials Science** *see* Chemistry, Physics
- Mathematical Modeling** *see* Mathematics and Statistics, Physics
- Mathematical Statistics** *see* Mathematics and Statistics
- Measurement Science** *see* Physics
- Medicinal Chemistry** *see* Chemistry, BMedSc, Pharmacology
- Medical Biochemistry** *see* Biochemistry, BMedSc, BSc (Molecular Biology and Genetics)
- Medical Microbiology** *see* BMedSc, Microbiology
- Medical Molecular Biology** *see* Biochemistry, Microbiology, BMedSc, BSc (Molecular Biology and Genetics)
- Membrane Biology** *see* Biological Sciences
- Metabolism** *see* Agricultural Chemistry and Soil Science, Biochemistry, Biological Sciences, BMedSc, Microbiology
- Microanalysis** *see* Chemistry, Physics, GradCertSc (Microscopy and Microanalysis), GradDipSc (Microscopy and Microanalysis), MSc (Microscopy and Microanalysis)
- Microscopy** *see* Agricultural Chemistry and Soil Science, Biological Sciences, BMedSc, Histology, Microbiology, Physics, GradCertSc (Microscopy and Microanalysis), GradDipSc (Microscopy and Microanalysis), MSc (Microscopy and Microanalysis)
- Microtechniques** *see* Histology, BMedSc
- Mineralogy** *see* Geology and Geophysics
- Mineral Physics** *see* Geology and Geophysics
- Molecular Biology** *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biology and Genetics), Cell Pathology, Chemistry, Immunology, Microbiology, Physiology
- Molecular Engineering** *see* Chemistry
- Molecular Genetics** *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biology and Genetics)
- Molecular Modeling** *see* Chemistry, Pharmacology
- Molecular Pharmacology** *see* Pharmacology
- Molecular Physics** *see* Physics
- Morphology** *see* BMedSc
- Muscle** *see* Cell Pathology, BMedSc, Physiology
- Mycology** *see* Biological Sciences, BMedSc
- Natural Hazards** *see* Geography, Geology and Geophysics
- Natural Products Chemistry** *see* Agricultural Chemistry and Soil Science, Chemistry
- Neural Networks** *see* Mathematics and Statistics, Physiology, BMedSc
- Neuroanatomy** *see* BMedSc, Anatomy
- Neurochemistry** *see* Pharmacology
- Neuropathology** *see* Cell Pathology
- Neuropharmacology** *see* BMedSc, Pharmacology
- Neurophysiology** *see* BMedSc, Physiology, Anatomy
- Neuroscience** *see* Anatomy, BMedSc, Pharmacology, Physiology, Psychology
- Nitrogen Fixation** *see* Agricultural Chemistry and Soil Science, Biological Sciences, Chemistry, Microbiology
- Nonlinear Analysis** *see* Mathematics and Statistics
- Nuclear Magnetic Resonance (NMR)** *see* Chemistry, Biochemistry
- Nuclear Physics** *see* Physics
- Nutrition** *see* Biochemistry, BMedSc, Postgraduate study MNutrSc and MNutrDiet
- Oceanography** *see* Biological Sciences, Geology and Geophysics, Marine Studies
- Optics** *see* Physics
- Organic Chemistry** *see* Chemistry
- Organisational Psychology** *see* Psychology
- Organometallic Chemistry** *see* Chemistry
- Paleontology** *see* Geology and Geophysics
- Parasitology** *see* BMedSc
- Pathology** *see* Cell Pathology
- Pathogenicity** *see* Microbiology
- Pedogeomorphology** *see* Geography
- Pedology** *see* Agricultural Chemistry and Soil Science
- Perception** *see* Psychology
- Personality** *see* Psychology
- Pesticide Chemistry** *see* Agricultural Chemistry and Soil Science, Chemistry
- Petrochemicals** *see* Chemistry

Petroleum Geology *see* Geology and Geophysics
Petrology *see* Geology and Geophysics
Pharmaceutical Chemistry *see* Chemistry, Pharmacology
Pharmacogenomics *see* Pharmacology
Philosophy of Science *see* History and Philosophy of Science
Photonics *see* Physics
Phycology *see* Biological Sciences
Physical Anthropology *see* Anatomy
Physical Chemistry *see* Chemistry
Plant Management *see* Biological Sciences
Plant Metabolism *see* Agricultural Chemistry and Soil Science, Biological Sciences
Plant Molecular Biology *see* Biological Sciences
Plant Physiology *see* Biological Sciences
Plant Science *see* Biological Sciences
Plasma Physics *see* Physics
Plate Tectonics *see* Geology and Geophysics
Polymer Science *see* Chemistry, Key Centre for Polymer Colloids
Programming *see* Computer Science
Proteins *see* Biochemistry, Chemistry
Protozoology *see* Biological Sciences
Psychological Assessment *see* Psychology
Public Health *see* BMedSc
Pure Mathematics *see* Mathematics and Statistics
Quantum Mechanics *see* Chemistry, Physics
Recombinant DNA Technology *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biology and Genetics), Microbiology, Physiology
Resource Management *see* Biological Sciences, Geography
Respiratory disease *see* Cell Pathology, Immunology
Rheology *see* Key Centre for Polymer Colloids
River Systems *see* BSc (Environmental), Geography
Robotics *see* Computer Science
Scientific Revolution *see* History and Philosophy of Science
Sedimentology *see* Geography, Geology and Geophysics, Marine Studies
Social Relations of Science *see* History and Philosophy of Science
Social Psychology *see* Psychology
Software Engineering *see* Computer Science
Soil Chemistry *see* Agricultural Chemistry and Soil Science
Soil Physics *see* Agricultural Chemistry and Soil Science
Soil Science *see* Agricultural Chemistry and Soil Science
Solar Physics *see* Physics
Solid State Chemistry *see* Chemistry
Solid State Physics *see* Physics
Solid State Science *see* Chemistry, Physics
Spectroscopy *see* Chemistry, Physics
Statistics *see* Mathematics and Statistics
Structural Geology *see* Geology and Geophysics
Surface Science *see* Chemistry, Key Centre for Polymer Colloids, Graduate Applied Science (Surface Coatings), Physics
Systems Analysis *see* Computer Science
Therapeutics *see* BMedSc, Pharmacology
Theoretical Chemistry *see* Chemistry
Theoretical Physics *see* Physics
Thermal Physics *see* Physics
Topographical Anatomy *see* Anatomy
Toxicology *see* Chemistry, Pharmacology
Vertebrate Zoology *see* Biological Sciences
Virology *see* BMedSc, BSc (Molecular Biology and Genetics), Microbiology, Pathology
Volcanology *see* Geology and Geophysics
X-Ray Crystallography *see* Chemistry
Zoology *see* Biological Sciences

3 Undergraduate degree requirements

This chapter sets out the requirements for the degrees of Bachelor of Science, Bachelor of Liberal Studies, Bachelor of Medical Science, Bachelor of Computer Science and Technology (and BCST(Adv)), Bachelor of Information Technology, Bachelor of Science in Media and Communications, Bachelor of Psychology, the specially designated Bachelor of Science degree programs of Advanced, Advanced Mathematics, Bioinformatics, Environmental, Marine Science, Molecular Biology and Genetics, Molecular Biotechnology and Nutritional Science, and the combined degrees of BSc/BCom, BSc/LLB, BA/BSc, BSc/BA, BN/BSc, BEd/BSc, BE/BSc, BSc/BE, and BE/BMedSc. The courses for the pass BSc (which includes the Advanced, Advanced Mathematics, Bioinformatics, Environmental, Marine Science, Molecular Biology and Genetics, Molecular Biotechnology and Nutrition degree programs), BMedSc and BCST degrees extend over a minimum of three years. For the Honours BSc, BMedSc and BCST degrees, a fourth year is taken and students must qualify to enter the Honours year. The courses for the BLibStud and the BScMediaComm degrees extend over a minimum of four years, a fifth year of Honours is available. The courses for both the pass and Honours degrees in the BIT extend over a minimum of four years. The BPsych extends over a minimum of four years and includes an Honours year. The combined degrees of BSc/BCom, BSc/LLB, BA/BSc, BSc/BA, BN/BSc, BEd/BSc, BE/BSc, BSc/BE and BE/BMedSc extend over five years. The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected in chapter 5.

Restrictions (general)

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

Time limits

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

Suspension

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

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

Credit

The Faculty resolved at its meeting on 14 March 1995 that students who have previously completed studies which are considered by the Faculty to be equivalent to any unit of study listed in the Tables may be given credit for that unit of study

providing that the unit of study was completed not more than nine years before admission to candidature in the Faculty.

Examinations and assessment

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

Results

For all junior, intermediate and senior units of study in the Bachelor of Science, Bachelor of Liberal Studies, Bachelor of 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) | 46-49 |
| F | Fail | Below 46 or 50 |
| AF | Absent Fail | |

*A maximum of 18 credit points from junior units of study may be counted for all degrees, except BScMediaComm where the maximum is 12 credit points and BIT and BMedSc where no credit points may be credited.

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

| | | |
|-----|-------------------------------|----------|
| H1 | Honours Class I | 80+ |
| H21 | Honours Class II (Division 1) | 75-79 |
| H22 | Honours Class II (Division 2) | 70-74 |
| H3 | Honours Class III | 65-69 |
| F | Fail* | below 65 |
| AF | Absent Fail* | |

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

Special consideration

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

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

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

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

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

■ Discontinuation and re-enrolment

University of Sydney (Coursework) Rule

Division 5 - Discontinuation of enrolment and suspension of candidature

14. Discontinuation of enrolment

- (1) A student who wishes to discontinue enrolment in an award course or a unit of study must apply to the relevant dean and will be presumed to have discontinued enrolment from the date of that application, unless evidence is produced showing:
 - (a) that the discontinuation occurred at an earlier date; and
 - (b) that there was good reason why the application could not be made at the earlier time.
- (2) A student who discontinues enrolment during the first year of enrolment in an award course may not re-enrol in that award course unless:
 - (a) the relevant dean has granted prior permission to re-enrol; or
 - (b) the student is reselected for admission to candidature for that course.
- (3) No student may discontinue enrolment in an award course or unit of study after the end of classes in that award course or unit of study, unless he or she produces evidence that:
 - (a) the discontinuation occurred at an earlier date; and
 - (b) there was good reason why the application could not be made at the earlier time.
- (4) A discontinuation of enrolment may be recorded as Withdrawn (W) or Discontinued Not To Count As Failure (DNF) where that discontinuation occurs within the time-frames specified by the University and published by the faculty, or where the student meets other conditions as specified by the relevant faculty.

■ Restrictions upon re-enrolment

University of Sydney (Coursework) Rule

Division 6 - Unsatisfactory progress and exclusion

14. Satisfactory progress

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

15. Requirement to show good cause

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

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

16. Exclusion for failure to show good cause

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

- (1) exclude the student from the relevant course; or
- (2) permit the student to re-enrol in the relevant award course subject to restrictions on units of study, which may include, but are not restricted to:
 - (a) completion of a unit or units of study within a specified time;
 - (b) exclusion from a unit or units of study, provided that the dean must first consult the head of the department responsible for the unit or units of study; and
 - (c) specification of the earliest date upon which a student may re-enrol in a unit or units of study.

17. Applying for re-admission after exclusion

- (1) A student who has been excluded from an award course or from a unit or units of study may apply to the relevant dean for readmission to the award course or re-enrolment in the unit or units of study concerned after at least 4 semesters, and that dean may readmit the student to the award course or permit the student to re-enrol in the unit or units of study concerned.
- (2) With the written approval of the relevant dean, a student who has been excluded may be given credit for any work completed elsewhere in the University or in another university during a period of exclusion.

18. Appeals against exclusion

- (1) In this Rule a reference to the Appeals Committee is a reference to the Senate Student Appeals Committee (Exclusions and Readmissions).
- (2) (a) (i) A student who has been excluded in accordance with this Rule may appeal to the Appeals Committee.
 - (ii) A student who has applied for readmission to an award course or re-enrolment in a unit of study after a period of exclusion, and who is refused readmission or re-enrolment may also apply to the Appeals Committee.
- (b) The Appeals Committee shall comprise:
 - (i) 3 ex officio members (the Chancellor, the Deputy Chancellor and the Vice-Chancellor and Principal);
 - (ii) the Chair and Deputy Chairs of the Academic Board;
 - (iii) 2 student Fellows; and
 - (iv) up to 4 other Fellows.
- (c) The Appeals Committee may meet as one or more sub-committees providing that each sub-committee shall include at least 1 member of each of the categories of:
 - (i) ex officio member;
 - (ii) Chair or Deputy Chair of the Academic Board;
 - (iii) student Fellow; and
 - (iv) other Fellows.
- (d) Three members shall constitute a quorum for a meeting of the Appeals Committee or a sub-committee.
- (e) The Appeals Committee and its sub-committees have authority to hear and determine all such appeals and must report its decision to the Senate annually.
- (f) The Appeals Committee or a sub-committee may uphold or disallow any appeal and, at its discretion, may determine the earliest date within a maximum of four semesters at which a student who has been excluded shall be permitted to apply to re-enrol.
- (g) No appeal shall be determined without granting the student the opportunity to appear in person before the Appeals Committee or sub-committee considering the appeal. A student so appearing may be accompanied by a friend or adviser.
- (h) The Appeals Committee or sub-committee may hear the relevant dean but that dean may only be present at those stages at which the student is permitted to be present. Similarly, the dean is entitled to be present when the Committee or sub-committee hears the student.
- (i) If, due notice having been given, a student fails to attend a meeting of the Appeals Committee or sub-committee scheduled to consider that student's appeal, the Appeals Committee or sub-committee, at its discretion, may defer consideration of the appeal or may proceed to determine the appeal.
- (j) A student who has been excluded in accordance with these resolutions and has lodged a timely appeal against that exclusion may re-enrol pending determination of that appeal if it has not been determined by the commencement of classes in the next appropriate semester.

Faculty resolutions

Satisfactory progress

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.

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% 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.

■ Bachelor of Science (BSc) degree program

Summary of requirements

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

Enrolment guide

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

- at least 96 credit points from Science subject areas
- at least one major from those included in Table I (see Table I: Bachelor of Science on page 13)
- 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
- no more than 18 credit points from units in which a grade of Pass (Concessional) has been awarded (Pass (Concessional) is awarded for Junior units of study only).
- 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 in the table of undergraduate units of study may be credited towards the course requirements

- a standard full time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part time
- you may not enrol in more than 32 credit points in any one semester without permission
- before being admitted to enrol in a unit of study, you have to meet any prerequisites and corequisites for that unit of study
- advanced units of study are indicated by a 9 (or 8) as the second digit of the unit of study code. Entry to these units of study are limited (details can be obtained from departments)
- a student may not enrol without first obtaining permission from the Dean in additional units of study once the degree requirements of 144 credit points have been satisfied
- 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.

Honours

There will be Honours courses in all Science subject areas. Please refer to "Honours in the Faculty of Science" on page 157.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. Consultation with a Faculty adviser is always recommended.

Discontinuation

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

Universities Admissions Index (UAI)

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

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.

Degree resolutions

See chapter 5.

Table I: Bachelor of Science

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---|----|--|---|----------------------------|----------------|---|----------|
| Agricultural Chemistry | | | | | | | |
| For a major in Agricultural Chemistry, the minimum requirement is 24 credit points of Senior units of study in this Subject Area. | | | | | | | |
| ■ Intermediate units of study | | | | | | | |
| AGCH 2001 Molecular Processes in Ecosystems | 8 | p BIOL 1002 or 1902 | Students who have not satisfied the prerequisites in Biology may enrol with SOIL 2001 as a corequisite. | Q CHEM 1002 or equivalent. | | N May not be counted with any Intermediate unit of study in Biochemistry. | 1 |
| ■ Senior units of study | | | | | | | |
| AGCH 3017 Food Chemistry and Biochemistry A | 4 | P AGCH 2001 or AGCH 2002 or BCHM (2002 or 2902) or BMED (2501 and 2502 and 2504). | | | | N May not be counted with AGCH 3003 or 3005. | 1 |
| AGCH 3018 Food Chemistry and Biochemistry B | 4 | c AGCH 3017. | | | | N May not be counted with AGCH 3003 or 3005. | 1 |
| AGCH 3019 Food Chemistry and Biochemistry C | 4 | c AGCH 3018. | | | | N May not be counted with AGCH 3003 or 3005. | 1 |
| AGCH 3020 Chemistry & Biochemistry of Ecosystems A | 4 | p AGCH 2001 or AGCH 2002 or CHEM (2001 or 2101 or 2202 or 2301 or 2302 or 2902) or BCHM (2002 or 2902) or ENVI (2001 or 2002). | | | | N May not be counted with AGCH 3001 or 3004. | 2 |
| AGCH 3021 Chemistry & Biochemistry of Ecosystems B | 4 | c AGCH 3020. | | | | N May not be counted with AGCH 3001 or 3004. | 2 |
| AGCH 3022 Chemistry & Biochemistry of Ecosystems C | 4 | c AGCH 3021. | | | | N May not be counted with AGCH 3001 or 3004. | 2 |
| AGCH 3024 Chemistry and Biochemistry of Foods | 6 | p MBLG2001 and 2002; and either CHEM 2311 and 2312, or BCHM 2002, or BCHM 2902. | | | | N May not be counted with AGCH 3017 or 3003 or 3005. | 1 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|--|----------------------|-----------------|---|----------------|----------------|-----------|
| Anatomy and Histology | | | | | | | |
| For a major in Anatomy and Histology, the minimum requirement is 24 credit points of Senior units of study in this Subject Area. | | | | | | | |
| ■ Intermediate units of study | | | | | | | |
| The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | | | | | | | |
| ANAT 2001 | Principles of Histology | 4 | p | 12 credit points of Junior Biology or Junior Psychology. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | 1, Summer |
| ANAT 2002 | Comparative Primate Anatomy | 4 | P | 12 creditpoints of Junior Biology or Junior Psychology. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | 2 |
| ANAT 2003 | Concepts in Neuroanatomy | 4 | A | Background in basic mammalian biology. p 12 credit points of Junior Biology or Junior Psychology. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | 2 |
| ANAT 2004 | Principles of Development | 4 | Q | ANAT 2001. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | 2 |
| ■ Senior units of study | | | | | | | |
| ANAT 3001 | Microscopy and Histochemistry | 12 | Q | ANAT 2001 For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2503,2504,2505. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | 1 |
| ANAT 3002 | Cells and Development | 12 | A | (i) an understanding of the basic structure of the vertebrates; (ii) an understanding of 2 elementary biochemistry and genetics. Q ANAT 2001 For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2503,2504,2505. N May not be counted with ANAT 3003. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | 2 |
| ANAT 3003 | Transmission & Scanning Electron Microsc | 12 | Q | ANAT 2001 or 32 credit points of Intermediate BMedSc units of study. N May not be counted with ANAT 3002. | | | 2 |
| ANAT 3004 | Cranial and Cervical Anatomy | 6 | Q | ANAT 2002. N May not be counted with ANAT 3005. <i>NB: Not more than 12 creditpoints allowed from ANAT 3004, ANAT 3007 & ANAT 3008. The completion of MBLG 2001 or 2101 or 2901 is highly recommended</i> | | | 2 |
| ANAT 3006 | Forensic Osteology | 6 | P | ANAT 2002. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | 1 |
| ANAT 3007 | Visceral Anatomy | 6 | A | Some knowledge of basic mammalian biology. Q ANAT 2002 or ANAT 2003. <i>NB: Not more than 12 creditpoints allowed from ANAT3004, ANAT 3007 & ANAT 3008. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | 1 |
| ANAT 3008 | Musculoskeletal Anatomy | 6 | Q | ANAT 2002. N May not be counted with ANAT 3005. <i>NB: Not more than 12 creditpoints allowed from ANAT 3004, AN AT 3007 & ANAT 3008. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | 2 |
| Biochemistry | | | | | | | |
| For a major in Biochemistry, the minimum requirement is 24 credit points of Senior units of study in this Subject Area. | | | | | | | |
| ■ Intermediate units of study | | | | | | | |
| The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | | | | | | | |
| BCHM 2011 | Biochemistry | 8 | A | CHEM (1101 and 1102). P 12 credit points of Junior Chemistry. c Recommended concurrent units of study: MBLG (2001 or 2901) for progression to Senior Biochemistry, and/or Intermediate Chemistry. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | 1 |
| BCHM 2002 | Molecules, Metabolism and Cells | 8 | P | MBLG 2001 or 2901. N May not be counted with AGCH 2001 or BCHM 2102 or 2902. | | | 2, Summer |
| BCHM 2102 | Molecules, Metabolism and Cells Theory | 4 | p | MBLG (2001 or 2101 or 2901). N May not be counted with AGCH 2001 or BCHM 2002 or 2902. | | | 2, Summer |
| BCHM 2902 | Molecules, Metabolism and Cells (Adv) | 8 | Q | Distinction in MBLG 2001 or 2901. N May not be counted with AGCH 2001 or BCHM 2002 or 2102. | | | 2 |
| ■ Senior units of study | | | | | | | |
| BCHM 3001 | Mol Biology and Structural Biochemistry | 12 | Q | For enrolment in 2002: MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). N May not be counted with BCHM 3901. <i>NB: From 2003 the entry requirements will be: MBLG (2001 or 2901) and [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students 32 creditpoints of Intermediate BMED units including BMED (2501 and 2502 and 2504).</i> | | | 1 |
| BCHM 3002 | Cellular and Medical Biochemistry | 12 | Q | For enrolment in 2002: MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). N May not be counted with BCHM 3902/3904. <i>NB: From 2003 entry requirements will be: MBLG (2001 or 2901) and [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students: 32 creditpoints of Intermediate BMED units including BMED (2501 and 2502 and 2504).</i> | | | 2 |
| BCHM 3098 | Functional Genomics and Proteomics | 6 | A | BCHM 2011. Q MBLG(2001 or 2901) or at least 32 credit points of intermediate BMED units including BMED (2501 and 2502 and 2504). | | | T |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge P: Prerequisite Q: Qualifying C: Corequisite N: Prohibition | Semester |
|--|----|--|----------|
| BCHM 3901 Mol Biology and Structural Biochem (Adv) | 12 | Q Distinction in MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902; or 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504). N May not be counted with BCHM 3001. <i>NB: From 2003 the requirements will be: Distinction in MBLG (2001 or 2901) and in [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504).</i> | 1 |
| BCHM 3902 Cellular and Medical Biochemistry (Adv) | 12 | Q For enrolment in 2002: Distinction in MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902; or 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504). N May not be counted with BCHM 3002/3904. <i>NB: From 2003 the entry requirements will be: Distinction in MBLG (2001 or 2901) and in [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504).</i> | 2 |

Biology

For a major in Biology, the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Junior units of study

| | | | |
|--|---|--|-----------|
| BIOL 1001 Concepts in Biology | 6 | A HSC Biology. N May not be counted with BIOL 1901 or 1500. | 1, Summer |
| BIOL 1901 Concepts in Biology (Advanced) | 6 | p UAI of at least 93 and HSC Biology result in the 90m percentile or better, or Distinction or better in a University level Biology unit, or by invitation. N May not be counted with BIOL 1001 or 1500. <i>NB: Permission required for enrolment.</i> | 1 |
| BIOL 1002 Living Systems | 6 | A HSC 2-unit Biology course. N May not be counted with BIOL 1902 or 1500. | 2 |
| BIOL 1902 Living Systems (Advanced) | 6 | P UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. N May not be counted with BIOL 1002 or 1904 or 1905 or 1500. <i>NB: Permission required for enrolment.</i> | 2 |
| BIOL 1003 Human Biology | 6 | A HSC Biology. N May not be counted with BIOL 1903 or 1500 or EDUH 1016. | 2, Summer |
| BIOL 1903 Human Biology (Advanced) | 6 | P UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. N May not be counted with BIOL 1003 or 1904 or 1905 or 1500 or EDUH 1016. <i>NB: Permission required for enrolment.</i> | 2 |
| BIOL 1500 Biology Today | 6 | A No previous knowledge required. N May not be counted with BIOL 1001,1901,1002,1902,1003,1903 or 1904 or 1905. May not be counted as a prerequisite for any Intermediate units of study in Biology. | 2 |

■ Intermediate units of study

See also Molecular Biology and Genetics MBLG 2002/2102/2902. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

| | | | |
|--------------------------------|---|--|---|
| BIOL 2001 Animals A | 8 | P 12 credit points of Junior Chemistry (for students in the BSc (Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics). Q BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). N May not be counted with BIOL 2101 or 2901. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2004 or 2904 or 2006 or 2906 must complete 32 hours of alternative work in one unit.</i> | 1 |
| BIOL 2901 Animals A (Advanced) | 8 | p 12 credit points of Junior Chemistry (for students in the BSc (Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics). Q Distinction average in BIOL 1001 or 1901 and one of BIOL 1002,1902,1003,1903. These requirements may be varied and students with lower averages should consult the unit Executive Officer. N May not be counted with BIOL 2001 or 2101. <i>NB: The completion of MBLG 2001 or 2901 or 2101 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2004 or 2904 or 2006 or 2906 must complete 32 hours of alternative work in one unit.</i> | 1 |
| BIOL 2101 Animals A - Theory | 4 | Q BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or LWSC 1002 or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). N May not be counted with BIOL 2001 or 2901. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Not a prerequisite for Senior units of study in Biology. Students taking this unit concurrently with (or following completion of) BIOL 2004 or 2904 or 2006 or 2106 or 2906 must complete 16 hours of alternative work in one unit, in place of the core material common to both units.</i> | 1 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|-----------------|--|----------------|--|----------|
| BIOL 2002 Animals B | 8 | P 12 credit points of Junior Chemistry. For students in the BSc(Marine Science) stream: MBLG (2001 or 2101) and 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. | | Q BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016 (for BEd (Secondary) (Human Movement and Health Education)). | | N May not be counted with BIOL 2102 or 2902. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of Biology 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading.</i> | 2 |
| BIOL 2902 Animals B (Advanced) | 8 | P 12 credit points of Junior Chemistry. For students in the BSc(Marine Science) stream: MBLG (2001 or 2101) and 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. | | Q Distinction average in BIOL (1001 or 1901) and one of BIOL (1002,1902,1003,1903). These requirements may be varied and students with lower averages should consult the unit Executive Officer. | | N May not be counted with BIOL 2002 or 2102. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading.</i> | 2 |
| BIOL 2102 Animals B - Theory | 4 | | | Q BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or LWSC 1002 or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). | | N May not be counted with BIOL 2002 or 2902. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Not a prerequisite for Senior units of study in Biology.</i> | 2 |
| BIOL 2003 Plant Anatomy and Physiology | 8 | | | Q BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). | | N May not be counted with BIOL 2903. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of Biology 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading.</i> | 2 |
| BIOL 2903 Plant Anatomy and Physiology (Advanced) | 8 | | | Q Distinction average in BIOL (1001 or 1901) and one of BIOL (1002,1902,1003,1903). These requirements may be varied and students with lower averages should consult the unit Executive Officer. | | N May not be counted with BIOL 2003. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading.</i> | 2 |
| BIOL 2004 Plant Ecology and Diversity | 8 | | | Q BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or LWSC 1002 or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). | | c MICR 2013 for BLWSc. N May not be counted with BIOL 2904. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of Biology 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2006 or 2906 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.</i> | 1 |
| BIOL 2904 Plant Ecology and Diversity (Advanced) | 8 | | | Q Distinction average in BIOL 1001 or 1901 and one of BIOL 1002,1902,1003,1903. These requirements may be varied and students with lower averages should consult the unit Executive Officer. | | N May not be counted with BIOL 2004. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2006 or 2906 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.</i> | 1 |
| BIOL 2006 Cell Biology | 8 | p 12 credit points of Junior Chemistry (for students in the BSc(Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics). | | Q BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903 or 1905) or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). | | N May not be counted with BIOL 2106 or 2906. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2004 or 2904 must complete 32 hours of alternative work in one unit, in place of the core material common to both and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.</i> | 1 |
| BIOL 2906 Cell Biology (Advanced) | 8 | p 12 credit points of Junior Chemistry (for students in the BSc(Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics). | | Q Distinction average in BIOL 1001 or 1901 and one of BIOL 1002,1902,1003,1903, 1905. These requirements may be varied and students with lower averages should consult the unit Executive Officer. | | N May not be counted with BIOL 2006 or 2106. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2004 or 2904 must complete 32 hours of alternative work in one unit, in place of the core material common to both and, if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.</i> | 1 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|----------------------|--|---|----------------|--|----------|
| BIOL 2106 Cell Biology-Theory | 4 | | P 12 credit points of Junior Chemistry (for students in the BSc(Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics). | | | O. BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). N May not be counted with BIOL 2006 or 2906. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2004 or 2904 must complete 32 hours of alternative work in one unit, in place of the core material common to both and, if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work</i> | 1 |
| BIOL 2007 Entomology Introductory | 8 | | P 12 credit points of Junior Chemistry. For students in the BSc(Marine Science) stream: MBLG (2001 or 2101) and 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. | Q BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. See prerequisites for Senior units of study in Biology.</i> | | | 2 |
| ■ Senior units of study | | | | | | | |
| BIOL 3011 Ecophysiology | 6 | | Q 16 credit points of Intermediate Biology including BIOL 2002 or 2003 or 2006 or 2902 or 2903 or 2906. N May not be counted with BIOL 3911. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| BIOL 3911 Ecophysiology (Advanced) | 6 | | Q Distinction average in 16 credit points of Intermediate Biology including BIOL 2002 or 2003 or 2006 or 2902 or 2903 or 2906. These requirements may be varied and students with lower averages should consult the unit Executive Officer. N May not be counted with BIOL 3011. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| BIOL 3012 Animal Physiology | 6 | | Q 16 credit points of Intermediate Biology including BIOL 2002 or 2003 or 2006 or 2902 or 2903 or 2906. N May not be counted with BIOL 3912. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| BIOL 3912 Animal Physiology (Advanced) | 6 | | Q Distinction average in 16 credit points of Intermediate Biology including BIOL 2002 or 2003 or 2006 or 2902 or 2903 or 2906. These requirements may be varied and students with lower averages should consult the unit Executive Officer. N May not be counted with BIOL 3012. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| BIOL 3013 Marine Biology | 6 | | Q 16 credit points of Intermediate Biology, including BIOL 2001 or 2002 or 2003 or 2004 or 2901 or 2902 or 2903 or 2904. N May not be counted with BIOL 3913. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| BIOL 3913 Marine Biology (Advanced) | 6 | | Q Distinction average in 16 credit points of Intermediate Biology including BIOL 2001 or 2002 or 2003 or 2004 or 2901 or 2902 or 2903 or 2904. These requirements may be varied and students with lower averages should consult the unit Executive Officer. N May not be counted with BIOL 3013. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| BIOL 3014 Biology of Terrestrial Vertebrates | 6 | | Q 16 credit points of Intermediate Biology. N May not be counted with BIOL 3914. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| BIOL 3914 Biology of Terrestrial Vertebrates (Adv) | 6 | | Q Distinction average in 16 credit points of Intermediate Biology. These requirements may be varied and students with lower averages should consult the unit Executive Officer. N May not be counted with BIOL 3014. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| BIOL 3015 Plant Systematics and Biogeography | 6 | | Q 16 credit points of Intermediate Biology including BIOL 2004 or 2904. N May not be counted with BIOL 3915. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| BIOL 3915 Plant Systematics and Biogeography (Adv) | 6 | | Q Distinction average in 16 credit points of Intermediate Biology including BIOL 2004 or 2904. These requirements may be varied and students with lower averages should consult the unit Executive Officer. N May not be counted with BIOL 3015. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| BIOL 3017 Fungal Biology | 6 | | 0. 16 credit points of Intermediate Biology, or 8 credit points of Intermediate Biology and 8 Intermediate credit points of either Microbiology or Geography, or their equivalent. N May not be counted with BIOL 3917. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| BIOL 3917 Fungal Biology (Advanced) | 6 | | Q Distinction average in 16 credit points of Intermediate Biology, or 8 credit points of Intermediate Biology and 8 Intermediate credit points of either Microbiology or Geography, or their equivalent. N May not be counted with BIOL 3017. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| BIOL 3018 Applications of DNA Tech | 6 | | Q MBLG (2001/2901 and 2002/2902) or 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. N May not be counted with BIOL 3918, 3103 or 3903. | | | | 1 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|-----------------|---------------|----------------|---|----------|
| BIOL 3918 Applications of Recombinant DNA Tech Adv | 6 | Q Distinction average in MBLG (2001/2901 and 2002/2902) or in 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. | | | | N May not be counted with BIOL 3018,3103 or 3903. | 1 |
| BIOL 3021 Plant Development | 6 | Q 16 credit points of Intermediate Biology including BIOL 2003 or 2903 or 2006 or 2906. | | | | N May not be counted with BIOL 3931. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| BIOL 3931 Plant Development (Advanced) | 6 | Q Distinction average in 16 credit points of Intermediate Biology including BIOL 2003 or 2903 or 2006 or 2906. These requirements may be varied and students with lower averages should consult the unit Executive Officer. | | | | N May not be counted with BIOL 3021. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| BIOL 3022 Plant Physiology | 6 | Q 16 credit points of Intermediate Biology including BIOL 2003 or 2006 or 2903 or 2906. | | | | N May not be counted with BIOL 3932. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| BIOL 3932 Plant Physiology (Advanced) | 6 | Q Distinction average in 16 credit points of Intermediate Biology including BIOL 2003 or 2903 or 2006 or 2906. These requirements may be varied and students with lower averages should contact the unit Executive Officer. | | | | N May not be counted with BIOL 3022. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| BIOL 3023 Ecological Methods | 6 | O 16 credit points of Intermediate Biology including BIOL 2001 or 2901 or 2002 or 2902 or 2004 or 2904. | | | | N May not be counted with BIOL 3923. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| BIOL 3923 Ecological Methods (Advanced) | 6 | Q Distinction average in BIOL (2001 or 2901) and (2002 or 2902), or in 16 credit points of Intermediate Biology including BIOL (2004 or 2904). | | | | N May not be counted with BIOL 3023. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| BIOL 3024 Ecology | 6 | Q BIOL (2001 or 2901) and BIOL (2002 or 2902) or 16 credit points of Intermediate Biology including BIOL (2004 or 2904). | | | | c BIOL (3023 or 3923). N May not be counted with BIOL 3924. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| BIOL 3924 Ecology (Advanced) | 6 | Q Distinction average in BIOL (2001 or 2901) and (2002 or 2902), or in 16 credit points of Intermediate Biology including BIOL (2004 or 2904). | | | | c BIOL (3023 or 3923). N May not be counted with BIOL 3024. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| BIOL 3025 Evolutionary Genetics & Animal Behaviour | 6 | Q 16 credit points from MBLG 2001, MBLG 2901, MBLG 2002, MBLG 2902 and intermediate level Biology units. For BMedSc students 32 credit points of Intermediate BMED units including BMED 2502. | | | | N May not be counted with BIOL (3925 or 3928). | 2 |
| BIOL 3925 Evolutionary Gen. & Animal Behaviour Adv | 6 | Q Distinction average in 16 credit points from MBLG 2001, MBLG 2901, MBLG 2002, MBLG 2902 and Intermediate Biology units. For BMedSc students 32 credit points of Intermediate BMED units including distinction in BMED 2502. These requirements may be varied and students with lower averages should consult the unit Executive Officer. | | | | N May not be counted with BIOL (3025 or 3928). | 2 |
| BIOL 3026 Developmental Genetics | 6 | Q MBLG (2001/2901 and 2002/2902) or 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. | | | | N May not be counted with BIOL 3926 or 3929. | 2 |
| BIOL 3926 Developmental Genetics (Advanced) | 6 | O Distinction average in MBLG (2001/2901 and 2002/2902) or in 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. | | | | N May not be counted with BIOL 3026 or 3929. | 2 |
| BIOL 3027 Bioinformatics and Genomics | 6 | Q MBLG (2001 or 2101 or 2901) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. | | | | N May not be counted with BIOL 3927. | 1 |
| BIOL 3927 Bioinformatics and Genomics (Advanced) | 6 | Q Distinction in MBLG (2001 or 2101 or 2901) or Distinction average in 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. | | | | N May not be counted with BIOL 3027. | 1 |

Cell Pathology

For a major in Cell Pathology, the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Senior units of study

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

| | | | | | | | |
|----------------------------|----|---|--|--|--|--|---|
| CPAT 3001 Cell Pathology A | 12 | P ANAT 2002; or BCHM 2002 or 2902; or BIOL 2005 or 2006 or 2905 or 2906; or both PCOL 2001 and (2002 or 2003); or PHS12002. For BMedSc: 32 credit points from Intermediate BMED units of study. | | | | | 1 |
|----------------------------|----|---|--|--|--|--|---|

NB: Permission required for enrolment. Entry requires Departmental permission: only a small number of students can be accommodated in the laboratory facilities. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|-----------------|---------------|----------------|----------------|----------|
| CPAT Pathological Basis of Human Disease 3101 | 12 | O. ANAT 2001; or BCHM 2001 or 2002 or 2101 or 2102 or 2901 or 2902; or MBLG 2001 or 2101 or 2901; or BIOL 2001 or 2002 or 2005 or 2006 or 2101 or 2102 or 2105 or 2106 or 2901 or 2902 or 2905 or 2906; or HPSC 2001 or 2002; or MICR 2001 or 2003 or 2901; or PCOL 2001; or PHSI2001. For BMedSc: 32 credit points from Intermediate BMED units of study. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 2 |
| Chemistry | | | | | | | |
| For a major in Chemistry, the minimum requirement is 24 credit points of Senior units of study in this Subject Area. | | | | | | | |
| ■ Junior units of study | | | | | | | |
| CHEM 1001 Fundamentals of Chemistry 1A | 6 | A There is no assumed knowledge of chemistry for this unit of study, but students who have not undertaken an HSC chemistry course are strongly advised to complete a chemistry bridging course before lectures commence. N May not be counted with CHEM 1101 or 1901 or 1903 or 1905 or 1906 or 1909. | | | | | 1 |
| CHEM 1002 Fundamentals of Chemistry 1B | 6 | p CHEM 1001 or 1101 or equivalent. N May not be counted with CHEM 1102 or 1902 or 1904 or 1907 or 1908. | | | | | 2 |
| CHEM 1101 Chemistry 1A | 6 | A HSC Chemistry and Mathematics. C Recommended concurrent units of study: 6 credit points of Junior Mathematics. N May not be counted with CHEM 1001 or 1901 or 1903 or 1905 or 1906 or 1909. | | | | | 1,2 |
| CHEM 1102 Chemistry 1B | 6 | Q CHEM 1101 or a Distinction in CHEM 1001 or equivalent. c Recommended concurrent units of study: 6 credit points of Junior Mathematics including MATH 1003 or 1903. N May not be counted with CHEM 1002 or 1902 or 1904 or 1907 or 1908. | | | | | 1,2 |
| CHEM 1901 Chemistry 1A (Advanced) | 6 | p UAI of at least 93 and HSC Chemistry result in the 80th percentile or better, 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 May not be counted with CHEM 1001 or 1101 or 1903 or 1905 or 1906 or 1909. <i>NB: Permission required for enrolment.</i> | | | | | 1 |
| CHEM 1902 Chemistry 1B (Advanced) | 6 | Q CHEM 1901 or 1903 or Distinction in CHEM 1101 or equivalent. C Recommended concurrent unit of study: 6 credit points of Junior Mathematics including MATH 1003 or 1903. N May not be counted with CHEM 1002 or 1102 or 1904 or 1907 or 1908. <i>NB: Permission required for enrolment. Entry is by invitation.</i> | | | | | 2 |
| CHEM 1903 Chemistry 1A (Special Studies Program) | 6 | p UAI of at least 98.7 and HSC Chemistry result in the 94th percentile or better, or Distinction or better in a University level Chemistry unit, or by invitation. Students in the Faculty of Science Talented Students Program are automatically eligible. C Recommended concurrent unit of study: 6 credit points of Junior Mathematics. N May not be counted with CHEM 1001 or 1101 or 1901 or 1905 or 1906 or 1909. <i>NB: Permission required for enrolment. Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.</i> | | | | | 1 |
| CHEM 1904 Chemistry 1B (Special Studies Program) | 6 | p Distinction in CHEM 1903. C Recommended concurrent units of study: 6 credit points of Junior Mathematics including MATH 1003 or 1903. N May not be counted with CHEM 1002 or 1102 or 1902 or 1907 or 1908. <i>NB: Permission required for enrolment. Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.</i> | | | | | 2 |
| ■ Intermediate units of study | | | | | | | |
| CHEM 2001 Chemistry 2 (Life Sciences) | 8 | P 6 credit points of Junior Mathematics. Q CHEM 1102 or 1902 or 1904 or 1909. N May not be counted with CHEM 2101 or 2301 or 2901 or 2903 or 2311 or 2312 or 2502. | | | | | 1 |
| CHEM 2101 Chemistry 2 (Environmental) | 8 | P 6 credit points of Junior Mathematics. Q CHEM 1102 or 1902 or 1904 or 1909. N May not be counted with CHEM 2001 or 2301 or 2901 or 2903 or 2311 or 2312 or 2502. | | | | | 1 |
| CHEM 2301 Chemistry 2A | 8 | P 6 credit points of Junior Mathematics. O. CHEM 1102 or 1902 or 1904 or 1909. N May not be counted with CHEM 2001 or 2101 or 2901 or 2903 or 2311 or 2312 or 2502. | | | | | 1 |
| CHEM 2302 Chemistry 2B | 8 | p 6 credit points of Junior Mathematics. Q CHEM 1102 or 1902 or 1904 or 1909. N May not be counted with CHEM 2202 or 2902. | | | | | 2 |
| CHEM 2901 Chemistry 2A (Advanced) | 8 | p 6 credit points of Junior Mathematics. Q WAM greater than 80 and Distinction average in CHEM 1101 or 1901 or 1903 and in Chemistry 1102 or 1902 or 1904 or 1909. N May not be counted with CHEM 2001 or 2101 or 2301 or 2903 or 2311 or 2312 or 2502. <i>NB: Permission required for enrolment. Entry to this unit of study is by invitation. Students in the Faculty of Science Talented Students Program are automatically eligible.</i> | | | | | 1 |
| CHEM 2902 Chemistry 2B (Advanced) | 8 | p 6 credit points of Junior Mathematics. Q WAM greater than 80 and Distinction average in CHEM (1101 or 1901 or 1903) and CHEM (1102 or 1902 or 1904 or 1909). N May not be counted with CHEM 2202 or 2302. <i>NB: Permission required for enrolment. Entry is by invitation.</i> | | | | | 2 |
| ■ Senior units of study | | | | | | | |
| CHEM 3101 Chemistry 3A | 12 | Q CHEM (2001 or 2101 or 2301 or 2901) and CHEM (2302 or 2902). N May not be counted with CHEM 3311, 3601, 3602, 3901 or 3903 (but may be counted with CHEM 3201). | | | | | 1 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|-----------------------------------|----|---|-----------------|---------------|----------------|----------------|----------|
| CHEM 3901 Chemistry 3A (Advanced) | 12 | Q Distinction average in CHEM 2001 or 2101 or 2301 or 2901 and in CHEM 2202 or 2302 or 2902; by invitation. | | | | | 1 |
| | | N May not be counted with CHEM 3101,3311,3601,3602 or 3903 (but may be counted with CHEM 3201). | | | | | |
| | | <i>NB: Permission required for enrolment. The number of places in this unit of study is limited and entry is by invitation. Applications are invited from students with a high WAM and an excellent record in Intermediate Chemistry. Students in the Faculty of Science Talented Student Program are automatically eligible.</i> | | | | | |
| CHEM 3201 Chemistry 3A Additional | 12 | Q CHEM (2001 or 2101 or 2301 or 2502 or 2901) and CHEM (2302 or 2902). | | | | | 1 |
| | | C CHEM 3101 or 3901. | | | | | |
| | | N May not be counted with CHEM 3601,3602 or 3903. | | | | | |
| CHEM 3102 Chemistry 3B | 12 | Q CHEM (2001 or 2101 or 2301 or 2901) and CHEM (2302 or 2902). | | | | | 2 |
| | | N May not be counted with CHEM 3601,3602,3902 or 3903 (but may be counted with CHEM 3202). | | | | | |
| CHEM 3902 Chemistry 3B (Advanced) | 12 | Q Distinction or better in CHEM 2902 or 3101 or 3901; by invitation. | | | | | 2 |
| | | N May not be counted with CHEM 3102,3601,3602 or 3903. | | | | | |
| | | <i>NB: Permission required for enrolment. The number of places in this unit of study is limited and entry is by invitation. Students in the Faculty of Science Talented Student Program are automatically eligible.</i> | | | | | |
| CHEM 3202 Chemistry 3B Additional | 12 | Q CHEM (2001 or 2101 or 2301 or 2502 or 2901) and CHEM (2302 or 2902). | | | | | 2 |
| | | C CHEM 3102 or 3902. | | | | | |
| | | N May not be counted with CHEM 3601,3602 or 3903. | | | | | |

Computational Science

For a major in Computational Science, the minimum requirement is

- (i) 12 credit points from the core Senior units of study; and
- (ii) a minimum of 12 credit points from the elective Senior units of study.

■ Junior units of study

| | | | | | | | |
|--|---|---|--|--|--|--|---|
| COSC 1001 Computational Science in Matlab | 3 | N May not be counted with COSC 1901. | | | | | 2 |
| COSC 1901 Computational Science in Matlab(Adv) | 3 | p UAI of at least 90, or COSC 1902, or a distinction or better in COSC 1002, SOFT 1001, 1002, 1901 or 1902. | | | | | 2 |
| | | N May not be counted with COSC 1001. | | | | | |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| COSC 1002 Computational Science in C | 3 | N May not be counted with COSC 1902. | | | | | 2 |
| COSC 1902 Computational Science in C (Adv) | 3 | p UAI of at least 90, or COSC 1901, or a distinction or better in COSC 1001, SOFT 1001, 1002, 1901 or 1902. | | | | | 2 |
| | | N May not be counted with COSC 1002. | | | | | |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |

■ Senior core units of study

| | | | | | | | |
|---|---|---|--|--|--|--|---|
| MATH 3016 Mathematical Computing I | 4 | P 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903 or 1906 or 1907. | | | | | 1 |
| | | N May not be counted with MATH 3916. | | | | | |
| MATH 3916 Mathematical Computing I (Advanced) | 4 | P 8 credit points of Intermediate Mathematics and one of MATH 1903 or 1907 or Credit in MATH 1003. | | | | | 1 |
| | | N May not be counted with MATH 3016. | | | | | |
| PHYS 3301 Scientific Computing | 4 | P 16 credit points of Intermediate units of study in Science Subject Areas. | | | | | 1 |
| | | N May not be counted with PHYS 3931. | | | | | |
| PHYS 3931 Scientific Computing (Advanced) | 4 | p 16 credit points at a level of Credit or better of Intermediate units of study in Science Subject Areas. | | | | | 1 |
| | | N May not be counted with PHYS 3301. | | | | | |
| PHYS 3303 Scientific Visualisation | 4 | P 16 credit points of Intermediate units of study in Science Subject Areas. | | | | | 2 |
| | | N May not be counted with PHYS 3933. | | | | | |
| PHYS 3933 Scientific Visualisation (Advanced) | 4 | P 16 credit points at a level of Credit or better of Intermediate units of study in Science Subject Areas. | | | | | 2 |
| | | N May not be counted with PHYS 3303. | | | | | |

■ Senior elective units of study

| | | | | | | | |
|--|---|--|--|--|--|--|---|
| BIOL 3023 Ecological Methods | 6 | Q 16 credit points of Intermediate Biology including BIOL 2001 or 2901 or 2002 or 2902 or 2004 or 2904. | | | | | 2 |
| | | N May not be counted with BIOL 3923. | | | | | |
| | | <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | |
| BIOL 3923 Ecological Methods (Advanced) | 6 | Q Distinction average in BIOL (2001 or 2901) and (2002 or 2902), or in 16 credit points of Intermediate Biology including BIOL (2004 or 2904). | | | | | 2 |
| | | N May not be counted with BIOL 3023. | | | | | |
| | | <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | |
| BIOL 3027 Bioinformatics and Genomics | 6 | Q MBLG (2001 or 2101 or 2901) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. | | | | | 1 |
| | | N May not be counted with BIOL 3927. | | | | | |
| BIOL 3927 Bioinformatics and Genomics (Advanced) | 6 | Q Distinction in MBLG (2001 or 2101 or 2901) or Distinction average in 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. | | | | | 1 |
| | | N May not be counted with BIOL 3027. | | | | | |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester | |
|--|----|----------------------|---|---|----------------|--|----------|--|
| CONIP 3004 Computer Graphics | 4 | p | COMP 2002 or 2902 or 2111 or 2811 and MATH 1002 or 1902 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | N May not be counted with COMP 3904. | 2 | |
| COMP 3904 Computer Graphics (Advanced) | 4 | p | 16 credit points of Intermediate or Senior Computer Science with Distinction average and COMP 2002 or 2902 or 2111 or 2811 and MATH 1002 or 1902 and 8 credit points of Intermediate Mathematics and/or Statistics and/or Econometrics. | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | N May not be counted with COMP 3004. | 2 | |
| COMP 3205 Product Development Project | 4 | p | COMP 3008 or 3908. | | | | 1,2 | |
| | | | <i>NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204 or 3205, 3206 or 3809.</i> | | | | | |
| COMP 3206 Bioinformatics Project | 4 | P | 16 credit points of Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and genetics and/or Pharmacology. | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | C COMP 3008 or 3100 or 3908 or 3800. | 2 | |
| | | | <i>NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809.</i> | | | | | |
| COSC 3601 Parallel Computing | 4 | A | Some familiarity is assumed with Unix and a programming language (eg, C or Fortran). | | | p At least one of SOFT (2004 or 2904) or COMP (2004 or 2904) or PHYS (3301 or 3901) or MATH 2903 or MATH (3016 or 3916). | 2 | |
| GEOP 3201 Modelling Earth Processes | 12 | P | 6 credit points of Junior Mathematics and 16 credit points of Intermediate Science units of study. | | | N May not be counted with GEOP 3001, 3002 and 3004. | 1 | |
| MATH 3003 Ordinary Differential Equations | 4 | P | 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2001 or 2901). | | | | 1 | |
| MATH 3018 Partial Differential Equations and Waves | 4 | P | MATH (2001 or 2901) and MATH (2005 or 2905). | | | N May not be counted with MATH 3921. | 1 | |
| MATH 3921 P D E And Waves (Advanced) | 4 | P | MATH (2901 or credit in 2001) and (2905 or credit in 2005). | | | N May not be counted with MATH 3018. | 1 | |
| MATH 3019 Signal Processing | 4 | P | MATH (2001 or 2901) and MATH (2005 or 2905). | | | N May not be counted with MATH 3919. | 1 | |
| MATH 3919 Signal Processing (Advanced) | 4 | P | MATH 2905 or Credit in MATH 2005. | | | N May not be counted with MATH 3019. | 1 | |
| STAT 3002 Applied Linear Models | 4 | P | STAT 2004 (or STAT 1022 for Arts students) and MATH (1002 or 1902). | | | N May not be counted with STAT 3902. | 1 | |
| STAT 3902 Linear Models (Advanced) | 4 | P | STAT 2004 and (STAT 2903 or Credit in 2003) and (MATH 2002 or 2902). | | | N May not be counted with STAT 3002. | 1 | |
| STAT 3003 Time Series Analysis | 4 | p | STAT 2003 or 2903. | | | | 1 | |
| STAT 3004 Design of Experiments | 4 | P | STAT 3002 or 3902. | | | | 2 | |

Computer Science

For a major in Computer Science, the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Junior units of study

| | | | | | | | | |
|--|---|---|--|--|--|--|-----|--|
| SOFT 1001 Software Development 1 | 6 | A | HSC Mathematics Extension 1. | | | N May not be counted with SOFT 1901 or COMP (1001 or 1901). | 1,2 | |
| SOFT 1901 Software Development 1 (Adv) | 6 | A | HSC Mathematics Extension 1. | | | p UAI at least that for acceptance into BSc (Advanced) degree program. Requires departmental permission. | 1,2 | |
| | | | | | | N May not be counted with SOFT 1001 or COMP (1001 or 1901). | | |
| | | | <i>NB: Permission required for enrolment.</i> | | | | | |
| SOFT 1002 Software Development 2 | 6 | Q | SOFT (1001 or 1901) or COMP (1001 or 1901). | | | N May not be counted with SOFT 1902 or COMP (1002 or 1902). | 1,2 | |
| SOFT 1902 Software Development 2 (Adv) | 6 | Q | Distinction in SOFT (1001 or 1901) or COMP (1001 or 1901). | | | N May not be counted with SOFT 1002 or COMP (1002 or 1902). | 1,2 | |
| | | | <i>NB: Permission required for enrolment.</i> | | | | | |

■ Intermediate units of study

| | | | | | | | |
|--|---|---|---|--|--|---|-----------|
| COMP 2003 Languages and Logic | 4 | p | MATH 1004 or 1904 or Econometrics or MATH 2009. | | | Q SOFT (1002 or 1902) or COMP (1002 or 1902). | 2 |
| | | | N May not be counted with COMP 2903. | | | | |
| COMP 2903 Languages and Logic (Advanced) | 4 | P | MATH 1004 or 1904 or Econometrics or MATH 2009. | | | O. Distinction in SOFT (1902 or 1002) or COMP (1001 or 1901 or 2111 or 2811). | 2 |
| | | | N May not be counted with COMP 2003. | | | | |
| COMP 2111 Introduction to Algorithms 1 | 4 | Q | (SOFT (1002 or 1902) or COMP (1002 or 1902)) and MATH (1004 or 1904 or 2009). | | | N May not be counted with COMP (2811 or 2002 or 2902). | 1 |
| COMP 2811 Introduction to Algorithms 1 (Adv) | 4 | Q | Distinction in [SOFT (1002 or 1902) or COMP (1002 or 1902 or 2003 or 2903)]. | | | N May not be counted with COMP (2111 or 2002 or 2902). | 1 |
| INFO 2000 System Analysis and Design | 4 | Q | INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). | | | | 1, Summer |
| INFO 2005 Personal Database Tools | 4 | Q | INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). | | | N May not be counted with COMP 3005 or 3905. | 2 |
| INFO 2007 Distributed Information Systems | 4 | Q | ISYS 2006. | | | | 2 |

Table 1: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|---|-----------------|---------------|----------------|----------------|----------|
| NETS 2008 Computer System Organisation | 4 | Q SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). | | | | | 1 |
| | | N May not be counted with NETS 2908 or COMP (2001 or 2901). | | | | | |
| NETS 2908 Computer System Organisation (Adv) | 4 | Q Distinction in SOFT (1001 or 1901 or 1002 or 1902) or COMP (1001 or 1901 or 1002 or 1902) or NETS (2009 or 2909). | | | | | 1 |
| | | N May not be counted with NETS 2008 or COMP (2001 or 2901). | | | | | |
| NETS 2009 Network Organisation | 4 | Q SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). | | | | | 2 |
| | | N May not be counted with NETS 2909. | | | | | |
| NETS 2909 Network Organisation (Adv) | 4 | Q Distinction in SOFT (1001 or 1901 or 1002 or 1902) or COMP (1001 or 1901 or 1002 or 1902) or NETS (2008 or 2908). | | | | | 2 |
| | | N May not be counted with NETS 2009. | | | | | |
| SOFT 2001 Concurrent Programming | 4 | Q SOFT (1002 or 1902) or COMP (1002 or 1902). | | | | | 2 |
| | | N May not be counted with SOFT 2901. | | | | | |
| SOFT 2901 Concurrent Programming (Adv) | 4 | Q Distinction in [SOFT (1002 or 1902 or 2004 or 2904) or COMP (1002 or 1902)]. | | | | | 2 |
| | | N May not be counted with SOFT 2001. | | | | | |
| SOFT 2004 Software Development Methods 1 | 4 | Q SOFT (1002 or 1902) or COMP (1002 or 1902). | | | | | 1 |
| | | N May not be counted with SOFT 2904 or COMP (2004 or 2904). | | | | | |
| SOFT 2904 Software Development Methods 1 (Adv) | 4 | Q Distinction in [SOFT (1002 or 1902 or 2001 or 2901) or COMP (1002 or 1902)]. | | | | | 1 |
| | | N May not be counted with SOFT 2004 or COMP (2004 or 2904). | | | | | |
| ■ Senior units of study | | | | | | | |
| COMP 3001 Algorithms | 4 | P MATH 1004 or 1904 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. | | | | | 2 |
| | | Q COMP 2002 or 2902 or 2111 or 2811. | | | | | |
| | | N May not be counted with COMP 3901. | | | | | |
| COMP 3901 Algorithms (Advanced) | 4 | P 16 credit points of Intermediate or Senior Computer Science with Distinction average and MATH 1004 or 1904 and 8 credit points of Intermediate Mathematics and/or Statistics and/or Econometrics. | | | | | 2 |
| | | Q COMP 2002 or 2902 or 2111 or 2811. | | | | | |
| | | N May not be counted with COMP 3001. | | | | | |
| COMP 3002 Artificial Intelligence | 4 | P COMP 2003 or 2903 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. | | | | | 1 |
| | | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | |
| | | N May not be counted with COMP 3902. | | | | | |
| COMP 3902 Artificial Intelligence (Advanced) | 4 | P COMP 2003 or 2903 and 16 credit points of Intermediate or Senior Computer Science with Distinction average and 8 credit points of Intermediate MATH and/or Statistics and/or Econometrics. | | | | | 1 |
| | | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | |
| | | N May not be counted with COMP 3002. | | | | | |
| COMP 3004 Computer Graphics | 4 | P COMP 2002 or 2902 or 2111 or 2811 and MATH 1002 or 1902 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. | | | | | 2 |
| | | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | |
| | | N May not be counted with COMP 3904. | | | | | |
| COMP 3904 Computer Graphics (Advanced) | 4 | p 16 credit points of Intermediate or Senior Computer Science with Distinction average and COMP 2002 or 2902 or 2111 or 2811 and MATH 1002 or 1902 and 8 credit points of Intermediate Mathematics and/or Statistics and/or Econometrics. | | | | | 2 |
| | | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | |
| | | N May not be counted with COMP 3004. | | | | | |
| COMP 3006 Declarative Programming Languages | 4 | p 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. | | | | | 1 |
| | | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | |
| | | N May not be counted with COMP 3906. | | | | | |
| COMP 3906 Declarative Programming Languages (Adv) | 4 | p 16 credit points of Intermediate or Senior Computer Science with Distinction average and 8 credit points of Intermediate Mathematics and/or Statistics and/or Econometrics. | | | | | 1 |
| | | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | |
| | | N May not be counted with COMP 3006. | | | | | |
| COMP 3007 Networked Systems | 4 | p COMP 2001 or 2901 or NETS 2008 or 2908 or ELEC 2601. | | | | | 1 |
| | | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | |
| | | N May not be counted with COMP 3907. | | | | | |
| COMP 3907 Networked Systems (Advanced) | 4 | p 16 credit points of Intermediate or Senior Computer Science with Distinction average and COMP 2001 or 2901 or NETS 2008 or 2908 or ELEC 2601. | | | | | 1 |
| | | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | |
| | | N May not be counted with COMP 3007. | | | | | |
| COMP 3008 Object-Oriented Systems | 4 | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | 1 |
| | | N May not be counted with COMP 3908. | | | | | |
| COMP 3908 Object-Oriented Systems (Advanced) | 4 | P 16 points of Intermediate or Senior Computer Science with Distinction average. | | | | | 1 |
| | | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | |
| | | N May not be counted with COMP 3008. | | | | | |
| COMP 3009 Operating Systems | 4 | p COMP 2001 or 2901 or NETS 2008 or 2908 or ELEC 2601. | | | | | 1 |
| | | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | |
| | | N May not be counted with COMP 3909. | | | | | |
| COMP 3909 Operating Systems (Advanced) | 4 | P 16 points of Intermediate or Senior Computer Science with Distinction average and COMP 2001 or 2901 or NETS 2008 or 2908 or ELEC 2601. | | | | | 1 |
| | | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | |
| | | N May not be counted with COMP 3009. | | | | | |
| COMP 3100 Software Engineering | 4 | p COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | 2 |
| | | N May not be counted with COMP 3800. | | | | | |
| COMP 3800 Software Engineering (Advanced) | 4 | P 16 points of Intermediate or Senior Computer Science with Distinction average. | | | | | 2 |
| | | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | | |
| | | N May not be counted with COMP 3100. | | | | | |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---|----|---|---|---------------|--------------------------------------|---|----------|
| COMP 3102 User Interfaces | 4 | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | | N May not be counted with COMP 3802. | 2 |
| COMP 3802 User Interfaces (Advanced) | 4 | P 16 points of Intermediate or Senior Computer Science with Distinction average. | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | | N May not be counted with COMP 3102. | 2 |
| COMP 3201 Algorithmic Systems Project | 4 | C COMP 3001 or 3901. | | | | NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809. | 2 |
| COMP 3202 Computer Systems Project | 4 | P COMP 3009 or 3909. | | | | NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204 or 3205, 3206 or 3809. | 1,2 |
| COMP 3203 Artificial Intelligence Project | 4 | C COMP 3002 or 3902. | | | | NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809. | 1 |
| COMP 3204 Software Engineering Project | 4 | C COMP 3100 or 3800. | | | | NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809. | 2 |
| COMP 3205 Product Development Project | 4 | P COMP 3008 or 3908. | | | | NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204 or 3205, 3206 or 3809. | 1,2 |
| COMP 3206 Bioinformatics Project | 4 | p 16 credit points of Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and genetics and/or Pharmacology. | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | | C COMP 3008 or 3100 or 3908 or 3800. | NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809. | 2 |
| COMP 3809 Software Project (Advanced) | 4 | P 16 credit points of Intermediate or Senior Computer Science, with Distinction average. | C 8 credit points of Senior Computer Science. | | | NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809. | 1,2 |
| INFO 3005 Organisational Database Systems | 4 | Q INFO 2005. | | | | N May not be counted with INFO 3905 or COMP 3005 or COMP 3905. | 1 |
| INFO 3905 Organisational Database Systems (Adv) | 4 | P 16 credit points of Intermediate or Senior Computer Science units of study with Distinction average. | Q INFO 2005. | | | N May not be counted with COMP 3005 or COMP 3905 or INFO 3005. | 1 |

Geography

For a major in Geography, the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Junior units of study

| | | | | | | | |
|------------------------------------|---|--|--|--|--|--|---|
| GEOG 1001 Biophysical Environments | 6 | | | | | | 1 |
| GEOG 1002 Human Environments | 6 | | | | | | 2 |

■ Intermediate units of study

| | | | | | | | |
|---|---|--|--|--|--|---|---|
| GEOG 2001 Processes in Geomorphology | 8 | P 36 credit points of Junior units of study, including GEOG 1001 or ENVI 1001 or 1002. Students enrolled in the Bachelor of Resource Economics should have 36 credit points from Junior units of study in Biology, Chemistry and Mathematics. | | | | | 1 |
| GEOG 2002 Fluvial and Coastal Geography | 8 | P 36 credit points of Junior units of study, including GEOG 1001 or ENVI 1001 or 1002. Students enrolled in the Bachelor of Resource Economics should have 36 credit points from Junior units of study in Biology, Chemistry and Mathematics. | | | | N May not be counted with GEOG 2302 or 2303 or MARS 2002. | 2 |
| | | | | | | NB: Other Information: As for GEOG 2001. | |
| GEOG 2101 Environmental Change and Human Response | 8 | p 36 credit points of Junior units of study, including GEOG 1001 or 1002 or ENVI 1001 or 1002. | | | | NB: Other Information: As for GEOG 2001. | 1 |
| GEOG 2102 Resource and Environmental Management | 8 | p 36 credit points of Junior units of study, including GEOG 1001 or 1002 or ENVI 1001 or 1002. | | | | NB: Other Information: As for GEOG 2001. | 2 |
| GEOG 2201 Cultural and Economic Geography | 8 | P 36 credit points of Junior units of study, including GEOG 1001 or 1002 or ENVI 1002 or ECOP1001 or 1002. | | | | NB: Other Information: As for GEOG 2001. | 1 |
| GEOG 2202 Urban and Political Geography | 8 | P 36 credit points of Junior units of study, including GEOG 1001 or 1002 or ENVI 1002 or ECOP 1001 or 1002. | | | | NB: Other Information: As for GEOG 2001. | 2 |
| GEOG 2302 Fluvial Geomorphology | 6 | p GEOG 2001 or 36 credit points of Junior units of study including GEOG 1001 or ENVI 1001 or 1002. Students in the Bachelor of Resource Economics should have 36 credit points of Junior units of study in Biology, Chemistry and Mathematics. | | | | N May not be counted with GEOG 2002 or 2303. | 2 |
| | | | | | | NB: Other Information: as for GEOG 2001. | |
| GEOG 2303 Fluvial and Groundwater Geomorphology | 8 | P GEOG 2001 or 36 credit points of Junior study including GEOG 1001 or ENVI 1001 or 1002. Students in the Bachelor of Resource Economics should have 36 credit points of study in Biology, Chemistry and Mathematics. | | | | N May not be counted with GEOG 2002 or GEOG 2302. | 2 |
| | | | | | | NB: Other Information: as for GEOG 2001. | |

■ Senior units of study

| | | | | | | | |
|---|----|---|--|--|--|--|---|
| GEOG 3001 Coastal Environments and Dynamics | 12 | P GEOG 2001 or 2002 or 2101 or 2302 or 2303 or MARS 2002. | | | | | 1 |
|---|----|---|--|--|--|--|---|

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|----------------------|---|---------------|----------------|----------------|----------|
| GEOG 3002 Environmental Geomorphology | 12 | P | GEOG 2001 or 2002 or 2101 or 2302 or 2303. | | | | 2 |
| GEOG 3101 Catchment Management | 12 | P | GEOG 2001 or 2002 or 2101 or 2302 or 2303 and GEOG 2102 or 2201 or 2202. | | | | 1 |
| GEOG 3102 Coastal Management and GIS | 12 | P | GEOG 2001 or 2002 or 2101 or 2302 or 2303 or MARS 2002. | | | | 2 |
| GEOG 3201 Asia-Pacific Development | 12 | P | GEOG 2101 or 2102 or 2201 or 2202. | | | | 1 |
| GEOG 3202 Sustainable Cities & Regional Change | 12 | P | GEOG 2102 or 2201 or 2202. | | | | 1 |
| GEOG 3302 Mining, Rural Change and Globalisation | 12 | P | GEOG (2001 or 2002 or 2102 or 2201 or 2202 or 2302 or 2303 or 3101) or GEOL (2002 or 2005). | | | | 2 |

Geology

For a major in Geology, the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Junior units of study

| | | | | | | | |
|---|---|---|---|--|--|--|---|
| GEOL 1001 Earth and its Environment | 6 | A | No previous knowledge of Geology assumed. N GEOL 1501. | | | | 1 |
| GEOL 1002 Earth Processes and Resources | 6 | A | No previous knowledge of Geology assumed. N GEOL 1501. | | | | 2 |

■ Intermediate units of study

| | | | | | | | |
|--|---|---|---|--|--|--|---|
| GEOL 2001 Geological Hazards and Solutions | 8 | P | GEOL 1002 or ENVI 1001. A candidate who has completed 24 credit points of Junior units of study in Physics and Chemistry and who has not taken Junior Geology or ENVI 1001, may apply under section 1 (4) for permission to enrol in GEOL 2001. N CIVL 2409. | | | | 1 |
| GEOL 2002 Resource Exploration and Management | 4 | P | GEOL 2001. N CIVL 2409. | | | | 2 |
| GEOL 2003 Fossils and Time | 4 | P | 24 credit points of Science units of study. N CIVL 2409. | | | | 2 |
| GEOL 2004 Environmental Geology and Climate Change | 4 | P | 24 credit points of Science units of study. | | | | 1 |
| GEOL 2005 Environmental Geology: Resources | 4 | P | 24 credit points of Science units of study. | | | | 2 |

■ Senior units of study

| | | | | | | | |
|--|----|---|--|--|--|--|---|
| GEOL 3101 Crustal Growth and Recycling | 12 | P | GEOL 2002. N May not be counted with GEOL 3001. | | | | 1 |
| GEOL 3102 Earth's Evolution and Energy | 12 | P | GEOL 2002 or 2003 or 8 credit points of Intermediate Biology, Environmental or Marine Science. N May not be counted with GEOL 3002, 3004 and/or 3006. | | | | 1 |
| GEOL 3103 Ore Deposit Geology & Structural Mapping | 12 | P | GEOL 2002. | | | | 2 |
| GEOL 3104 Sedimentary Processes | 12 | P | GEOL 2001 or 8 credit points of Intermediate Marine Science. | | | | 2 |

Geophysics

For a major in Geophysics, the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Senior units of study

| | | | | | | | |
|-------------------------------------|----|---|---|--|--|--|---|
| GEOP 3201 Modelling Earth Processes | 12 | P | 6 credit points of Junior Mathematics and 16 credit points of Intermediate Science units of study. N May not be counted with GEOP 3001, 3002 and 3004. | | | | 1 |
| GEOP 3202 Geophysical Exploration | 12 | P | 16 credit points of Science units of study. N May not be counted with GEOP 3003, 3005 and 3006. | | | | 2 |

History and Philosophy of Science

For a major in History and Philosophy of Science, the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Intermediate units of study

| | | | | | | | |
|--|---|---|--|--|--|--|---|
| HPSC 2001 What Is This Thing Called Science? | 4 | P | 24 credit points of Junior units of study. This is a qualifying unit of study for Senior History and Philosophy of Science units of study. | | | | 2 |
| HPSC 2002 The Birth of Modern Science | 4 | P | 24 credit points of Junior units of study. This is a qualifying unit of study for Senior History and Philosophy of Science units of study. | | | | 1 |

■ Senior units of study

| | | | | | | | |
|--|---|---|---------------------|--|--|--|---|
| HPSC 3001 History of Physical Sciences and Maths | 6 | Q | HPSC 2001 and 2002. | | | | 1 |
| HPSC 3002 History of Biological/Medical Sciences | 6 | Q | HPSC 2001 and 2002. | | | | 2 |
| HPSC 3003 Social Relations of Science | 4 | Q | HPSC 2001 and 2002. | | | | 1 |
| HPSC 3005 History/Philosophy of Medicine | 4 | Q | HPSC 2001 and 2002. | | | | 1 |
| HPSC 3007 Science and Ethics | 4 | Q | HPSC 2001 and 2002. | | | | 1 |
| HPSC 3100 Contemporary Issues in HPS | 4 | Q | HPSC 2001 and 2002. | | | | 2 |

Table 1: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|-----------------|---------------|----------------|----------------|----------|
| HPSC Philosophy of the Biological Sciences 3103 | 4 | P HPSC 2001 and 2002. | | | | | 2 |
| HPSC Philosophy of Physics 3105 | 4 | P HPSC 2001 and 2002. N May not be counted with PHIL 3212. | | | | | 2 |
| HPSC Philosophy of Mathematics 3106 | 4 | P HPSC 2001 and 2002. N May not be counted with PHIL 3219. | | | | | 2 |
| Immunobiology | | | | | | | |
| For a major in Immunobiology, the minimum requirement is: | | | | | | | |
| (i) IMMU 3002; and | | | | | | | |
| (ii) a minimum of 12 credit points from the elective units. | | | | | | | |
| ■ Intermediate units of study | | | | | | | |
| The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | | | | | | | |
| IMMU Introductory Immunology 2001 | 4 | Q 12 credit points of Junior Chemistry and 12 credit points of Junior Biology or, with permission of Head of Department, 24 credit points of Junior study from any of the Science Discipline Areas. <i>NB: This is a qualifying unit of study for IMMU 3002. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 1 |
| ■ Senior core units of study | | | | | | | |
| IMMU Immunology 3002 | 12 | P 8 credit points of intermediate units of study from: BCHM (2001,2101,2901,2002, 2102,2902), BIOL (2005,2006,2105,2106,2905,2906), MBLG (2001,2101,2901, 2002,2102,2902), MICR (2001,2901,2002,2902,2003,2004) or, with permission of Head of Department, in units not specified above. Q IMMU 2001. N May not be counted with BMED 3003. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 2 |
| ■ Senior elective units of study | | | | | | | |
| BCHM Mol Biology and Structural 3001 Biochemistry | 12 | Q For enrolment in 2002: MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). N May not be counted with BCHM 3901. <i>NB: From 2003 the entry requirements will be: MBLG (2001 or 2901) and [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504).</i> | | | | | 1 |
| BCHM Mol Biology and Structural 3901 Biochem(Adv) | 12 | Q Distinction in MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902; or 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504). N May not be counted with BCHM 3001. <i>NB: From 2003 the requirements will be: Distinction in MBLG (2001 or 2901) and in [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504).</i> | | | | | 1 |
| BCHM Cellular and Medical 3002 Biochemistry | 12 | Q For enrolment in 2002: MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). N May not be counted with BCHM 3902/3904. <i>NB: From 2003 entry requirements will be: MBLG (2001 or 2901) and [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504).</i> | | | | | 2 |
| BCHM Cellular and Medical 3902 Biochemistry (Adv) | 12 | Q For enrolment in 2002: Distinction in MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902; or 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504). N May not be counted with BCHM 3002/3904. <i>NB: From 2003 the entry requirements will be: Distinction in MBLG (2001 or 2901) and in [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504).</i> | | | | | 2 |
| BIOL Applications of Recombinant 3018 DNA Tech | 6 | Q MBLG (2001/2901 and 2002/2902) or 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. N May not be counted with BIOL 3918,3103 or 3903. | | | | | 1 |
| BIOL Applications of Recombinant 3918 DNA Tech Adv | 6 | Q Distinction average in MBLG (2001/2901 and 2002/2902) or in 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer N May not be counted with BIOL 3018,3103 or 3903. | | | | | 1 |
| BIOL Developmental Genetics 3026 | 6 | Q MBLG (2001/2901 and 2002/2902) or 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. N May not be counted with BIOL 3926 or 3929. | | | | | 2 |
| BIOL Developmental Genetics 3926 (Advanced) | 6 | Q Distinction average in MBLG (2001/2901 and 2002/2902) or in 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. N May not be counted with BIOL 3026 or 3929. | | | | | 2 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---------------|----|--|-----------------|---------------|----------------|--|----------|
| BIOL 3027 | 6 | Q MBLG(2001 or 2101 or 2901) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. | | | | N May not be counted with BIOL 3927. | 1 |
| BIOL 3927 | 6 | Q Distinction in MBLG (2001 or 2101 or 2901) or Distinction average in 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. | | | | N May not be counted with BIOL 3027. | 1 |
| CPAT 3001 | 12 | p ANAT 2002; or BCHM 2002 or 2902; or BIOL 2005 or 2006 or 2905 or 2906; or both PCOL 2001 and (2002 or 2003); or PHSI 2002. For BMedSc: 32 credit points from Intermediate BMED units of study. | | | | NB: Permission required for enrolment. Entry requires Departmental permission: only a small number of students can be accommodated in the laboratory facilities. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | 1 |
| CPAT 3101 | 12 | Q ANAT 2001; or BCHM 2001 or 2002 or 2101 or 2102 or 2901 or 2902; or MBLG 2001 or 2101 or 2901; or BIOL 2001 or 2002 or 2005 or 2006 or 2101 or 2102 or 2105 or 2106 or 2901 or 2902 or 2905 or 2906; or HPSC 2001 or 2002; or MICR 2001 or 2003 or 2901; or PCOL 2001; or PHSI 2001. For BMedSc: 32 credit points from Intermediate BMED units of study. | | | | NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | 2 |
| MICR 3001 | 12 | P Except for BMedSc: BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). | | | | Q Except for BMedSc: MICR 2002 or 2012 or (2001 and 2004) or 2902. For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2506. | 1 |
| | | | | | | N May not be counted with MICR 3901. NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | |
| MICR 3901 | 12 | P Except for BMedSc: BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). | | | | Q Except for BMedSc: At least 12 credit points of Intermediate Microbiology including Distinction in MICR (2001 or 2002 or 2004 or 2901 or 2902) For BMedSc: 32 credit points of Intermediate BMED units including Distinction or better in BMED 2506. | 1 |
| | | | | | | N May not be counted with MICR 3001. NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | |
| PHSI 3004 | 12 | p Except for BMedSc: PHSI (2001 or 2101) and PHSI (2002 or 2102) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901). For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). | | | | N May not be counted with PHSI 3904. | 1 |
| PHSI 3904 | 12 | P Except for BMedSc students: PHSI (2001 or 2101) and PHSI (2002 or 2102) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901). For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). | | | | N May not be counted with PHSI 3004. NB: Permission required for enrolment. Available to selected students who have achieved an average of at least 65 in the prerequisite units of study. | 1 |

Information Systems

For a major in Information Systems, the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Junior units of study

| | | | | | | | |
|-----------|---------------------------------------|---|---|------------------------------------|--|--|-----|
| ISYS 1003 | Foundations of Information Technology | 6 | N | May not be counted with INFO 1000. | | | 1,2 |
|-----------|---------------------------------------|---|---|------------------------------------|--|--|-----|

■ Intermediate units of study

| | | | | | | | |
|-----------|--------------------------------------|---|---|---|--|--|-----------|
| ISYS 2006 | Information Systems in Organisations | 4 | A | Use of basic PC tools such as spreadsheets, Internet, email and word processing software. | | | 1 |
| | | | Q | INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). | | | |
| | | | | NB: Enrolment Restriction: Entry is restricted to students who have a credit or better in at least one of the qualifying units. | | | |
| INFO 2000 | System Analysis and Design | 4 | Q | INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). | | | 1, Summer |
| INFO 2005 | Personal Database Tools | 4 | Q | INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). | | | 2 |
| | | | | N May not be counted with COMP 3005 or 3905. | | | |
| INFO 2007 | Distributed Information Systems | 4 | Q | ISYS 2006. | | | 2 |

■ Senior units of study

| | | | | | | | |
|-----------|---|---|---|--|--|--|---|
| ISYS 3000 | Information Systems Management | 4 | Q | INFO 2000 or ISYS 2006. | | | 2 |
| ISYS 3012 | Project Management and Practice | 4 | Q | INFO 2000. | | | 1 |
| ISYS 3015 | Analytical Methods for IS Professionals | 4 | P | 16 credit points of Intermediate or Senior units of study. | | | 1 |
| | | | Q | ISYS 2006 and INFO 2000 and [ARIN 1000 or ENGL (1050 or 1005) or LNGS (1001 or 1002 or 1005) or ECOF (1001 or 1002)]. | | | |
| | | | | NB: Enrolment Restriction: Entry is restricted to students who have a credit or better in at least one of the Qualifying units. Alternatively, for 2002 only, a student who has completed ISYS 2006 with a Credit or better, and 24 credit points of Intermediate units of study including Scpf from INFO or ISYS units of study will be also be admitted to the unit. | | | |
| ISYS 3113 | Arts Informatics Systems | 4 | Q | INFO 2005. | | | 1 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---|----|----------------------|--|---------------|----------------|--|-----------|
| ISYS 3207 Information Systems Project | 8 | p | INFO3005orISYS3000or3012or3113. | | | | 2 |
| INFO 3005 Organisational Database Systems | 4 | Q | INFO 2005. | | | N May not be counted with INFO 3905 or COMP 3005 or COMP 3905. | 1 |
| INFO 3905 Organisational Database Systems (Adv) | 4 | p | 16 credit points of Intermediate or Senior Computer Science units of study with Distinction average. | | | Q INFO 2005. N May not be counted with COMP 3005 or COMP 3905 or INFO 3005. | 1 |
| Marine Science | | | | | | | |
| For a major in Marine Science, the minimum requirement is 24 credit points of Senior units of study in this Subject Area. | | | | | | | |
| ■ Intermediate units of study | | | | | | | |
| MARS 2001 Introductory Marine Science A | 4 | p | 24 credit points of Junior units of study from Science Discipline Areas. This is a qualifying unit of study for MARS 3001 and 3002. Some options in Senior Marine Science have additional prerequisites. | | | | 1 |
| MARS 2002 Introductory Marine Science B | 4 | p | 24 credit points of Junior units of study from Science Discipline Areas. This is a qualifying unit of study for MARS 3001 and 3002. Some options in Senior Marine Science have additional prerequisites. | | | N May not be counted with GEOG 2002. | 2 |
| ■ Senior units of study | | | | | | | |
| MARS 3001 Marine Science A | 12 | p | MARS 2001 and MARS 2002. There are additional prerequisites for some options, see options entries. | | | | 1 |
| MARS 3002 Marine Science B | 12 | p | MARS 2001 and MARS 2002. There are additional prerequisites for some options, see option entries. | | | | 2 |
| Mathematics | | | | | | | |
| For a major in Mathematics, the minimum requirement is 24 credit points of Senior units of study in this Subject Area. | | | | | | | |
| ■ Junior units of study | | | | | | | |
| Students enrolled in the combined BSc/BCom program may not enrol in MATH 1005, 1011, 1012, 1013, 1015 or 1905. | | | | | | | |
| MATH 1011 Life Sciences Calculus | 3 | A | HSC Mathematics. | | | N May not be counted with MATH 1001 or 1901 or 1906. May not be counted by students enrolled in the BSc/BCom combined award course. | 1 |
| MATH 1012 Life Sciences Algebra | 3 | A | HSC Mathematics. | | | N May not be counted with MATH 1002 or 1902. May not be counted by students enrolled in the BSc/BCom combined award course. | 2 |
| MATH 1013 Differential and Difference Equations | 3 | A | HSC Mathematics. | | | N May not be counted with MATH 1003 or 1903 or 1907. May not be counted by students enrolled in the BSc/BCom combined award course. | 2 |
| MATH 1015 Life Science Statistics | 3 | A | HSC Mathematics. | | | N May not be counted with MATH 1905 or 1005 or STAT 1021 or 1022. May not be counted by students enrolled in the BSc/BCom combined award course. | 1, Summer |
| MATH 1001 Differential Calculus | 3 | A | HSC Mathematics Extension 1. | | | N May not be counted with MATH 1011 or 1901 or 1906. | 1, Summer |
| MATH 1002 Linear Algebra | 3 | A | HSC Mathematics Extension 1. | | | N May not be counted with MATH 1902 or 1012. | 1, Summer |
| MATH 1003 Integral Calculus and Modelling | 3 | A | HSC Mathematics Extension 2 or MATH 1001. | | | N May not be counted with MATH 1013 or 1903 or 1907. | 2, Summer |
| MATH 1004 Discrete Mathematics | 3 | A | HSC Mathematics Extension 1. | | | N May not be counted with MATH 1904. | 2, Summer |
| MATH 1005 Statistics | 3 | A | HSC Mathematics. | | | N May not be counted with MATH 1905 or 1015 or ECMT 1010 or 1020 or STAT 1021 or 1022. | 2, Summer |
| MATH 1901 Differential Calculus (Advanced) | 3 | A | HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. | | | N May not be counted with MATH 1011 or 1001 or 1906. | 1 |
| MATH 1902 Linear Algebra (Advanced) | 3 | A | HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. | | | N May not be counted with MATH 1002 or 1012. | 1 |
| MATH 1903 Integral Calculus and Modelling Advanced | 3 | A | HSC Mathematics Extension 2 or Credit or better in MATH 1001/1901. | | | N May not be counted with MATH 1003 or 1013 or 1907. | 2 |
| MATH 1904 Discrete Mathematics (Advanced) | 3 | A | HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. | | | N May not be counted with MATH 1004. | 2 |
| MATH 1905 Statistics (Advanced) | 3 | A | HSC Mathematics Extension 2 or result in Band E2 or better of HSC Mathematics Extension 1. | | | N May not be counted with MATH 1005 or 1015 or ECMT 1010 or 1020 or STAT 1021 or 1022. | 2 |
| MATH 1906 Mathematics (Special Studies Program) A | 3 | p | UAI of at least 98.5 and result in Band E4 HSC Mathematics Extension 2; by invitation. | | | N May not be counted with MATH 1001 or 1011 or 1901. <i>NB: Permission required for enrolment.</i> | 1 |
| MATH 1907 Mathematics (Special Studies Program) B | 3 | p | Distinction in MATH 1906; by invitation. | | | N May not be counted with MATH 1003 or 1013 or 1903. <i>NB: Permission required for enrolment.</i> | 2 |
| ■ Intermediate units of study | | | | | | | |
| MATH 2001 Vector Calculus and Complex Variables | 4 | p | MATH (1001 or 1901 or 1906) and (1002 or 1902) and (1003 or 1903 or 1907). | | | N May not be counted with MATH 2901. | 1, Summer |
| MATH 2002 Matrix Applications | 4 | P | MATH 1002 or 1902 or Distinction in MATH 1012. | | | N May not be counted with MATH 2902. | 1, Summer |

Table 1: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|---|-----------------|---------------|----------------|----------------|-----------|
| MATH 2003 Introduction to Mathematical Computing | 4 | P MATH (1001 or 1901 or 1906) and (1002 or 1902) and (1003 or 1903 or 1907). N May not be counted with MATH 2903. | | | | | 1 |
| MATH 2004 Lagrangian Dynamics | 4 | P MATH 2001 or 2901. N May not be counted with MATH 2904. | | | | | 2 |
| MATH 2005 Fourier Series & Differential Equations | 4 | P MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907). N May not be counted with MATH 2905. | | | | | 2, Summer |
| MATH 2006 Nonlinear Systems and Chaos Introduction | 4 | P MATH (1001 or 1901 or 1906) and (1002 or 1902) and (1003 or 1903 or 1907) or (Credit in MATH 1011 and 1012 and 1013). N May not be counted with MATH 2906. | | | | | 2 |
| MATH 2007 Analysis | 4 | P MATH (1001 or 1901 or 1906) and (1003 or 1903 or 1907) or Distinction average in MATH 1011 and 1013. N May not be counted with MATH 2907. | | | | | 2 |
| MATH 2008 Introduction to Modern Algebra | 4 | p MATH 2002 or 2902. N May not be counted with MATH 2908 or 2918. | | | | | 2 |
| MATH 2009 Graph Theory | 4 | p 6 credit points of Junior Mathematics (at the Distinction level in Life Sciences units). | | | | | 1, Summer |
| MATH 2010 Optimisation | 4 | P MATH (1001 or 1901 or 1906) and (1002 or 1902). N May not be counted with Econometrics 3510 Operations Research A. | | | | | 2 |
| MATH 2033 Financial Mathematics 1 | 4 | p MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) and MATH (1005 or 1905). N May not be counted with MATH 2933. | | | | | 1 |
| MATH 2901 Vector Calculus and Complex Var(Adv) | 4 | P MATH (1901 or 1906 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or 1907 or Credit in 1003). N May not be counted with MATH 2001. | | | | | 1 |
| MATH 2902 Linear Algebra (Advanced) | 4 | p 12 credit points of Junior Mathematics, including MATH 1902 or Credit in 1002. N May not be counted with MATH 2002. | | | | | 1 |
| MATH 2903 Intro to Mathematical Computing (Adv) | 4 | p MATH (1901 or 1906 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or 1907 or Credit in 1003). N May not be counted with MATH 2003. | | | | | 1 |
| MATH 2904 Lagrangian Dynamics (Advanced) | 4 | P MATH 2901 or Credit in MATH 2001. N May not be counted with MATH 2004. | | | | | 2 |
| MATH 2905 Mathematical Methods (Advanced) | 4 | P MATH 2901 or Credit in MATH 2001. N May not be counted with MATH 2005. | | | | | 2 |
| MATH 2906 Nonlinear Systems and Chaos (Advanced) | 4 | p MATH (1901 or 1906 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or 1907 or Credit in 1003). N May not be counted with MATH 2006. | | | | | 2 |
| MATH 2907 Analysis (Advanced) | 4 | p MATH (1901 or 1906 or Credit in 1001) and (1903 or 1907 or Credit in 1003) (MATH 2901 or 2001 strongly advised). N May not be counted with MATH 2007. | | | | | 2 |
| MATH 2918 Introduction to Modern Algebra (Adv) | 4 | P MATH 2902. N May not be counted with MATH 2008 or 2908. | | | | | 2 |
| MATH 2933 Financial Mathematics 1 (Advanced) | 4 | 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) and MATH (1905 or credit in 1005). N May not be counted with MATH 2033. | | | | | 1 |
| ■ Senior units of study | | | | | | | |
| MATH 3001 Topology | 4 | p 8 credit points of Intermediate Mathematics. N May not be counted with MATH 3901. | | | | | 1 |
| MATH 3002 Rings and Fields | 4 | p 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2008 or 2908). N May not be counted with MATH 3902. | | | | | 1 |
| MATH 3003 Ordinary Differential Equations | 4 | p 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2001 or 2901). | | | | | 1 |
| MATH 3004 History of Mathematical Ideas | 4 | P 8 credit points of Intermediate Mathematics. | | | | | 1 |
| MATH 3005 Logic | 4 | P (for all but BCST students) 8 credit points of Intermediate Mathematics; (for BCST students) 8 credit points of Intermediate Mathematics or 12 credit points of Junior Mathematics at Advanced level. | | | | | 1 |
| MATH 3006 Geometry | 4 | P 8 credit points of Intermediate Mathematics (strongly advise MATH 1902 or 1002). | | | | | 2 |
| MATH 3007 Coding Theory | 4 | p 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902). | | | | | 2 |
| MATH 3008 Real Variables | 4 | P 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2007 or 2901 or 2907). | | | | | 2 |
| MATH 3009 Number Theory | 4 | p 8 credit points of Intermediate Mathematics. | | | | | 2 |
| MATH 3010 Information Theory | 4 | P 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901 and some probability theory). | | | | | 2 |
| MATH 3015 Financial Mathematics 2 | 4 | p 8 credit points of Intermediate Mathematics including MATH 2033 or 2933 (and strongly advise MATH 2010 and STAT (2001 or 2901)). N May not be counted with MATH 3933. | | | | | 2 |
| MATH 3016 Mathematical Computing I | 4 | P 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903 or 1906 or 1907. N May not be counted with MATH 3916. | | | | | 1 |
| MATH 3018 Partial Differential Equations and Waves | 4 | P MATH (2001 or 2901) and MATH (2005 or 2905). N May not be counted with MATH 3921. | | | | | 1 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|-----------------|---------------|----------------|----------------|----------|
| MATH 3019 Signal Processing | 4 | P MATH (2001 or 2901) and MATH (2005 or 2905). N May not be counted with MATH 3919. | | | | | 1 |
| MATH 3020 Nonlinear Systems and Biomathematics | 4 | p 8 credit points of Intermediate Mathematics (strongly advise MATH 2006 or 2906 or 2908 or 3003) and one of MATH 1001 or 1003 or 1901 or 1903. N May not be counted with MATH 3920. | | | | | 2 |
| MATH 3024 Elementary Cryptography and Protocols | 4 | p 12 credit points of Intermediate Mathematics. Strongly advise MATH 2008 or 2908. | | | | | 1 |
| MATH 3901 Metric Spaces (Advanced) | 4 | P 12 credit points of Intermediate Mathematics (strongly advise MATH 2907). N May not be counted with MATH 3001. | | | | | 1 |
| MATH 3902 Algebra I (Advanced) | 4 | P 12 credit points of Intermediate Mathematics (strongly advise MATH 2902). N May not be counted with MATH 3002. | | | | | 1 |
| MATH 3903 Differential Geometry (Advanced) | 4 | P 12 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901, with MATH 3001 or 3901). | | | | | 1 |
| MATH 3904 Complex Variable (Advanced) | 4 | p 12 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901, with MATH 3001 or 3901). | | | | | 1 |
| MATH 3905 Categories and Computer Science (Adv) | 4 | p 12 credit points of Intermediate Mathematics. <i>NB: Permission required for enrolment. This unit of study is offered in odd years only.</i> | | | | | 1 |
| MATH 3906 Group Representation Theory (Advanced) | 4 | p 12 credit points of Intermediate Mathematics (strongly advise MATH 3902). <i>NB: Permission required for enrolment. This unit is only offered in odd years.</i> | | | | | 2 |
| MATH 3907 Algebra II (Advanced) | 4 | p MATH 3902 or Credit in MATH 3002, and 12 credit points of Intermediate Mathematics. <i>NB: This unit of study is only offered in even years.</i> | | | | | 2 |
| MATH 3908 Nonlinear Analysis (Advanced) | 4 | P 12 credit points of Intermediate Mathematics (strongly advise MATH 3901). | | | | | 2 |
| MATH 3909 Lebesgue Int and Fourier Analysis (Adv) | 4 | p 12 credit points of Intermediate Mathematics (strongly advise MATH 2907 and MATH 3901). | | | | | 2 |
| MATH 3912 Combinatorics (Advanced) | 4 | P 12 credit points of Intermediate Mathematics (strongly advise MATH 2902). | | | | | 2 |
| MATH 3914 Fluid Dynamics (Advanced) | 4 | p MATH (2901 or credit in 2001) and MATH (2905 or credit in 2005). | | | | | 1 |
| MATH 3915 Mathematical Methods (Advanced) | 4 | p MATH (2901 or 2905 or 2907 or 3921) or Credit in MATH (2005 or 3018). | | | | | 2 |
| MATH 3916 Mathematical Computing I (Advanced) | 4 | p 8 credit points of Intermediate Mathematics and one of MATH 1903 or 1907 or Credit in MATH 1003. N May not be counted with MATH 3016. | | | | | 1 |
| MATH 3917 Hamiltonian Dynamics (Advanced) | 4 | p MATH 2904 or Credit in MATH 2004. | | | | | 2 |
| MATH 3919 Signal Processing (Advanced) | 4 | P MATH 2905 or Credit in MATH 2005. N May not be counted with MATH 3019. | | | | | 1 |
| MATH 3920 Nonlinear Systems & Biomathematics (Adv) | 4 | P 8 credit points of Intermediate Mathematics (strongly advise MATH 2908 or 3003) and one of MATH 1903 and 1905 or 1903 and 1904 or Credit in MATH 1003 and 1005 or 1003 and 1004. N May not be counted with MATH 3020. | | | | | 2 |
| MATH 3921 P D E And Waves (Advanced) | 4 | p MATH (2901 or credit in 2001) and (2905 or credit in 2005). N May not be counted with MATH 3018. | | | | | 1 |
| MATH 3925 Public Key Cryptography (Advanced) | 4 | p 12 credit points from Intermediate or senior mathematics. Strongly recommend MATH 3902. | | | | | 2 |
| MATH 3933 Financial Mathematics 2 (Advanced) | 4 | p 8 credit points of Intermediate Mathematics including MATH 2933 or Credit in MATH 2033 (and strongly advise MATH 2010 and STAT (2001 or 2901)). N May not be counted with MATH 3015. | | | | | 2 |

Medicinal Chemistry

For a major in Medicinal Chemistry, the minimum requirement is 24 credit points from the core units of study. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

■ Core units of study

| | | | | | | | |
|---|----|---|--|--|--|--|---|
| CHEM 3102 Chemistry 3B | 12 | Q CHEM (2001 or 2101 or 2301 or 2901) and CHEM (2302 or 2902). N May not be counted with CHEM 3601, 3602, 3902 or 3903 (but may be counted with CHEM 3202). | | | | | 2 |
| CHEM 3902 Chemistry 3B (Advanced) | 12 | Q Distinction or better in CHEM 2902 or 3101 or 3901; by invitation. N May not be counted with CHEM 3102, 3601, 3602 or 3903. <i>NB: Permission required for enrolment. The number of places in this unit of study is limited and entry is by invitation. Students in the Faculty of Science Talented Student Program are automatically eligible.</i> | | | | | 2 |
| PCOL 3001 Molecular Pharmacology and Toxicology | 12 | p PCOL 2001 and (2002 or 2003) or 32 credit points from Intermediate BMED units of study. N PCOL 3901. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 1 |
| PCOL 3901 Molecular Pharmacology & Toxicology Adv | 12 | Q Distinction average in PCOL 2001 and (2002 or 2003) or in 32 credit points from Intermediate BMED units of study. N May not be counted with PCOL 3001. <i>NB: Permission required for enrolment. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Entry to this unit requires Departmental permission.</i> | | | | | 1 |

Table I: Bachelor of Science (continued)

Unit of study CP A: Assumed knowledge P: Prerequisite Q: Qualifying C: Corequisite N: Prohibition Semester

Microbiology

For a major in Microbiology, the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Intermediate units of study

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

| | | | | |
|------------------|--------------------------------------|---|---|---|
| MICR 2001 | Introductory Microbiology | 8 | P 6 credit points of Junior Chemistry. Q 6 credit points of Junior Biology. N May not be counted with MICR 2003 or 2901. <i>NB: It is highly recommended that students complete 12 credit points of Junior Biology and MBLG 2001 or 2101 or 2901.</i> | 1 |
| MICR 2002 | Applied Microbiology | 8 | P MICR 2001 or 2901. N May not be counted with MICR 2004 or 2902. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| MICR 2003 | Theoretical Microbiology A | 4 | 0. 6 credit points of Junior Biology. N May not be counted with MICR 2001 or 2901. <i>NB: It is highly recommended that students complete 12 credit points of Junior Biology and MBLG 2001 or 2101 or 2901.</i> | 1 |
| MICR 2004 | Theoretical Microbiology B | 4 | P MICR 2001 or 2003 or 2901. N May not be counted with MICR 2002 or 2902. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| MICR 2901 | Introductory Microbiology (Advanced) | 8 | Q 6 credit points of Junior Chemistry and Distinction in 6 credit points of Junior Biology. N May not be counted with MICR 2001 or 2003. <i>NB: It is highly recommended that students complete 12 credit points of Junior Biology and MBLG 2001 or 2101 or 2901.</i> | 1 |
| MICR 2902 | Applied Microbiology (Advanced) | 8 | Q Distinction in MICR 2001 or 2901. N May not be counted with MICR 2002 or 2004. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |

■ Senior units of study

| | | | | |
|------------------|--|----|---|---|
| MICR 3001 | General and Medical Microbiology | 12 | P Except for BMedSc: BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). Q Except for BMedSc: MICR 2002 or 2012 or (2001 and 2004) or 2902. For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2506. N May not be counted with MICR 3901. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 1 |
| MICR 3002 | Molecular/Environmental Microbiology | 12 | P BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). Q MICR 2002 or (2001 and 2004) or 2902. N May not be counted with MICR 3902. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| MICR 3901 | General and Medical Microbiology (Adv) | 12 | P Except for BMedSc: BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). Q Except for BMedSc: At least 12 credit points of Intermediate Microbiology including Distinction in MICR (2001 or 2002 or 2004 or 2901 or 2902) For BMedSc: 32 credit points of Intermediate BMED units including Distinction or better in BMED 2506. N May not be counted with MICR 3001. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 1 |
| MICR 3902 | Molecular/Environmental Microbiology Adv | 12 | P BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). Q At least 12 credit points of Intermediate Microbiology including Distinction in MICR (2001 or 2002 or 2004 or 2901 or 2902). N May not be counted with MICR 3002. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |

Molecular Biology and Genetics

There is no major available in this subject area. Molecular Biology and Genetics units of study are highly recommended to be studied in conjunction with all Life Sciences Subject Areas.

■ Intermediate units of study

| | | | | |
|------------------|---|---|---|-----------|
| MBLG 2001 | Molecular Biology and Genetics A | 8 | P 12 credit points of Junior Chemistry. Q BIOL 1001 or 1901 except for students co-enrolled in BCHM 2011, or with permission of the unit Coordinator. N May not be counted with AGCH 2001 or BCHM 2001 or 2101 or 2901 or MBLG 2101 or 2901. | 1, Summer |
| MBLG 2101 | Molecular Biology & Genetics A (Theory) | 4 | P 12 credit points of Junior Chemistry. Q BIOL 1001 or 1901 or by permission of the unit Coordinator. N May not be counted with AGCH 2001 or BCHM 2001 or 2101 or 2901 or MBLG 2001 or 2901. | 1, Summer |
| MBLG 2901 | Molecular Biology and Genetics A (Adv) | 8 | P 12 credit points of Junior Chemistry. Q BIOL 1001 or 1901 except for students co-enrolled in BCHM 2011. N May not be counted with AGCH 2011 or BCHM 2001 or 2101 or 2901 or MBLG 2001 or 2101. <i>NB: Entry requires a Distinction in one of the Qualifying or Prerequisite units of study, or permission of the unit Coordinator.</i> | 1 |
| MBLG 2002 | Molecular Biology and Genetics B | 8 | P MBLG 2001. N May not be counted with BIOL 2005 or 2105 or 2905 or MBLG 2102 or 2902. | 2 |
| MBLG 2102 | Molecular Biology & Genetics B (Theory) | 4 | p MBLG 2001 or 2101. N May not be counted with BIOL 2005, 2105 or 2905, or MBLG 2002 or 2902. | 2 |
| MBLG 2902 | Molecular Biology and Genetics B (Adv) | 8 | Q Distinction or better in MBLG 2001 or 2901. This requirement may be varied and students with lower marks should consult the unit Executive Officer. N May not be counted with BIOL 2005 or 2105 or 2905 or MBLG 2002 or 2102. | 2 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---|--|----------------------|---|---------------|----------------|----------------|----------|
| Nanoscience and Technology | | | | | | | |
| For a major in Nanoscience and Technology, students are advised to complete: | | | | | | | |
| (i) Junior units: 12 credit points of non-terminating units in each of Chemistry, Mathematics and Physics, and MECH 2300; and | | | | | | | |
| (ii) Intermediate units: 16 credit points of Intermediate Physics and Chemistry, and AERO 2300, MATH 2005 and MECH 3300. | | | | | | | |
| Students must complete: | | | | | | | |
| (iii) Senior units: a minimum of 24 credit points in at least two subject areas from the following electives. | | | | | | | |
| ■ Senior elective units of study | | | | | | | |
| CHEM 3101 | Chemistry 3A | 12 | Q CHEM (2001 or 2101 or 2301 or 2901) and CHEM (2302 or 2902). N May not be counted with CHEM 3311,3601,3602,3901 or 3903 (but may be counted with CHEM 3201). | | | | 1 |
| CHEM 3901 | Chemistry 3A (Advanced) | 12 | Q Distinction average in CHEM 2001 or 2101 or 2301 or 2901 and in CHEM 2202 or 2302 or 2902; by invitation. N May not be counted with CHEM 3101,3311,3601,3602 or 3903 (but may be counted with CHEM 3201). <i>NB: Permission required for enrolment. The number of places in this unit of study is limited and entry is by invitation. Applications are invited from students with a high WAM and an excellent record in Intermediate Chemistry. Students in the Faculty of Science Talented Student Program are automatically eligible.</i> | | | | 1 |
| CHEM 3102 | Chemistry 3B | 12 | O. CHEM (2001 or 2101 or 2301 or 2901) and CHEM (2302 or 2902). N May not be counted with CHEM 3601,3602,3902 or 3903 (but may be counted with CHEM 3202). | | | | 2 |
| CHEM 3902 | Chemistry 3B (Advanced) | 12 | Q Distinction or better in CHEM 2902 or 3101 or 3901; by invitation. N May not be counted with CHEM 3102,3601,3602 or 3903. <i>NB: Permission required for enrolment. The number of places in this unit of study is limited and entry is by invitation. Students in the Faculty of Science Talented Student Program are automatically eligible.</i> | | | | 2 |
| MECH 3310 | Mechanics of Solids 2 | 4 | p AERO 2300 Mechanics of Solids 1 and MATH 2005. | | | | 1 |
| MECH 3610 | Team Project | 2 | p 30 credit points of second year units of study. | | | | 2 |
| MECH 4310 | Advanced Engineering Materials | 6 | P MECH 3300 Materials 2. N MECH 4315 Advanced Aerospace Materials. | | | | 2 |
| PHYS 3003 | Quantum Mechanics and Relativity | 4 | p 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3903 or 3200. | | | | 1 |
| PHYS 3903 | Quantum Mechanics and Relativity (Adv) | 4 | p 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3003 or 3200. | | | | 1 |
| PHYS 3004 | Condensed Matter Physics and Photonics | 4 | p 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3904. | | | | 1 |
| PHYS 3904 | Condensed Matter Physics & Photonics Adv | 4 | P 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3004. | | | | 1 |
| PHYS 3103 | Special Project A | 4 | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3104 or 3803 or 3804. <i>NB: Permission required for enrolment. Enrolling students should contact the lecturer in charge of Senior Physics to arrange a suitable project and supervisor.</i> | | | | 1 |
| PHYS 3803 | Special Project A (Advanced) | 4 | p 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3103 or 3104 or 3804. <i>NB: Permission required for enrolment. Enrolling students should contact the lecturer in charge of Senior Physics to arrange a suitable project and supervisor.</i> | | | | 1 |
| PHYS 3104 | Special Project B | 4 | p 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3103 or 3803 or 3804. <i>NB: Enrolling students should contact the lecturer in charge of Senior Physics to arrange a suitable project and supervisor.</i> | | | | 2 |
| PHYS 3804 | Special Project B (Advanced) | 4 | P 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3103 or 3104 or 3803. <i>NB: Enrolling students should contact the lecturer in charge of Senior Physics to arrange a suitable project and supervisor.</i> | | | | 2 |
| PHYS 3008 | Experimental Physics A | 4 | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3908 or 3009 or 3909. | | | | 1,2 |
| PHYS 3908 | Experimental Physics A (Advanced) | 4 | p 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3008 or 3009 or 3909. | | | | 1,2 |
| PHYS 3009 | Experimental Physics B | 8 | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3008 or 3908 or 3909. | | | | 1,2 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite' | N: Prohibition | Semester |
|---|----|--|---|---------------|-----------------|--|----------|
| PHYS 3909 Experimental Physics B (Advanced) | 8 | P 16 creditpoints of Intermediate Mathematics. | Q PHYS 2901 and 2902, or Credit or better in PPHYS or 2101 and Credit or better in PHYS 2002 or 2102. | | | N May not be counted with PHYS 3008 or 3009 or 3908. | 1,2 |
| PHYS 3101 Experimental Physics C | 4 | Q PHYS 3008 or 3009 or 3908 or 3909. | | | | N May not be counted with PHYS 3102 or 3801 or 3802. | 1,2 |
| PHYS 3801 Experimental Physics C (Advanced) | 4 | Q PHYS 3908 or 3909. | | | | N May not be counted with PHYS 3101 or 3102 or 3802. | 1,2 |
| PHYS 3102 Experimental Physics D | 8 | Q PHYS 3008 or 3009 or 3908 or 3909. | | | | N May not be counted with PHYS 3101 or 3801 or 3802. | 1,2 |
| PHYS 3802 Experimental Physics D (Advanced) | 8 | Q PHYS 3908 or 3909. | | | | N May not be counted with PHYS 3101 or 3102 or 3801. | 1,2 |

Neuroscience

For a major in Neuroscience, students are required to complete:

■ Junior units of study

- (i) 12 credit points of Junior units of study from the Science Subject Area of Mathematics; and
- (ii) 24 credit points from Junior units of study from the Science Subject Areas of Biology, Chemistry, Computer Science, Physics or Psychology.

■ Intermediate elective units of study

At least 24 credit points from the following units of study (ANAT 2003 is particularly recommended).

| | | | | | | | |
|---|---|---|---|--|--|---|-----------|
| ANAT 2003 Concepts in Neuroanatomy | 4 | A Background in basic mammalian biology. | P 12 credit points of Junior Biology or Junior Psychology. | | | NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | 2 |
| MBLG 2001 Molecular Biology and Genetics A | 8 | P 12 credit points of Junior Chemistry. | Q BIOL 1001 or 1901 except for students co-enrolled in BCHM 2011, or with permission of the unit Coordinator. | | | N May not be counted with AGCH 2001 or BCHM 2001 or 2101 or 2901 or MBLG 2101 or 2901. | 1, Summer |
| MBLG 2101 Molecular Biology & Genetics A (Theory) | 4 | P 12 credit points of Junior Chemistry. | Q BIOL 1001 or 1901 or by permission of the unit Coordinator. | | | N May not be counted with AGCH 2001 or BCHM 2001 or 2101 or 2901 or MBLG 2001 or 2901. | 1, Summer |
| MBLG 2901 Molecular Biology and Genetics A (Adv) | 8 | P 12 creditpoints of Junior Chemistry. | Q BIOL 1001 or 1901 except for students co-enrolled in BCHM 2011. | | | N May not be counted with AGCH 2011 or BCHM 2001 or 2101 or 2901 or MBLG 2001 or 2101. | 1 |
| PCOL 2001 Pharmacology Fundamentals | 4 | P 6 credit points of Junior Chemistry and 6 credit points of Junior Biology. | | | | NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | 1 |
| PCOL 2002 Intro Pharmacology: Drugs and People | 4 | P 6 credit points of Junior Chemistry and 6 credit points of Junior Biology. | | | | N May not be counted with PCOL 2003. NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Students are strongly advised to complete PCOL 2001 before enrolling in PCOL 2002. | 2 |
| PCOL 2003 Pharmacology: Drugs and Society | 8 | P 6 credit points of Junior Biology and 6 credit points of Junior Chemistry. | | | | N May not be counted with PCOL 2002. NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Students are strongly advised to complete PCOL 2001 before enrolling in PCOL 2003. | 2 |
| PHSI 2001 Introductory Physiology A | 4 | p 6 credit points of any March semester Junior Chemistry unit of study (eg, CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. | | | | N May not be counted with PHSI 2101. NB: Biology and Physics are strongly recommended prerequisites. PHSI 2001 is one of the recommended qualifying units for Senior Physiology units of study. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | 1 |
| PHSI 2101 Physiology A | 8 | p 6 credit points of any March semester Junior Chemistry unit of study (eg, CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. | | | | N May not be counted with PHSI 2001. NB: Biology and Physics are strongly recommended prerequisites. PHSI 2101 is one of the recommended Physiology qualifying units of study for PHSI 3001. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | 1 |
| PHSI 2002 Introductory Physiology B | 4 | P 6 credit points of any March semester Junior Chemistry unit of study (eg, CHEM 1001 or 1101 or 1901) plus 30 creditpoints from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. | | | | N May not be counted with PHSI 2102. NB: PHSI 2002 is one of the recommended qualifying units for Senior Physiology units of study. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | 2 |
| PHSI 2102 Physiology B | 8 | P 6 credit points of any March semester Junior Chemistry unit of study (eg, CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. | | | | N May not be counted with PHSI 2002. NB: Biology and Physics are strongly recommended prerequisites. PHSI 2101 is one of the recommended Physiology qualifying units of study for PHSI 3001. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | 2 |
| PSYC 2111 Learning, Neuroscience and Perception | 4 | Q PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). | | | | | 1 |
| PSYC 2112 Psychological Statistics | 4 | Q PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). | | | | | 1 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---|----|----------------------|---|---------------|----------------|----------------|----------|
| PSYC 2113 Cognitive Processes & Social Psychology | 4 | | Q PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). | | | | 2 |
| PSYC 2114 Personality and Individual Differences | 4 | | Q PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). | | | | 2 |
| <p>■ Senior elective units of study</p> <p>At least 28 credit points from the following units of study.</p> | | | | | | | |
| PCOL 3002 Neuro- and Cardiovascular Pharmacology | 12 | | p PCOL 2001 and (2002 or 2003) or 32 credit points from Intermediate BMED units of study. N May not be counted with PCOL 3902. NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | | | | 2 |
| PCOL 3902 Neuro & Cardiovascular Pharmacology Adv | 12 | | Q Distinction average in PCOL 2001 and (2002 or 2003) or in 32 credit points from Intermediate BMED units of study. N May not be counted with PCOL 3002. NB: Permission required for enrolment. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Entry to this unit requires Departmental permission. | | | | 2 |
| PHSI 3001 Neuroscience | 12 | | P Except for BMedSc students: (MBLG 2001 or 2101 or 2901 or BCHM 2001 or 2101 or 2901) plus at least 8 credit points of Intermediate Science units of study. Q PHSI (2101 or 2001) or ANAT 2003 or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). N May not be counted with PHSI 3901. NB: A minimum of 8 credit points of Intermediate Physiology and/or Anatomy is recommended. | | | | 1 |
| PHSI 3901 Neuroscience (Advanced) | 12 | | P Except for BMedSc students: (MBLG 2001 or 2101 or 2901 or BCHM 2001 or 2101 or 2901) plus at least 8 credit points of Intermediate Science units of study. Q PHSI (2101 or 2001) or ANAT 2003 or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). N May not be counted with PHSI 3001. NB: Permission required for enrolment. A minimum of 8 credit points of Intermediate Physiology and/or Anatomy is recommended. Available to selected students who have achieved a mark of at least 65 in the qualifying unit/s of study. | | | | 1 |
| PHSI 3002 Neuroscience - Cellular and Integrative | 12 | | p For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. N May not be counted with PHSI 3902. NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | | | | 2 |
| PHSI 3902 Neuroscience- Cellular & Integrative Adv | 12 | | p For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. Q Credit or better in PHSI 3001. N May not be counted with PHSI 3002. NB: Permission required for enrolment. Available to selected students who have achieved a mark of at least 65 in the qualifying unit/s of study for PHSI 3002 and approved by course coordinators. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | | | | 2 |
| PSYC 3203 Abnormal Psychology | 4 | | Q PSYC 2111 and PSYC (2113 or 2114). NB: 32 credit points of Senior (thirdyear) Psychology is required for a major. | | | | 2 |
| PSYC 3204 Behavioural Neuroscience | 4 | | Q 8 credit points of Intermediate Psychology including PSYC 2111. NB: 32 credit points of Senior (thirdyear) Psychology is required for a major. | | | | 2 |
| PSYC 3209 Learning and Motivation | 4 | | Q PSYC2111 and 2112. NB: 32 credit points of Senior (thirdyear) Psychology is required for a major. | | | | 1 |
| PSYC 3210 Perceptual Systems | 4 | | Q PSYC 2111 and 2112. NB: 32 credit points of Senior (thirdyear) Psychology is required for a major. | | | | 2 |

Pharmacology

For a major in Pharmacology, the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Intermediate units of study

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

| | | | | | | | |
|--|---|--|---|--|--|--|---|
| PCOL 2001 Pharmacology Fundamentals | 4 | | p 6 credit points of Junior Chemistry and 6 credit points of Junior Biology. NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | | | | 1 |
| PCOL 2002 Intro Pharmacology: Drugs and People | 4 | | p 6 credit points of Junior Chemistry and 6 credit points of Junior Biology. N May not be counted with PCOL 2003. NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Students are strongly advised to complete PCOL 2001 before enrolling in PCOL 2002. | | | | 2 |
| PCOL 2003 Pharmacology: Drugs and Society | 8 | | p 6 credit points of Junior Biology and 6 credit points of Junior Chemistry. N May not be counted with PCOL 2002. NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Students are strongly advised to complete PCOL 2001 before enrolling in PCOL 2003. | | | | 2 |

■ Senior units of study

| | | | | | | | |
|---|----|--|---|--|--|--|---|
| PCOL 3001 Molecular Pharmacology and Toxicology | 12 | | p PCOL 2001 and (2002 or 2003) or 32 credit points from Intermediate BMED units of study. N PCOL 3901. NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. | | | | 1 |
|---|----|--|---|--|--|--|---|

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge P: Prerequisite Q: Qualifying C: Corequisite N: Prohibition | Semester |
|---|----|---|----------|
| PCOL 3002 Neuro- and Cardiovascular Pharmacology | 12 | P PCOL 2001 and (2002 or 2003) or 32 credit points from Intermediate BMED units of study. N May not be counted with PCOL 3902. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| PCOL 3901 Molecular Pharmacology & Toxicology Adv | 12 | 0. Distinction average in PCOL 2001 and (2002 or 2003) or in 32 credit points from Intermediate BMED units of study. N May not be counted with PCOL 3001. <i>NB: Permission required for enrolment. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Entry to this unit requires Departmental permission.</i> | 1 |
| PCOL 3902 Neuro & Cardiovascular Pharmacology Adv | 12 | Q Distinction average in PCOL 2001 and (2002 or 2003) or in 32 credit points from Intermediate BMED units of study. N May not be counted with PCOL 3002. <i>NB: Permission required for enrolment. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Entry to this unit requires Departmental permission.</i> | 2 |

Physics

For a major in Physics, the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Junior units of study

| | | | |
|--|---|--|-----|
| PHYS 1001 Physics 1 (Regular) | 6 | A HSC Physics. C Recommended concurrent units of study: MATH 1001 and 1002 or 1901 and 1902. N May not be counted with PHYS 1002 or 1901. | 1 |
| PHYS 1002 Physics 1 (Fundamentals) | 6 | A No assumed knowledge of Physics. C Recommended concurrent units of study: MATH (1001 and 1002) or (1901 and 1902). N May not be counted with PHYS 1001 or 1901. | 1 |
| PHYS 1003 Physics 1 (Technological) | 6 | A HSC Physics or PHYS 1001 or 1002 or 1901 or equivalent. c For Science students: Recommended concurrent units MATH (1003 and 1005) or (1903 and 1905). N May not be counted with PHYS 1004 or 1902. | 1,2 |
| PHYS 1004 Physics 1 (Environmental & Life Science) | 6 | A HSC Physics or PHYS 1001 or 1002 or 1901 or equivalent. C Recommended concurrent units of study: MATH 1003 and 1005 or 1903 and 1905. N May not be counted with PHYS 1003 or 1902. | 2 |
| PHYS 1500 Astronomy | 6 | A No assumed knowledge of Physics. | 2 |
| PHYS 1901 Physics IA (Advanced) | 6 | P UAI of at least 95 or HSC Physics result in the 9 8th percentile or better, or Distinction or better in a University level Physics unit, or by invitation. c Recommended concurrent units of study: MATH (1001 and 1002) or (1901 and 1902). N May not be counted with PHYS 1001 or 1002. <i>NB: Permission required for enrolment.</i> | 1 |
| PHYS 1902 Physics IB (Advanced) | 6 | p UAI of at least 95 or HSC Physics result in the 9 8th percentile or better, or Distinction or better in a University level Physics unit, or by invitation. c Recommended concurrent units of study: MATH (1003 and 1005) or (1903 and 1905). N May not be counted with PHYS 1003 or 1004. <i>NB: Permission required for enrolment.</i> | 2 |

■ Intermediate units of study

| | | | |
|--|---|---|---|
| PHYS 2001 Physics (Regular) | 8 | P 12 credit points of Junior Physics (excluding PHYS 1500 and 1600) and 12 credit points of Junior Mathematics other than MATH 1011,1012,1013 and 1015 or Credit or better in MATH 1011, 1012,1013 and 1015. N May not be counted with PHYS 2101 or 2103 or 2901. | 1 |
| PHYS 2002 Physics (Technological) | 8 | p 12 credit points of Junior Physics (excluding PHYS 1500 and 1600) and 12 credit points of Junior Mathematics other than MATH 1011, 1012, 1013 and 1015 or Credit or better in MATH 1011,1012,1013 and 1015. N May not be counted with PHYS 2102 or 2104 or 2902. | 2 |
| PHYS 2105 Physics for Medical Sciences | 4 | P 12 credit points of Junior Physics, excluding PHYS 1500 & 1600. | 2 |
| PHYS 2901 Physics (Advanced) A | 8 | P 12 credit points of Junior Physics at the Advanced level (PHYS 1901 or 1902) or a result of Credit or better in units (PHYS 1001,1002,1003,1004) but excluding PHYS 1500 and 1600; 12 credit points of Junior Mathematics other than MATH 1011,1012,1013 and 1015 or Credit or better in MATH 1011,1012,1013 and 1015. N May not be counted with PHYS 2001 or 2101 or 2103. | 1 |
| PHYS 2902 Physics (Advanced) B | 8 | P 12 credit points of Junior Physics at the Advanced level (PHYS 1901 and 1902) or a result of Credit or better in units (PHYS 1001,1002,1003,1004) but excluding PHYS 1500 and PHYS 1600; 12 credit points of Junior Mathematics other than MATH 1011, 1012,1013 and 1015 or a result of Credit or better in MATH 1011,1012,1013 and 1015. N May not be counted with PHYS 2002 or 2102 or 2104. | 2 |

■ Senior units of study

| | | | |
|--|---|---|---|
| PHYS 3003 Quantum Mechanics and Relativity | 4 | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3903 or 3200. | 1 |
| PHYS 3004 Condensed Matter Physics and Photonics | 4 | p 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3904. | 1 |
| PHYS 3005 Topics in Modern Physics A | 4 | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3905 or 3105 or 3106 or 3107 or 3108 or 3109. | 2 |
| PHYS 3006 Topics in Modern Physics B | 4 | p 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3906 or 3105 or 3106 or 3107 or 3108 or 3109. | 2 |

Table 1: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|-----------------|---------------|----------------|----------------|----------|
| PHYS 3008 Experimental Physics A | 4 | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3908 or 3009 or 3909. | | | | | 1,2 |
| PHYS 3009 Experimental Physics B | 8 | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3008 or 3908 or 3909. | | | | | 1,2 |
| PHYS 3101 Experimental Physics C | 4 | Q PHYS 3008 or 3009 or 3908 or 3909. N May not be counted with PHYS 3102 or 3801 or 3802. | | | | | 1,2 |
| PHYS 3102 Experimental Physics D | 8 | Q PHYS 3008 or 3009 or 3908 or 3909. N May not be counted with PHYS 3101 or 3801 or 3802. | | | | | 1,2 |
| PHYS 3103 Special Project A | 4 | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3104 or 3803 or 3804. <i>NB: Permission required for enrolment. Enrolling students should contact the lecturer in charge of Senior Physics to arrange a suitable project and supervisor.</i> | | | | | 1 |
| PHYS 3104 Special Project B | 4 | p 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3103 or 3803 or 3804. <i>NB: Enrolling students should contact the lecturer in charge of Senior Physics to arrange a suitable project and supervisor.</i> | | | | | 2 |
| PHYS 3301 Scientific Computing | 4 | p 16 credit points of Intermediate units of study in Science Subject Areas. N May not be counted with PHYS 3931. | | | | | 1 |
| PHYS 3303 Scientific Visualisation | 4 | p 16 credit points of Intermediate units of study in Science Subject Areas. N May not be counted with PHYS 3933. | | | | | 2 |
| PHYS 3903 Quantum Mechanics and Relativity (Adv) | 4 | p 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3003 or 3200. | | | | | 1 |
| PHYS 3904 Condensed Matter Physics & Photonics Adv | 4 | p 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3004. | | | | | 1 |
| PHYS 3905 Topics in Modern Physics A (Advanced) | 4 | p 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3005 or 3105 or 3106 or 3107 or 3108 or 3109. | | | | | 2 |
| PHYS 3906 Topics in Modern Physics B (Advanced) | 4 | P 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3006 or 3105 or 3106 or 3107 or 3108 or 3109. | | | | | 2 |
| PHYS 3908 Experimental Physics A (Advanced) | 4 | P 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3008 or 3009 or 3909. | | | | | 1,2 |
| PHYS 3909 Experimental Physics B (Advanced) | 8 | P 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902, or Credit or better in PPHYS or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3008 or 3009 or 3908. | | | | | 1,2 |
| PHYS 3801 Experimental Physics C (Advanced) | 4 | Q PHYS 3908 or 3909. N May not be counted with PHYS 3101 or 3102 or 3802. | | | | | 1,2 |
| PHYS 3802 Experimental Physics D (Advanced) | 8 | Q PHYS 3908 or 3909. N May not be counted with PHYS 3101 or 3102 or 3801. | | | | | 1,2 |
| PHYS 3803 Special Project A (Advanced) | 4 | P 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3103 or 3104 or 3804. <i>NB: Permission required for enrolment. Enrolling students should contact the lecturer in charge of Senior Physics to arrange a suitable project and supervisor.</i> | | | | | 1 |
| PHYS 3804 Special Project B (Advanced) | 4 | P 16 credit points of Intermediate Mathematics. Q PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. N May not be counted with PHYS 3103 or 3104 or 3803. <i>NB: Enrolling students should contact the lecturer in charge of Senior Physics to arrange a suitable project and supervisor.</i> | | | | | 2 |
| PHYS 3931 Scientific Computing (Advanced) | 4 | p 16 credit points at a level of Credit or better of Intermediate units of study in Science Subject Areas. N May not be counted with PHYS 3301. | | | | | 1 |
| PHYS 3933 Scientific Visualisation (Advanced) | 4 | P 16 credit points at a level of Credit or better of Intermediate units of study in Science Subject Areas. N May not be counted with PHYS 3303. | | | | | 2 |
| PHYS 3200 Quantum Physics | 4 | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3003 or 3903. | | | | | 1 |
| PHYS 3105 Astrophysics | 4 | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3005 or 3006 or 3905 or 3906. | | | | | 2 |
| PHYS 3106 Plasma Physics | 4 | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3005 or 3006 or 3905 or 3906. | | | | | 2 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|----------------------|---|---------------|----------------|----------------|----------|
| PHYS 3107 Modem Optics | 4 | | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3005 or 3006 or 3905 or 3906. | | | | 2 |
| PHYS 3108 Nuclear and Particle Physics | 4 | | P 8 credit points of Intermediate Mathematics. Q 16 credit points of Intermediate Physics. N May not be counted with PHYS 3005 or 3006 or 3905 or 3906. <i>NB: Permission required for enrolment. Entry requires permission from the School.</i> | | | | 2 |

Physiology

For a major in Physiology the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Intermediate units of study

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

| | | | | | | | |
|-------------------------------------|---|--|---|--|--|--|---|
| PHSI 2001 Introductory Physiology A | 4 | | P 6 credit points of any March semester Junior Chemistry unit of study (eg. CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. N May not be counted with PHSI 2101. <i>NB: Biology and Physics are strongly recommended prerequisites. PHSI 2001 is one of the recommended qualifying units for Senior Physiology units of study. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| PHSI 2002 Introductory Physiology B | 4 | | P 6 credit points of any March semester Junior Chemistry unit of study (eg. CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. N May not be counted with PHSI 2102. <i>NB: PHSI 2002 is one of the recommended qualifying units for Senior Physiology units of study. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 2 |
| PHSI 2101 Physiology A | 8 | | P 6 credit points of any March semester Junior Chemistry unit of study (eg. CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. N May not be counted with PHSI 2001. <i>NB: Biology and Physics are strongly recommended prerequisites. PHSI 2101 is one of the recommended Physiology qualifying units of study for PHSI 3001. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 1 |
| PHSI 2102 Physiology B | 8 | | P 6 credit points of any March semester Junior Chemistry unit of study (eg. CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. N May not be counted with PHSI 2002. <i>NB: Biology and Physics are strongly recommended prerequisites. PHSI 2101 is one of the recommended Physiology qualifying units of study for PHSI 3001. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 2 |

■ Senior units of study

| | | | | | | | |
|--|----|--|--|--|--|--|---|
| PHSI 3001 Neuroscience | 12 | | P Except for BMedSc students: (MBLG 2001 or 2101 or 2901 or BCHM 2001 or 2101 or 2901) plus at least 8 credit points of Intermediate Science units of study. Q PHSI (2101 or 2001) or ANAT 2003 or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). N May not be counted with PHSI 3901. <i>NB: A minimum of 8 credit points of Intermediate Physiology and/or Anatomy is recommended.</i> | | | | 1 |
| PHSI 3901 Neuroscience (Advanced) | 12 | | P Except for BMedSc students: (MBLG 2001 or 2101 or 2901 or BCHM 2001 or 2101 or 2901) plus at least 8 credit points of Intermediate Science units of study. Q PHSI (2101 or 2001) or ANAT 2003 or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). N May not be counted with PHSI 3001. <i>NB: Permission required for enrolment. A minimum of 8 credit points of Intermediate Physiology and/or Anatomy is recommended. Available to selected students who have achieved a mark of at least 65 in the qualifying unit/s of study.</i> | | | | 1 |
| PHSI 3002 Neuroscience - Cellular and Integrative | 12 | | P For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. N May not be counted with PHSI 3902. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 2 |
| PHSI 3902 Neuroscience- Cellular & Integrative Adv | 12 | | P For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. Q Credit or better in PHSI 3001. N May not be counted with PHSI 3002. <i>NB: Permission required for enrolment. Available to selected students who have achieved a mark of at least 65 in the qualifying unit/s of study for PHSI 3002 and approved by course coordinators. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | 2 |
| PHSI 3003 Heart and Circulation | 12 | | P Except for BMedSc: (MBLG 2001 or 2101 or 2901 or BCHM 2001 or 2101 or 2901) and (BCHM 2002 or 2102 or 2902 or MBLG 2002 or 2102 or 2902) plus at least 8 credit points of Intermediate Science units of study. Q PHSI (2102 or 2002) or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). N May not be counted with PHSI 3903. <i>NB: A minimum of 8 credit points of Intermediate Physiology and BCHM 2002 or 2102 or 2902 are strongly recommended.</i> | | | | 2 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge P: Prerequisite Q: Qualifying C: Corequisite N: Prohibition | Semester |
|--|----|---|----------|
| PHSI 3903 Heart and Circulation (Advanced) | 12 | P Except for BMedSc: (MBLG2001 or 2101 or 2901 or BCHM2001 or 2101 or 2901) and (BCHM 2002 or 2102 or 2902 or MBLG 2002 or 2102 or 2902) plus at least 8 credit points of Intermediate Science units of study. Q PHSI (2102 or 2002) or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). N May not be counted with PHSI 3003. <i>NB: Permission required for enrolment. A minimum of 8 credit points of Intermediate Physiology and BCHM 2002 or 2102 or 2902 are strongly recommended. Available to selected students who have achieved a mark of at least 65 in the qualifying unit/s of study.</i> | 2 |
| PHSI 3004 Human Cellular Physiology | 12 | P Except for BMedSc: PHSI (2001 or 2101) and PHSI (2002 or 2102) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901). For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). N May not be counted with PHSI 3904. | 1 |
| PHSI 3904 Human Cellular Physiology (Advanced) | 12 | P Except for BMedSc students: PHSI (2001 or 2101) and PHSI (2002 or 2102) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901). For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). N May not be counted with PHSI 3004. <i>NB: Permission required for enrolment. Available to selected students who have achieved an average of at least 65 in the prerequisite units of study.</i> | 1 |

Psychology

For a major in Psychology the minimum requirement is 16 credit points of Intermediate and 32 credit points of Senior units of study in this Subject Area.

■ Junior units of study

| | | | |
|---------------------------|---|--|-----------|
| PSYC 1001 Psychology 1001 | 6 | | 1, Summer |
| PSYC 1002 Psychology 1002 | 6 | | 2 |

■ Intermediate units of study

| | | | |
|---|---|---|---|
| PSYC 2111 Learning, Neuroscience and Perception | 4 | Q PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). | 1 |
| PSYC 2112 Psychological Statistics | 4 | Q PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). | 1 |
| PSYC 2113 Cognitive Processes & Social Psychology | 4 | Q PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). | 2 |
| PSYC 2114 Personality and Individual Differences | 4 | Q PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). | 2 |

■ Senior units of study

| | | | |
|--|---|--|---|
| PSYC 3201 Statistics and Psychometrics | 4 | Q 8 credit points of Intermediate Psychology including PSYC 2112. <i>NB: 32 credit points of Senior (thirdyear) Psychology is required for a major.</i> | 2 |
| PSYC 3202 History and Philosophy of Psychology | 4 | Q 12 credit points of Intermediate Psychology. <i>NB: 32 credit points of Senior (third year) Psychology is required for a major.</i> | 1 |
| PSYC 3203 Abnormal Psychology | 4 | Q PSYC 2111 and PSYC (2113 or 2114). <i>NB: 32 credit points of Senior (thirdyear) Psychology is required for a major.</i> | 2 |
| PSYC 3204 Behavioural Neuroscience | 4 | Q 8 credit points of Intermediate Psychology including PSYC 2111. <i>NB: 32 credit points of Senior (thirdyear) Psychology is required for a major.</i> | 2 |
| PSYC 3205 Cognitive Psychology | 4 | Q PSYC 2112 and 2113. <i>NB: 32 credit points of Senior (thirdyear) Psychology is required for a major.</i> | 1 |
| PSYC 3206 Developmental Psychology | 4 | Q 8 credit points of Intermediate Psychology. <i>NB: 32 credit points of Senior (thirdyear) Psychology is required for a major.</i> | 1 |
| PSYC 3208 Intelligence | 4 | Q PSYC 2112 and 2114. <i>NB: 32 credit points of Senior (thirdyear) Psychology is required for a major.</i> | 2 |
| PSYC 3209 Learning and Motivation | 4 | Q PSYC 2111 and 2112. <i>NB: 32 credit points of Senior (thirdyear) Psychology is required for a major.</i> | 1 |
| PSYC 3210 Perceptual Systems | 4 | Q PSYC 2111 and 2112. <i>NB: 32 credit points of Senior (thirdyear) Psychology is required for a major.</i> | 2 |
| PSYC 3211 Psychological Assessmt. & Organisational | 4 | Q PSYC 2112 and 2114., N May not be counted with PSYC 3207 (except with permission from the Head of Department). <i>NB: 32 credit points of Senior (thirdyear) Psychology is required for a major.</i> | 1 |
| PSYC 3212 Social Psychology | 4 | Q 8 credit points of Intermediate Psychology including PSYC 2113. <i>NB: 32 credit points of Senior (thirdyear) Psychology is required for a major.</i> | 1 |
| PSYC 3214 Communication and Counselling | 4 | Q PSYC 2113 and 2114. <i>NB: 32 credit points of Senior (thirdyear) Psychology is required for a major.</i> | 2 |

Soil Science

For a major in Soil Science the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

■ Intermediate units of study

| | | | |
|---|---|--|---|
| SOIL 2001 Soil Properties and Processes | 8 | P CHEM 1002 or equivalent and 12 credit points of Junior Mathematics or PHYS 1003 or 1004. | 1 |
| SOIL 2002 Soil Resources and Conservation | 8 | P SOIL 2001 or GEOL1002 or GEOL 2004 or GEOG 1001 or ENV12001. N May not be counted with GEOG 3002. | 2 |

Table I: Bachelor of Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|---|-----------------|---------------|----------------|----------------|----------|
| ■ Senior units of study | | | | | | | |
| SOIL 3001 Environmental Soil Science A | 12 | Q SOIL 2001. | | | | | 1 |
| SOIL 3002 Environmental Soil Science B | 12 | P AGCH2001 or CHEM2001 or 2101 or 2202 or 2301 or 2302 or BCHM2002 or 2902. Q SOIL 2001. | | | | | 2 |

Statistics

For a major in Statistics the minimum requirement is 24 credit points of Senior units of study in this Subject Area.

| | | | | | | | |
|--|---|---|--|--|--|--|---|
| ■ Intermediate units of study | | | | | | | |
| STAT 2001 Statistical Distributions | 4 | P MATH (1001 or 1901 or 1906 or Credit in 1011) and [MATH (1005 or 1905 or 1015) or MATH (1004 or 1904)]. N May not be counted with STAT 2901. | | | | | 1 |
| STAT 2002 Data Analysis | 4 | P MATH 1005 or 1905 or 1015 (or STAT 1021 for Arts students). | | | | | 1 |
| STAT 2003 Estimation Theory | 4 | P STAT 2001 or 2901. N May not be counted with STAT 2903. | | | | | 2 |
| STAT 2004 Hypothesis Testing | 4 | P STAT 2002. | | | | | 2 |
| STAT 2901 Introduction to Probability (Advanced) | 4 | P MATH (1903 or 1907 or Credit in 1003) and MATH (1905 or Credit in 1005). N May not be counted with STAT 2001. | | | | | 1 |
| STAT 2903 Estimation Theory (Advanced) | 4 | P STAT 2901 or Credit in STAT 2001. N May not be counted with STAT 2003. | | | | | 2 |
| ■ Senior units of study | | | | | | | |
| STAT 3001 Distribution Theory and Inference | 4 | P MATH (1003 or 1903 or 1907) and STAT (2003 or 2903). N May not be counted with STAT 3901. | | | | | 1 |
| STAT 3002 Applied Linear Models | 4 | P STAT 2004 (or STAT 1022 for Arts students) and MATH (1002 or 1902). N May not be counted with STAT 3902. | | | | | 1 |
| STAT 3003 Time Series Analysis | 4 | P STAT 2003 or 2903. | | | | | 1 |
| STAT 3004 Design of Experiments | 4 | P STAT 3002 or 3902. | | | | | 2 |
| STAT 3005 Applied Stochastic Processes | 4 | P MATH (1003 or 1903 or 1907) and STAT (2001 or 2901). N May not be counted with STAT 3905. | | | | | 2 |
| STAT 3006 Sampling Theory and Categorical Data | 4 | P STAT 2003 or 2903. | | | | | 2 |
| STAT 3901 Statistical Theory (Advanced) | 4 | P (MATH 2001 or 2901) and STAT 2903. N May not be counted with STAT 3001. | | | | | 1 |
| STAT 3902 Linear Models (Advanced) | 4 | P STAT 2004 and (STAT 2903 or Credit in 2003) and (MATH 2002 or 2902). N May not be counted with STAT 3002. | | | | | 1 |
| STAT 3905 Markov Processes (Advanced) | 4 | P STAT 2901 or (Credit in STAT 2001 and MATH (1003 or 1903 or 1907)). N May not be counted with STAT 3005. | | | | | 2 |
| STAT 3907 Multivariate Analysis (Advanced) | 4 | P STAT 3902 and either STAT 3001 or 3901. <i>NB: Permission required for enrolment. This unit is only offered in odd years.</i> | | | | | 2 |

Study in other faculties

A total of 48 credit points of units of study from non-Science discipline areas may be counted towards the BSc degree. Students should consult the handbooks from other faculties to determine any prerequisites, corequisites or other requirements relating to enrolment in units of study offered by departments in these faculties. Students may not enrol in General Statistical Methods 1 (STAT 1021) or General Statistical Methods 2 (STAT 1021) or Econometrics 1A (ECMT 1010) or Econometrics 1B (ECMT 1020) or any other unit of study deemed to be mutually exclusive with units of study listed in this table. Students enrolled in the combined BSc/BCom program may enrol in Econometrics 1A (ECMT 1010) and/or Econometrics 1B (ECMT 1020).

■ Bachelor of Science units of study

Aerospace, Mechanical and Mechatronic Engineering

The School of Aerospace, Mechanical and Mechatronic Engineering is part of the Faculty of Engineering. In addition to providing professional training in aerospace, mechanical and mechatronic engineering, units of study in the School are available to students in the Faculty of Science who meet any prerequisite requirements for a particular unit.

Registration

Timetable information on alternative lecture/tutorial/laboratory/practical classes is available in the General Office of the School.

Tutorials and laboratories

All students are required to undertake the tutorial and laboratory work associated with the chosen units of study, details of which are provided in the timetables. The experimental and tutorial work, an integral part of the unit of study, complements the lecture material.

Double degree

Science graduates may obtain up to two years advanced standing towards a Bachelor of Engineering degree in Aerospace, Mechanical, Mechatronic or Biomedical Engineering. Students wishing to undertake this option must apply through UAC and compete on the basis of academic merit. Information about application procedures is available from the Engineering Faculty Office in the Engineering Faculty Building.

■ Department of Agricultural Chemistry and Soil Science

Agricultural Chemistry

Units of study in Agricultural Chemistry for Science students cover aspects of chemistry and biochemistry which are relevant in basic and applied biological sciences including agriculture, the environment and food science. Emphasis is placed on the chemistry of molecules of biological, agricultural and environmental significance both naturally occurring (eg, in foods and natural fibres), and chemically synthesised (eg, insecticides

and herbicides). The biochemistry is planned around the relationship between living organisms and their environment and includes sections on the metabolism of inorganic and synthetic materials by animals, plants and micro-organisms.

The units of study available are: AGCH 2001 Molecular Processes in Ecosystems (8 credit points Intermediate); AGCH 3017, AGCH 3018 and AGCH 3019, Food Chemistry and Biochemistry A, B and C respectively (4 credit points Senior each); AGCH 3020, AGCH 3021 and AGCH 3022, Chemistry and Biochemistry of Ecosystems A, B and C respectively (4 credit points Senior each); AGCH 3024 Chemistry and Biochemistry of Foods (6 credit points Senior); and Agricultural Chemistry Honours.

AGCH 2001 Molecular Processes in Ecosystems

8 credit points. Dr Lees, Dr Caldwell (Coordinator). **Semester:** 1. **Classes:** 3 lec & 5 prac/wk. **Prerequisite:** BIOL 1002 or 1902 Students who have not satisfied the prerequisites in Biology may enrol with SOIL 2001 as a corequisite. **Qualifying:** CHEM 1002 or equivalent. **Prohibition:** May not be counted with any Intermediate unit of study in Biochemistry. **Assessment:** One 3hr exam, prac, assignments.

This is an introductory unit of study consisting of aspects of chemistry and biochemistry relevant in studies of basic and applied biological sciences including agriculture and the environment. The unit of study introduces students to biophysical, biological and environmental chemistry. Lecture topics include: energy in the biosphere; the interaction of radiation and matter; solutions of neutral solutes and electrolytes; emulsions, foams and gels; the biological chemistry of carbohydrates, lipids, amino acids and proteins (including enzymes); nucleic acids; the metabolism of simple sugars, fatty acids and amino acids; the mechanisms of energy release and transduction; the basic pathway of carbon fixation in photosynthesis. Emphasis is given to the theory, principles and practice of the basic analytical techniques which underpin the more advanced instrumental methods used in many laboratory based disciplines.

Practical: Seven laboratory sessions cover aspects of analytical and biophysical chemistry including: elemental analysis of foods, spectrophotometry, chromatographic techniques, preparation of buffers, fundamentals of pH measurement; emulsions, foams and gels. An additional five laboratory sessions are concerned with the properties of carbohydrates, lipids, amino acids, proteins and nucleic acids. Laboratory classes include instruction in the safe handling of chemicals and safe practices in chemical laboratories.

AGCH 3017 Food Chemistry and Biochemistry A

4 credit points. Dr Lees (Coordinator), Dr Caldwell, Prof. Copeland. **Semester:** 1. **Classes:** 3 lec & 1 tut/wk. **Prerequisite:** AGCH 2001 or AGCH 2002 or BCHM (2002 or 2902) or BMED (2501 and 2502 and 2504). **Prohibition:** May not be counted with AGCH 3003 or 3005. **Assessment:** One 2-hr exam (75%), assignments and quizzes (25%).

This unit of study aims to give students an understanding of the constituents of foods and fibres. The lecture topics cover:

- o the chemistry, biochemistry and processing behaviour of major food constituents - oligosaccharides, polysaccharides, lipids and proteins;
- o the relationship between molecular structure of constituents and their functionality in foods;
- o natural fibres and gel-forming biopolymers - uses in foods, importance in dietary fibre and commercial products;
- o enzymes in foods and food processing;
- o wheat flour doughs and protein chemistry during baking and cooking;
- o anti-nutritional and toxic constituents of plants and foods;
- o flavour chemistry.

AGCH 3018 Food Chemistry and Biochemistry B

4 credit points. Dr Lees (Coordinator), Dr Caldwell, Prof. Copeland. **Semester:** 1. **Classes:** 4 prac/wk. **Corequisite:** AGCH 3017. **Prohibition:** May not be counted with AGCH 3003 or 3005. **Assessment:** Laboratory reports and assignment.

This unit of study aims to give students an understanding of the methods used in the analysis of foods and other biological materials. The laboratory exercises will include:

- o Sample preparation;
- o Spectroscopic, enzymic, chromatographic (including GC and HPLC) and electrophoretic methods.

AGCH 3019 Food Chemistry and Biochemistry C

4 credit points. Dr Lees (Coordinator), Dr Caldwell, Prof. Copeland. **Semester:** 1. **Classes:** 2-4 seminar & library study/wk. **Corequisite:** AGCH 3018. **Prohibition:** May not be counted with AGCH 3003 or 3005. **Assessment:** Oral & written reports.

Seminar-tutorial sessions will be presented on a wide range of topical issues including world-wide food sustainability, genetically modified foods and food safety.

AGCH 3020 Chemistry & Biochemistry of Ecosystems A

4 credit points. Prof. Kennedy (Coordinator), Dr Caldwell, Dr Lees, Prof. Copeland. **Semester:** 2. **Classes:** 3 lec & 1 tut/wk. **Prerequisite:** AGCH 2001 or AGCH 2002 or CHEM (2001 or 2101 or 2202 or 2301 or 2302 or 2902) or BCHM (2002 or 2902) or ENVI (2001 or 2002). **Prohibition:** May not be counted with AGCH 3001 or 3004. **Assessment:** One 2-hr exam (60%), assignments and quizzes (40%).

This unit of study aims to give students an understanding of the chemical and biochemical processes in ecosystems. The lecture topics cover:

- o the biological carbon cycle - bioenergetics of autotrophy and heterotrophy, photosynthesis, fermentation, eutrophication;
- o the mineral nutrient cycles, uptake and utilization by organisms; pH balancing;
- o the biological nitrogen cycle - ammonification, nitrification of ammonia, denitrification of nitrate, nitrogen fixation, ammonia and nitrate assimilation;
- o the biological sulphur cycle - sulphate assimilation, sulphate reduction and dissimilation in soil and water;
- o the role of the nitrogen and sulphur cycles in the acidification of ecosystems; effects of acidification on plants and animals;
- o pesticides and herbicides, modes of action, metabolism and detoxification; environmental chemistry and fate of pesticides; the design of new pesticides and means of pest control;
- o heavy metals and plants, mechanisms of tolerance, hyperaccumulators, halophytes.

The tutorials are designed to provide students with an insight into environmental issues and methods for monitoring and remediation of contaminants including heavy metals and pesticides.

AGCH 3021 Chemistry & Biochemistry of Ecosystems B

4 credit points. Prof. Kennedy (Coordinator), Dr Caldwell, Dr Lees, Prof. Copeland. **Semester:** 2. **Classes:** 4 prac/wk. **Corequisite:** AGCH 3020. **Prohibition:** May not be counted with AGCH 3001 or 3004. **Assessment:** Laboratory reports and assignment.

This unit of study aims to give students an understanding of the practical skills required for chemical and biochemical methods of analysis used in environmental chemistry. The laboratory exercises will include:

- o sample preparation;
- o analyses of environmental samples for organic and inorganic nutrients, products and contaminants including heavy metals and pesticides;
- o experience with gas, liquid and ion chromatography, atomic absorption spectroscopy, electrochemical methods, mass spectrometry and the use of immunoassays (ELISA).

AGCH 3022 Chemistry & Biochemistry of Ecosystems C

4 credit points. Prof. Kennedy (Coordinator), Dr Caldwell, Dr Lees, Prof. Copeland. **Semester:** 2. **Classes:** 4 days fieldwork excursion and 1-2 lec or tut/wk. **Corequisite:** AGCH 3021. **Prohibition:** May not be counted with AGCH 3001 or 3004. **Assessment:** Oral & written reports.

This unit of study will focus on chemical and biological factors involved in the generation of the enhanced greenhouse effect and its impact on rural ecosystems. Practical solutions will be sought by students, employing a field theory relating the generation of molecular action in ecosystems to the dissipation of solar energy to outer space. Relevant case studies will involve fieldwork at research centres and fieldsites in eastern Australia.

AGCH 3024 Chemistry and Biochemistry of Foods

6 credit points. Assoc Prof Copeland. **Semester:** 1. **Classes:** 3 lec & 1 tut/wk. 8x3hr pracs. **Prerequisite:** MBLG 2001 and 2002; and either CHEM 2311 and 2312, or BCHM 2002, or BCHM 2902. **Prohibition:** May not be counted with AGCH 3017 or 3003 or 3005. **Assessment:** One 2hr exam (50%), One major assignment (25%), Practical Reports (25%). 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 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 doughs 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. Each practical will incorporate a tutorial introducing the background to the characterisation technique employed. Particular emphasis will be placed on the development of practical skills and critical thinking about the implications of experimental data. 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.

The tutorials will provide an introduction to each of the practical exercises, and will also cover topical issues in food science, including food quality, food labelling and food security and genetically modified foods.

Agricultural Chemistry Honours

The fourth year unit of study in Agricultural Chemistry aims to: provide students with problem-solving and communication skills required by professional chemists in enterprises concerned with agricultural production and processing, foods and beverages, and environmental science; enable students to learn to work independently in a laboratory environment; familiarise students with the research literature and methodology of biological chemistry; and provide a basis for students who wish to proceed to postgraduate research.

Candidates should consult the Department as soon as possible after results in Senior unit of study are obtained. The unit of study consists of a research project (with submission of a dissertation), two essays, an oral presentation and attendance at specialist lectures and seminars in agricultural, biological and environmental chemistry. The essays and oral presentation are selected from a list of topics in basic and applied biological and environmental chemistry, and food science. Projects are usually available in one of the following areas of current research interest in the Department: carbohydrate and nitrogen metabolism in plants, biological nitrogen fixation in legumes and associated with wheat, insect metabolism, the biochemistry and environmental chemistry of pesticides and herbicides, acidification of ecosystems including the mechanism of aluminium phytotoxicity, residue analysis in foods and other aspects of food science, cereal chemistry and biochemistry.

Soil Science

The Soil Science units of study offered by the Department of Agricultural Chemistry and Soil Science aim primarily at giving students an introduction to the three major branches of soil science, namely soil physics, soil chemistry, and pedology, and at providing the basis for a professional career in each of these divisions for students wishing to specialise.

The introductory unit of study is particularly relevant for students interested in the environmental and geological sciences and in land-use management.

SOIL 2001 Soil Properties and Processes

8 credit points. Dr Cattle. Semester: 1. Classes: 3 lec, 1 tut, 3hr prac/wk; and 2 days of fieldwork. Prerequisite: CHEM 1002 or equivalent and 12 credit points of Junior Mathematics or PHYS1003 or 1004. Assessment: One 3hr written exam, one 2hr prac exam, coursework, and prac report. This unit of study is concerned with the fundamental properties of soil, the factors of soil formation, and the processes that operate in the soil system. The components of the unit of study are pedology, soil physics and soil chemistry. These components are synthesised by reference to common soil profiles. The study of soil in the field starts with field description and assessment of essential characteristics. The physics of water and gas movement, temperature, density, swelling and strength are considered. Soil chemistry includes properties of organic matter, cation exchange capacity, nitrogen, phosphorus, potassium and acidity. Common soil types of New South Wales are studied in relation to their formation, properties and classification.

Textbooks

White RE. Principles and Practice of Soil Science: The Soil as a Natural Resource. Blackwell Science, 1997

SOIL 2002 Soil Resources and Conservation

8 credit points. Dr Singh. Semester: 2. Classes: 4 lec & 3hr prac/wk; 5 days in the field in the week prior to the commencement of the July Semester. Prerequisite: SOIL 2001 or GEOL1002 or GEOL 2004 or GEOG 1001 or ENVI2001. Prohibition: May not be counted with GEOG 3002. Assessment: One 3hr exam, reports on field and lab work. Lectures on classification of soil, soil survey, pedological processes, geomorphology and soil stratigraphy, geostatistics and their application to land evaluation for rural purposes, the forms of land degradation occurring in Australia, the management of the soil environment and processes and management conducive to sustainable soil husbandry. Five days' field work in the last week of the mid-year break will take place at a country location and involves landscape description and the description, mapping and sampling of soil profiles for the purpose of assessing land-use capability and field variability of soil properties. The field-work component is a compulsory part of the unit of study.

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

SOIL 3001 Environmental Soil Science A

12 credit points. Prof. McBratney (Coordinator), Dr Cattle. Semester: 1. Classes: 3 lec, 1 tut & 6hr prac/wk, 10 days in the field. Qualifying: SOIL 2001. Assessment: two 2hr exams, field and prac reports, problem sets, essay.

The soil science specialisation trains people for careers in professional soil science and extension. It provides an excellent background for entry into all aspects of soil science research ranging from physics through mineralogy and chemistry to pedology. Increasing emphasis is being given to aspects of soil sustainability and environmental soil science in order that graduates can meet the growing national demands in this area.

This unit of study covers physics and pedology.

Physics

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

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

Pedology

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

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

Reference books

FitzPatrick EA. Soils. Longman, 1980
FitzPatrick EA. Micromorphology of Soils. Chapman & Hall, 1984
Isbell RF. The Australian Soil Classification. CSIRO Publishing, 1996
Kirkman D, & Powers WL. Advanced Soil Physics. Wiley 1972
Loveday J (ed.). Methods for Analysis of Irrigated Soils. C.A.B., 1974
Richler J. The Soil as a Reactor. Catena Verlag, 1987
Soil Survey Staff Soil Taxonomy: A Basic System of Soil Classification for Making and Interpreting Soil Surveys Agric. Handbook No. 436. U. S. Department Agric, Washington D.C., 1975

SOIL 3002 Environmental Soil Science B

12 credit points. Dr Singh, Prof. McBratney, Dr Cattle. Semester: 2. Classes: 3 lec, 1 tut & 8hr prac/wk. Prerequisite: AGCH 2001 or CHEM 2001 or 2101 or 2202 or 2301 or 2302 or BCHM 2002 or 2902. Qualifying: SOIL 2001. Assessment: Two 2hr exams, lab reports, problem sets, essays.

This soil science specialisation trains people for careers in professional soil science and extension. It provides an excellent background for entry into all aspects of soil science research ranging from physics through mineralogy and chemistry to pedology. Increasing emphasis is being given to aspects of soil sustainability and environmental soil science in order that graduates can meet the growing national demands in this area. This unit of study covers advanced soil chemistry and methods of soil analysis.

Soil Chemistry: Topics include clay mineralogy, cation exchange capacity and pH dependent charge, soil charge characteristics, soil chemical analyses and their interpretation, formation of acid soil - Al and Mn toxicities, chemistry and adsorption/desorption of K, P and S in soil, soil solution and speciation of ionic components, oxidation/reduction reactions in soil and chemistry of soil organic matter and nitrogen.

Methods: Topics to be covered will include the use of algorithms and simulation modelling in soil science, techniques for soil structural assessment, techniques for dating the age of soil materials, and the use of electron microscopy and X-ray based techniques in soil science. Practicals will involve the writing of computer programs for modelling applications, soil structural assessment of samples using image analysis, radiocarbon dating of field samples, and the use of electron microscopy and X-ray diffraction to identify soil constituents.

Reference books

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

Soil Science Honours

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.

■ Department of Anatomy and Histology

The Department 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 ground floor, Room S254.

Noticeboards

The noticeboards are situated next to the Department Office, Room S254, and near Rooms W225 and S431. Students are advised to consult the noticeboard regularly. Timetables for lectures and practical classes will be posted, where possible, in the week before the beginning of each semester.

Advice on units of study and enrolment

Students wishing to enrol in units of study in Anatomy and Histology must consult the Departmental advisers in the Enrolment Centre during re-enrolment week prior to enrolling in the units of study. Information will be available at this time on the units of study offered by the Department and on the advisability of various combinations of subjects.

Registration

All students should register with the Department. Please consult the Departmental noticeboards for details.

Vaccinations

All students studying gross anatomy or neurosciences who may also be exposed to human tissues or fluids should contact the University Health Service regarding vaccinations.

Protective Clothing

All students studying gross anatomy or neurosciences must wear a laboratory coat or gown in tutorial rooms and a gown in dissection rooms and must wear gloves when handling cadaveric material.

ANAT 2001 Principles of Histology

4 credit points. Assoc Prof Byrne. Semester: 1, Summer. Classes: 4hr/wk, usually 2 lec & 2 prac. Prerequisite: 12 credit points of Junior Biology or Junior Psychology. Assessment: One 1 hr exam, one 1 hr prac exam. NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended

This unit of study covers the principles of cell biology and study of the structure of cells, tissues and organ systems at the light and electron microscopic levels. Instruction also includes a focus on practical applications of histological techniques and analysis for research.

Textbooks

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

Reference Books

Gilbert SF. Developmental Biology. (6th edn), Sinauer, 2000
Alberts B et al. Molecular Biology of the Cell. Garland: N.Y., 1994
The histology text and practical book are to be purchased before the first practical class

ANAT 2002 Comparative Primate Anatomy

4 credit points. Dr Denise Donlon. Semester: 2. Classes: 4hr/wk, usually 2 lec & 2 prac/tut. Prerequisite: 12 credit points of Junior Biology or Junior Psychology. Assessment: One 1 hr theory exam (50%), one 1 hr prac exam (30%), quizzes and worksheets (20%).

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study covers the musculoskeletal anatomy of the human body with particular emphasis on human evolution and comparisons with apes and fossil hominids. The topics covered include the versatility of the hand in manipulation and locomotion, bipedalism, climbing and brachiation in apes, and the changes in pelvic anatomy associated with bipedalism and their obstetric consequences.

Textbooks

Kapit, W & Elson, LM. The Anatomy Colouring Book. Addison-Wesley, 1993

Reference Books

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

ANAT 2003 Concepts in Neuroanatomy

4 credit points. Assoc. Prof. Jan Provis. Semester: 2. Classes: 2hrs lec & 2hr prac/wk. Assumed knowledge: Background in basic mammalian biology. Prerequisite: 12 credit points of Junior Biology or Junior Psychology. Assessment: One 1.5hr theory exam; one 1-hr prac exam. NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study introduces students to the structural organization of the central nervous system, exploring the anatomy, histology, and aspects of the chemical architecture of the mammalian brain and spinal cord. Some comparison is made with invertebrate species. Students are introduced to the structural and neurochemical specializations of neurons and their micro-environment. Other topics considered include special senses, the autonomic and peripheral nervous system, the development and aging of the primate brain. This unit of study will be of general interest to students studying science and related disciplines, and will prepare students for neuroscience study at higher levels.

ANAT 2004 Principles of Development

4 credit points. Ms R. Arnold. Semester: 2. Classes: 2hrs lec & 2hrs prac/wk. Qualifying: ANAT 2001. Assessment: One 1 hr theory exam, one 1 hr prac exam, one 1200 word essay.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

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

ANAT 3001 Microscopy and Histochemistry

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

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

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

Textbooks

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

ANAT 3002 Cells and Development

12 credit points. Dr McAvoy. **Semester:** 2. **Classes:** 12hr/wk. **Assumed knowledge:** (i) an understanding of the basic structure of the vertebrates; (ii) an understanding of elementary biochemistry and genetics. **Qualifying:** ANAT 2001 For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2503, 2504, 2505.

Prohibition: May not be counted with ANAT 3003. **Assessment:** Theory exam and practical assignments.

NB: The completion of MBLG 2001 or 2101 or 2901 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 examined in a range of animals, mainly vertebrates. The parts played by inductive cell and tissue interactions in differentiation, morphogenesis and pattern formation are studied at cellular and molecular levels. The unit of study also covers the design of experimental procedures using appropriate molecular and cellular techniques to answer developmental questions.

Textbooks

Gilbert SF. *Developmental Biology*. (5th edn) Sinauer Associates Inc: Sunderland, Mass. 1997

ANAT 3003 Transmission & Scanning Electron Microsc

12 credit points. Dr Swan & Dr Jones. **Semester:** 2. **Classes:** 4 lec & 8 lab/wk. **Qualifying:** ANAT 2001 or 32 credit points of Intermediate BMedSc units of study. **Prohibition:** May not be counted with ANAT 3002. **Assessment:** Exam, prac reports and/or project and/or essay.

This course is run conjointly by the Department of Anatomy and Histology and the Electron Microscope unit. This unit of study covers the theoretical basis of resolution, basic electron and light optics, microscope image formation as well as instrument design as applied to scanning electron microscopy (SEM), transmission electron microscopy (TEM) and other advanced microscope modalities. It includes the theory and practice of specimen preparation, the sectioning of plastic blocks for both light microscopy and TEM, the operation of advanced electron microscope instrumentation (SEM and TEM) and the application of digital data manipulation techniques, including image analysis, to extract quantitative information from acquired images. Laser scanning confocal (LSC) microscopy will also be studied at both a theoretical level and in practical application. In addition, the unit of study covers special methods in electron microscopy including; scanning transmission electron microscopy (STEM), immuno-electron microscopy, cryo-ultramicrotomy, electron diffraction and freeze fracture.

Textbook

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

Reference book

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

ANAT 3004 Cranial and Cervical Anatomy

6 credit points. Assoc. Prof. Jan Provis. **Semester:** 2. **Classes:** 1 lec, 2hr dissection, 3hr prac/tut. **Qualifying:** ANAT 2002. **Prohibition:** May not be counted with ANAT 3005. **Assessment:** One 1.5hr theory exam, one 1hr prac exam, one 2500 word essay, continuous assessment (10%).

NB: Not more than 12 credit points allowed from ANAT3004, ANAT 3007 & ANAT 3008. The completion of MBLG 2001 or 2101 or 2901 is highly recommended

This unit of study focuses on the peripheral distribution of the cranial nerves in the head and neck regions of the body. Emphasis is placed on the functional components of the cranial nerves and their relationship to the special senses and special motor functions such as facial gesture and speech. Dissection classes enable students to develop their own approach to the understanding and organisation of subject material.

Communication of key concepts and presentation of subject material in an academic context are encouraged and assessed in a major assignment.

Textbooks

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

ANAT 3006 Forensic Osteology

6 credit points. Dr Donlon. **Semester:** 1. **Classes:** 2 lec, 2hr tut & 2hr prac/week. **Prerequisite:** ANAT 2002. **Assessment:** Exam, essay, case study.

NB: The completion of MBLG 2001 or 2101 or 2901 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

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

ANAT 3007 Visceral Anatomy

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

NB: Not more than 12 credit points allowed from ANAT 3004, ANAT 3007 & ANAT 3008. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

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

ANAT 3008 Musculoskeletal Anatomy

6 credit points. **Semester:** 2. **Classes:** 2 lec, 2 x 2 hr tut/prac / wk. **Qualifying:** ANAT 2002. **Prohibition:** May not be counted with ANAT 3005. **Assessment:** One assignment, 1 hr prac exam, 1.5hr theory exam.

NB: Not more than 12 credit points allowed from ANAT 3004, ANAT 3007 & ANAT 3008. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study covers the topographical anatomy of the limbs and back. The musculoskeletal anatomy of the limbs and back is considered with particular reference to posture and locomotion. This is contrasted with specialization of the upper limb for manipulation and tactile functions. The emphasis is on the organization of muscle groups, how they act on joints and their innervation patterns.

Textbooks

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

Clemente, CO. *A Regional Atlas of the Human Body*. Williams and Wilkins

Anatomy Honours and Graduate Diploma

This unit of study provides the opportunity for the student to do research on a project supervised by a member of staff.

Assessment is based on a thesis summarising the results of the year's research. To qualify for this unit of study the student must obtain an appropriate standard in Senior Anatomy or Histology or Neuroscience.

Histology Honours and Graduate Diploma

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

Anatomy and Histology Higher Degrees

The award courses of Master of Science and Doctor of Philosophy by research are offered in the Faculty of Science by the Department of Anatomy and Histology. The department also contributes to the teaching of the Graduate degrees in Applied Science (Neuroscience).

■ School of Biological Sciences

Advice on units of study

Members of the Biology staff are normally present among Faculty Advisers during enrolment week. Any student needing advice before enrolling should make an appointment to see a Departmental adviser from the School of Biological Sciences.

Assistance during semester

The offices of Junior year Biology staff are on the 5th floor of Carlaw. Students can make appointments by signing the form on the door of the offices of members of the academic staff members. Students are strongly advised to get acquainted with the staff and to use this service.

Summer School: January-February.

This School offers some units of study in The Sydney Summer School. Consult The Sydney Summer School Web site for more information: www.summer.usyd.edu.au

BIOL 1001 Concepts in Biology

6 credit points. **Semester:** 1, Summer. **Classes:** 3 lec & 3 prac/wk. **Assumed knowledge:** HSC Biology. **Prohibition:** May not be counted with BIOL 1901 or 1500. **Assessment:** One 2.5hr exam, assignments, classwork.

'Concepts in Biology' is an introduction to the major themes of modern biology. Starting with interactions between organisms in biological communities, we move on to the diversity of microorganisms. This is followed by introductory cell biology, which particularly emphasises how cells obtain and use energy, and leads into an introduction to molecular biology through the role of DNA in protein synthesis and development. The genetics of organisms is then discussed, leading to consideration of theories of evolution and the origins of the diversity of modern organisms. It is recommended that this unit of study be taken before all other Junior units of study in Biology.

Textbooks

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

BIOL 1901 Concepts in Biology (Advanced)

6 credit points. Dr D Hochuli, Dr S Hudson, Dr B Oldroyd. **Semester:** 1. **Classes:** 3 lec & 3 hrs prac/wk. **Prerequisite:** 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. **Prohibition:** May not be counted with BIOL 1001 or 1500. **Assessment:** One 2.5hr exam, assignments, classwork.

NB: Permission required for enrolment.

Selected students may be invited to participate in a more demanding alternative component of Concepts in Biology. The content and nature of this component will be determined each year. Details and selection criteria are announced at the start of semester.

BIOL 1002 Living Systems

6 credit points. **Semester:** 2. **Classes:** 3 lec & 3 prac/wk. **Assumed knowledge:** HSC 2-unit Biology course. **Prohibition:** May not be counted with BIOL 1902 or 1500. **Assessment:** One 2.5hr exam, assignments, classwork.

'Living Systems' deals with the biology of all sorts of organisms, from bacteria to large plants and animals, and emphasises the ways in which they can live in a range of habitats. The importance of energy in living systems, and how elements are used and recycled in biological communities, are described. The unit of study includes lectures and laboratory classes on the physiology of nutrition and growth, basic physiological

processes of animals and plants, the ways in which organisms control and integrate their activities, and their reproduction. Finally applications of knowledge of genetics and ecology to practical problems in agriculture and conservation are introduced. It is recommended that Concepts in Biology be taken before this unit of study. Enrolment may be restricted by the availability of places. This unit of study, together with BIOL 1001 or 1901, provides entry to all Intermediate units of study in biology in the School of Biological Sciences.

Textbooks

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

BIOL 1902 Living Systems (Advanced)

6 credit points. Dr D Hochuli, Dr S Hudson, Dr B Oldroyd. **Semester:** 2. **Classes:** 3 lec & 3 hrs prac/wk. **Prerequisite:** 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. **Prohibition:** May not be counted with BIOL 1002 or 1904 or 1905 or 1500. **Assessment:** One 2.5hr exam, assignments, classwork.

NB: Permission required for enrolment.

Selected students may be invited to participate in a more demanding alternative component of Living Systems. The content and nature of this component will be determined each year. Details and selection criteria are announced in the first semester.

BIOL 1003 Human Biology

6 credit points. **Semester:** 2, Summer. **Classes:** 2 lec, 1 session independent study & 3 prac/wk. **Assumed knowledge:** HSC Biology. **Prohibition:** May not be counted with BIOL 1903 or 1500 or EDUH 1016. **Assessment:** One 2.5hr exam, assignments, classwork.

This unit of study provides an introduction to human evolution and ecology, cell biology, physiology and anatomy, through both lectures and practical work. It begins with human evolution, human population dynamics and the impact of people on the environment. The unit of study includes human nutrition, distribution of essential requirements to and from the cells, control of body functions and defence mechanisms. After discussion of reproduction and development, it concludes with some controversial aspects of human genetics. It is recommended that Concepts in Biology be taken before this unit of study. Enrolment may be restricted by the availability of places. This unit of study, together with BIOL 1001 or 1901, provides entry to Intermediate units of study in genetics and cell biology in the School of Biological Sciences, and with good performance or permission the School's other Intermediate units of study.

Textbooks

Seeley, RR et al. Essentials of Anatomy and Physiology. McGraw Hill, 3rd ed, 1999

Benjamin C L. et al. Human Biology. McGraw Hill, 1997 (Chapters 19, 20, 21, 22)

BIOL 1903 Human Biology (Advanced)

6 credit points. Dr D Hochuli, Dr S Hudson. **Semester:** 2. **Classes:** 2 lec, 1 session independent study & 3 hrs prac/wk. **Prerequisite:** 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. **Prohibition:** May not be counted with BIOL 1003 or 1904 or 1905 or 1500 or EDUH 1016. **Assessment:** One 2.5hr exam, assignments, classwork.

NB: Permission required for enrolment.

Selected students may be invited to participate in a more demanding alternative component of Human Biology. The content and nature of this component will be determined each year. Details and selection criteria are announced in the first semester.

BIOL 1500 Biology Today

6 credit points. Dr B Oldroyd. **Semester:** 2. **Classes:** 11ec, 2 tut & 3hr project/wk. **Assumed knowledge:** No previous knowledge required. **Prohibition:** May not be counted with BIOL 1001, 1901, 1002, 1902, 1003, 1903 or 1904 or 1905. May not be counted as a prerequisite for any Intermediate units of study in Biology. **Assessment:** One 2hr exam, report, quizzes, teamwork.

This unit of study begins with a discussion of the nature, scope and diversity of biology and why it is of increasing relevance in policy development in contemporary society. Six themes each of two weeks follow. They include marine ecology and fisheries, land use and terrestrial ecology, global warming, genetically modified foods, molecular genetics and human medicine, and evolution. The unit is very reliant on the use of the Internet to build up learning skills and knowledge about biology. We adopt a problem-based approach to learning. Students work in groups. There is no laboratory material.

Lectures and knowledge development

One lecture introduces the theme, and develops the scientific background. The lecture also raises social and political aspects and these usually form the basis of the problem to be investigated. Learning resources are made available through a dedicated Web site and are used for independent and cooperative research. The timetable includes Internet-mediated discussions with experts and other students, tutorials, and debates.

Team work and generic skills

Students will work in small groups to research each topic. There is a heavy reliance on information available from the Internet. The unit includes a subcurriculum that promotes the development of Internet learning skills and which has been developed by the University of Sydney Library. The unit of study fosters independent research, cooperative work, skills in Internet learning, and communication skills - as well as an understanding of the scope and relevance of contemporary biology.

Information about the unit of study is available at www.bio.usyd.edu.au/SOBS/TEACHING/index.html.

Biology Intermediate units of study-

students who wish to take Intermediate Biology units of study should obtain Information for Students Considering Intermediate Biology units of study from the School Office (Science Rd Cottage, A10). Students should discuss their preferences, together with the other units of study they propose to study, with a Biology staff member before enrolling.

If you are considering going on to study Senior Biology you must satisfy the Intermediate qualifying and prerequisite units of study for the Senior units of study you intend taking.

MBLG 2001 (or 2901 or 2101) is highly recommended to be taken by Science students in combination with all 8 credit point Intermediate Biology units of study, and is a qualifying unit for BIOL 3018, 3025, 3026 and 3027. Note that MBLG 2001 (or 2901) is a prerequisite for students wishing to enrol in MBLG 2002 (or 2902). See entry below for MBLG 2002, 2902 and 2102, and the separate entry under the heading Molecular Biology and Genetics.

Students should note that there is a core component in all the February semester units of study listed below.

The following Intermediate units of study are offered:

*February Semester**Group 1*

- BIOL 2001 Animals A
- BIOL 2101 Animals A-Theory
- BIOL 2901 Animals A (Advanced)

Group 3

- BIOL 2004 Plant Ecology and Diversity
- BIOL 2904 Plant Ecology and Diversity (Advanced)

Group 6

- BIOL 2006 Cell Biology
- BIOL 2106 Cell Biology - Theory
- BIOL 2906 Cell Biology (Advanced)

*July Semester**Group 2*

- BIOL 2002 Animals B
- BIOL 2102 Animals B -Theory
- BIOL 2902 Animals B (Advanced)

Group 4

- BIOL 2003 Plant Anatomy and Physiology
- BIOL 2903 Plant Anatomy and Physiology (Advanced)

Group 5

- MBLG 2002 Molecular Biology and Genetics B
- MBLG 2102 Molecular Biology and Genetics B - Theory

Group 7

- BIOL 2007 Introductory Entomology

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

BIOL 2001 Animals A

8 credit points. Assoc. Prof. M B Thompson, Dr E L May. **Semester: 1.** **Classes:** 3 lec, 1 tut & 1 prac/wk or 4 lec & 1 prac/wk. **Prerequisite:** 12 credit points of Junior Chemistry (for students in the BSc (Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics). **Qualifying:** BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or EDUH 1016 (for BEd (Secondary) (Human

Movement and Health Education)). **Prohibition:** May not be counted with BIOL 2101 or 2901. **Assessment:** One 1 hr & one 2hr theory exams, one 2hr prac exam, 1 essay, tutorial work.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2004 or 2904 or 2006 or 2906 must complete 32 hours of alternative work in one unit

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 evolution, phylogeny and biodiversity and provide opportunity to develop communication skills. The unit of study is designed to be taken in conjunction with BIOL 2002 Animals B; the two units of study together provide complete coverage of the diversity of animals at the level of phylum. This unit of study may be taken alone, but when taken with Biology 2002 Animals B provides entry into certain Senior Biology units of study.

BIOL 2901 Animals A (Advanced)

8 credit points. Assoc. Prof. M B Thompson, Dr E L May. Semester: 1. Prerequisite: 12 credit points of Junior Chemistry (for students in the BSc (Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics). Qualifying: Distinction average in BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. These requirements may be varied and students with lower averages should consult the unit Executive Officer. Prohibition: May not be counted with BIOL 2001 or 2101.

NB: The completion of MBLG 2001 or 2901 or 2101 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2004 or 2904 or 2006 or 2906 must complete 32 hours of alternative work in one unit

Qualified students will participate in alternative components of BIOL 2001 Animals A. The content and nature of these components may vary from year to year.

BIOL 2101 Animals A-Theory

4 credit points. Assoc. Prof. M B Thompson, Dr E L May. Semester: 1. Classes: 3 lec & 1 prac/wk. Qualifying: BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or LWSC1002 or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). Prohibition: May not be counted with BIOL 2001 or 2901. Assessment: One 1 hr and one 2hr theory exam, optional assignment.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Not a prerequisite for Senior units of study in Biology. Students taking this unit concurrently with (or following completion of) BIOL 2004 or 2904 or 2006 or 2106 or 2906 must complete 16 hours of alternative work in one unit, in place of the core material common to both units.

This unit of study provides a broad background to the diversity of animals through lectures and museum-style displays. The material is presented within the conceptual framework of evolution and the principles and use of phylogeny and classification. It is suitable for students who are majoring in other areas of biology or other subjects but who wish to acquire an introduction to animal biology. The unit of study is designed to be taken with Biology 2102 Animals B - Theory. The diversity, morphology and evolution of most invertebrate phyla are presented.

BIOL 2002 Animals B

8 credit points. Assoc. Prof. M B Thompson, Dr E L May. **Semester: 2.** **Classes:** 3 lec, 1 tut & 3 prac/wk or 4 lec & 3 prac/wk & one field trip. **Prerequisite:** 12 credit points of Junior Chemistry. For students in the BSc (Marine Science) stream: MBLG (2001 or 2101) and 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. **Qualifying:** BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). **Prohibition:** May not be counted with BIOL 2102 or 2902. **Assessment:** One 3hr theory exam, one 2hr prac exam, 1 poster assignment, 1 essay, tutorial work.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of Biology 1002/1902 is assumed

knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading.

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

BIOL 2902 Animals B (Advanced)

8 credit points. Assoc. Prof. MB Thompson, Dr E L May. **Semester:** 2. **Prerequisite:** 12 credit points of Junior Chemistry. For students in the BSc(Marine Science) stream: MBLG (2001 or 2101) and 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. **Qualifying:** Distinction average in BIOL (1001 or 1901) and one of BIOL (1002,1902,1003,1903). These requirements may be varied and students with lower averages should consult the unit Executive Officer. **Prohibition:** May not be counted with BIOL 2002 or 2102.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading.

Qualified students will participate in alternative components of BIOL 2002 Animals B. The content and nature of these components may vary from year to year.

BIOL 2102 Animals B-Theory

4 credit points. Assoc. Prof. MB Thompson and Dr E L May. **Semester:** 2. **Classes:** 3 lec & 1 prac/wk. **Qualifying:** BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or LWSC 1002 or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). **Prohibition:** May not be counted with BIOL 2002 or 2902. **Assessment:** One 2hr theory exam, one 1 hr prac exam, optional assignment.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Not a prerequisite for Senior units of study in Biology.

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

BIOL 2003 Plant Anatomy and Physiology

8 credit points. Assoc. Prof. Allaway, Dr McGee, Dr Overall, Dr Quinnett. **Semester:** 2. **Classes:** 2 lec, 1 prac/audovisual & 1 tut/wk. **Qualifying:** BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). **Prohibition:** May not be counted with BIOL 2903. **Assessment:** Assessment one 2hr exam, one prac exam, practical reports.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of Biology 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading.

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

Textbooks

Atwell B, Kriedemann P, Turnbull C. 1999. Plants in Action, Macmillan, Australia;
Salisbury FB, Ross CW, 1991. Plant Physiology, 4th ed. Wadsworth.

BIOL 2903 Plant Anatomy and Physiology (Advanced)

8 credit points. Assoc. Prof W G Allaway. **Semester:** 2. **Qualifying:** Distinction average in BIOL (1001 or 1901) and one of BIOL (1002,1902,1003,1903). These requirements may be varied and students with lower averages should consult the unit Executive Officer. **Prohibition:** May not be counted with BIOL 2003.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading.

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

BIOL 2004 Plant Ecology and Diversity

8 credit points. Dr McGee, Dr Henwood, Dr Marc, Dr Quinnett, Dr Wardle. **Semester:** 1. **Classes:** 2 lec, 1 prac/audovisual & 1 tut/wk. **Qualifying:** BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or LWSC 1002 or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). **Corequisite:** MICR 2013 for BLWSc. **Prohibition:** May not be counted with BIOL 2904. **Assessment:** One theory exam, 1 prac exam, one 1000w essay, classwork.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of Biology 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2006 or 2906 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.

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

BIOL 2904 Plant Ecology and Diversity (Advanced)

8 credit points. Dr M Henwood. **Semester:** 1. **Qualifying:** Distinction average in BIOL 1001 or 1901 and one of BIOL 1002,1902,1003,1903. These requirements may be varied and students with lower averages should consult the unit Executive Officer. **Prohibition:** May not be counted with BIOL 2004.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2006 or 2906 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.

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

BIOL 2006 Cell Biology

8 credit points. Dr J Marc. **Semester:** 1. **Classes:** Weeks 1-4 (3 lec, 1 tut & 3 prac hrs/wk); Weeks 5-13 (3 lec & 4 prac hrs/wk). **Prerequisite:** 12 credit points of Junior Chemistry (for students in the BSc(Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics). **Qualifying:** BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903 or 1905) or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). **Prohibition:** May not be counted with BIOL 2106 or 2906. **Assessment:** One 1 hr exam (based on weeks 1-4), one 2hr exam (based on weeks 5-13), pracs and assignments.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2004 or 2904 must complete 32 hours of alternative work in one unit, in place of the core material common to both and, if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.

A unit of study on cell biology and development in plants and animals with emphasis on cellular functions and favouring the

molecular perspective. Topics include cell and organelle structure, function and evolution, cellular development and differentiation, and embryonic development. The unit of study is given by means of lectures, tutorials, and laboratory classes. It is designed to compliment intermediate Molecular Biology and Genetics units and leads into various senior modules in biology, including Ecophysiology, Animal Physiology, Plant Development, Plant Physiology, Terrestrial Vertebrates, and Bioinformatics.

Textbooks

Alberts B, Bray D, Johnson A, Lewis J, Raff M, Roberts K, Walter P.

1998. Essential Cell Biology. Garland Publishing.

Alberts B, Bray D, Lewis J, Raff M, Roberts K, Watson JD. 1994.

Molecular Biology of the Cell, Third Edition. Garland Publishing [this version becomes redundant if the next edition gets published before the end of 2001]

BIOL 2906 Cell Biology (Advanced)

8 credit points. Dr J Marc. Semester: 1. Classes: Weeks 1-4 (3 lec, 1 tut & 3 prac hrs/wk); Weeks 5-13 (3 lec & 4 prac hrs/wk). Prerequisite: 12 credit points of Junior Chemistry (for students in the BSc(Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics). Qualifying: Distinction average in BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903, 1905. These requirements may be varied and students with lower averages should consult the unit Executive Officer. Prohibition: May not be counted with BIOL 2006 or 2106. Assessment: One 1 hr exam (based on weeks 1-4), one 2hr exam (based on weeks 5-13), pracs and assignments.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2004 or 2904 must complete 32 hours of alternative work in one unit, in place of the core material common to both and, if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.

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

Textbooks

Alberts B, Bray D, Johnson A, Lewis J, Raff M, Roberts K, Walter P.

1998. Essential Cell Biology. Garland Publishing.

Alberts B, Bray D, Lewis J, Raff M, Roberts K, Watson JD. 1994.

Molecular Biology of the Cell, Third Edition. Garland Publishing [this version becomes redundant if the next edition gets published before the end of 2001]

BIOL 2106 Cell Biology -Theory

4 credit points. Dr J Marc. Semester: 1. Classes: 3 lec/wk. Prerequisite: 12 credit points of Junior Chemistry (for students in the BSc(Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics). Qualifying: BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). Prohibition: May not be counted with BIOL 2006 or 2906. Assessment: One 1 hr exam (based on weeks 1-4), one 2hr exam (based on weeks 5-13), and assignments.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2004 or 2904 must complete 32 hours of alternative work in one unit, in place of the core material common to both and, if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.

This unit of study provides a solid theoretical foundation in cellular and developmental biology. Topics include cell and organelle structure, function and evolution, cellular development and differentiation, and embryonic development. It is presented in the form of lectures only; there are no tutorials or practical classes. This unit of study is not suitable for students wishing to continue with many senior modules in biology, for which BIOL 2006 and 2906 are appropriate.

Textbooks

Alberts B, Bray D, Johnson A, Lewis J, Raff M, Roberts K, Walter P.

1998. Essential Cell Biology. Garland Publishing.

Alberts B, Bray D, Lewis J, Raff M, Roberts K, Watson JD. 1994.

Molecular Biology of the Cell, Third Edition. Garland Publishing [this version becomes redundant if the next edition gets published before the end of 2001]

MBLG 2002 Molecular Biology and Genetics B

8 credit points. Dr K Raphael. Semester: 2. Classes: 3 lec & 5 prac/wk. Prerequisite: MBLG 2001. Prohibition: May not be counted with BIOL 2005 or 2105 or 2905 or MBLG 2102 or 2902. Assessment: One 2 hour theory exam, one 2 hour theory of practical exam, laboratory reports, quizzes, project.

This unit of study will build on the concepts introduced in MBLG 2001 and show how modern molecular biology is being applied to the study of the genetics of all life forms from bacteria through to complex multicellular organisms including plants, animals and humans. The course begins with a discussion of classical Mendelian genetics and its extensions, including linkage, sex-linkage and gene interactions. Lectures in this section also cover statistical analysis of genetic data, crossing over, tetrad analysis, gene mapping. Eukaryotic chromosome structure and variations in chromosome number and structure are examined as well as inheritance of cytoplasmic genes and gene mutation.

Topics in bacterial genetics and evolution include transfer of genetic information between bacteria via fertility factors and plasmids, bacterial genomics, population genetics, recombinant micro-organisms and their use in vaccine production and in agriculture. The application of recombinant DNA to the production of important biologicals will be examined as well as the utility of transgenesis and gene knockouts. The study of eukaryotic genomes will begin with a comparison of classical and molecular gene mapping, and results and lessons from eukaryotic sequencing projects, including the Human Genome Project, will be examined. The way in which modern molecular techniques have increased our knowledge in the field of developmental biology will be examined by lectures on the developmental genetics of plants, animals and insects, control of gene expression, regulation of the cell cycle.

Topics in population genetics and molecular evolution include changes in gene frequency, Hardy-Weinberg equilibrium, inbreeding selection, genetic drift, molecular and gene evolution, conservation and ecological genetics, plant and animal breeding. **Practical:** Laboratory exercises will utilize a variety of prokaryotic and eukaryotic organisms to illustrate aspects of the lecture material, while developing familiarity and competence with practical equipment, microscopes, computers, and statistical tests.

MBLG 2102 Molecular Biology & Genetics B (Theory)

4 credit points. Dr K Raphael. Semester: 2. Classes: 3 lec & 1 tut/wk. Prerequisite: MBLG 2001 or 2101. Prohibition: May not be counted with BIOL 2005, 2105 or 2905, or MBLG 2002 or 2902. Assessment: One 2 hour theory exam, one essay.

This unit of study has the same lectures and tutorials as MBLG 2002 Molecular Biology and Genetics B, but no practical work. It does not lead on to Senior Biology units of study in genetics. It is suitable for students who wish to gain an understanding of theoretical aspects of genetics in greater depth, for applications to other areas of their career.

MBLG 2902 Molecular Biology and Genetics B (Adv)

8 credit points. Dr K Raphael. Semester: 2. Classes: 3 lec & 5 prac/wk. Qualifying: Distinction or better in MBLG 2001 or 2901. This requirement may be varied and students with lower marks should consult the unit Executive Officer. Prohibition: May not be counted with BIOL 2005 or 2105 or 2905 or MBLG 2002 or 2102. Assessment: One 2 hour theory exam, one 2 hour theory of practical exam, laboratory reports, quizzes, project.

Qualified students will participate in alternative components of MBLG 2002 Molecular Biology and Genetics B. The content and nature of these components may vary from year to year. This is a core Intermediate unit of study in the BSc (Molecular Biology and Genetics) award course. See prerequisites for Senior units of study in Biology.

BIOL 2007 Entomology Introductory

8 credit points. Dr D Hochuli, Dr H Rose. Semester: 2. Classes: 2 lec, 1-2 tut & 4 prac/wk. Prerequisite: 12 credit points of Junior Chemistry. For students in the BSc(Marine Science) stream: MBLG (2001 or 2101) and 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. Qualifying: BIOL (1001 or 1901) and either BIOL (1002 or 1902 or 1003 or 1903) or EDUH 1016 (for BEd (Secondary) (Human Movement and Health Education)). Assessment: One 3hr theory exam, assignment, insect collection.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. See prerequisites for Senior units of study in Biology.

A general but comprehensive introduction to Insect Biology, this unit of study develops understanding of the scientific approach to

insect structural diversity, identification, life histories, development, physiology, ecology, biogeography, principles of control, toxicology of insecticides and biology of major economic pests in NSW. Practicals give a working knowledge of major orders of insects economically important species, principles of collection, preservation and identification. Entomological data bases are introduced, and students do a library assignment and make and present a small collection of insects. Leads into the Entomology module in Senior Biology.

Biology Senior units of study

Students who intend to proceed from Intermediate to Senior Biology must:

- obtain Information for Students Considering Senior Biology units of study from the School Office (Rm 1, The Cottage, A10 Science Road). This booklet gives detailed synopses of all Senior Biology units of study.
- discuss their choice with a Biology Staff member before enrolling.

Fourteen 6 credit point units of study are offered. They are arranged in three compatible timetables:

Timetable 1

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

BIOL 3012 Animal Physiology. February Semester (second half)

BIOL 3017 Fungal Biology. Summer Break and February Semester

BIOL 3021 Plant Development. July Semester (first half)

BIOL 3022 Plant Physiology. July Semester (second half)

(Plus Advanced versions of these - BIOL 39XX)

Timetable 2

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

BIOL 3014 Terrestrial Vertebrates. February Semester (first half)

BIOL 3015 Plant Systematics. February Semester (second half)

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

BIOL 3024 Ecology (Applications). July Semester (second half)(MS)

(Plus Advanced versions of these - BIOL 39XX)

Timetable 3

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

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

BIOL 3026 Developmental Genetics. July Semester (second half)

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

(Plus Advanced versions of these - BIOL 39XX)

Locations of lectures and practical classes are given in the booklet: Information for Students Considering Senior Biology units of study.

Any combination of units may be chosen subject to timetable and prerequisite constraints.

Units of study are offered subject to student numbers, availability of staff and resources. Quotas exist on the Marine modules in BIOL 3023/3923 and BIOL 3024/3924. Entry to these modules would normally be based on academic performance.

Students majoring in Marine Science must do 24 credit points of units designated as Marine Science but are allowed to include from 6 to a maximum of 18 credit points of Senior Biology (from those marked MS) as part of Marine Science. If these credit points are taken as part of Marine Science they may not be counted towards a Biology major.

Selecting units of study

Select your unit of study after checking (a) that you have passed the qualifying units of study stated for each unit of study, and (b) checking your timetable. You are strongly advised to check the most up-to-date information, including details of quotas in Marine modules, in the booklet: Information for Students Considering Senior Biology units of study, available from the School Office (Rm 1, The Cottage, A10, Science Road).

Textbooks

A list of textbooks and reference books is provided in the booklet: Information for Students Considering Senior Biology units of study.

BIOL 3011 Ecophysiology

6 credit points. Prof. Hume, Dr McGee, Dr Seebacher A/Prof Thompson.

Semester: 1. **Classes:** 4 lec and 8 prac/wk. **Qualifying:** 16 credit points of Intermediate Biology including BIOL 2002 or 2003 or 2006 or 2902 or 2903 or 2906. **Prohibition:** May not be counted with BIOL 3911.

Assessment: One 1.5 hr exam, field trip quiz, laboratory reports.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Ecophysiology covers physiological interactions between organisms and their environments. The range of environments inhabited by organisms is outlined and the influences of important environmental parameters including temperature, water, salt and pH are investigated. Physiological interactions among animals, plants and fungi are discussed. Animal examples will have an emphasis on vertebrates and on marine organisms. Plants from marine and terrestrial environments and the interaction with fungi are examined. Some emphasis will be placed on marine plants.

BIOL 3911 Ecophysiology (Advanced)

6 credit points. Prof. Hume, Dr McGee, Dr Seebacher, A/Prof Thompson.

Semester: 1. **Classes:** 4 lec and 8 prac/wk. **Qualifying:** Distinction average in 16 credit points of Intermediate Biology including BIOL 2002 or 2003 or 2006 or 2902 or 2903 or 2906. These requirements may be varied and students with lower averages should consult the unit Executive Officer. **Prohibition:** May not be counted with BIOL 3011. **Assessment:** One 1.5 hr exam, field trip quiz, laboratory reports, independent project report.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Ecophysiology (Advanced) shares most of the same lectures as BIOL 3011 Ecophysiology, but it includes an independent project in place of one or more components of the laboratory classes to the equivalent of 20% of Ecophysiology. The content and nature of the independent project may vary from year to year.

BIOL 3012 Animal Physiology

6 credit points. Assoc. Prof. Thompson, Prof. Hume. **Semester:** 1.

Classes: 4 lec and 8 prac/wk. **Qualifying:** 16 credit points of Intermediate Biology including BIOL 2002 or 2003 or 2006 or 2902 or 2903 or 2906. **Prohibition:** May not be counted with BIOL 3912.

Assessment: One 1.5 hr exam, laboratory/library reports.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Animal Physiology explores aspects of the physiology of animals and how physiology is influenced by environmental factors. The emphasis of the unit of study is vertebrate animals, although invertebrate examples will be used where appropriate. The unit of study is designed to complement Ecophysiology. Particular emphasis will be placed on energy metabolism and respiration in a range of animals and how that is affected by body mass and locomotion. About half the course will be devoted to digestive physiology and wildlife nutrition.

BIOL 3912 Animal Physiology (Advanced)

6 credit points. Assoc. Prof. Thompson, Prof. Hume. **Semester:** 1.

Classes: 4 lec and 8 prac/wk. **Qualifying:** Distinction average in 16 credit points of Intermediate Biology including BIOL 2002 or 2003 or 2006 or 2902 or 2903 or 2906. These requirements may be varied and students with lower averages should consult the unit Executive Officer.

Prohibition: May not be counted with BIOL 3012. **Assessment:** One 1.5 hr exam, laboratory reports, independent project report.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Animal Physiology (Advanced) shares the same lectures as Animal Physiology, but it includes an independent project in place of one or more components of the laboratory classes to the equivalent of 30% of Animal Physiology. The content and nature of the independent project may vary from year to year.

BIOL 3013 Marine Biology

6 credit points. A/Prof Hinde and others. **Semester:** 1. **Classes:** 4 lec & 8 prac/wk (or field trip). **Qualifying:** 16 credit points of Intermediate Biology, including BIOL 2001 or 2002 or 2003 or 2004 or 2901 or 2902 or 2903 or 2904. **Prohibition:** May not be counted with BIOL 3913.

Assessment: One 1.5 hr exam, assignments.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Marine biological diversity is discussed with particular attention to the main types of marine habitats represented along the Australian coastline. Emphasis is placed on exposing students to the key ideas, researchers and methodologies within selected fields of marine biology. Students will develop skills in areas such as protistology, the identification of algae, the biology of corals and other reef associated animals, as well as the techniques

used to study marine animals and plants. Discussion sessions will review major marine biological themes. Laboratory sessions will develop hands-on experience with marine organisms, and there may be a field trip.

BIOL 3913 Marine Biology (Advanced)

6 credit points. A/Prof Hinde and others. Semester: 1. Classes: 4 lec & 8 prac/wk (or field trip). Qualifying: Distinction average in 16 credit points of Intermediate Biology including BIOL 2001 or 2002 or 2003 or 2004 or 2901 or 2902 or 2903 or 2904. These requirements may be varied and students with lower averages should consult the unit Executive Officer. Prohibition: May not be counted with BIOL 3013. Assessment: One 1.5 hr exam, assignments.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Qualified students will participate in alternative components of the BIOL 3103 Marine Biology unit. The content and nature of these components may vary from year to year.

BIOL 3014 Biology of Terrestrial Vertebrates

6 credit points. Prof. Shine, Dr Dickman. Semester: 1. Classes: 4 lec & 8 prac/wk. Qualifying: 16 credit points of Intermediate Biology.

Prohibition: May not be counted with BIOL 3914. Assessment: One 1.5hr exam, laboratory report, quizzes, one 1 hr practical examination.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study will review the biology of Australia's terrestrial vertebrate fauna, with emphasis on ecological and behavioural adaptations to the Australian environment. The adaptive radiations of amphibians, reptiles, birds and mammals will be discussed. Conservation issues involved with these taxa will also be a focus of the course. The unit aims to provide an overview of the distinctive features of the Australian environment, and how those peculiarities have shaped the way that terrestrial vertebrates have evolved in this continent.

BIOL 3914 Biology of Terrestrial Vertebrates (Adv)

6 credit points. Prof. Shine, Dr Dickman. Semester: 1. Classes: 4 lec & 8 prac/wk. Qualifying: Distinction average in 16 credit points of Intermediate Biology. These requirements may be varied and students with lower averages should consult the unit Executive Officer.

Prohibition: May not be counted with BIOL 3014. Assessment: One 1.5hr exam, essay, quizzes, one 1 hr practical examination.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Compared to the associated unit of study BIOL 3014, the Advanced unit has less practical work but contains an independent research project.

BIOL 3015 Plant Systematics and Biogeography

6 credit points. Dr Henwood, Dr Taylor. Semester: 1. Classes: 4 lec & 8 prac/wk. Qualifying: 16 credit points of Intermediate Biology including BIOL 2004 or 2904. Prohibition: May not be counted with BIOL 3915.

Assessment: One 2hr exam, assignments.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

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

BIOL 3915 Plant Systematics and Biogeography (Adv)

6 credit points. Dr Henwood, Dr Taylor. Semester: 1. Classes: 4 lec & 8 prac/wk. Qualifying: Distinction average in 16 credit points of Intermediate Biology including BIOL 2004 or 2904. These requirements may be varied and students with lower averages should contact the unit Executive Officer. Prohibition: May not be counted with BIOL 3015.

Assessment: One 2hr exam, assignments.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

See BIOL 3015.

BIOL 3017 Fungal Biology

6 credit points. Dr P McGee. Semester: 1. Classes: 5 lec & 15 prac in a two week intensive program immediately prior to semester one, plus the equivalent of 30hrs self-guided study during the semester. Qualifying: 16 credit points of Intermediate Biology, or 8 credit points or Intermediate Biology and 8 Intermediate credit points of either Microbiology or Geography, or their equivalent. Prohibition: May not be counted with BIOL 3917. Assessment: One 2hr take home exam, laboratory and written assignments.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Students interested in fungal ecology, environmental and rehabilitation biology, fungal biodiversity, biological control and soil microbiology will study the structure and function of fungi. Emphasis will be placed on the benefit provided by fungi in symbiotic interactions with plants, including mycorrhizal fungi and shoot-borne endophytes. Physiological and ecological implications of the interactions will also be examined, emphasising the use of these interactions in vegetation restoration and biocontrol of pests and pathogens. Students will be encouraged to develop a deeper understanding of one area of Fungal Biology through independent study. Part of the learning material will be available on the Internet.

BIOL 3917 Fungal Biology (Advanced)

6 credit points. Dr P McGee. Semester: 1. Classes: 5 lec & 15 prac in a two week intensive program immediately prior to semester one, plus the equivalent of 30hrs self-guided study during the semester. Qualifying: Distinction average in 16 credit points of Intermediate Biology, or 8 credit points or Intermediate Biology and 8 Intermediate credit points of either Microbiology or Geography, or their equivalent. Prohibition: May not be counted with BIOL 3017. Assessment: One 2hr take home exam, laboratory and written assignments.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Qualified students will participate in alternative components of BIOL 3017 Fungal Biology. The content and nature of the components will vary each year, but will include individual research on a topic agreed on with the executive officer.

BIOL 3018 Applications of Recombinant DNA Tech

6 credit points. Dr B Lyon & Prof. R Skurray. Semester: 1. Classes: 4 lec & 8 prac/wk. Qualifying: MBLG (2001/2901 and 2002/2902) or 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. Prohibition: May not be counted with BIOL 3918, 3103 or 3903. Assessment: One 2 hr exam, assignments, seminar.

A unit of study with lectures, practicals, tutorials and seminars on the utilisation of recombinant DNA technology in 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 the use of molecular techniques for nucleic acid isolation, characterisation and manipulation, gene cloning and PCR amplification, DNA sequencing and computer analysis of gene sequences, and immunological detection of proteins.

BIOL 3918 Applications of Recombinant DNA Tech Adv

6 credit points. Dr B Lyon. Semester: 1. Classes: 4 lec & 3 prac/wk. Qualifying: Distinction average in MBLG (2001/2901 and 2002/2902) or in 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. Prohibition: May not be counted with BIOL 3018, 3103 or 3903. Assessment: One 2 hr exam, assignments, seminar.

Qualified students will participate in alternative components of BIOL 3018 Recombinant DNA Technology. The content and nature of these components may vary from year to year.

BIOL 3021 Plant Development

6 credit points. A/Prof. Overall, Dr Marc. Semester: 2. Classes: 4 lec & 8 prac/wk. Qualifying: 16 credit points of Intermediate Biology including BIOL 2003 or 2903 or 2006 or 2906. Prohibition: May not be counted with BIOL 3931. Assessment: One 2hr exam, assignments, one essay.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Current topics in plant development are explored to the levels of plant cell biology and plant molecular biology. Subjects covered include the development of the plant body from embryo to a seedling, organogenesis at the shoot apical meristem, leaf development, differentiation of specialized cell types, signal transduction, plant hormones, developmental responses to the environment, role of extracellular matrix in plant development, development of polarity, and intercellular communication. Advances in the molecular basis of plant development are discussed. Practical work, which uses a variety of plant material including protoplasts, suspension cultures and Arabidopsis

seedlings, involves a range of cellular and molecular techniques such as advanced light microscopy, immunochemistry, protein purification and characterisation, and the Green Fluorescent Protein technology. A one-day workshop at research institutions in Canberra involves seminars and discussion groups.

BIOL 3931 Plant Development (Advanced)

6 credit points. A/Prof. Overall, Dr Marc. **Semester: 2. Classes:** 4 lec & 8 prac/wk. **Qualifying:** Distinction average in 16 credit points of Intermediate Biology including BIOL 2003 or 2903 or 2006 or 2906. These requirements may be varied and students with lower averages should consult the unit Executive Officer. **Prohibition:** May not be counted with BIOL 3021. **Assessment:** One 2hr exam, assignments, one essay.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Qualified students will participate in alternative components of the BIOL 3021 Plant Development, representing 20% of the total assessment. The students will be exempt from one standard essay and one standard assignment, but instead will conduct an independent practical or theoretical research project under the supervision of a member of the academic staff. The program includes a formal presentation of the results of the project and writing an essay on a related topic.

BIOL 3022 Plant Physiology

6 credit points. A/Prof. Allaway. **Semester: 2. Classes:** 3 lec & 8 prac/wk. **Qualifying:** 16 credit points of Intermediate Biology including BIOL 2003 or 2006 or 2903 or 2906. **Prohibition:** May not be counted with BIOL 3932. **Assessment:** One 2 hr exam, assignment reports.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

A unit of study of lectures, practical assignments and tutorials on the applications of plant physiology. The unit will begin with a consideration of the physiology of photosynthesis using conventional techniques and will go on to the use of the pulse amplitude modulated (PAM) fluorometer. There will follow an in-depth consideration of boundary layers in plants and the use of oxygen microelectrodes to measure photosynthesis, respiration and primary production. A consideration of nitrogen fixation and plant nutrition leads on to the use of gas exchange analysis, the activity of Rubisco in leaves and the activities of roots.

BIOL 3932 Plant Physiology (Advanced)

6 credit points. A/Prof. Allaway. **Semester: 2. Classes:** 3 lec & 8 pract/wk. **Qualifying:** Distinction average in 16 credit points of Intermediate Biology including BIOL 2003 or 2903 or 2006 or 2906. These requirements may be varied and students with lower averages should contact the unit Executive Officer. **Prohibition:** May not be counted with BIOL 3022. **Assessment:** One 2 hr exam, assignment reports.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

Qualified students will participate in alternative components of BIOL 3022 Plant Physiology. The content and nature of these components may vary from year to year. Some assessment will be in an alternative form.

BIOL 3023 Ecological Methods

6 credit points. Dr Hochuli, Dr Holloway, Dr Wardle, Dr Dickman, Dr Chapman, Prof. Underwood. **Semester: 2. Classes:** 4 lec and 8 prac/wk. **Qualifying:** 16 credit points of Intermediate Biology including BIOL 2001 or 2901 or 2002 or 2902 or 2004 or 2904. **Prohibition:** May not be counted with BIOL 3923. **Assessment:** One 2 hr exam, laboratory reports.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

The unit of study will consider ecology as a theoretical, quantitative, experimental science concerned with the analysis of patterns of distribution, abundance, dynamics, demography and life-histories of natural populations with an appraisal of the nature of scientific investigations, from a philosophical viewpoint and the practicalities of testing hypotheses in the real world. Application of ecological theory and methods to practical problems will be integrated throughout the unit of study.

Lectures will be on sound philosophical and experimental principles and useful for the more informed management, conservation and utilization of natural populations and habitats. Practical classes will deal with practical methods of determining patterns of distribution and abundance, problems of sampling, estimation of ecological variables, and methods of statistical analysis of field data. Computer simulations and analyses will be used where appropriate. Students taking BIOL 3023 only do not take the field course and will undertake coursework separate from the other students.

BIOL 3923 Ecological Methods (Advanced)

6 credit points. Dr Hochuli, Dr Holloway, Dr Wardle, Dr Chapman, Prof. Underwood. **Semester: 2. Classes:** 4 lec and 8 prac/wk. **Qualifying:** Distinction average in BIOL (2001 or 2901) and (2002 or 2902), or in 16 credit points of Intermediate Biology including BIOL (2004 or 2904). **Prohibition:** May not be counted with BIOL 3023. **Assessment:** One 2 hr exam, laboratory reports.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study has the same objectives as BIOL 3023 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 2. This unit of study may be taken as a part of the BSc (Advanced) program.

BIOL 3024 Ecology

6 credit points. Dr Hochuli, Dr Holloway, Dr Wardle, Dr Dickman, Dr Chapman, Prof. Underwood. **Semester: 2. Classes:** 4 lec and 8 prac/wk. **Qualifying:** BIOL (2001 or 2901) and BIOL (2002 or 2902) or 16 credit points of Intermediate Biology including BIOL (2004 or 2904). **Corequisite:** BIOL (3023 or 3923). **Prohibition:** May not be counted with BIOL 3924. **Assessment:** One 2 hr exam, laboratory reports, practical assignments.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

The unit of study consists of one of three Field units of study (before Semester 2 starts; all details will be announced when they are available) and one of three options: Marine Ecology, Terrestrial Ecology or Plant Ecology. Each student must choose one of these modules (which run concurrently) and must register for the associated field-unit of study. This is done through the School in semester one.

Marine Ecology will explore the designs of experimental analysis of marine populations, drawing upon extensive examples from intertidal assemblages of animals and plants and from the biology of subtidal organisms in coastal habitats. No particular mathematical or statistical skills are required for this module. Much emphasis will be placed on evaluation of recent studies in the literature. Laboratory classes will deal with techniques of analysis and experimental manipulation of natural assemblages. The relationships between experimental marine ecology and general ecological theory will be emphasised. The role of ecological science in management, conservation and exploitation of populations will be emphasised.

Terrestrial Ecology will consider the dynamics of ecological systems. Inter- and intra-specific competition, herbivory and predation will all be examined. Relationships between behavioural strategies of insect and vertebrate herbivores and predators, and the exploitation and conservation of their resources will be a major focus. In addition, practical work will investigate natural and exploited habitats. A major emphasis will be on the relationships between ecological science and methods for management of populations, conservation and managed exploitation of animal and plant resources and the control of pests (including biological control).

Plant Ecology integrates experimental studies, quantitative sampling and theoretical models to examine the ecological processes that produce complex interactions in natural populations. The lectures will include the following topics: plants as modular individuals, demography, life history variation, reproductive ecology, dispersal, dormancy, recruitment, effects of neighbours, plant animal interactions, natural selection, ecological genetics, vegetation structure and diversity, succession and gap phase regeneration. Examples will be given on the role of genetics, demography and population structure in the conservation and management of plants.

BIOL 3924 Ecology (Advanced)

6 credit points. Dr Hochuli, Dr Holloway, Dr Wardle, Dr Dickman, Dr Chapman, Prof. Underwood. **Semester: 2. Classes:** 4 lec and 8 prac/wk. **Qualifying:** Distinction average in BIOL (2001 or 2901) and (2002 or 2902), or in 16 credit points of Intermediate Biology including BIOL (2004 or 2904). **Corequisite:** BIOL (3023 or 3923). **Prohibition:** May not be counted with BIOL 3024. **Assessment:** One 2 hr exam, laboratory reports, practical assignments.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit has the same objectives as BIOL 3024 Ecology, and is suitable for students who wish to pursue certain aspects in greater depth. Entry is restricted and selection is made from the applicants on the basis of their previous performance. Students taking this unit of study will participate in alternatives to some elements of the standard unit and will be required to pursue the objectives by more independent means. Specific details of this unit of study and assessment will be announced in meetings with students in week 1 of semester two. This unit of study may be taken as part of the BSc (Advanced).

BIOL 3025 Evolutionary Genetics & Animal Behaviour

6 credit points. Dr Oldroyd, Prof. Shine. Semester: 2. Classes: 4 lec & 8 prac/wk. Qualifying: 16 credit points from MBLG 2001, MBLG 2901, MBLG 2002, MBLG 2902 and intermediate level Biology units. For BMedSc students 32 credit points of Intermediate BMED units including BMED 2502. Prohibition: May not be counted with BIOL (3925 or 3928). Assessment: One 2hr 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 phylogenetics and how the evolution of traits can be tracked using the comparative method. We will consider how studies of sex ratios, sexual selection, kin selection, game theory and quantitative genetics can illuminate the mechanisms by which animals have evolved, and explain why they behave as they do. We will then consider if these themes have any relevance to human sociobiology. The unit also covers the role of genetics in conservation. There will be a field trip to collect organisms for population genetic analysis. There will be plenty of opportunity in the student seminars to examine the more controversial aspects of modern evolutionary thought.

BIOL 3925 Evolutionary Gen. & Animal Behaviour Adv

6 credit points. Dr Oldroyd, Prof. Shine. Semester: 2. Classes: 4 lec & 8 prac/wk. Qualifying: Distinction average in 16 credit points from MBLG 2001, MBLG 2901, MBLG 2002, MBLG 2902 and Intermediate Biology units. For BMedSc students 32 credit points of Intermediate BMED units including distinction in BMED 2502. These requirements may be varied and students with lower averages should consult the unit Executive Officer. Prohibition: May not be counted with BIOL (3025 or 3928). Assessment: One 2hr exam, assignments, seminar.

Qualified students will participate in alternative components of BIOL 3025 Evolutionary Genetics and Animal Behaviour. The content and nature of these components may vary from year to year. Some assessment will be in an alternative format.

BIOL 3026 Developmental Genetics

6 credit points. Dr Saieeba, Dr Raphael, A/Prof. Gillies. Semester: 2. Classes: 4 lec & 8 prac/wk. Qualifying: MBLG (2001/2901 and 2002/2902) or 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. Prohibition: May not be counted with BIOL 3926 or 3929. Assessment: One 2hr exam, assignments, seminar.

This unit discusses current understanding of developmental genetics with emphasis on molecular genetics. The developmental genetics of model plants and animals will be investigated. In particular, the molecular genetics of vertebrate development, pattern formation and gene expression, sex determination, the study of mutants in development, plant specific processes such as root formation and flowering, will be covered making reference to modern techniques such as transgenics, recombinant DNA technology, and tissue specific expression analysis. Various methods of genetic mapping will be covered, as well as genetic counselling. Practical work complements the theoretical aspects and develops important genetical skills.

BIOL 3926 Developmental Genetics (Advanced)

6 credit points. Dr Saieeba, Dr Raphael, A/Prof. Gillies. Semester: 2. Classes: 4 lec & 8 prac/wk. Qualifying: Distinction average in MBLG (2001/2901 and 2002/2902) or in 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. Prohibition: May not be counted with BIOL 3026 or 3929. Assessment: One 2hr exam, assignments, seminar. Qualified students will participate in alternative components to BIOL 3026 Developmental Genetics. The content and nature of these components may vary from year to year. Some assessment will be in an alternative format.

BIOL 3027 Bioinformatics and Genomics

6 credit points. Dr Firth, Dr Jermin, Dr Saieeba and others. Semester: 1. Classes: 4 lec & 8 prac/wk. Qualifying: MBLG (2001 or 2101 or 2901) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. Prohibition: May not be counted with BIOL 3927. Assessment: One 2hr exam, assignments, seminar.

A unit of study of 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 such as protein structures, chemical structures and pharmaceuticals are considered, together with classical taxonomy and biodiversity.

The unit begins with the assembly and management of nucleotide sequence data and an introduction to the databases that are normally used for the storage and retrieval of biological data, and continues with signal detection and analysis of deduced products, sequence alignment, and database search methods. Phylogenetic reconstruction based on distance-based methods, parsimony methods and maximum-likelihood methods is described and students are introduced to the idea of tree-space, phylogenetic uncertainty, and taught to evaluate phylogenetic trees and identify factors that will confound phylogenetic inference. Finally, whole genome analysis and comparative genomics are considered. The unit gives students an appreciation of the significance of bioinformatics in contemporary biological science by equipping them with skills in the use of a core set of programs and databases for 'in silico' biology, and an awareness of the breadth of bioinformatics resources and applications.

BIOL 3927 Bioinformatics and Genomics (Advanced)

6 credit points. Dr Firth, Dr Jermin, Dr Saieeba and others. Semester: 1. Classes: 4 lec & 8 prac/wk. Qualifying: Distinction in MBLG (2001 or 2101 or 2901) or Distinction average in 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. Prohibition: May not be counted with BIOL 3027. Assessment: One 2hr exam, assignments, seminar.

Qualified students will participate in alternative components of BIOL 3027 Bioinformatics and Genomics. The content and nature of these components may vary from year to year. Some assessment will be in alternative format.

Biology Honours

A single Honours program in Biology accommodates students who have completed 24 credit points of Senior Biology or equivalent. Information about qualifications for entry into Honours is available from the School Office (Science Road Cottage, A10).

During the Honours year the principles established in the first three years of the undergraduate award course are further developed, and students are introduced to a wider field of biology and biological techniques. Students may elect to specialise in any of the aspects of biology that are studied in the School.

Students who have signified their intention of entering Honours will be notified of acceptance after the publication of the second semester Senior examination results. Honours students are expected to start their academic year at the beginning of February or in July.

With the permission of the Head of School and the Faculty of Science, students who have qualified to take Honours and passed 12 credit points of Junior Biology may take Biology Honours without having taken Intermediate or Senior Biology units of study. The concession is intended for students who have majored in physics, chemistry or biochemistry and wish to study biophysics or plant physiology; they should first discuss their qualifications with Associate Professor R. L. Overall.

The Honours unit of study comprises:

- a project in which the student investigates a problem and presents oral and written accounts of his or her research.
- coursework units chosen from a program offered by the School.
- instruction in experimental design, and other technical instruction.

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

The degree will be awarded on the basis of:

- (a) written assignments and essays from coursework units.
 (b) marks awarded for a thesis on the subject of the project.

Graduate Diploma in Science (Biology)

The Graduate Diploma program in Biology is available as a one year full-time or two year part-time course. Information about qualifications for entry into the Graduate Diploma is available from the School Office (Science Road Cottage, A10).

The course is intended for students wishing to progress beyond a pass degree but not via the Honours degree, or who are ineligible for admission to Honours. Students enrolled in the one year course will follow the same program as Biology Honours students and be assessed using similar criteria. Students may therefore elect to specialise in any area within the research interests of the School. Projects jointly supervised by staff in other Schools or Departments within the University may also be considered. Students undertaking the two year course (part-time) will follow the same curriculum but will satisfactorily complete the instructed elements of the course before progressing to the project element at the end of the Junior year.

Students who have signified their intention to enter the Graduate Diploma course will be notified of acceptance after the publication of the second semester Senior examination results. Graduate Diploma students are expected to start their academic year at the beginning of February or in July.

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

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

Postgraduate study

MSc and PhD degrees by research are available in the School.

On completion of an Honours degree (at first or second class level), MSc Preliminary course or Graduate Diploma in Science, students may pursue candidature for MSc degrees by research. The range of research fields offered and the fields of each member of academic staff are listed in the School's Research Interests Handbook, which is available from the School Office (Science Road Cottage, A10) or on the School's Web site at www.bio.usyd.edu.au

■ Department of Pathology

Students interested in CPAT 3001 Cell Pathology A are expected to meet with Professor Hunt or Associate Professor King before enrolling, preferably during the preceding year. The Department can cater only for a small number of students in CPAT 3001 and good performance in Junior and Intermediate units of study will be essential to ensure success in this unit. The Department of Pathology is located on Level 5 of the Blackburn Building (phone (02) 9351 2414).

CPAT 3001 Cell Pathology A

12 credit points. Prof. Hunt, Dr Gibbins, Dr Hambly, A/Prof. King.
Semester: 1. Classes: 1 tut & 11 prac/wk. Prerequisite: ANAT 2002; or BCHM 2002 or 2902; or BIOL 2005 or 2006 or 2905 or 2906; or both PCOL 2001 and (2002 or 2003); or PHSI2002. For BMedSc: 32 credit points from Intermediate BMED units of study. **Assessment:** One 3hr exam, 4 prac reports.

NB: Permission required for enrolment. Entry requires Departmental permission: only a small number of students can be accommodated in the laboratory facilities. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

The unit of study Cell Pathology is particularly suited to those interested in subsequently doing research in a challenging area of biology. This unit of study will provide students with insight into alterations in cellular processes in disease and injury and equip them to apply the concepts and methods of cell biology to the study of pathology. Subjects studied include inflammation, immunopathology, cellular immunology, molecular pathophysiology and cancer biology. This unit of study would not be useful for those wishing to pursue a career in diagnostic pathology.

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

Laboratory work is designed to illustrate particular aspects of pathology. A range of methods that will help in later development

of this area will be used. These include flow cytometry, tissue culture, molecular biology and microscopy.

CPAT 3101 Pathological Basis of Human Disease

12 credit points. Prof. Hunt, Dr Gibbins, Dr Hambly, A/Prof. King, Dr Pamphlett and others. **Semester:** 2. Classes: 3hr lec, 6 hrs self directed learning or museum sessions, & 3 hr microscopic specimen prac class/wk (Total 12 hrs/wk). **Qualifying:** ANAT 2001; or BCHM 2001 or 2002 or 2101 or 2102 or 2901 or 2902; or MBLG 2001 or 2101 or 2901; or BIOL 2001 or 2002 or 2005 or 2006 or 2101 or 2102 or 2105 or 2106 or 2901 or 2902 or 2905 or 2906; or HPSC 2001 or 2002; or MICR 2001 or 2003 or 2901; or PCOL 2001; or PHSI 2001. For BMedSc: 32 credit points from Intermediate BMED units of study. **Assessment:** Project Report (10%), Theory exam (60%), Practical exam (30%).

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended

The Pathological Basis of Human Disease unit of study modules will provide a practical and theoretical background to the scientific basis of the pathogenesis of disease, including elements of forensic pathology. Areas covered in theoretical modules include: tissue responses to exogenous factors, adaptive responses to foreign agents, cardiovascular/pulmonary responses to disease, forensic science, neuropathology and cancer. Practical modules include disease specimen evaluation on a macroscopic and microscopic basis. The unit of study would be appropriate for those who intend to proceed to Honours research, to professional degrees or to careers in biomedical areas such as hospital science. It fulfils the Pathology requirements for the Centre for Chiropractic at Macquarie University.

Textbooks

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

■ Chemical Engineering

The Department of Chemical Engineering is part of the Faculty of Engineering. In addition to providing professional training in this branch of engineering it offers units of study to students enrolled in the Faculty of Science majoring particularly in Chemistry, but also Biochemistry, Physics or Mathematics.

The most relevant units of study are CHNG 1101 - Chemical Engineering IA, CHNG 1102- Chemical Engineering IB, CHNG 2101 - Chemical Engineering 2A and CHNG 2102 - Chemical Engineering 2B. Details regarding these units of study can be obtained from the Faculty of Engineering Handbook. The units of study are intended to give a science student some insight into the principles which control the design and performance of large scale industrial processing plants. As well as the above units of study, Faculty of Science students are invited to enrol in any other chemical engineering unit of study, provided they have the appropriate prerequisites.

Double Degree

Some BSc graduates, who have passed all four of the above units of study within the Department of Chemical Engineering, may obtain a Bachelor of Engineering degree in Chemical Engineering after an additional two years' study, following the award of the B Sc. Students wishing to undertake this option must apply through UAC and compete on the basis of academic merit. Further details regarding admission to the BE in Chemical Engineering may be obtained from the Engineering Faculty Office.

■ School of Chemistry

Chemistry Junior units of study

Dr Adrian George

The School of Chemistry offers a number of 6 credit point units of study to cater for the differing needs of students. These units of study are:

- CHEM 1001 Fundamentals of Chemistry IA
- CHEM 1002 Fundamentals of Chemistry IB
- CHEM 1101 Chemistry IA
- CHEM 1102 Chemistry IB
- CHEM 1901 Chemistry IA (Advanced)
- CHEM 1902 Chemistry IB (Advanced)
- CHEM 1903 Chemistry IA (Special Studies Program)
- CHEM 1904 Chemistry IB (Special Studies Program)

Fully detailed information about all units of study, prescribed textbooks and reference books is available from the School of Chemistry and is contained in a booklet, Information for Students, distributed at the time of enrolment.

Exercises are issued and tutorials are held at regular intervals for all units of study.

CHEM 1001 Fundamentals of Chemistry 1A

6 credit points. Semester: 1. Classes: 3 lec & 1 tut/wk & 3hrs prac/wk for 9 wks. Assumed knowledge: There is no assumed knowledge of chemistry for this unit of study, but students who have not undertaken an HSC chemistry course are strongly advised to complete a chemistry bridging course before lectures commence. Prohibition: May not be counted with CHEM 1101 or 1901 or 1903 or 1905 or 1906 or 1909.

Assessment: A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

The aim of the unit of study is to provide those students whose chemical background is weak (or non-existent) with a good grounding in fundamental chemical principles together with an overview of the relevance of chemistry. There is no prerequisite or assumed knowledge for entry to this unit of study.

Lectures: A series of 39 lectures, three per week throughout the semester.

Practical: A series of 9 three-hour laboratory sessions, one per week for 9 weeks of the semester.

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1002 Fundamentals of Chemistry 1B

6 credit points. Semester: 2. Classes: 3 lec & 1 tut/wk & 3hrs prac/wk for 9 wks. Prerequisite: CHEM 1001 or 1101 or equivalent. Prohibition: May not be counted with CHEM 1102 or 1902 or 1904 or 1907 or 1908.

Assessment: A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

Chemistry 1002 builds on Chemistry 1001 to provide a sound coverage of inorganic and organic chemistry.

Lectures: A series of 39 lectures, three per week throughout the semester.

Practical: A series of 9 three-hour laboratory sessions, one per week for 9 weeks of the semester.

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1101 Chemistry 1A

6 credit points. Semester: 1, 2. Classes: 3 lec & 1 tut/wk & 3hrs prac/wk for 9 wks. Assumed knowledge: HSC Chemistry and Mathematics.

Corequisite: Recommended concurrent units of study: 6 credit points of Junior Mathematics. Prohibition: May not be counted with CHEM 1001 or 1901 or 1903 or 1905 or 1906 or 1909. Assessment: A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

Chemistry 1A is built on a satisfactory prior knowledge of the HSC 2-unit 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.

Practical: A series of 9 three-hour laboratory sessions, one per week for 9 weeks of the semester.

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1102 Chemistry 1B

6 credit points. Semester: 1, 2. Classes: 3 lec & 1 tut/wk & 3hrs prac/wk for 9 wks. Qualifying: CHEM 1101 or a Distinction in CHEM 1001 or equivalent. Corequisite: Recommended concurrent units of study: 6 credit points of Junior Mathematics including MATH 1003 or 1903.

Prohibition: May not be counted with CHEM 1002 or 1902 or 1904 or 1907 or 1908. Assessment: A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

Chemistry 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.

Practical: A series of 9 three-hour laboratory sessions, one per week for 9 weeks of the semester.

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1901 Chemistry 1A (Advanced)

6 credit points. Semester: 1. Classes: 3 lec & 1 tut/wk & 3hrs prac/wk for 9 wks. **Prerequisite:** UAI of at least 93 and HSC Chemistry result in the 80th percentile or better, or Distinction or better in a University level Chemistry unit, or by invitation. **Corequisite:** Recommended concurrent unit of study: 6 credit points of Junior Mathematics. **Prohibition:** May not be counted with CHEM 1001 or 1101 or 1903 or 1905 or 1906 or 1909.

Assessment: A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

NB: Permission required for enrolment.

Chemistry 1A (Advanced) is available to students with a very good HSC performance (typically a UAI of 92.5+) as well as a very good school record in chemistry or science. Students in these categories are expected to do Chemistry 1A (Advanced) rather than Chemistry 1A.

The theory and practical work syllabuses for Chemistry 1A and Chemistry 1A (Advanced) are very similar, though the level of treatment in the latter unit of study is more advanced, presupposing a very good grounding in the subject at secondary level. Chemistry 1A (Advanced) covers chemical theory and physical chemistry.

Lectures: A series of about 39 lectures, three per week throughout the semester.

Practical: A series of 9 three-hour laboratory sessions, one per week for 9 weeks of the semester.

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1902 Chemistry 1B (Advanced)

6 credit points. Semester: 2. Classes: 3 lec & 1 tut/wk & 3hrs prac/wk for 9 wks. Qualifying: CHEM 1901 or 1903 or Distinction in CHEM 1101 or equivalent. Corequisite: Recommended concurrent unit of study: 6 credit points of Junior Mathematics including MATH 1003 or 1903.

Prohibition: May not be counted with CHEM 1002 or 1102 or 1904 or 1907 or 1908. Assessment: A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

NB: Permission required for enrolment. Entry is by invitation.

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.

Practical: A series of 9 three-hour laboratory sessions, one per week for 9 weeks of the semester.

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1903 Chemistry 1A (Special Studies Program)

6 credit points. Semester: 1. Classes: 3 lec & 1 tut/wk & 3hrs prac/wk. Prerequisite: UAI of at least 98.7 and HSC Chemistry result in the 94th percentile or better, or Distinction or better in a University level Chemistry unit, or by invitation. Students in the Faculty of Science Talented Students Program are automatically eligible. Corequisite: Recommended concurrent unit of study: 6 credit points of Junior Mathematics.

Prohibition: May not be counted with CHEM 1001 or 1101 or 1901 or 1905 or 1906 or 1909.

NB: Permission required for enrolment. Entry is by invitation.

This unit of study is deemed to be an Advanced unit of study.

Entry to Chemistry 1A (Special Studies Program) is restricted to students with a UAI of 98.7 and an excellent school record in chemistry or science. 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).

CHEM 1904 Chemistry 1B (Special Studies Program)

6 credit points. Semester: 2. Classes: 3 lec & 1 tut/wk & 3hrs prac/wk. Prerequisite: Distinction in CHEM 1903. Corequisite: Recommended concurrent units of study: 6 credit points of Junior Mathematics including MATH 1003 or 1903. Prohibition: May not be counted with CHEM 1002 or 1102 or 1902 or 1907 or 1908.

NB: Permission required for enrolment. Entry is by invitation.

This unit of study is deemed to be an Advanced unit of study.

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

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

Chemistry Intermediate units of study

Dr RW Baker.

The School of Chemistry offers a number of units of study to cater for the differing needs of students. The following units of study are offered:

- CHEM 2001 Chemistry 2 (Life Sciences), 8 credit points
- CHEM 2101 Chemistry 2 (Environmental), 8 credit points
- CHEM 2301 Chemistry 2A, 8 credit points
- CHEM 2302 Chemistry 2B, 8 credit points
- CHEM 2901 Chemistry 2A (Advanced), 8 credit points
- CHEM 2902 Chemistry 2B (Advanced), 8 credit points

The units of study CHEM 2101 (Environmental) and 2301 (2A) have common lectures and practical work. Separate tutorials are held for each unit, with tutorials for 2101 emphasising environmental applications. There are approximately 51 lectures consisting of: Modern Chemical Analysis; Mechanisms of Organic Reactions; Bonding and Spectroscopy.

CHEM 2001 Chemistry 2 (Life Sciences)

8 credit points. Semester: 1. Classes: 4 lec & 4hr prac/wk. Prerequisite: 6 credit points of Junior Mathematics. Qualifying: CHEM 1102 or 1902 or 1904 or 1909. Prohibition: May not be counted with CHEM 2101 or 2301 or 2901 or 2903 or 2311 or 2312 or 2502. Assessment: Theory (67%), lab exercises (33%).

This unit of study comprises approximately 51 lectures consisting of: Organic Reaction Mechanisms in Biological Systems; Chemical Analysis and Spectroscopy of Biomolecules; Chemistry of Biomaterials (biopolymers, metalloproteins, biomineralisation etc). Non-compulsory tutorials will also be provided at a rate of one per week.

Additional information: The aim of this unit of study is to provide students interested in life sciences with the chemical knowledge required for an understanding of the subject. Practical: Practical work entails 4 hours per week for 13 weeks during the semester. Students must ensure that one complete afternoon from 1pm to 5pm, free from other commitments, is available for this practical work.

CHEM 2101 Chemistry 2 (Environmental)

8 credit points. Semester: 1. Classes: 4 lec & 4hr prac/wk. Prerequisite: 6 credit points of Junior Mathematics. Qualifying: CHEM 1102 or 1902 or 1904 or 1909. Prohibition: May not be counted with CHEM 2001 or 2301 or 2901 or 2903 or 2311 or 2312 or 2502. Assessment: Theory (67%), lab exercises (33%).

The aim of this unit of study is to provide students interested in environmental science with the chemical knowledge required for an understanding of the area.

Practical: As for CHEM 2001.

CHEM 2301 Chemistry 2A

8 credit points. Semester: 1. Classes: 4 lec & 4hr prac/wk. Prerequisite: 6 credit points of Junior Mathematics. Qualifying: CHEM 1102 or 1902 or 1904 or 1909. Prohibition: May not be counted with CHEM 2001 or 2101 or 2901 or 2903 or 2311 or 2312 or 2502. Assessment: Theory (67%), lab exercises (33%).

Non-compulsory tutorials will also be provided at a rate of one per week.

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

Practical: As for CHEM 2001.

CHEM 2302 Chemistry 2B

8 credit points. Semester: 2. Classes: 4 lec & 4hr prac/wk. Prerequisite: 6 credit points of Junior Mathematics. Qualifying: CHEM 1102 or 1902 or 1904 or 1909. Prohibition: May not be counted with CHEM 2202 or 2902. Assessment: Theory (67%), lab exercises (33%).

Lectures: This unit of study consists of 17 lectures in which the structure, bonding and properties of inorganic compounds and complexes will be presented; 17 lectures of physical chemistry on statistical thermodynamics and thermodynamics; and 17 lectures in organic chemistry which will include amine chemistry, electrophilic substitution and the chemistry of aromatics, the chemistry of carbonyls, nucleophilic organometallic reagents and organic synthesis and synthetic methods.

Additional information: Main chemistry unit of study for students expecting to major in chemistry.

Practical: As for CHEM 2001.

CHEM 2901 Chemistry 2A (Advanced)

8 credit points. Semester: 1. Classes: 5 lec & 4 prac/wk. Prerequisite: 6 credit points of Junior Mathematics. Qualifying: WAM greater than 80 and Distinction average in CHEM 1101 or 1901 or 1903 and in Chemistry 1102 or 1902 or 1904 or 1909. Prohibition: May not be counted with CHEM 2001 or 2101 or 2301 or 2903 or 2311 or 2312 or 2502. Assessment: Theory (56.7%), lab exercises (33%), Advanced Assignment (10%).

NB: Permission required for enrolment. Entry to this unit of study is by invitation. Students in the Faculty of Science Talented Students Program are automatically eligible.

Lectures and tutorials: Lectures and tutorials in Chemistry 2901 (Advanced) comprise two sets: Four lectures per week in common with any other Intermediate Chemistry unit of study and one lecture per week of advanced lectures on topics that are complementary to the other units of study.

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

Practical: Practical work entails 4 hours per week during the semester. Students must be available 1pm-5pm Friday afternoons for laboratory work.

CHEM 2902 Chemistry 2B (Advanced)

8 credit points. Semester: 2. Classes: 5 lec & 4hr prac/wk. Prerequisite: 6 credit points of Junior Mathematics. Qualifying: WAM greater than 80 and Distinction average in CHEM (1101 or 1901 or 1903) and CHEM (1102 or 1902 or 1904 or 1909). Prohibition: May not be counted with CHEM 2202 or 2302. Assessment: Theory (56.7%), lab exercises (33%), Advanced Assignment (10%). *

NB: Permission required for enrolment. Entry is by invitation.

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

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

Practical: Practical work entails 4 hours per week during the semester. Students must be available 1pm-5pm Friday afternoons for laboratory work.

Chemistry Senior units of study

A/Prof. SHKable.

The School of Chemistry offers a number of units of study to cater for the differing needs of students. The following units of study are offered:

- CHEM 3101 Chemistry 3A, 12 credit points
- CHEM 3102 Chemistry 3B, 12 credit points
- CHEM 3901 Chemistry 3A (Advanced), 12 credit points
- CHEM 3902 Chemistry 3B (Advanced), 12 credit points
- CHEM 3201 Chemistry 3A Additional, 12 credit points

CHEM 3202 Chemistry 3B Additional, 12 credit points

Advice on units of study

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

CHEM 3101 Chemistry 3A

12 credit points. **Semester:** 1. **Classes:** 4 lec & 8hr prac/wk. **Qualifying:** CHEM (2001 or 2101 or 2301 or 2901) and CHEM (2302 or 2902). **Prohibition:** May not be counted with CHEM 3311, 3601, 3602, 3901 or 3903 (but may be counted with CHEM 3201). **Assessment:** Exam (67%), lab exercises (33%).

The lectures will be presented in modules (each module runs for a semester and comprises 13 lectures). A listing of the module titles offered in the March Semester in 2001 is given below.

There are some restrictions on the number of modules that a student can take from each area. In addition, the seven lecture course on Chemical Laboratory Practices is compulsory. Further details can be obtained from the Senior Chemistry Handbook available from the School.

Inorganic Chemistry

- 311F Transition Metal Chemistry and Inorganic Reaction Mechanisms
- 312F Biological, Environmental and Industrial Chemistry of the Main Group
- 313F Organometallic Chemistry and Catalysis

Organic Chemistry

- 301F Spectroscopic Identification of Organic Compounds
- 302F Stereochemistry and Mechanism
- 304F Bioorganic Chemistry

Physical/Theoretical Chemistry

- 3PT1F Quantum Chemistry
- 3PT3F Chemical Dynamics
- 3PT7F Surfaces and Colloids

Cross Disciplinary

- 3C2F Symmetry and Spectroscopy.

There may be some interchange of modules between CHEM 3101 and CHEM 3102. As well, some modules may not be offered.

Practical: Practical work (8 hours/week) comprises sessions in the inorganic, organic and physical chemistry laboratories. Details can be obtained from the School of Chemistry.

Textbooks

See the Senior Chemistry handbook available from the School of Chemistry.

CHEM 3102 Chemistry 3B

12 credit points. **Semester:** 2. **Classes:** 4 lec & 8 hr prac/wk. **Qualifying:** CHEM (2001 or 2101 or 2301 or 2901) and CHEM (2302 or 2902). **Prohibition:** May not be counted with CHEM 3601, 3602, 3902 or 3903 (but may be counted with CHEM 3202). **Assessment:** Exam (67%), lab exercises (33%).

The lectures will be presented in modules (each module runs for a semester and comprises 13 lectures). A listing of the module titles offered in the July Semester in 2001 is given below. There are some restrictions on the number of modules that a student can take from each area. The 7-lecture course on Chemical Laboratory Practices is compulsory for those students who did not attend in semester 1. Further details can be obtained from the Senior Chemistry Handbook available from the School.

Inorganic Chemistry

- 314J Biological and Environmental Chemistry of the Transition Elements
- 315 J Inorganic Materials Chemistry
- 317J Forensic and Analytical Chemistry

Organic Chemistry

- 303J Heterocyclic Chemistry
- 305J Medicinal and Biological Chemistry
- 306J Free Radicals and Pericyclics in Synthesis and Nature
- 307J Synthetic Methods

Physical/Theoretical Chemistry

- 3PT4J Atmospheric and Photochemistry
- 3PT5J Biophysical Chemistry
- 3PT6J Polymer Chemistry
- 3PT8 J Physical Chemistry of Materials

Cross-Divisional

- 3C1J Supramolecular Chemistry

There may be some interchange of modules between Chemistry 3101 and Chemistry 3102. As well, some modules may not be offered.

Practical: As for CHEM 3101, but the last six weeks comprise of a workshop.

Textbooks

See the Senior Chemistry handbook available from the School of Chemistry

CHEM 3901 Chemistry 3A (Advanced)

12 credit points. **Semester:** 1. **Classes:** 5 lec & 8hr prac/wk. **Qualifying:** Distinction average in CHEM 2001 or 2101 or 2301 or 2901 and in CHEM 2202 or 2302 or 2902; by invitation. **Prohibition:** May not be counted with CHEM 3101, 3311, 3601, 3602 or 3903 (but may be counted with CHEM 3201). **Assessment:** As for CHEM 3101, plus a report on each Advanced module. Only the marks for the best 4 out of the total of 5 modules assessed contribute to a student's final mark.

NB: Permission required for enrolment. The number of places in this unit of study is limited and entry is by invitation. Applications are invited from students with a high WAM and an excellent record in Intermediate Chemistry. Students in the Faculty of Science Talented Student Program are automatically eligible.

Lectures: The requirements for CHEM 3901 are identical with those for CHEM 3101, with the addition of a special module that is available only to Advanced students. This special module involves an inquiry into a major problem in contemporary chemistry. A member of staff guides the discussion and acts as a consultant. Advanced topics offered in March semester 2001 were:

New technologies based on supramolecular chemistry - Fact or fiction?

Climate chemistry: Exercises in modelling.

Practical: As for CHEM 3101

Textbooks

See the Senior Chemistry handbook available from the School of Chemistry

CHEM 3902 Chemistry 3B (Advanced)

12 credit points. **Semester:** 2. **Classes:** 5.5 lec & 8hr prac/wk. **Qualifying:** Distinction or better in CHEM 2902 or 3101 or 3901; by invitation. **Prohibition:** May not be counted with CHEM 3102, 3601, 3602 or 3903. **Assessment:** As for CHEM 3B, plus a report on each Advanced module. Only the marks for the best 4 out of the total of 5 modules assessed contribute to a student's final mark.

NB: Permission required for enrolment. The number of places in this unit of study is limited and entry is by invitation. Students in the Faculty of Science Talented Student Program are automatically eligible.

Lectures: The requirements for Chemistry 3B (Advanced) are identical with those for Chemistry 3B, with the addition of a special module that is available only to Advanced students. This special module involves an inquiry into a major problem in contemporary chemistry. A member of staff guides the discussion and acts as a consultant. Advanced topics offered in July semester 2001 were:

Drug Resistance

Faster, higher, stronger

Practical: As for CHEM 3101

Textbooks

See the Senior Chemistry handbook available from the School of Chemistry.

CHEM 3201 Chemistry 3A Additional

12 credit points. **Semester:** 1. **Classes:** 4 lec & 8hr prac/wk. **Qualifying:** CHEM (2001 or 2101 or 2301 or 2502 or 2901) and CHEM (2302 or 2902). **Corequisite:** CHEM 3101 or 3901. **Prohibition:** May not be counted with CHEM 3601, 3602 or 3903. **Assessment:** Exam (67%), lab exercises (33%).

Students taking this unit of study must be concurrently enrolled in or have previously completed either CHEM 3101 or CHEM 3901. The modules will be chosen from the modules listed for CHEM 3101 and the same selection rules as applicable to CHEM 3101 will apply to the selection of the additional 4 modules. Students cannot take modules already counted towards CHEM 3101 or 3102 or 3901 or 3902 or 3202.

Practical: As for CHEM 3101

Textbooks

See the Senior Chemistry handbook available from the School of Chemistry

CHEM 3202 Chemistry 3B Additional

12 credit points. **Semester:** 2. **Classes:** 4 lec & 8hr prac/wk. **Qualifying:** CHEM (2001 or 2101 or 2301 or 2502 or 2901) and CHEM (2302 or 2902). **Corequisite:** CHEM 3102 or 3902. **Prohibition:** May not be counted with CHEM 3601, 3602 or 3903. **Assessment:** Exam (67%), lab exercises (33%).

Students taking this unit of study must be concurrently enrolled in or have previously completed either CHEM 3102 or CHEM 3902. The modules will be chosen from the modules listed for CHEM 3102 and the same selection rules as applicable to CHEM 3102 will apply to the selection of the additional 4 modules. Students cannot take modules already counted towards CHEM 3101 or 3102 or 3201 or 3901 or 3902.

Practical: As for CHEM 3101, but the last six weeks comprise a workshop in one of the Divisions

Textbooks

See the Senior Chemistry handbook available from the School of Chemistry

Chemistry Honours

A/Prof. D Ridley.

The Honours program in the School of Chemistry gives students the opportunity to get involved in a research program in an area that is of interest to them. It provides training in research techniques and experience using modern research instrumentation. The Honours program adds a new dimension to the skills that the students have acquired during their undergraduate years and enhances their immediate employment prospects and, more significantly, their future career potential. All students with a sound record in Chemistry are encouraged to apply for entry to the Honours program. The School of Chemistry offers a wide range of possible projects in all areas of contemporary chemistry including Biological and Medicinal Chemistry, Synthesis and Catalysis, Physical and Theoretical Chemistry, Supramolecular Chemistry, Polymers and Colloids and Chemical Spectroscopy. Details of available projects are contained in the School's Honours Booklet that is available from the School's Information Desk. In the Honours year, each student undertakes a research project under the supervision of a member of staff; writes a thesis which explains the problem, outlines the research undertaken and the results obtained; attends advanced lecture courses, normally given by leaders in their field from overseas or Australia; attends research seminars and undertakes additional written assessment. Further information is available from the Honours Coordinator, from the Administrative Officer (Academic), or at www.chem.usyd.edu.au/honours.html.

■ Civil Engineering

The Department of Civil Engineering is part of the Faculty of Engineering. In addition to providing professional training in this branch of engineering it offers units of study to students enrolled in the Faculty of Science majoring in Mathematics, Physics, Chemistry, Geology, Computer Science or Soil Science. The most relevant units of study are CFVL1051 - Statics (5 credit points), CIVL 2201 - Structural Mechanics (6 credit points), CIVL 2205 - Introduction to Structural Design (4 credit points), and CIVL 2204 - Introduction to Structural Concepts (4 credit points). Details regarding these units of study can be obtained from the Faculty of Engineering Handbook.

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

As well as the above units of study, Faculty of Science students are invited to enrol in any other civil engineering unit of study, provided they have the appropriate prerequisites.

Double Degree

Some BSc graduates, who have passed all four of the above four units of study within the Department of Civil Engineering, may obtain a Bachelor of Engineering degree in Civil Engineering after an additional two years' study, following the award of the BSc. Students wishing to undertake this option must apply through UAC and compete on the basis of academic merit. 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 focusses on scientific problem solving using computers. It covers the formulation and analysis of problems, the use of software packages and programs to solve these

problems computationally, simulations and modelling, mathematical and numerical analysis, high performance super-computing, graphics, visualisation and programming.

Graduates with computational science skills are in strong and increasing demand in scientific research, industry, government and finance, particularly for their analytic and problem solving skills and their specific expertise in computing.

The major in Computational Science can include a wide range of electives to suit individual interests, selected from computationally oriented offerings from various departments and schools from across the Faculty. Table 1 lists the core Senior units and electives, as well as Junior options. COSC units are described below. For descriptions of other units see their separate entries under the contributing school or department.

COSC 1001 Computational Science in Matlab

3 credit points. Semester: 2. Classes: 1 lec & 2 prac/wk. Prohibition: May not be counted with COSC 1901. Assessment: One 3hr theory exam, one 3hr prac exam, 1 essay, quizzes, project.

This unit of study focuses on scientific problem solving and data visualisation using computers and is complementary to COSC 1002. Students will learn how to solve problems arising in the natural sciences and mathematics using core features of the problem solving environment Matlab, with a choice of problems from various areas of science at each stage. Emphasis will be placed on graphical display and visualisation of data and solutions to problems. No previous knowledge of programming is assumed.

COSC 1901 Computational Science in Matlab (Adv)

3 credit points. Semester: 2. Classes: 1 lec & 2 prac/wk. Prerequisite: UAI of at least 90, or COSC 1902, or a distinction or better in COSC 1002, SOFT 1001, 1002, 1901 or 1902. Prohibition: May not be counted with COSC 1001. Assessment: One 3hr theory exam, one 3hr prac exam, 1 essay, quizzes, project.

NB: Permission required for enrolment.

This unit of study is the advanced version of COSC 1001 and is complementary to COSC 1902. The subject matter is very similar but more challenging problems will be covered and some additional programming and visualisation techniques will be used. The unit focuses on scientific problem solving and data visualisation using computers. 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.

COSC 1002 Computational Science in C

3 credit points. Semester: 2. Classes: 1 lec & 2 prac/wk. Prohibition: May not be counted with COSC 1902. Assessment: One 3hr theory exam, one 3 hr prac exam, 1 essay, quizzes, project.

This unit of study focusses on scientific problem solving using computers and is complementary to COSC 1001. Students will learn how to solve problems arising in the natural sciences and mathematics using core features of the language C, with a choice of problems from various areas of science at each stage. No previous knowledge of programming is assumed.

COSC 1902 Computational Science in C (Adv)

3 credit points. Semester: 2. Classes: 1 lec & 2 prac/wk. Prerequisite: UAI of at least 90, or COSC 1901, or a distinction or better in COSC 1001, SOFT1001, 1002, 1901 or 1902. Prohibition: May not be counted with COSC 1002. Assessment: One 3hr theory exam, one 3hr prac exam, 1 essay, quizzes, project.

NB: Permission required for enrolment.

This unit of study is the advanced version of COSC 1002 and is complementary to COSC 1901. The subject matter is very similar, but more challenging problems will be covered and some additional programming techniques will be used. The unit focusses on scientific problem solving using computers. 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.

COSC 3601 Parallel Computing

4 credit points. Semester: 2. Classes: 2 lec & 2 prac/wk. Assumed knowledge: Some familiarity is assumed with Unix and a programming language (eg, C or Fortran). Prerequisite: At least one of SOFT (2004 or 2904) or COMP (2004 or 2904) or PHYS (3301 or 3901) or MATH 2903 or MATH (3016 or 3916). Assessment: Written exam of up to 2hrs and assignment work.

This unit of study introduces the student to basic concepts of parallel computing such as Amdahl's law. Superscalar and Symmetric Multiprocessor (SMP) architecture and strategies for achieving parallelism. Programming topics will cover the use of Message Passing Interfaces (MPI), batch queue systems and Open Message Passing. Practical work will be done using the advanced computing facilities of the University of Sydney's VISLAB.

■ School of Information Technologies

The School of Information Technologies administers the disciplines of Information Systems and Computer Science, each of which is available as a major in the Bachelor of Science degree.

Computer Science

Computer Science is the scientific discipline which has grown out of the use of digital computers to manage and transform information. Computer Science is concerned with the design of computers, their applications in science, government and business, and the formal and theoretical properties which can be shown to characterise these applications. Teaching in Computer Science covers a diversity of topics such as Software Development, Networks and Systems, Multimedia Technologies and Principles of Computer Science.

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

Note that units of study beginning with COMP, MULT, NETS, SOFT and INFO (but not ISYS) can be counted as Computer Science. Each INFO unit may only be counted to one subject area (either Computer Science or Information Systems, but not both).

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

Students should note that entry to Honours requires an average of Credit or better in the Senior units of study.

Information Systems

Information Systems studies people and organisations to determine and deliver their technological needs. Hence Information Systems encompasses issues such as strategic planning, system development, system implementation, operational management, end-user needs and education. Information Systems study is related to Computer Science but there is an important distinction in that Information Systems is about the architecture of computer systems and making them work for people. Hence people are the focus of attention, whereas much of Computer Science is about developing and improving the performance of computers. The School performs IS research in a number of areas including natural language processing, data mining, knowledge management and workflow methods. Students who wish to complete a major in Information Systems need to appreciate that effective communication and critical analysis are important parts of the curriculum and though taught explicitly in one unit ARIN 1000 (or an equivalent unit) are expected to be practised throughout all units of study. Intending Honours students need to complete at least 16 credit points of Information systems units at Senior level. Note that units beginning with both ISYS and INFO codes (but not COMP, MULT, NETS or SOFT) can be counted as Information systems units.

Other information

The units of study offered by the School are described briefly below, and more fully in the School's Handbook which is available from the School Office (Room G71) in the Madsen Building. Students should confirm details of units of study, registration procedures, textbooks, etc., on the School noticeboards and Web site www.cs.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.cs.usyd.edu.au for advice on choosing appropriate units of study from this list.

SOFT 1001 **Software Development 1**

6 credit points. Semester: 1,2. Classes: 1 lec, 2 tut & 3 lab/wk. Assumed knowledge: HSC Mathematics Extension 1. Prohibition: May not be counted with SOFT 1901 or COMP (1001 or 1901).

Computers are highly versatile: the same machine can be used to manage the payroll for an enterprise, or play multi-user games, or predict changing weather activity. The reason is that people can write software that causes the machine to behave in very different ways. This unit is the first in a long sequence that build students' skills in software development. For many students these skills are the key to their employment as IT professionals. The unit introduces object-oriented software development with design-by-contract, which is the state-of-the-art in industry. Java is the programming language used. Students work in small groups, so they experience many of the issues of team interaction that are important in practice. Also, students take responsibility to plan their own learning to meet required objectives, so they will develop skills to learn from resources including reference materials and examples, just as happens in the profession.

SOFT 1901 **Software Development 1 (Adv)**

6 credit points. Semester: 1,2. Classes: 1 lec, 2 tut & 3 lab/wk. Assumed knowledge: HSC Mathematics Extension 1. Prerequisite: UAI at least that for acceptance into BSc (Advanced) degree program. Requires departmental permission. Prohibition: May not be counted with SOFT 1001 or COMP (1001 or 1901).

NB: Permission required for enrolment.

An advanced alternative to SOFT 1001; covers material at an advanced and challenging level. See the description of SOFT 1001 for more information.

SOFT 1002 **Software Development 2**

6 credit points. Semester: 1,2. Classes: 1 lec, 2 tut & 3 lab/wk. Qualifying: SOFT (1001 or 1901) or COMP (1001 or 1901) (Prohibition: May not be counted with SOFT 1902 or COMP (1002 or 1902)).

This unit extends the students' software development skills in several important directions. It covers a number of advanced features of Java programming such as inheritance and recursion. It deals with important issues in using library classes to manage collections of similar objects. It also provides students with experience in design; that is, in choosing which classes to write to respond to a user's demands. Design in group work raises special issues of dealing with conflict and misunderstanding between group members.

SOFT 1902 **Software Development 2 (Adv)**

6 credit points. Semester: 1,2. Classes: 1 lec, 2 tut & 3 lab/wk. Qualifying: Distinction in SOFT (1001 or 1901) or COMP (1001 or 1901). Prohibition: May not be counted with SOFT 1002 or COMP (1002 or 1902).

NB: Permission required for enrolment.

An advanced alternative to SOFT 1002; covers material at an advanced and challenging level. See the description of SOFT 1002 for more information.

ISYS 1003 **Foundations of Information Technology**

6 credit points. Semester: 1,2. Classes: 2 lec, 3 prac & 1 tut/wk.

Prohibition: May not be counted with INFO 1000. Assessment: Practical assignments, quizzes, tutorial contribution, written exam. In our society computer systems have become a major platform for communication, commerce, education and entertainment. Students, using a systems thinking approach, will undertake meaningful research and authoring tasks using various kinds of software including word processors, spreadsheets, Web browsers and databases, in order to understand how hardware, software and human systems support communication, collaboration, modelling and decision-making. Students will be expected to understand how information is structured, linked and flowed in different situations, and to be able to customise an IT environment to streamline or share tasks. In addition, the course will emphasise the importance of documenting decisions and processes, and understanding the many social, ethical, and intellectual property issues that arise when creating and handling information.

Computer Science and Information Systems Intermediate units of study

Note that in 2003 there will be significant changes to the curriculum, especially among 3000-level units. It is important to choose second year subjects appropriately to keep options open for further study. See www.cs.usyd.edu.au for advice.

COMP 2003 Languages and Logic

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** MATH 1004 or 1904 or Econometrics or MATH 2009. **Qualifying:** SOFT (1002 or 1902) or COMP (1002 or 1902). **Prohibition:** May not be counted with COMP 2903. **Assessment:** Assessment assignments, written exam.

All communication requires a language. People communicate with each other in a natural language such as English; they communicate with computers in a formal language such as Java. This unit of study looks at two important kinds of formal languages (called regular and context-free), and the algorithms, or automata, that are used to recognise them. On the theoretical side, several ways to represent languages are presented, and their capabilities and limitations discovered; on the practical side, sound and indeed foolproof methods are derived for writing programs to recognise formal languages such as Java. Considerable emphasis is also put on the use of logic (both propositional and first-order), which provides a powerful design tool for hardware implementations of automata.

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

COMP 2903 Languages and Logic (Advanced)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** MATH 1004 or 1904 or Econometrics or MATH 2009. **Qualifying:** Distinction in SOFT (1902 or 1002) or COMP (1001 or 1901 or 2111 or 2811). **Prohibition:** May not be counted with COMP 2003. **Assessment:** Assessment assignments, written exam.

This unit of study is the advanced alternative to COMP 2003. Topics in Languages and Logic are covered at an advanced and more challenging level.

COMP 2111 Introduction to Algorithms 1

4 credit points. **Semester:** 1. **Classes:** 2 lec, 1 tut/wk. **Qualifying:** (SOFT (1002 or 1902) or COMP (1002 or 1902)) and MATH (1004 or 1904 or 2009). **Prohibition:** May not be counted with COMP (2811 or 2002 or 2902).

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 the analysis of algorithms. Commonly used data structures such as lists, stacks, queues, priority queues, search trees, hash tables and graphs are all analysed according to a notion of asymptotic complexity. Design principles such as the greedy strategy, divide and conquer, and dynamic programming are covered, as well as efficient techniques for searching within graphs. There will be a programming project in which students will design an algorithmic solution to a problem, analyse its time complexity, and implement it.

COMP 2811 Introduction to Algorithms 1 (Adv)

4 credit points. **Semester:** 1. **Classes:** 2 lec, 1 tut/wk. **Qualifying:** Distinction in [SOFT (1002 or 1902) or COMP (1002 or 1902 or 2003 or 2903)]. **Prohibition:** May not be counted with COMP (2111 or 2002 or 2902).

An advanced alternative to COMP 2111; covers material at an advanced and challenging level. See the description of COMP 2111 for more information.

INFO 2000 System Analysis and Design

4 credit points. **Semester:** 1, Summer. **Classes:** 2 lec and 1 tut or 1 prac/wk; 1 unscheduled lab work with a CASE tool. **Qualifying:** INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). **Assessment:** Written and practical assignments + written exam.

The syllabus covers data-centred, process-oriented and object-centred methodologies for requirements analysis and system description to address organisational needs, including the gathering of facts, diagnosis of problems, recommendation of appropriate and feasible solutions. A CASE tool will be used to develop practical skills.

INFO 2005 Personal Database Tools

4 credit points. **Semester:** 2. **Classes:** 2 lec, 1 tut/wk; 1 unscheduled lab work. **Qualifying:** INF01000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). **Prohibition:** May not be counted with COMP 3005 or 3905. **Assessment:** Written and practical assignments + written exam.

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

INFO 2007 Distributed Information Systems

4 credit points. **Semester:** 2. **Classes:** 2 lec, 2 prac/wk. **Qualifying:** ISYS 2006. **Assessment:** One 2hr examination, written assignments.

This unit of study covers both networking technologies and design of distributed applications. Emphasis is on the analysis and design of effective solutions and patterns to business issues. Students learn to evaluate and select appropriate technologies and configurations. Major topics include: communications media and techniques; network topologies, devices and standards; distributed system architectures such as client/server and the Internet; design and management for integrity, reliability and security; and, business applications.

ISYS 2006 Information Systems in Organisations

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Assumed knowledge:** Use of basic PC tools such as spreadsheets, Internet, email and word processing software. **Qualifying:** INF01000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). **Assessment:** One 2hr examination, written assignments.

NB: Enrolment Restriction: Entry is restricted to students who have a credit or better in at least one of the qualifying units
The syllabus provides a critical review of the enabling impact of information systems on business processes. The use of telecommunications and data communications and their applications to distributed information systems, and the management of change due to information technology are discussed in some detail. A key element of this unit is the development of critical analysis and communication skills by students.

NETS 2008 Computer System Organisation

4 credit points. **Semester:** 1. **Classes:** 2 lec, 2 lab/wk. **Qualifying:** SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). **Prohibition:** May not be counted with NETS 2908 or COMP (2001 or 2901).

For most people, a computer-based system provides powerful services. This unit aims to show how the underlying hardware and software components can make this possible. It covers an overview of the main hardware components, such as CPU, memory, storage, peripherals, it also explains the functionality (not the internal details) of the main software necessary to turn a box into a working system, including the operating system, file system, window manager, command processing shell.

The unit provides hands-on experience of some aspects in the administration of a system, including writing scripts to automate repetitive tasks such as installing upgrades, monitoring logs, altering configuration information, and estimating the performance implications of possible changes.

NETS 2908 Computer System Organisation (Adv)

4 credit points. **Semester:** 1. **Classes:** 2 lec, 2 lab/wk. **Qualifying:** Distinction in SOFT (1001 or 1901 or 1002 or 1902) or COMP (1001 or 1901 or 1002 or 1902) or NETS (2009 or 2909). **Prohibition:** May not be counted with NETS 2008 or COMP (2001 or 2901).

An advanced alternative to NETS 2008; covers material at an advanced and challenging level. See the description of NETS 2008 for more information.

NETS 2009 Network Organisation

4 credit points. **Semester:** 2. **Classes:** 2 lec & 2 lab/wk. **Qualifying:** SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). **Prohibition:** May not be counted with NETS 2909.

Computer users often take for granted the ability to access information and services from remote computers. This unit aims to show how the underlying hardware and software components can make this possible. It covers the overall structure of a network, including the hardware (LANs, WANs, bridges, switches) and the software (an overview of the OSI layered reference model; description of the functionality of protocols such as TCP/IP, PPP, SLIP, DNS, SNMP, SMTP, HTTP; and the functionality of networked file systems). It introduces the main issues for security in a network, including firewalls and viruses.

The unit provides hands-on experience of some aspects in the administration of a network, including writing scripts to detect problems and adjust configurations. There is practice in trouble-shooting from the wire-level up to the application level.

NETS 2909 Network Organisation (Adv)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 2 lab/wk. **Qualifying:** Distinction in SOFT (1001 or 1901 or 1002 or 1902) or COMP (1001 or 1901 or 1002 or 1902) or NETS (2008 or 2908). **Prohibition:** May not be counted with NETS 2009.

An advanced alternative to NETS 2009; covers material at an advanced and challenging level. See the description of NETS 2009 for more information.

SOFT 2001 Concurrent Programming

4 credit points. **Semester:** 2. **Classes:** 2 lec & 2 lab/wk. **Qualifying:** SOFT (1002 or 1902) or COMP (1002 or 1902). **Prohibition:** May not be counted with SOFT 2901.

There are many sorts of computing infrastructure such as an operating system kernel or network protocol stack or Web server, where one activity may start before other activities have finished. This requires the software to interleave the processing from different activities. This software is called 'concurrent' or 'multithreaded', and it requires special programming techniques which are taught in this unit. In particular, there is a need to synchronise the activities when they deal with shared data, using primitives such as semaphores or mutual exclusion locks. Emphasis is also given to a similar 'event-handling' style for writing graphical user interfaces.

SOFT 2901 Concurrent Programming (Adv)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 2 lab/wk. **Qualifying:** Distinction in [SOFT (1002 or 1902 or 2004 or 2904) or COMP (1002 or 1902)]. **Prohibition:** May not be counted with SOFT 2001.

An advanced alternative to SOFT 2001; covers material at an advanced and challenging level. See the description of SOFT 2001 for more information.

SOFT 2004 Software Development Methods 1

4 credit points. **Semester:** 1. **Classes:** 2 lec & 2 lab/wk. **Qualifying:** SOFT (1002 or 1902) or COMP (1002 or 1902). **Prohibition:** May not be counted with SOFT 2904 or COMP (2004 or 2904).

In this unit of study we cover elementary methods for developing robust, efficient, and re-usable software. Specific topics include memory management and the pragmatic aspects of implementing data structures such as lists and hash tables. Debugging tools and techniques are discussed and common programming errors are considered along with defensive programming techniques to avoid such errors. Testing regimes, such as regression testing, are introduced. The subject is taught from a practical engineering viewpoint and it includes a considerable amount of programming practice, using existing tools as building blocks to complete a large-scale task.

SOFT 2904 Software Development Methods 1 (Adv)

4 credit points. **Semester:** 1. **Classes:** 2 lec & 2 lab/wk. **Qualifying:** Distinction in [SOFT (1002 or 1902 or 2001 or 2901) or COMP (1002 or 1902)]. **Prohibition:** May not be counted with SOFT 2004 or COMP (2004 or 2904).

In this unit of study we learn elementary methods for developing robust, efficient, and re-usable software. An advanced alternative to SOFT 2004; covers material at an advanced and challenging level. See the description of SOFT 2004 for more information.

Computer Science and Information Systems Senior units of study

Students are advised that doing less than 6 Senior units of study is not regarded as adequate preparation for a professional career in computing or for further study. Students are advised to balance their workload between semesters.

There will be significant changes to the curriculum in 2003. Students who will not complete their study this year should check the school Web site www.cs.usyd.edu.au for advice in unit choice.

COMP 3001 Algorithms

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** MATH 1004 or 1904 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. **Qualifying:** COMP 2002 or 2902 or 2111 or 2811. **Prohibition:** May not be counted with COMP 3901.

Assessment: Assessment assignments, written exam. Algorithms are particularly important in all areas of Computer Science. The knowledge of basic algorithms, as well as the ability to design a new algorithm and to analyse an existing one

in terms of time and space efficiency, are essential for a person to successfully work in a computer and information related professional area. This unit of study will provide a systematic study of the analysis of existing algorithms and strategies for the design of new algorithms. The analysis skill includes the method of analysis of average computational complexity. The design strategies covered include divide-and-conquer, greedy method, and dynamic programming. Many interesting real-life problems and smart algorithm application examples will also be introduced.

COMP 3901 Algorithms (Advanced)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 16 credit points of Intermediate or Senior Computer Science with Distinction average and MATH 1004 or 1904 and 8 credit points of Intermediate Mathematics and/or Statistics and/or Econometrics. **Qualifying:** COMP 2002 or 2902 or 2111 or 2811. **Prohibition:** May not be counted with COMP 3001. **Assessment:** Written and programming assignments; written exam.

An advanced alternative to COMP 3001; covers material at an advanced and challenging level.

COMP 3002 Artificial Intelligence

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** COMP 2003 or 2903 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. **Qualifying:** COMP 2004 or 2904 or SOFT 2004 or 2904. **Prohibition:** May not be counted with COMP 3902. **Assessment:** Assessment assignments, written exam.

Artificial Intelligence is all about programming computers to perform tasks normally associated with intelligent behaviour. Classical AI programs have played games, proved theorems, discovered patterns in data, planned complex assembly sequences and so on. Most of these activities depend on general or 'weak' methods, primarily search. AI also addresses issues related to the representation and use of the knowledge of human experts. This unit of study will explore topics from selected areas of AI. Students who complete it will have an understanding of some of the fundamental methods and algorithms of AI, and an appreciation of how they can be applied to interesting problems. The unit of study will involve a practical component in which some simple problems are solved using standard AI techniques.

COMP 3902 Artificial Intelligence (Advanced)

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** COMP 2003 or 2903 and 16 credit points of Intermediate or Senior Computer Science with Distinction average and 8 credit points of Intermediate MATH and/or Statistics and/or Econometrics. **Qualifying:** COMP 2004 or 2904 or SOFT 2004 or 2904. **Prohibition:** May not be counted with COMP 3002. **Assessment:** Written and programming assignments; written exam.

An advanced alternative to COMP 3002; covers material at an advanced and challenging level.

COMP 3004 Computer Graphics

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** COMP 2002 or 2902 or 2111 or 2811 and MATH 1002 or 1902 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. **Qualifying:** COMP 2004 or 2904 or SOFT 2004 or 2904. **Prohibition:** May not be counted with COMP 3904. **Assessment:** Assessment assignments, written exam.

A picture has a million pixels (in round terms). Like any other interface, it must be well engineered for accuracy, high speed-performance and compatibility with user needs. The Computer Graphics unit of study examines established algorithms for picture generation, covering such topics as hidden-line elimination, shading and texturing, and ray-tracing in terms of the technology of standard graphical output devices and the 3-space geometry which applies. The effects on performance of algorithmic design choices are considered and connections are made with the cognate field of computational geometry. Typically in making pictures, a round ball is modelled by the unit sphere $x^2 + y^2 + z^2 = 1$ (after Pythagoras), and a point on a tumbling football by the affine transform $p = A.p' + T$, where A is a non-singular matrix, p' is a point on the unit sphere, and T is a translation vector. The unit of study therefore assumes an understanding of vector and matrix methods.

COMP 3904 Computer Graphics (Advanced)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 16 credit points of Intermediate or Senior Computer Science with Distinction average and COMP 2002 or 2902 or 2111 or 2811 and MATH 1002 or 1902 and 8 credit points of Intermediate Mathematics and/or Statistics and/or Econometrics. **Qualifying:** COMP 2004 or 2904 or SOFT 2004 or 2904. **Prohibition:** May not be counted with COMP 3004. **Assessment:** Written and programming assignments; written exam.

An advanced alternative to COMP 3004; covers material at an advanced and challenging level.

COMP 3006 Declarative Programming Languages

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. **Qualifying:** COMP 2004 or 2904 or SOFT 2004 or 2904. **Prohibition:** May not be counted with COMP 3906. **Assessment:** Assessment assignments, written exam.

What distinguishes Declarative Programming Languages is the way in which programs specify the logic of a problem (what is to be done) rather than the mechanics of solving the problem (how to do it). It is this aspect that has led to these sorts of languages being extensively used for Artificial Intelligence software systems. In addition, they are also often used for rapid prototyping of novel software systems, and many of the ideas and techniques employed in declarative programming language systems have found broader application.

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

COMP 3906 Declarative Programming Languages (Adv)

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

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

COMP 3007 Networked Systems

4 credit points. **Semester:** 1. **Classes:** 2 lec & 2 prac/wk. **Prerequisite:** COMP 2001 or 2901 or NETS 2008 or 2908 or ELEC 2601. **Qualifying:** COMP 2004 or 2904 or SOFT 2004 or 2904. **Prohibition:** May not be counted with COMP 3907. **Assessment:** Assessment assignments, written exam.

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

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

COMP 3907 Networked Systems (Advanced)

4 credit points. **Semester:** 1. **Classes:** 2 lec & 2 prac/wk. **Prerequisite:** 16 credit points of Intermediate or Senior Computer Science with Distinction average and COMP 2001 or 2901 or NETS 2008 or 2908 or ELEC 2601. **Qualifying:** COMP 2004 or 2904 or SOFT 2004 or 2904. **Prohibition:** May not be counted with COMP 3007. **Assessment:** Written and programming assignments; written exam.

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

COMP 3008 Object-Oriented Systems

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

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

COMP 3908 Object-Oriented Systems (Advanced)

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

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

COMP 3009 Operating Systems

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** COMP 2001 or 2901 or NETS 2008 or 2908 or ELEC 2601. **Qualifying:** COMP 2004 or 2904 or SOFT 2004 or 2904. **Prohibition:** May not be counted with COMP 3909. **Assessment:** Assessment assignments, written exam.

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

COMP 3909 Operating Systems (Advanced)

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 16 points of Intermediate or Senior Computer Science with Distinction average and COMP 2001 or 2901 or NETS 2008 or 2908 or ELEC 2601. **Qualifying:** COMP 2004 or 2904 or SOFT 2004 or 2904. **Prohibition:** May not be counted with COMP 3009. **Assessment:** Written and programming assignments; written exam.

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

COMP 3100 Software Engineering

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

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

COMP 3800 Software Engineering (Advanced)

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

An advanced alternative to COMP 3100; covers material at an advanced and challenging level.

COMP 3102 User Interfaces

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

This unit of study introduces several of the critical elements programs need to create effective user interfaces. These include the essentially technical skills used in creating several of the major types of interface as well as human and design issues. Critical to designing an effective interface is familiarity with the substantial body of knowledge about cognitive and perceptual constraints. The technical skills of User Interface programming include learning current tools for building interfaces. The unit of study will introduce students to 'web-technology', programming of interfaces in the World-Wide-Web environment, a visual programming environment and the Python scripting language and TK toolkit for building graphical interfaces.

COMP 3802 User Interfaces (Advanced)

4 credit points. Semester: 2. Classes: 2 lec & 1 tut/wk. Prerequisite: 16 points of Intermediate or Senior Computer Science with Distinction average. Qualifying: COMP 2004 or 2904 or SOFT 2004 or 2904. Prohibition: May not be counted with COMP 3102. Assessment: Written and programming assignments; written exam. An advanced alternative to COMP 3102; covers material at an advanced and challenging level.

COMP 3201 Algorithmic Systems Project

4 credit points. Semester: 2. Classes: supervised project. Corequisite: COMP 3001 or 3901. Assessment: Assessment quality of software product, written report, product presentation. NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809.

Some of the most exciting work being done in the Algorithms and Complexity area today is concerned with the development of software which applies the algorithms and techniques to practical problems. Much progress has been made recently in graph drawing, computational geometry, timetable construction, etc. Real-life instances of these kinds of problems are typically too large to be solved without using efficient algorithms that have been developed for them. In this unit of study you will work in a group to develop a software product of this kind. Past projects have included graph editors for X-windows, various computational geometry projects, and timetable construction.

COMP 3202 Computer Systems Project

4 credit points. Semester: 1,2. Classes: supervised project. Prerequisite: COMP 3009 or 3909. Assessment: Assessment quality of software product, written report, product presentation. NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204 or 3205, 3206 or 3809.

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

COMP 3203 Artificial Intelligence Project

4 credit points. Semester: 1. Classes: supervised project. Corequisite: COMP 3002 or 3902. Assessment: Assessment quality of software product, written report, product presentation. NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809.

As with any other applied science, theories and techniques in Artificial Intelligence, regardless of how fancy they appear to be, are of little use by themselves unless they can be used to solve real world problems. Furthermore, they can best be understood and mastered by applying them to non-trivial practical problems. In this project, students will have a chance to write computer programs to solve practical problems in a way 'similar' to what intelligent beings do. Specifically, students will be asked to apply learned AI techniques to solve small but realistic and knowledge intensive tasks (eg, advice-giving, troubleshooting), in a carefully selected domain; and to evaluate the utility and performance of the techniques used. Students will work in groups.

COMP 3204 Software Engineering Project

4 credit points. Semester: 2. Classes: supervised project. Corequisite: COMP 3100 or 3800. Assessment: Assessment quality of software product, written report, product presentation. NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809.

The primary objectives of this module are that students:

- have the opportunity to complete a large and realistic software development task
 - develop skills in defining software requirements in response to an authentic user's needs
 - put into practice state-of-the-art techniques for developing quality software and record these processes in reports
 - develop skills in working in software teams
 - evaluate the quality of the software developed
- Students will produce several products:
- a requirements document

- evaluation of a product in terms of user needs and the report of testing the software
- produce a report to the client on what has been achieved
- a software product with supporting documentation, in a form suitable to hand over to the client
- a poster outlining the project and highlighting its achievements

COMP 3205 Product Development Project

4 credit points. Semester: 1,2. Classes: supervised project. Prerequisite: COMP 3008 or 3908. Assessment: Assessment quality of software product, written report, product presentation. NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204 or 3205, 3206 or 3809.

The Product Development Project consists of working, as a member of a group of four students, in the specification, design, implementation and testing of a substantial software product, using sophisticated techniques including object-oriented programming. The product is often intended for users elsewhere in the University or in the Department, and an important aspect is discussion with eventual users to determine their needs. The unit of study has three aims. Firstly, students learn to use previously gained implementation, testing, and debugging skills in the realisation of a complete, practical product. Secondly, the importance of careful specification, design and project management to successful completion of a product by a cooperating team is made manifest. Thirdly, students learn to take responsibility for a project and work independently of detailed supervision under the demanding 'sink or swim' conditions of real software development.

COMP 3206 Bioinformatics Project

4 credit points. Semester: 2. Classes: weekly meeting with supervisor plus project work; 3-4 introductory lectures. Prerequisite: 16 credit points of Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and genetics and/or Pharmacology. Qualifying: COMP 2004 or 2904 or SOFT 2004 or 2904. Corequisite: COMP 3008 or 3100 or 3908 or 3800. Assessment: Quality of software and documentation produced; quality of process; student's written evaluation of outcome. NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809.

Students work in groups to design and develop software that will be useful to practitioners in biosciences.

COMP 3809 Software Project (Advanced)

4 credit points. Semester: 1,2. Classes: 30 mins/week meeting with project supervisor; 3-4 introductory talks; private work on the project. Prerequisite: 16 credit points of Intermediate or Senior Computer Science, with Distinction average. Corequisite: 8 credit points of Senior Computer Science. Assessment: Based on quality of the software and documentation produced, and the process by which it is produced, and the student's written reflections on the outcome. NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809.

This unit of study involves students in producing innovative software to support activity in a research or advanced development project, either within the university or in industry.

INFO 3005 Organisational Database Systems

4 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Qualifying: INFO 2005. Prohibition: May not be counted with INFO 3905 or COMP 3005 or COMP 3905. Assessment: Assessment assignments, written exam. Large organisations store lots of essential data in central repositories from which many users can access it. This unit covers the development of client-server systems which access shared data in a DBMS. It also deals with the responsibilities of the Database Administrator who must organise the physical structures to make access efficient, and who must also guard the integrity of the data.

INFO 3905 Organisational Database Systems (Adv)

4 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Prerequisite: 16 credit points of Intermediate or Senior Computer Science units of study with Distinction average. Qualifying: INFO 2005. Prohibition: May not be counted with COMP 3005 or COMP 3905 or INFO 3005. Assessment: Written and programming assignments; written exam. An advanced alternative to INFO 3005; covers material at an advanced and challenging level.

ISYS 3000 Information Systems Management

4 credit points. Semester: 2. Classes: 2 lec, 1 tut/wk; 1 unscheduled lab work. Qualifying: INFO 2000 or ISYS 2006. Assessment: Written and practical assignments and written exam.

The syllabus covers applications in business and management, managing information technology, planning and implementation of information systems, end user computing, system approach, strategic planning, operations management, control and audit and quality management, strategic information systems.

ISYS 3012 Project Management and Practice

4 credit points. **Semester:** 1. **Classes:** 2hr lec, 1 prac & 1 hr independent study/wk. **Qualifying:** INFO 2000. **Assessment:** One 2hr examination, written assignments.

This unit of study covers the factors necessary for successful management of system development or enhancement projects. Both technical and behavioural aspects of project management are discussed with a focus on management of development for enterprise-level systems. Major topics include managing the system life cycle, system and database integration issues, network and client-server management, system performance evaluation, managing expectations of team members, cost-effectiveness analysis, and change management.

ISYS 3015 Analytical Methods for IS Professionals

4 credit points. **Semester:** 1. **Classes:** 2hr lec & 1 prac/wk. **Prerequisite:** 16 credit points of Intermediate or Senior units of study. **Qualifying:** ISYS 2006 and INFO 2000 and [ARIN 1000 or ENGL (1050 or 1005) or LNGS (1001 or 1002 or 1005) or ECOF (1001 or 1002)]. **Assessment:** One 3hr examination, written assignments.

NB: Enrolment Restriction: Entry is restricted to students who have a credit or better in at least one of the Qualifying units. Alternatively, for 2002 only, a student who has completed ISYS 2006 with a Credit or better, and 24 credit points of Intermediate units of study including 8cp from INFO or ISYS units of study will be also be admitted to the unit.

A collection of different methods for collecting and analysing information will be studied in the context of a systems thinking approach to investigative research. These approaches include participative methods, surveys, focus groups, controlled experiments and case studies.

ISYS 3113 Arts Informatics Systems

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Qualifying:** INFO 2005. **Assessment:** Examination and written assignments.

A variety of topics relevant to the text and image processing needs of the Arts and Social Sciences such as scripting languages, text retrieval, natural language processing, applied artificial intelligence, and multi media techniques in the context of data distributed in databases across networks.

ISYS 3207 Information Systems Project

8 credit points. **Semester:** 2. **Classes:** 1 hr lec/wk. **Prerequisite:** INFO 3005 or ISYS 3000 or 3012 or 3113. **Qualifying:** ISYS 3015 or ARIN 2000. **Assessment:** Written project report and presentation.

The objective is to enable students to design and implement a solution to a complex data processing problem or to investigate an issue in the management or development of a real-world information system. The project consists of students working together in teams to complete a task of adequate complexity that draws on their education in Information Systems to date. The project will either investigate an issue that is important to the successful practice of the management of Information systems including topics in such areas as end-user computing, IS methodologies, business process re-engineering. Alternatively, it will follow through the life-cycle of systems creation and development and delivery using the traditional tools and methods of the systems analyst.

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: 8 credit points of research preparation, covering a literature review and research plan, 16 credit points of research project, and 24 credit points of coursework units of study, which, except with permission of the School and Faculty, must all be from 4000-level units of study which are in the subject area of Computer Science (that is, units of study which have codes starting with COMP or INFO).

Note that the Faculty requires that Honours be completed in two consecutive semesters of full-time study, or four consecutive semesters of part-time study; individual results for separate units of study will not appear on the transcript, instead a single final grade and mark is given for the Honours course, as determined by the Faculty based on performance in Honours and in prior undergraduate study.

COMP 4301 Algorithms (AdvancedTopic)

4 credit points. **Semester:** 1, 2. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk. **Prerequisite:** Credit in COMP 3001. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination. *NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.*

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Algorithms. This would build on the broad survey provided by COMP 3001. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: parallel algorithms, randomised algorithms, approximation algorithms for intractable problems.

COMP 4302 Artificial Intelligence

4 credit points. **Semester:** 1, 2. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk. **Prerequisite:** Credit in COMP 3002. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination. *NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.*

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Artificial Intelligence. This would build on the broad survey provided by COMP 3002. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: Machine Learning, Natural Language Processing, Non-monotonic reasoning.

COMP 4304 Graphics (AdvancedTopic)

4 credit points. **Semester:** 1, 2. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk. **Prerequisite:** Credit in COMP 3004. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination. *NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.*

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Graphics. This would build on the broad survey provided by COMP 3004. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: three-dimensional rendering, constraint-maintenance image systems.

COMP 4305 Networked Systems (AdvancedTopic)

4 credit points. **Semester:** 1, 2. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk. **Prerequisite:** Credit in COMP 3007. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination. *NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.*

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

COMP 4307 Distributed Systems (AdvancedTopic)

4 credit points. **Semester:** 1, 2. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk. **Prerequisite:** Credit in COMP 3007 or Credit in COMP 3009. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination. *NB; Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.*

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

Example topics include: electronic commerce, distributed operating systems, security in distributed systems.

COMP 4309 Object-Oriented Systems (Advanced Topic)

4 credit points. Semester: 1, 2. Classes: 2hrs lec & 1 hr tutorial or lab/wk. Prerequisite: Credit in COMP 3008. Assessment: Written and practical assignments (individually and/or in small groups) and a final examination. NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.

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

COMP 4400 Operating Systems (AdvancedTopic)

4 credit points. Semester: 1, 2. Classes: 2hrs lec & 1 hr tutorial or lab/wk. Prerequisite: Credit in COMP 3009. Assessment: Written and practical assignments (individually and/or in small groups) and a final examination. NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Operating Systems. This would build on the broad survey provided by COMP 3009. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: system administration, process group infrastructure, modern kernel internals.

COMP 4401 Software Engineering (AdvancedTopic)

4 credit points. Semester: 1, 2. Classes: 2hrs lec & 1 hr tutorial or lab/wk. Prerequisite: Credit in COMP 3100. Assessment: Written and practical assignments (individually and/or in small groups) and a final examination. NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.

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

COMP 4402 User Interfaces (AdvancedTopic)

4 credit points. Semester: 1, 2. Classes: 2hrs lec & 1 hr tutorial or lab/wk. Prerequisite: Credit in COMP 3102. Assessment: Written and practical assignments (individually and/or in small groups) and a final examination. NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.

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

COMP 4403 Computation Theory (Advanced Topic)

4 credit points. Semester: 1, 2. Classes: 2hrs lec & 1 hr tutorial or lab/wk. Prerequisite: Credit in COMP 2003 and 8 credit points of Intermediate Mathematics. Assessment: Written and practical assignments (individually and/or in small groups) and a final examination. NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.

To develop understanding of the theoretical limits of computation, and the proof techniques used to show these limits in specific problems. Syllabus Summary: Computability; models

of computation and their relationships; recursive sets and recursively enumerable sets; Godel incompleteness theorem; halting problem; complexity theory; speed-up theorems; reductions; NP-completeness.

COMP 4404 Scientific Visualisation (Advanced Topic)

4 credit points. Semester: 1, 2. Classes: 2hrs lec & 1 hr tutorial or lab/wk. Prerequisite: Credit in one of: COMP 3001 or COMP 3304 or PHYS 3303. Assessment: Written and practical assignments (individually and/or in small groups) and a final examination.

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

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

COMP 4601 Advances in Computer Science 1

4 credit points. Semester: 1, 2. Classes: 2hrs lec & 1 hr tutorial or lab/wk. Prerequisite: Permission of Head of Department. Assessment: Written and practical assignments (individually and/or in small groups) and a final examination.

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

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

COMP 4602 Advances in Computer Science 2

4 credit points. Semester: 1, 2. Classes: 2hrs lec & 1 hr tutorial or lab/wk. Prerequisite: Permission of Head of Department. Assessment: Written and practical assignments (individually and/or in small groups) and a final examination.

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

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

COMP 4603 Advances in Computer Science 3

4 credit points. Semester: 1, 2. Classes: 2hrs lec & 1 hr tutorial or lab/wk. Prerequisite: Permission of Head of Department. Assessment: Written and practical assignments (individually and/or in small groups) and a final examination.

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

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

COMP 4604 Advances in Computer Science 4

4 credit points. Semester: 1, 2. Classes: 2hrs lec & 1 hr tutorial or lab/wk. Prerequisite: Permission of Head of Department. Assessment: Written and practical assignments (individually and/or in small groups) and a final examination.

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

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

INFO 4300 Information Systems (AdvancedTopic)

4 credit points. Semester: 1, 2. Classes: 2hrs lec & 1 hr tutorial or lab/wk. Prerequisite: Credit in ISYS 3000. Assessment: Written and practical assignments (individually and/or in small groups) and a final examination.

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

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

INFO 4306 Database Systems (Advanced Topic)
4 credit points. Semester: 1,2. Classes: 2hrs lec & 1 hr tutorial or lab/wk. Prerequisite: Credit in INFO 3005. Assessment: Written and practical assignments (individually and/or in small groups) and a final examination. *NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.*

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

INFO 4901 Research Preparation
8 credit points. Semester: 1,2. Prerequisite: Permission of Head of Department.

NB: Permission required for enrolment.

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

- A literature review:

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

- Research Plan and Project requirements:

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

- Initial progress:

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

INFO 4902 Research Project
16 credit points. Semester: 1,2. Prerequisite: Permission of Head of Department.

NB: Permission required for enrolment.

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

INFO 4999 Computer Science Honours Result
No credit points. Semester: 1,2. Prerequisite: Permission of the Head of Department.

NB: Permission required for enrolment.

All students in Computer Science Honours must enrol in this non assessable unit of study in their final semester.

Information Systems Honours

Information Systems Honours consists of coursework and a project. The project involves a substantial development or investigation task generally in support of the department's research effort. It provides training in investigating the history of

the body of knowledge that encompasses a conceptual problem space, defining a complex task to tackle the problem, and then taking the task to completion. Students receive an education in moving through a problem from its inception to its completion so that they gain the confidence and experience to tackle independently significant research and industrial projects. Research areas in the School include natural language processing, data mining, systems methodologies and Workflow methods. Students are required to participate in School seminars as part of their coursework and in all other activities of the School. They are provided with office accommodation and laboratory facilities and may be employed for a few hours per week in undergraduate teaching.

For further details consult the School Handbook and the Honours Guide Book.

■ School of Geosciences

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

Geography

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

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

Tutorials and practical work

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

Assigned work and examinations

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

Conducted field excursions

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

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

Geography handbook

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

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

Geography Junior units of study

Geography offers two Junior units of study: Geography 1001 in the February Semester and Geography 1002 in the July Semester. Both units of study consist of three lectures and three hours of laboratory work a week. Morning lectures are repeated in the afternoon. All students do the same unit of study.

GEOG 1001 Biophysical Environments

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

This unit of study provides an introduction to the earth's biophysical environments. It begins by considering the earth's place in the universe, its origin and its development, and the nature and evolution of the earth's structure. This is followed by an investigation of the evolution of the earth's physical environment and its development to its present stage over time. With this background, the unit of study goes on to examine the earth's hydrosphere and atmosphere and the major landforms produced by the interaction of atmospheric and ocean processes with the earth's surface, including fluvial, arid, coastal and glacial systems.

Practical: Field excursion one half day/sem

GEOG 1002 Human Environments

6 credit points. Prof. Connell & Dr W Pritchard. **Semester:** 2. **Classes:** 3 lec & 3hr prac/wk. **Assessment:** One 2hr exam, 2000w essay, prac exercises.

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

Geography Intermediate units of study

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

Geomorphology - Geography 2001, 2002, 2302 and 2303

Environmental - Geography 2101 and 2102

Human - Geography 2201 and 2202

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

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

To complete Intermediate Geography, a student is advised to select at least two Intermediate Geography units of study. Each unit of study is worth 8 credit points. A student would normally select two sequential units of study from one of the three streams (Geomorphology, Environmental, Human). However, students may vary the sequence of units of study between streams and options within units of study, with the permission of the Head of Department. Not all units of study may be offered in any given year.

Special Geography Sequence (Science students)

A candidate who has completed 36 Junior credit points including 12 Junior credit points of Mathematics and 12 Junior credit points of Physics or Chemistry and who has not taken Geography 1001 or 1002 may apply to the department for permission to enrol in any Intermediate Geography unit of study.

The Department of Geography is not normally prepared to support such applications to enrol in Intermediate Geography units of study from persons other than those who, in their first year of studies, have completed six Junior units of study above the concessional pass grade and have not subsequently failed in any Intermediate unit of study.

GEOG 2001 Processes in Geomorphology

8 credit points. Associate Professor D Dragovich and others. **Semester:** 1. **Classes:** 3 lec & 5 prac or field/wk. **Prerequisite:** 36 credit points of Junior units of study, including GEOG 1001 or ENV11001 or 1002.

Students enrolled in the Bachelor of Resource Economics should have 36 credit points from Junior units of study in Biology, Chemistry and Mathematics. **Assessment:** One 2hr exam and 1500w essay or prac papers.

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

GEOG 2002 Fluvial and Coastal Geography

8 credit points. Dr P Cowell & others. **Semester:** 2. **Classes:** 3 lec & 5 prac or field/wk. **Prerequisite:** 36 credit points of Junior units of study, including GEOG 1001 or ENV11001 or 1002. Students enrolled in the Bachelor of Resource Economics should have 36 credit points from Junior units of study in Biology, Chemistry and Mathematics. **Prohibition:** May not be counted with GEOG 2302 or 2303 or MARS 2002. **Assessment:** One 2hr exam, 1500w essay or prac reports.

NB: Other Information: As for GEOG 2001

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

GEOG 2101 Environmental Change and Human Response

8 credit points. Associate Professor D Dragovich & Dr Chapman. **Semester:** 1. **Classes:** 3 lec & 2 prac & field/wk. **Prerequisite:** 36 credit points of Junior units of study, including GEOG 1001 or 1002 or ENV11001 or 1002. **Assessment:** One 2hr exam, 2000w essay or prac reports.

NB: Other Information: As for GEOG 2001

Environmental Geography stream: Environmental change occurs at time scales from seconds to centuries or longer, from the sudden and catastrophic to gradual transformations barely noticeable at human time scales. Some kinds of environmental change are largely caused by humans, but in other cases humans are helpless before the uncontrollable forces of nature.

Environmental change is explored in all of these categories.

Consideration is given to land degradation problems such as soil erosion and desertification, and how humans are both implicated in these problems and respond to them. We also study environmental hazards like floods and bushfires, and how we may (or in some cases may not) effectively manage them.

Included in the unit of study will be a variety of techniques for the analysis of environmental problems.

GEOG 2102 Resource and Environmental Management

8 credit points. Dr Hirsch and Dr McManus. **Semester:** 2. **Classes:** 3 lec & 5hr tut or prac or fieldwork/wk. **Prerequisite:** 36 credit points of Junior units of study, including GEOG 1001 or 1002 or ENV11001 or 1002. **Assessment:** One 2hr exam, 2000w essay, tut papers, prac and fieldwork reports/s.

NB: Other Information: As for GEOG 2001

Environmental Geography stream: This unit of study forms part of the Environmental Geography and Resource Management stream which is designed to evaluate human interaction with the biophysical environment and use of the earth's surface and its resources. Emphasis is upon human impacts on environments through social, economic and political processes and through deliberate decision making and management. Policy responses are considered at a range of scales. The unit of study examines the nature and characteristics of selected resource processes with reference to Australian (and, as appropriate, other national and international) contexts, and, on a more global and regional scale, focuses on the changing relationship between people and environments in tropical Asia and the Pacific.

GEOG 2201 Cultural and Economic Geography

8 credit points. Prof Connell, Dr W Pritchard. **Semester:** 1. **Classes:** 3 lec & 5hr tut or prac or fieldwork/wk. **Prerequisite:** 36 credit points of Junior units of study, including GEOG 1001 or 1002 or ENV11002 or ECOP 1001 or 1002. **Assessment:** One 2hr exam, two 2000w essays, tut papers, prac and fieldwork reports.

NB: Other Information: As for GEOG 2001

Human Geography stream: This unit of study exams the spatial processes that underpin cultural and economic activity. Two themes dominate: firstly cultural and economic activities are defined by multiple sets of spatial relations; and secondly, that economic and cultural processes and practices are by necessity inter-related. These arguments provide the entry points for debate on the social construction of economic and cultural spaces, with

specific attention to topics including urban change and gentrification; ethnicity; the geographies of global financial flows; and the development of industrial clusters. The unit also develops arguments relating to the economic and cultural geographies of food production and consumption.

GEOG 2202 Urban and Political Geography

8 credit points. Lecturers to be advised. Semester: 2. Classes: 3 lec & 5hr tut or prac or fieldwork/wk. Prerequisite: 36 credit points of Junior units of study, including GEOG 1001 or 1002 or ENV11002 or ECOP 1001 or 1002. Assessment: One 2hr exam, two 2000w essays, tut papers, prac and fieldwork reports.

NB: Other Information: As for GEOG 2001.

Human Geography stream: This unit of study starts by examining urban processes and problems in developed and developing countries. For developed countries, the focus is on urban economies, suburbs, urban politics, and the nature of the built environment. For developing countries, urbanisation trends and the ideologies of planning policies are considered. The unit of study considers the political constructions of space, with specific reference to issues of sovereignty and the changing character of political borders and divisions. Topics include diasporas, refugee policies, the role of culture in nationalism, and global geopolitical trends.

GEOG 2302 Fluvial Geomorphology

6 credit points. Lecturers to be advised. Semester: 2. Classes: 3 lec, 3 prac & 1 tut/wk. Prerequisite: GEOG 2001 or 36 credit points of Junior units of study including GEOG 1001 or ENV11001 or 1002. Students in the Bachelor of Resource Economics should have 36 credit points of Junior units of study in Biology, Chemistry and Mathematics. Prohibition: May not be counted with GEOG 2002 or 2303. Assessment: One 2hr exam, one essay, one project.

NB: Other Information: as for GEOG 2001.

This unit will provide an introduction to fluvial processes and morphology, with particular reference to the Australian environment. The unit will take a holistic view of the fluvial system, emphasising that stream characteristics are an outcome of interrelated variables operating at different scales within the catchment. It will include a description of catchment characteristics; water and sediment delivery, conveyance and influence on channel morphology; floods and floodplains; natural and anthropogenic channel change; groundwater issues; and estuarine sedimentation.

GEOG 2303 Fluvial and Groundwater Geomorphology

8 credit points. Dr M. Neave, Dr R.W. Vervoort. Semester: 2. Classes: 3 lec, 3 prac & 2 fieldwork/wk. Prerequisite: GEOG 2001 or 36 credit points of Junior study including GEOG 1001 or ENV11001 or 1002. Students in the Bachelor of Resource Economics should have 36 credit points of study in Biology, Chemistry and Mathematics. Prohibition: May not be counted with GEOG 2002 or GEOG 2302. Assessment: One 2 hr theory exam, 1 essay, 2 projects.

NB: Other Information: as for GEOG 2001

This course will provide an introduction to fluvial processes, morphology and groundwater hydrology, with particular reference to the Australian environment. The course will take a holistic view of the fluvial system, emphasising that stream characteristics are the result of many factors operating at different scales across the entire catchment. An introduction in groundwater hydrology will introduce aquifer flow and water quality concepts as well as the interaction between aquifers and the over- and underlying strata. A modelling project using MODFLOW will be given to study the effects of a contamination on a groundwater supply.

Geography Senior units of study

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

Geomorphology - Geography 3001 and 3002

Environmental - Geography 3101 and 3102

Human - Geography 3201, 3202 and 3302

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

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

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

Geography Senior unit of study Combinations

48 credit points

Students may elect to do four Senior units of study (12 credit points each) in the one year, giving a total of 48 credit points.

Such students will be required to enrol in two of the Senior Geography Streams, Geomorphology, Environmental or Human. Those who have passed at least two of the Senior Geography units of study at Honours level may proceed to an appropriate unit of study in Geography Honours. Those choosing physical honours topics must have majored in the Geomorphology stream units of study.

GEOG 3001 Coastal Environments and Dynamics

12 credit points. Assoc. Prof. Short, Dr Cowell. Semester: 1. Classes: 3 lec & 6hr prac or field/wk. Prerequisite: GEOG 2001 or 2002 or 2101 or 2302 or 2303 or MARS 2002. Assessment: One 2hr exam, two 1500w essays, prac reports.

Senior Geomorphology stream

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

Practical: Field excursion one 1-day, two 3-day

GEOG 3002 Environmental Geomorphology

12 credit points. Assoc. Prof. D Dragovich, Dr S Gale. Semester: 2. Classes: 3 lec & 6 prac or field/wk. Prerequisite: GEOG 2001 or 2002 or 2101 or 2302 or 2303. Assessment: One 2hr exam, two 1500w essays, prac and field reports.

Senior Geomorphology stream

One component of this unit of study deals with the effects of weathering on the physical and the built environment, and considers the relationship between soils and landforms. The other component deals with environmental change in Australia and the interaction of people with the Australian environment.

GEOG 3101 Catchment Management

12 credit points. Lecturers to be advised. Semester: 1. Classes: 3 lec & 1 tut & 8 prac or field/wk. Prerequisite: GEOG 2001 or 2002 or 2101 or 2302 or 2303 and GEOG 2102 or 2201 or 2202. Assessment: One 2hr exam, two 1500w essays.

Senior Environmental stream

The unit of study is concerned with understanding the functioning of river catchments from both natural science and social science perspectives, at a variety of scales. The catchment as a morphodynamic process-response system is addressed with an emphasis on the relationships between processes and landform entities. Similarly, relationships within social, economic, and political systems are explored within the catchment context, with particular emphasis on the interactions between the social system and bio-physical system. Empirical context for the unit will primarily be drawn from the Murray-Darling, Mekong, and Hawkesbury-Nepean catchments. Fieldwork in the latter is integral to the unit of study.

GEOG 3102 Coastal Management and GIS

12 credit points. Dr Chapman, Dr Cowell. Semester: 2. Classes: 3 lec & 6 prac or field/wk. Prerequisite: GEOG 2001 or 2002 or 2101 or 2302 or 2303 or MARS 2002. Assessment: One 2hr exam, two 1500w essay, prac or reports.

Senior Environmental Geomorphology stream

The coastal zone provides an ideal area for the study of resources management, since virtually all the central concerns of resources management are exemplified in that zone. Hence, the structure of this unit of study will be determined by these concerns, with the application to the coastal zone providing the central unifying theme. The unit of study first addresses critical physical systems and natural hazards in the coastal zone, and the ways in which decisions are made about resources management. The unit of study then applies geographical information systems in environmental assessment and management of coastal drainage catchments. It focuses on the development and

application of GIS models for strategic planning and is structured around a field exercise in location-analysis within a coastal catchment. Practical work involves extensive use of computers. Practical: Field excursion one 2-day

GEOG 3201 Asia-Pacific Development

12 credit points. Prof. Connell, Dr Hirsch. **Semester: 1. Classes:** 3 lec & 9hr tut or prac or fieldwork/wk. **Prerequisite:** GEOG 2101 or 2102 or 2201 or 2202. **Assessment:** One 2hr exam, two 2000w essays, tut papers, prac and fieldwork reports.

Senior Social and Economic Geography stream

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

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

GEOG 3202 Sustainable Cities & Regional Change

12 credit points. Dr P McManus and others. **Semester: 1. Classes:** 3 lec & 9 hrs tut or prac or fieldwork or indiv. research/wk. **Prerequisite:** GEOG 2102 or 2201 or 2202. **Assessment:** One 2hr exam, two 2000w essays, tut papers, prac and fieldwork report/s.

Senior Social and Economic Geography stream: This unit of study develops the urban geography and environmental management ideas introduced in second year subjects. The focus is on the reconceptualisation of both cities and regions in order to physically change these spaces. The unit of study draws upon Australian and international examples and traces changes in ideas and physical form over time. Students completing this unit of study will have a sound understanding of urban environmental issues, current debates in urban and regional planning for sustainability and how to use GIS in urban and regional studies. Topics covered include ecological footprint analysis, transport, urban form, environmental history, government policy on cities and regions and the use of GIS in urban and regional studies.

GEOG 3302 Mining, Rural Change and Globalisation

12 credit points. Prof Connell, Dr W Pritchard and others. **Semester: 2. Classes:** 4 lec & 4 prac/wk. One 5 day field excursion. **Prerequisite:** GEOG (2001 or 2002 or 2102 or 2201 or 2202 or 2302 or 2303 or 3101) or GEOL (2002 or 2005). **Assessment:** One 2hr exam, two 2000w essays, tut papers, prac and fieldwork reports.

Senior Social and Economic Geography stream. This unit of study will provide an overview of key issues relating to the assessment of the social and economic impacts of mining and resource industries. Topics to be covered include: the economic geography of the global resources industry; Indigenous Land Rights and Native Title; regional economic analysis using input-output tables; social research on 'company town' mining environments and in fly-in fly-out mining systems, and the political geographies of contested resource ownership. The unit will be taught on the basis of two lecture/seminar presentations weekly, plus problem-solving practical classes where students will be required to critically evaluate Impact Assessment documents relating to major mining developments. The lecture/seminar presentations will each have a two hour duration and will combine formal lecture-style teaching techniques with collaborative 'roundtable' seminar discussions.

Geography Honours

Students contemplating Geography Honours will be invited to complete a preliminary registration form in the July Semester. Following the publication of the July semester Senior Geography unit of study results, those eligible students who have preregistered will be invited to formally enrol. They are required to consult the Head of Geography as soon as possible after the publication of the results concerning choice of topic and the appointment of a staff supervisor. Preliminary work should begin shortly after the publication of these results.

Honours students are required to undertake formal coursework during their first semester and to participate in seminars throughout the year as arranged. They will be required to study original problems, working as appropriate in the field, the laboratory, libraries, and in some instances in conjunction with other university or government departments. A dissertation

of not more than 20 000 words must be submitted during the second semester, followed by an examination that may include both written and oral work.

Geology and Geophysics

Location

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

Structure of units of study

Entry into Junior units of study in Geology does not require any prior knowledge of the subject. The Junior units of study provide an introduction to the earth, ocean and planetary sciences. The Intermediate and Senior Geology units of study build on the preceding coursework to present a balanced and wide ranging coverage of resource geology, environmental geology and marine geology. A degree of specialisation is built into the Senior units of study as they are designed especially for students majoring in geology, geophysics and marine science, who are proposing to pursue a career in these professions.

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

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

Geology Junior units of study

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

All Junior Geology students are required to register in the first laboratory session of each semester.

GEOL 1001 Earth and its Environment

6 credit points. Prof P Davies (Coordinator). **Semester: 1. Classes:** 3 lec & prac or tut/wk. **Assumed knowledge:** No previous knowledge of Geology assumed. **Prohibition:** GEOL 1501. **Assessment:** One 2hr exam, class and field work.

The aim of this unit of study is to provide students with an understanding of how the Earth system works, its origin, plate tectonics, surface processes, evolution of life and geologic time. The crises in resources and fossil fuel and implications for our economy will be discussed and an assessment made of our own impact on the Earth together with the role of geologists in protecting and monitoring the environment. Students will learn techniques and types of observations used to decipher the history and evolution of the Earth, and dating sediments and rocks. Laboratory classes and a one day field trip in the Sydney region will involve exercises in observing and describing Earth materials and in interpreting Earth history from geological information, including fossils and maps.

GEOL 1002 Earth Processes and Resources

6 credit points. Associate Professor Keene (Coordinator). **Semester: 2. Classes:** 3 lec & prac or tut/wk. **Assumed knowledge:** No previous knowledge of Geology assumed. **Prohibition:** GEOL 1501. **Assessment:** One 2hr exam, class and field work.

The aim of this unit of study is to examine the chemical and physical processes involved in mineral formation, the interior of the Earth, volcanoes, and metamorphism. Lectures and laboratory sessions on mountain building processes and the formation of ore deposits will lead to an understanding of the driving forces in geology. Processes such as weathering, erosion and nature of sedimentary environments are related to the origin of the Australian landscape. In addition to laboratory classes there is a weekend field excursion to the Hunter Valley. Students will be required to pay hostel accommodation for one night on the Hunter Valley excursion.

Geology Intermediate units of study

GEOL 2001 Geological Hazards and Solutions

8 credit points. Dr D Wyman. **Semester: 1. Classes:** 4 lec & 2 prac or tut/wk. **Prerequisite:** GEOL 1002 or ENV11001. A candidate who has completed 24 credit points of Junior units of study in Physics and Chemistry and who has not taken Junior Geology or ENV11001, may apply under section 1 (4) for permission to enrol in GEOL 2001. **Prohibition:** CIVL 2409. **Assessment:** Two 2hr theory, lab exam, class work, field work.

This unit expands upon the concepts introduced during the Junior units of study in Geology and uses a problem solving approach to investigate geological processes and materials that are important in Asia, Australia, and the South-West Pacific. The two main topics covered in the unit are a) the description, analysis, and remediation of sediments polluted by agricultural, industrial and urban practices; and b) the strategies used to identify, predict and mitigate the hazards associated with volcanism and earthquakes. The unit of study has an emphasis on developing a thorough knowledge of the analytical techniques and methods applied to evaluating the hazards associated with these phenomena as well as providing students with the fundamental geochemical and geological knowledge required to interpret the data collected during these investigations. In addition to lectures and practicals students are required to attend a compulsory field trip and may choose between two alternative field trips, either a) the New Zealand Field Trip which gives students a first-hand experience of volcanism and seismic activity at an active plate margin; or b) the Rivers and Estuaries of Sydney which introduces students to the sampling and mapping techniques used to evaluate geochemical pollution and remediation strategies.

GEOL 2002 Resource Exploration and Management

4 credit points. Dr Birch. **Semester:** 2. **Classes:** 2 lec & 1 prac or tut/wk. **Prerequisite:** GEOL 2001. **Prohibition:** CIVL 2409. **Assessment:** One 2hr exam, class work, field work.

Materials sourced from mining and fossil fuels are important to the Australian economy and essential parts of our everyday lives. Geological concepts developed in Geology 2001 are used as a basis to understand the basic physical, chemical and biological processes that formed metamorphic rocks, petroleum, coal and ore deposits in Australia. The unit of study also introduces students to geophysics and geophysical techniques used in resource management.

In addition to laboratory classes there will be a compulsory five-day field trip to near Yass, where students will be instructed in methods of geological mapping and the identification of geological objects in the field. Students will be required to pay hostel accommodation for five nights.

GEOL 2003 Fossils and Time

4 credit points. Semester: 2. Classes: 2 lec & 1 prac or tut/wk. Prerequisite: 24 credit points of Science units of study. Prohibition: CIVL 2409. Assessment: One 2hr theory, class work.

This palaeontology and stratigraphy unit of study is aimed at geoscientists; archaeologists, biologists, marine and environmental scientists who use fossils or stratigraphic data to determine ages, environments or evolutionary lineages. It provides an overview of fossil biodiversity, concentrating on invertebrate animals but also covering vertebrates, plants and microorganisms, with the emphasis on those groups that are most environmentally or stratigraphically useful. It also considers the main methods of stratigraphic correlation and age determination, concentrating on litho- and bio-stratigraphy but also covering the more modern techniques of chemo-, magneto- and sequence-stratigraphy as well as radiometric age dating.

GEOL 2004 Environmental Geology and Climate Change

4 credit points. Dr Hughes and Dr Gavin Birch. Semester: 1. Classes: 3 lec/wk & fieldwork. Prerequisite: 24 credit points of Science units of study. Assessment: One 2hr exam and assignments.

The Earth sciences provide an essential framework for understanding environmental changes that arise from short-term and long-term geological processes. This unit of study introduces students to a range of geological phenomena that can impact detrimentally on society using examples drawn from the urban areas and national parks in New South Wales. These phenomena have a variety of impacts ranging from the level of nuisance to disastrous. As the welfare of much of the world's population is sensitive to climate change, a component of the course will include an examination of global climate change over a variety of timescales ranging from millions of years to tens of years. The record of recent climate change and projections of future climate change will be reviewed in the context of their natural and human causes.

GEOL 2005 Environmental Geology: Resources

4 credit points. Professor Iain Mason. **Semester:** 2. **Classes:** 3 lec/wk & fieldwork. **Prerequisite:** 24 credit points of Science units of study. **Assessment:** One 2hr exam.

Australia is a major primary producing nation and mining accounts for a substantial part of its export income. This segment

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

Geology Senior units of study

Geology & Geophysics offers six units of study in five streams focussed on the vocational training needs of graduates seeking employment in Mineral Exploration as geologists or geophysicists, in Petroleum Exploration as geologists or geophysicists, and in Marine Geology. The streams and their recommended minimum units of study are:

Mineral Exploration-geology: GEOL 3101, GEOL 3102 and GEOL 3103

Mineral Exploration-geophysics: GEOP 3201, GEOP 3202 and GEOL 3101

Petroleum Exploration-geology: GEOL3101, 3102 and GEOP 3201

Petroleum Exploration-geophysics: GEOP 3201, GEOP 3202 and GEOL 3102

Marine geology and geophysics: GEOL 3102, GEOL 3104 and GEOP 3201

Students that desire a general background in Geology and Geophysics for a career in government, education, resources law, commodity economics and management, or environmental earth science can construct their own stream consisting of any grouping of units of study. Each unit of study consists of three lectures and the equivalent of nine hours assigned work per week, which may comprise practical classes, seminars, individual course work and/or field work. Some units of study have compulsory field excursions, which are commonly held in semester breaks.

To complete Senior Geology & Geophysics, a student must complete a minimum of two units of study in either Geology or Geophysics (24 credit points). A student would normally select at least two sequential units of study from the five streams, however, students may vary the sequence of units of study between streams and options within units of study with the permission of the Head of School. Students may elect to complete four Senior units of study (12 credit points each) in one year, giving a total of 48 credit points.

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

GEOL 3101 Crustal Growth and Recycling

12 credit points. Dr Geoffrey Clarke and Dr Patrice Rey. Semester: 1. Classes: 12 hours of lectures & practical classes per wk, one 12-day field excursion. **Prerequisite:** GEOL 2002. **Prohibition:** May not be counted with GEOL 3001. **Assessment:** Two 2 hr theory & laboratory exams, classwork and field exercises.

One half of this unit will study the major tectonic processes that shape the Earth's surface and their products. Tectonic, metamorphic and structural studies provide students with a more detailed understanding of global tectonic theory. Students will study rocks from active tectonic environments, the structure of the crust in different tectonic settings, processes that control mountain building, and the effects of modern and ancient plate boundaries on the evolution of the continents. The application and interpretation of remote sensing techniques in these studies will also be covered in computer-based practical exercises that use a mixture of Landsat TM, radiometric and magnetic databases.

The other half of this unit provides a detailed, process-oriented understanding of the origin and evolution (petrogenesis) of Earth's crust. It will show how thin sections and hand samples of igneous rocks can be used in conjunction with chemical and isotopic data to illustrate magmatic processes. An optional twelve-day field school will be run to New Zealand, where students will examine exciting and, in many cases, active examples of developing geological phenomena that are only preserved as ancient examples in Australia. Study topics include active volcanic processes in the North Island, Neotectonic

structures and crustal uplift, and features produced by active and Cretaceous plate convergence in the South Island.

GEOL 3102 Earth's Evolution and Energy

12 credit points. Dr Gavin Birch. Semester: 1. Classes: 12 hours of lectures & practical classes perwk, one weekend field excursion. Prerequisite: GEOL 2002 or 2003 or 8 credit points of Intermediate Biology, Environmental or Marine Science. Prohibition: May not be counted with GEOL 3002,3004 and/or 3006. Assessment: Two 2hr exams, assignment and classwork.

One half of this unit is aimed at geoscientists, biologists, environmental and marine scientists who are interested in the evolution of life, how it has been constrained by changing environmental conditions, and how it provides a basis for assessing modern environmental problems such as 'nuclear winter', global warming, the ozone hole and biodiversity destruction. It includes a seminar series focussing on the major events in the history of life and the earth, including mass extinctions and explosive radiations and their evolutionary and ecological influences and outcomes. This emphasises critical reading of scientific papers, short oral presentations and group discussions. An accompanying lecture and practical component will focus on historical geology, particularly of the Australian continent, covering the changing nature of Earth's geological record and surface environment through time. A weekend field excursion to examine a mass extinction horizon is also included.

The other half of this unit provides a comprehensive introduction to petroleum exploration. It acquaints students with tools currently being used in the industry and is underpinned by modern concepts of basin architecture and sequence stratigraphy. Exploration techniques include the principals and practice of electrical logging, source rock evaluation and reservoir quality assessment. The controlling influence of basin architecture is examined in terms of critical factors such as hydrocarbon source, migration and entrapment, whereas the modern concepts of sequence stratigraphy and seismic stratigraphy are used to demonstrate climatic and tectonic control. This unit of study uses a problem solving approach to bring the theoretical and practical issues of petroleum exploration into clear focus.

GEOL 3103 Ore Deposit Geology & Structural Mapping

12 credit points. Dr Derek Wyman and Dr Patrice Rey. Semester: 2. Classes: 12 hours of lectures & practical classes perwk, two field excursions. Prerequisite: GEOL 2002. Assessment: Two 2 hr theory & laboratory exams, class work and field reports.

One half of this unit provides an introduction to the geology of metallic ore deposits. Deposits will be examined in terms of their geographic and tectonic distribution, physical and geochemical characteristics, genesis, and related exploration criteria. General metallogenic principals will be emphasised through the examination of representative ore deposit subtypes including: magmatic Cr-PGE-Ni-Cu; volcanogenic and sedimentary Cu-Pb-Zn massive sulphide; lode gold; Mississippi Valley type Pb-Zn; and Cu-Mo-Au porphyry. Laboratory classes will include reflected and transmitted light microscopy of ores and associated rock types, along with hand specimen assessment; evaluation of geochemical data; and a synthesis of Global to Local exploration methods. In addition to laboratory classes there will be a five-day field excursion to an area of known sub-surface mineralisation, close to active mining operations. There, students will plan and execute basic geological, magnetic, gravimetric, electro-magnetic and electrical prospecting surveys. Data collected in the field will be analysed both on-site and in the laboratory. Students will be required to pay hostel accommodation for five nights.

The other half of this unit will give students practical experience in advanced structural analysis. It examines aspects of structural geology that characterise the tectonic setting and evolution of various sedimentary basins, integrating geological models that assist in the search for petroleum resources. It also examines current models proposed for the origin and evolution of multiply deformed gneiss terrains in different tectonic settings and shows how to combine different types of both field and laboratory data to develop structural models for these terrains. A twelve-day field trip will be run between Semesters 1 and 2 to central Australia (Alice Springs), where students will be instructed in methods of geological mapping and map interpretation in deformed and metamorphosed terranes. Students will be required to pay hostel accommodation for this excursion, and the field trip may involve camping.

GEOL 3104 Sedimentary Processes

12 credit points. A/Prof Jock Keene and Dr Michael Hughes. Semester: 2. Classes: 12 hours of lectures & practical classes per wk, two weekend field excursions. Prerequisite: GEOL 2001 or 8 credit points of Intermediate Marine Science. Assessment: Two 2 hr theory & laboratory exams, assignment and class work.

The first half of this unit provides a detailed understanding of the physical processes responsible for producing sedimentary textures, bed-forms and structures observed in both modern and ancient depositional environments. The theory content of the course is divided into three themes. The fluid dynamics theme addresses boundary layer processes, in particular, turbulence and shear stress production at the fluid/sediment boundary. Both unidirectional (currents) and oscillatory (waves) flows are considered. The sediment dynamics theme describes the mechanics of sediment entrainment, transport and deposition for both cohesionless (sandy) and cohesive (muddy) sediments. The final theme explains how the interaction of fluid and sediment dynamics produces the wide variety of bedforms and structures observed in both modern sediments and ancient sedimentary rocks. The practical content of the course will develop student's skills in field experimentation and sampling, and the quantitative interpretation of physical processes from the study of sedimentary textures and structures. A weekend field excursion forms part of the practical program, and students will be required to cover the cost of hostel accommodation for one night.

The second half of this unit examines the interaction of physical, chemical and biological processes active on, and in, the sea floor of Planet Earth. A variety of continental margins will be compared together with the deep sea floor. Samples from the shelf, slope and deep-sea will enable examination of the role of plants and animals in modifying sediment texture and composition, unravelling the history of how sediments became rocks, and enable an understanding of how and why ocean basin sedimentary deposits have changed through time. The past 200 million years will be analysed using Ocean Drilling Program data. The aim of this module is to provide the student with skills to analyse sea floor environments, sediments and rocks and interpret a variety of geological, geophysical, oceanographic and biological data. Laboratory work will emphasise both techniques of sediment/rock analysis and interpretation of data from direct sampling. Includes a one day excursion on Sydney Harbour.

GEOP 3201 Modelling Earth Processes

12 credit points. Dr Dietmar Muller and Dr Michael Hughes. Semester: 1. Classes: 12 hours of lectures & practical classes perwk. Prerequisite: 6 credit points of Junior Mathematics and 16 credit points of Intermediate Science units of study. Prohibition: May not be counted with GEOP 3001, 3002 and 3004. Assessment: Two 2hr theory & laboratory exams, assignment and class work.

This unit of study is aimed at applying computational methods to modelling Earth processes. Complex links among deep Earth processes, tectonics, and surface processes control the long-term evolution of the Earth. Plate tectonic processes in the ocean basins and margins control the production of magma and the destruction of crust, which collectively lead to changes in sea level, geochemistry and sedimentation, and drive the formation of basins and mountain belts with associated natural resources. Subject to rapid change within this system are the Earth's coastlines, which are vulnerable to changes in sea level and ocean currents, causing erosion/sedimentation or flooding. This unit bridges the gap between solid Earth and surface processes by building on the similarity in computational methods common to many aspects of analysing/modelling the Earth system. Our objective is to convey the basics of data collection, time series (harmonic and spectral) analysis, and filtering, as well as forward modelling of solid Earth and surface physical processes, with an emphasis of data collected by remote sensing and at sea. As 70% of the Earth's surface is covered by water, marine processes are highlighted, including the formation of sedimentary basins and hydrocarbon resources. The unit is relevant to all students interested in using computational methods to learn how the Earth works.

GEOP 3202 Geophysical Exploration

12 credit points. Prof. Iain Mason. Semester: 2. Classes: 12 hours of lectures & practical classes per wk, one 5-day field excursion. Prerequisite: 16 credit points of Science units of study. Prohibition: May not be counted with GEOP 3003,3005 and 3006. Assessment: Two 2hr theory & laboratory exams, assignment and class work. One half of the unit examines the use of geophysical techniques to map high value sites with minimum disruption. Immediate targets will include archaeological digs, and other sites of high

cultural and/or commercial value that have been polluted: (1) inadvertently, as in the Murray-Darling basin; or (2) by more hostile actions, such as the planting of land mines, the construction of sub-standard factories, and poorly designed mine tailings dumps. The problems selected will be prototypes of more general mapping problems, such as that of delineating an oil reservoir. Techniques to be covered will include micro-gravity surveying, magnetism and aero-magnetism; radiometry, short- and long-range surveillance and tracking. Computer-aided design techniques, backed up by field measurements, will be used to design and cost an economical high-resolution survey of a housing area, endangered by a very old unmapped mine.

The other half of the unit will formalise the description and sampling of three kinds of fields: quasi-static (gravity / magnetic), dynamic (seismic / radar) and hydrodynamic that influence the formation and betray the presence of mineral deposits. It will also analyse the data acquisition, mapping, map enhancement and pattern recognition operations that influence their discovery. These operations include the analysis of time series in order to formally link colours, patterns and their spectra, the filtering of gravity and aero-magnetic maps to distinguish between deep and shallow exploration targets, the reconstruction of 3D images from the shadows cast by the transmission of X-rays, sound and other forms of radiation; and the use of back-scattered light, seismic and radar radiation to form 3D synthetic aperture images. In addition to laboratory classes there will be a five-day field excursion to an area of known sub-surface mineralisation, close to active mining operations. There, students will plan and execute basic geological, magnetic, gravimetric, electro-magnetic and electrical prospecting surveys. Data collected in the field will be analysed both on-site and in the laboratory. Students will be required to pay hostel accommodation for five nights.

Geology Honours

Dr Clarke

Offered: February and July.

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

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

Further details are available from the Head of School.

Geophysics Honours

Offered: February and July

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

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

Further details are available from the Head of School.

Geology & Geophysics Postgraduate Study.

Details concerning fields of postgraduate study in Geology and Geophysics may be obtained from Dr Birch or the Head of School.

H History and Philosophy of Science

History and Philosophy of Science allows students to stand back from the specialised concerns of their other subjects and gain some perspective on what science is, how it came to acquire 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. However, 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 Carlaw Building. Detailed information on courses is available either in a handbook from the unit office or electronically via the unit Web site.

The unit for History and Philosophy of Science does not have first year units of study. Students interested in related topics should consider taking the unit Concepts and Issues in Physical

Science (PHYS 1600) offered in the School of Physics. This unit serves as useful background for further studies in HPS and is offered as an Arts unit for all students, including students enrolled in the Faculty of Science.

HPSC 2001 What Is This Thing Called Science?

4 credit points. Semester: 2. Classes: 2 lec & 2 tut/wk. Prerequisite: 24 credit points of Junior units of study. This is a qualifying unit of study for Senior History and Philosophy of Science units of study. Assessment: Two in-class tests, tutorial assignments.

Based on the best-selling book of the same title, this course critically examines the most important attempts to define the 'scientific method', to draw a line dividing science from non-science and to justify the high status generally accorded to scientific knowledge.

Textbooks

Chalmers, A. What is this thing called Science? (3rd ed)

HPSC 2002 The Birth of Modern Science

4 credit points. Semester: 1. Classes: 2 lec & 2 tut/wk. Prerequisite: 24 credit points of Junior units of study. This is a qualifying unit of study for Senior History and Philosophy of Science units of study. Assessment: Two in-class tests, tutorial assignments.

An introduction to the 'scientific revolution' of the seventeenth century, often described as the most important period in the history of science and as one of the most vital stages in human intellectual history.

Textbooks

Henry, J. The Scientific Revolution and the Origins of Modern Science.

History and Philosophy of Science Senior units of study

Students wishing to major in History and Philosophy of Science in either the BSc, BA or BLibStud must take 24 credit points from the following Senior units of study.

HPSC 3001 History of Physical Sciences and Maths

6 credit points. Semester: 1. Classes: 2 lec & 2 tut/wk. Qualifying: HPSC 2001 and 2002. Assessment: Exercises, one take-home exam.

Examines some of the major episodes in the social and scientific history of the physical and/or mathematical sciences, building upon the material covered in HPSC 2002.

HPSC 3002 History of Biological/Medical Sciences

6 credit points. Semester: 2. Classes: 2 lec, 2 tut/wk. Qualifying: HPSC 2001 and 2002. Assessment: Take-home exams, tutorial work.

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

HPSC 3003 Social Relations of Science

4 credit points. Semester: 1. Classes: 1 lec & 1 tut/wk. Qualifying: HPSC 2001 and 2002. Assessment: Short essay, fieldwork reports, tutorial work.

An introduction to sociological approaches to science as an institution and the study of social influences on the production of scientific knowledge.

HPSC 3005 History/Philosophy of Medicine

4 credit points. Semester: 1. Classes: 1 lec & 1 tut/wk. Qualifying: HPSC 2001 and 2002. Assessment: Class work, essay.

An introduction to some of the major episodes in the social and scientific history of medicine, from ancient Greece to the present day.

HPSC 3007 Science and Ethics

4 credit points. Semester: 1. Classes: 1 lec, 1 tut/wk. Qualifying: HPSC 2001 and 2002. Assessment: Short essays, tutorial work.

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

HPSC 3100 Contemporary Issues in HPS

4 credit points. Semester: 2. Classes: 1 lec, 1 tut/wk. Qualifying: HPSC 2001 and 2002. Assessment: Classwork, take-home exam.

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

HPSC 3103 Philosophy of the Biological Sciences

4 credit points. Dr Griffiths. Semester: 2. Classes: 1 lec & 1 tut/wk. Prerequisite: HPSC 2001 and 2002. Assessment: One tut presentation (50%), one take-home exam.

The major philosophical debates in and about recent biological science, concentrating on evolutionary biology and genetics. Previous study in biology is not assumed.

Textbooks

Sterelny, K & Griffith, P E. Sex and Death: An Introduction to the Philosophy of Biology

HPSC 3105 Philosophy of Physics

4 credit points. Professor Huw Price (Philosophy), Professor Stephen Gaukroger (Philosophy). **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. Individual student consultation as required. **Prerequisite:** HPSC 2001 and 2002. **Prohibition:** May not be counted with PHIL 3212. **Assessment:** Take home examination.

A discussion of the main philosophical issues arising from developments in physics in the past century. The course uses texts for non-physicists and presupposes no more than an average high school background in mathematics and physics.

Textbooks

Price, H. Time's Arrow and Archimedes Point (OUP 1996);

Sklar, L. The Philosophy of Physics (Westview & OUP 1992).

HPSC 3106 Philosophy of Mathematics

4 credit points. Dr Adrian Heathcote (Philosophy). **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. Individual student consultation as required. **Prerequisite:** HPSC 2001 and 2002. **Prohibition:** May not be counted with PHIL 3219. **Assessment:** Take home examination.

An examination of contemporary problems in the philosophy of mathematics. We will look at the philosophies of mathematics known as Nominalism, Platonism, Formalism and Constructivism while also touching on the reduction of mathematics to Set Theory and the significance of the Godel and Lob theorems.

History and Philosophy of Science Honours

An Honours course in HPS is available to students of sufficient merit who have satisfied the requirements for the degree of BSc or BA or BLibStud with a major in HPS or another relevant area and to students who have satisfied the requirements for the degree of BMedSci including the HPS options in the second and third years of study.

The Honours course consists of 48 points of Honours level units of study, which must include HPSC 4106 Research Project A and HPSC 4107 Research Project B. In their final semester all students must also enrol in the zero credit point non assessable unit HPSC 4999.

Students intending to proceed to Honours or to enrol in the Graduate Diploma in Science (HPS) are strongly advised to contact the unit towards the end of the previous academic year to discuss thesis topic and supervision.

Note: Honours level (4000) units of study are available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science).

HPSC 4101 Philosophy of Science

6 credit points. **Semester:** 1. **Classes:** One 2hr sem/wk. **Prerequisite:** 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). **Assessment:** Five short written assignments, seminar participation mark.

NB: Permission required for enrolment.

This unit covers the main contemporary philosophical accounts of the nature of science. Philosophical analyses are compared with examples of actual practice in both physical and biological science.

HPSC 4102 History of Science

6 credit points. **Semester:** 1,2. **Classes:** One 2hr sem/wk. **Prerequisite:** 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). **Assessment:** Two essays, seminar participation.

NB: Permission required for enrolment.

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

HPSC 4103 Sociology of Science

6 credit points. **Semester:** 2. **Classes:** One 2hr sem/wk. **Prerequisite:** 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). **Assessment:** Essay, fieldwork report, seminar participation mark.

NB: Permission required for enrolment.

This course builds upon earlier courses introducing the sociology of science with an exploration of recent approaches in the social studies of scientific knowledge. Specific topics include the 'strong program' sociologists of knowledge and their critique of traditional philosophy of science, the counter-arguments of philosophers, anthropological approaches to science such as

ethnomethodology and 'actor-network' theory, and sociology of technology. Students evaluate the approaches by conducting their own research on specific cases.

HPSC 4104 Recent Topics in HPS

6 credit points. **Semester:** 1,2. **Classes:** One 2hr sem/wk. **Prerequisite:** 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). **Assessment:** Two essays, seminar participation.

NB: Permission required for enrolment.

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

HPSC 4105 HPS Research Methods

6 credit points. **Semester:** 1. **Classes:** One 2hr sem/wk. **Prerequisite:** 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). **Assessment:** Literature review, archival research project, seminar participation mark.

NB: Permission required for enrolment.

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

HPSC 4106 Research Project A

12 credit points. **Semester:** 1,2. **Classes:** Weekly individual supervision. **Prerequisite:** Available only to students admitted to HPS Honours and Graduate Diploma in Science (History and Philosophy of Science).

Corequisite: Must be taken in conjunction with HPSC 4107 Research Project B in the following semester. **Assessment:** Conduct of research tasks as specified by the supervisor.

NB: Permission required for enrolment.

Research into a topic in history and philosophy of science under the supervision of one or more members of the HPS staff.

HPSC 4107 Research Project B

12 credit points. **Semester:** 1,2. **Classes:** Weekly individual supervision. **Prerequisite:** Available only to students admitted to HPS Honours and Graduate Diploma in Science (History and Philosophy of Science).

Corequisite: HPSC 4999 (for Honours students only). **Assessment:** 15000 word thesis.

NB: Permission required for enrolment.

Production of an original thesis of not more than 15,000 wds under the supervision of one or more members of the HPS staff.

HPSC 4999 History & Philosophy of Science Honours

No credit points. **Semester:** 1,2. **Prerequisite:** Available only to students admitted to HPS Honours.

NB: 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.

■ Immunology

The Immunology unit of the Department of Medicine offers Introductory Immunology (IMMU 2001) at Intermediate level, Immunology (IMMU 3002) at Senior level and Immunology Honours. The Immunology unit is located in the Centenary Institute, Building 93, Royal Prince Alfred Hospital and Room 424 Blackburn Building D06. Further information from Dr Helen Briscoe, (phone (02) 9351 7308; email hbriscoe@med.usyd.edu.au) and www.med.usyd.edu.au/medicine/immunology/

IMMU 2001 Introductory Immunology

4 credit points. **Semester:** 1. **Classes:** 20hrs lec, 12hrs prac, 20hrs tut/independent study. **Qualifying:** 12 credit points of Junior Chemistry and 12 credit points of Junior Biology or, with permission of Head of Department, 24 credit points of Junior study from any of the Science Discipline Areas. **Assessment:** One 2hr theory exam (50%), one essay (20%), practical reports and tutorial contributions (30%).

NB: This is a qualifying unit of study for IMMU 3002. The completion of MBLG 2001 or 2101 or 2901 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 (10 lectures). This includes the nature of the cells and molecules that recognise antigen and how these cells respond at the cellular and molecular levels. Practical and tutorial sessions will illustrate particular concepts introduced in the lecture program. A further 10 lectures and self-directed learning sessions (directed reading and problem-based learning tutorials) will integrate this fundamental information into studies of

mechanisms of host defence against infection, transplantation and pregnancy, and dysfunction of the immune system including allergy, immunodeficiency and autoimmune diseases.

IMMU 3002 Immunology

12 credit points. Dr Helen Briscoe. Semester: 2. Classes: 3 lec, 8 prac & 1 tut/wk. Prerequisite: 8 credit points of intermediate units of study from: BCHM (2001, 2101, 2901, 2002, 2102, 2902), BIOL (2005, 2006, 2105, 2106, 2905, 2906), MBLG (2001, 2101, 2901, 2002, 2102, 2902), MICR (2001, 2901, 2002, 2902, 2003, 2004) or, with permission of Head of Department, in units not specified above. Qualifying: IMMU 2001. Prohibition: May not be counted with BMED 3003. Assessment: Two 2hr theory exams: (50%); essay, practical reports and seminar: (50%). NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study will provide a comprehensive understanding of the components and functions of the immune system at the molecular and cellular levels; the mechanisms of pathological immune processes; immune system dysfunction; and, immunological techniques used in the life sciences in clinical diagnostic and research laboratories. The components of this study unit will be taught by immunologists in the Department of Medicine, with contributions from the Centenary Institute for Cancer Medicine & Cell Biology and other invited experts in the discipline.

Immunology Honours

The Honours program in immunology provides the opportunity for full-time research on a project proposed and supervised by a staff member expert in that field. Experimental research, a literature review in essay format of the research topic, a thesis, and a seminar on the project constitutes the major part of the Honours program. Guidance in research techniques is given in training programs covering experimental design, data analysis, written and oral communication and critical appraisal of the literature. In addition, a supplementary seminar program keeps students informed and abreast of wider issues in immunology.

Students are invited to apply for Honours enrolment during semester two of the year preceding Honours. Students should consult the Honours coordinator in the first instance. A list of possible research topics is provided, and students select projects of interest, speak with prospective supervisors and apply for permission to enrol, before the end of semester two. Within the constraints of availability, an attempt is made to assign students to projects of their choice.

Usually Honours candidates will have achieved at least a credit in IMMU 3002 or BMED 3003, will have taken senior study in biochemistry, biology, cell pathology, microbiology or physiology, and, for BSc candidates, gained a Major in Immunobiology, Biochemistry, Biology, Pathology or Physiology. Usually Honours candidates will have an overall SCIWAMof65+.

H Immunobiology Major

Dr Helen Briscoe

The Immunology unit of the Department of Medicine administers the Immunobiology Major. The Immunology unit is located in the Centenary Institute, Building 93, Royal Prince Alfred Hospital and Room 424 Blackburn Building D06. Further information from Dr Helen Briscoe, (phone (02) 9351 7308; email hbriscoe@med.usyd.edu.au) and www.med.usyd.edu.au/medicine/immunology/

A Major in Immunobiology requires successful completion of 12 credit points of Senior study in Immunology plus 12 credit points from the elective Senior units of study in biochemistry, molecular biology and genetics, microbiology, pathology or physiology. Participants in the Immunobiology major will select an accompanying senior unit according to their particular interest. Concurrent study in these life science disciplines will add a depth of understanding in a particular aspect of immunology. Participants are invited to consult with Helen Briscoe and with elective unit of study coordinators 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.

■ Marine Science

The Marine Studies Centre offers Intermediate, Senior and Honours units of study of a transdisciplinary nature in the marine

sciences. Staff from the School of Biological Sciences and the School of Geosciences teach in the undergraduate program.

MARS 2001 Introductory Marine Science A

4 credit points. Semester: 1. Classes: 3 lec & 1 tut/wk. Prerequisite: 24 credit points of Junior units of study from Science Discipline Areas. This is a qualifying unit of study for MARS 3001 and 3002. Some options in Senior Marine Science have additional prerequisites. Assessment: One 2hr exam, classwork.

Introduction to oceanography and its history; the morphology, geology and history of the continental shelves, continental slopes and ocean basins; ocean properties and circulation, ocean-atmosphere and ocean-sea floor relationships.

MARS 2002 Introductory Marine Science B

4 credit points. Semester: 2. Classes: 3 lec & 1 tut/wk, 1 day excursion, 1/2 day excursion. Prerequisite: 24 credit points of Junior units of study from Science Discipline Areas. This is a qualifying unit of study for MARS 3001 and 3002. Some options in Senior Marine Science have additional prerequisites. Prohibition: May not be counted with GEOG 2002. Assessment: One 2hr exam, classwork.

Introduction to physical processes affecting the coastal zone; chemical cycles within the oceans; major biological systems of the oceans; biological adaptation.

Marine Science Senior units of study

This program is for Senior students of biology, geology, geography or mathematics who are interested in the marine sciences. It can, however, be taken with a Senior unit of study in any other subject. No special requirement of Junior units of study is laid down.

Internal structure

Students may enrol in either or both semesters (ie, Marine Science 3001 or 3002 or both). Within the program, options are available in each semester. Students are encouraged to select those in which they have a particular interest, subject to the unavoidable requirement in certain cases that they have completed some prior study in that subject area.

MARS 3001 Marine Science A

12 credit points. Semester: 1. Classes: See options. Prerequisite: MARS 2001 and MARS 2002. There are additional prerequisites for some options, see options entries. Assessment: See individual options.

The lectures will be presented in options (each option runs for a half-semester and comprises 18 lectures, plus up to 6 hr practicals per week, and excursions, with the number of practical hours and length of excursions varying between options).

- Students must take two options one from each half-semester (ie, February Semester weeks 1-6 and February Semester weeks 7-13).
- Note students taking MARS 3001 and MARS 3002 cannot take more than three options from the same discipline streams (ie, A: Geography, B: Geology/Geophysics or C: Biology)

Semester 1 (weeks 1-6)

MS 1 Coastal Depositional Environment (stream A)

MS 3 Marine Geophysical Data Analysis (stream B)

MS 5 Ecophysiology (stream C)

Semester 1 (weeks 7-13)

MS 2 Coastal Morphodynamics (stream A)

MS 4 Dynamics of Ocean Basins and Margins (stream B)

MS 6 Marine Biology (stream C)

MARS 3002 Marine Science B

12 credit points. Semester: 2. Classes: See individual options. Prerequisite: MARS 2001 and MARS 2002. There are additional prerequisites for some options, see option entries. Assessment: See individual options.

The lectures will be presented in options (each option runs for a half-semester and comprises 18 hr lectures, plus up to 6 hr practicals per week, and excursions, with the number of practical hours and length of excursions varying between options).

- Students must take two options one from each half-semester (ie, Semester 2 weeks 1-6 and Semester 2 weeks 7-13).
- Note students taking MARS 3001 and MARS 3002 cannot take more than three options from the same discipline streams (ie, A: Geography, B: Geology or C: Biology)

Semester 2 (weeks 1-6)

MS 8 Geographical Information Systems (stream A)

MS 9 Physical Sedimentology: Shallow Marine Environments (stream B)

MS 11/12 Marine Ecology (stream C)

Semester 2 (weeks 7-13)

MS 7 Coastal Zone Management (stream A)

- MS 10 The Physical Marine Habitat (stream B)
MS 11/12 Marine Ecology (stream C)

Enrolling in Marine Science options

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

Notes

- (a) Because of limited facilities available for some units of study it may be necessary to restrict number of students taking options MS5, 6 and 11/12. If this need arises selection will be based on academic merit.
- (b) All students intending to enrol in any of the marine biology options must consult the booklet Information for Students Considering Senior Biology units of study available from the School of Biological Sciences Office during the last few weeks of the academic year prior to this enrolment. Each student should also complete a preliminary enrolment form in the School of Biological Sciences before first semester commences.

Enrolment and registration

In addition to complying with enrolment procedures required by the University, all students in Senior Marine Science must register with the Marine Studies Centre (Room 469 Madsen) during the first week of lectures. Enquiries should be made to the Administrative Officer (Dr Craig Barnes). All enrolments must also be approved by the Director.

Summaries of options

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

MS 1 Coastal Depositional Environments

6 credit points. Prof. Andy Short. Semester: 1 (weeks 1-6). Prerequisite: MARS 2001, 2002. Prohibition: May not be counted with GEOG 3001. Classes: 3 lec, 1 prac, one half day and 1 weekend excursion. Assessment: excursion report, two 1500 word assignments, 1 hr exam.

Coastal depositional environments dominate the coast of Australia and most shorelines. They are dynamic systems responding to input sediments and processes as well as boundary conditions. This unit focuses on high energy wave and wind dominated depositional systems manifest as beaches, dunes and barrier systems. It examines the background to the study of these systems and their global variation, before systematically looking at the beach-surf zone, backshore, dunes and barriers, including their Holocene evolution. The impact of lower waves and tides, embayments, structures and other environmental parameters are also considered. The surface morphology and stratigraphy of representative systems is examined on the excursions and in the practicals. The practicals also introduce students to field and laboratory techniques used in core logging and analysis of sediments. One assignment is based on the excursion and practical work, the second is based on library research of a section of the Australian coast.

Textbook: Short, AD, 1999, Beach and Shoreface Morphodynamics (available at University Copy Centre)

MS 2 Coastal Morphodynamics

6 credit points. Dr Peter Cowell. Semester: 1 (weeks 7-13). Prerequisite: MARS 2001, 2002. Prohibition: May not be counted with GEOG 3001. Classes: 3 lec, 1 6hr prac/wk (Tue 12-6pm), excursion (over 1 weekend). Assessment: assignments, 1 hr exam.

Coastal Morphodynamics is an option in the modeling of complex environmental systems. Specifically, this option concerns the interactions between fluid dynamics and changes in coastal geomorphology over a wide range of scale in space and time. More generally, the coast is used for exploring development and application of computer models for simulating the behaviour of complex environmental processes. Such processes involve non-linear dynamical problems that go beyond the realm of classical mathematics and physics. Computer simulation of these problems provides practical insights into the application of chaos theory to the evolutionary behaviour of coasts. The option aims to provide: (1) skills in managing complex problems in general, (2) an analytical understanding of coastal processes in particular, and (3) experience in application of computer simulation programs and vocationally relevant, commercial software packages. Practical work involves extensive use of computers.

MS 3 Marine Geophysical Data Analysis

6 credit points. Dr. Dietmar Muller. Semester: 1 (weeks 1-7). Prerequisite: Physics I, Mathematics I, Geology 2001 or 8 credit points of Intermediate Marine Science. Prohibition: This module cannot be taken with GEOP 3201. Classes: 12 hours of lectures & practical classes per wk, one weekend field excursion. Assessment: one 2 hr theory & laboratory exams, computer assignments and class work.

This class is aimed at teaching the basics of signal processing and analysis relevant to marine geophysical data. The class covers the basics of data collection, signal processing and statistical techniques, applied to a variety of problems and data from the deep ocean basins to the surf zone. The ocean basins cover 70% of the Earth's surface, and there are still many areas of the seafloor that we know less about than the surface topography of Venus. Exploring the sediments/rocks that make up the deep ocean floor and the continental shelves requires the use of remote sensing techniques, and the analysis of geophysical data. This unit teaches analytical and interpretive skills in both these areas, with a focus on: basic signal properties, convolution and correlation, numerical transforms, time series (harmonic and spectral) analysis, and filtering. The unit is relevant to students interested in either geological or physical oceanography, and coastal geomorphology since it covers a variety of data types including: wave and current data, seismic reflection and refraction data, multibeam data, gravity and magnetic data, and satellite altimetry.

Textbook: Muller, R D, Marine geophysical data analysis, (available at University Copy Center).

MS 4 Dynamics of ocean basins and margins

6 credit points. Dr. Dietmar Muller. Semester: 1 (weeks 7-13). Prerequisite: Physics I, Mathematics I, Geology 2001 or 8 credit points of Intermediate Marine Science. Prohibition: May not be taken with GEOP 3201. Classes: 12 hours of lectures & practical classes per wk, one weekend field excursions. Assessment: one 1 hr theory & laboratory exam, computer assignments and class work.

This unit explores the processes that have shaped the abyssal plains, deep-sea trenches, continental shelves and slopes of the ocean basins. It also examines the processes leading to the formation of marine resources, in particular hydrocarbons. The class introduces the basics of geodynamics as well as research at the cutting edge of modelling our dynamic Earth. Different types of data are presented which are used to constrain geodynamic models, including topography, gravity, magnetics, heatflow, reflection seismic data and satellite altimetry. The unit introduces an integrated up-to-date approach to continental margin and sedimentary basin analysis and modelling. The physical mechanisms forming different types of basins are examined and their relevance for petroleum resources is explored. Computer exercises introduce a variety of thermal and mechanical models for the evolution of sedimentary basins.

Textbook: Muller, R D, Dynamics of ocean basins and margins, (available at University Copy Center).

MS 5 Ecophysiology

6 credit points. Prof. Hume, Dr McGee, Dr Seebacher. Assoc. Professor Thompson. Semester: 1 (weeks 1-6). Qualifying: 16 credit points of Intermediate Biology including BIOL 2002 or 2003 or 2006 or 2902 or 2903 or 2906. Prohibitions: May not be counted with BIOL 3011 or 3911. Classes: 4 lec & 8hr prac/wk. Assessment: One 1.5hr exam, field trip quiz, lab reports.

Ecophysiology covers physiological interactions between organisms and their environments. The range of environments inhabited by organisms is outlined and the influences of important environmental parameters including temperature, water, salt and pH are investigated. Physiological interactions among animals, plants and fungi are discussed. Animal examples will have an emphasis on vertebrates and on marine organisms. Plants from marine and terrestrial environments and the interaction with fungi are examined. Some emphasis will be placed on marine plants.

MS 6 Marine Biology

6 credit points. Assoc. Prof. Hinde and others. Semester: 1 (weeks 7-13). Qualifying: 16 credit points of Intermediate Biology, including BIOL 2001 or 2002 or 2003 or 2004 or 2901 or 2902 or 2903 or 2904. Prohibition: May not be counted with BIOL 3013 and BIOL 3913. Classes: 4 lec & 8hr prac/wk, field courses, Timetable 2. Assessment One 1.5hr exam, assignments.

Marine biology diversity is discussed with particular attention to the main types of marine habitats represented along the

Australian coastline. Emphasis is placed on exposing students to the key ideas, researchers and methodologies within selected fields of marine biology. Students will develop skills in areas such as protistology, the identification of algae, the biology of corals and other reef-associated animals, as well as the techniques used to study marine animals and plants. Discussion sessions will review major marine biological themes. Laboratory sessions will develop hand-on experience with marine organisms, and there may be a field trip.

MS 7 Coastal Zone Management

6 credit points. Dr David Chapman. Semester: 2 (weeks 7-13). Classes: 3 lec, 4-6hr lab/wk. Prohibition: May not be counted with GEOG 3002. Assessment: assignments, exams

Aims of the unit: To assist you to identify significant problems in resource management in the coastal zone, to enhance your understanding of the origins of these problems at the interface between the natural and human environments, and the nature of human responses to them. To equip you with some conceptual models for the management of problems in resource management in the coastal zone, and to teach you some of the fundamental skills in analysis of environmental problems, including the use of remotely sensed information in resource management.

MS 8 Geographical Information Systems

6 credit points. Dr Peter Cowell. Semester: 2 (weeks 1-6). Classes: 3 lec, 6hr prac/wk (Tue 12-6pm). Prohibition: May not be counted with GEOG 3002. Assessment: assignments, 1 hr exam.

Specific aims of the unit are to provide: i) an introduction to technical issues in Geographic Information Systems (GIS), ii) experience in using GIS techniques ('hands on'), and iii) insights in application of GIS to coastal studies. The lectures illustrate how Geographic Information Systems can be applied by people working in marine sciences, and provide an introduction to the nuts and bolts of GIS. The technical lectures are based on a leading GIS text book. The practical work focuses on application of GIS techniques to coastal management problems. Practical work involves extensive use of computers.

MS 9 Physical Sedimentology: Shallow Marine Environments

6 credit points. Dr. Michael Hughes. Semester: 2 (weeks 1-7). Prerequisite: Geology 2001 or 8 credit points of Intermediate Marine Science. Prohibition: May not be counted with GEOL 3104. Classes: 12 hours of lectures & practical classes per wk, one weekend field excursion. Assessment: one 2 hr theory & laboratory exam, assignment and class work.

This module provides a detailed understanding of the physical processes responsible for producing sedimentary textures, bedforms and structures observed in both modern and ancient depositional environments. The theory content of the course is divided into three themes. The fluid dynamics theme addresses boundary layer processes, in particular, turbulence and shear stress production at the fluid/sediment boundary. Both unidirectional (currents) and oscillatory (waves) flows are considered. The sediment dynamics theme describes the mechanics of sediment entrainment, transport and deposition for both cohesionless (sandy) and cohesive (muddy) sediments. The final theme explains how the interaction of fluid and sediment dynamics produces the wide variety of bedforms and structures observed in both modern sediments and ancient sedimentary rocks. The practical content of the course will develop student's skills in field experimentation and sampling, and the quantitative interpretation of physical processes from the study of sedimentary textures and structures. A weekend field excursion forms part of the practical program, and students will be required to cover the cost of hostel accommodation for one night.

MS 10 The Physical Marine Habitat

6 credit points. Assoc. Prof. J Keene. Prerequisite: Geology 2001 or MARS 2001 and MARS 2002. Semester: 2 (weeks 7-13). Classes: 12 hours of lectures & practical classes per week, one weekend field excursion. Prohibition: May not be counted with GEOL 3104. Assessment: One 2 hr theory & laboratory exam, assignment and class work.

This unit examines the interaction of physical, chemical and biological processes active on, and in, the sea floor of Planet Earth. A variety of continental margins will be compared together with the deep sea floor. Samples from the shelf, slope and deep-sea will enable examination of the role of plants and animals in modifying sediment texture and composition, unravelling the history of how sediments became rocks and enable an understanding of how and why ocean basin

sedimentary deposits have changed through time. The past 200 million years will be analysed using Ocean Drilling Program data. The aim of this module is to provide the student with skill to analyse sea floor environments, sediments and rocks and interpret a variety of geological, geophysical, oceanographic and biological data. Laboratory work will emphasise both techniques of sediment/rock analysis and interpretation of data from direct sampling. Includes a one-day excursion on Sydney Harbour.

MS 11/12 Marine Ecology

12 credit points. Dr Dickman, Dr Holloway, Dr Hochuli, Dr Wardle, Prof. Underwood, Dr M Chapman and others. Semester: 2. Qualifying: 16 credit points of Intermediate Biology, including BIOL 2001 or 2901 or 2002 or 2902 or 2004 or 2904. Prohibition: May not be counted with BIOL 3023/3923 or 3024/3924. Classes: 4 lec & 8hr prac/wk, one 8-day field course in vacation before Sem 2. Timetable 2. Assessment: exam and laboratory and field reports.

Students enrol in Ecological Methods (MS 11/BIOL3023) and Ecology (MS 12/BIOL3024) including its field course. Ecological Methods will consider ecology as a theoretical, quantitative, experimental science concerned with the analysis of patterns of distribution, abundance, dynamics, demography and life-histories of natural populations with an appraisal of the nature of scientific investigations, from a philosophical viewpoint and the practicalities of testing hypotheses in the real world. Application of ecological theory and methods to practical problems will be integrated throughout the unit of study. Lectures will be on sound philosophical and experimental principles and useful for the more informed management, conservation and utilization of natural populations and habitats. Practical classes will deal with practical methods of determining patterns of distribution and abundance, problems of sampling, estimation of ecological variables and methods of statistical analysis of field data. Computer simulations and analyses will be used where appropriate.

Marine Sciences Honours

Semester: 1, 2.

The structure of Honours will be about one third formal coursework, seminars and reading, and about two thirds devoted to preparation of a thesis on a topic with a clear marine or estuarine orientation. The formal coursework may comprise units of study mainly chosen from existing Honours options offered in the Department of the student's principal interest. Background study in a subsidiary field of interest may be required. Thesis work will commence in February and continue to November.

In general, a Credit average or better in Senior Marine Sciences units of study and at least a Pass in another Senior unit of study are required for entry. A minimal WAM score is usually set for entry into Honours in Marine Sciences, preferably during the July semester of the Senior program and otherwise as soon as possible after publication of the Senior units of study examination results. Arrangements for the supervision and Department of primary location of students will be made in the light of their proposed thesis topic. Joint supervision involving staff of more than one Department may be arranged if a thesis topic is deemed to be transdisciplinary. Upon acceptance, students should register formally with the Director of the Marine Studies Centre.

■ School of Mathematics and Statistics

The School of Mathematics and Statistics offers units of study in Applied Mathematics, Mathematical Statistics and Pure Mathematics.

The Junior units of study cover a range of topics in mathematics and statistics and are offered at three levels, viz. Life Sciences, Normal and Advanced, to suit various levels of previous knowledge.

Intermediate, Senior and Honours units of study are mostly provided within one of the subject areas of Applied Mathematics, Mathematical Statistics and Pure Mathematics.

Applied Mathematics is concerned with the development of mathematical and computing methods and their application in particular contexts which may arise in the natural sciences, engineering, economics or the social sciences. Units of study are designed to give training to students who will specialise in other subjects, and also for training applied mathematicians. While mathematical rigour is not neglected, particular emphasis is

given to questions such as the treatment of observational models which are relevant to particular contexts.

Mathematical Statistics is concerned with the theory of probability and the mathematical methods of statistics applied to such problems as statistical inference, the design of experiments and sample surveys, and all problems of data analysis. The major units of study are designed to train those who wish to become professional statisticians, tertiary teachers and research workers, but there are units of study which provide a knowledge of statistical methods and techniques for students specialising in other fields.

Pure Mathematics units of study have two main aims. One of these is to equip students with the background of mathematical knowledge, understanding and skill necessary for units of study in many branches of science. The other is the provision of training in pure mathematics necessary for those who wish to make a career in mathematics. This might be either in teaching or research or in one of the many avenues where highly developed mathematical ability and a thorough knowledge of modern mathematical techniques are required, such as computing, operations research, management, finance and economics.

Web Site: Further information about all units of study is available at www.maths.usyd.edu.au/Teaching.html
Summer School

This School offers some units of study in The Sydney Summer School (January-February). Consult The Sydney Summer School Web site for more information: www.summer.usyd.edu.au/

Mathematics Junior units of study

Various combinations of Junior units of study may be taken, subject to the prerequisites listed. Often specific Junior units of study are prerequisites for Mathematics and Statistics units in the Intermediate and Senior years.

Before deciding on a particular combination of Junior units of study, students are advised to check carefully the prerequisites relating to mathematics for all units of study.

Life Sciences units of study

Life Sciences units of study are designed to provide students with an overview of the necessary mathematical and statistical background for studies in the Life Sciences. They are provided for students in the Faculty of Science whose major interest lies outside mathematics. Each unit of study uses both computers and graphics calculators as aids to the development of mathematical ideas.

There are comprehensive details in the Junior Mathematics Handbook, available from the School at the time of enrolment.

Assumed knowledge

Knowledge equivalent to the HSC 2-unit Mathematics course is assumed. Students who do not have this knowledge are strongly advised to attend a bridging course conducted jointly by the School and the Mathematics Learning Centre in February.

Relation to other units of study and recommendations

The four Life Science units of study together give 12 credit points of mathematics, which is the minimum required by the BSc degree regulations. Students obtaining a Distinction in MATH 1011 are encouraged to enrol in normal units of study in subsequent semesters. Students obtaining a Distinction or better in MATH 1011, 1012 or 1013 may proceed to Intermediate units of study in the Mathematics Discipline Area. Students with a Credit or better in MATH 1011 and a Pass or better in MATH 1015 may proceed to Intermediate units of study in the Statistics discipline area. Students with a Pass in only MATH 1015 are limited to the Intermediate Statistics units of study STAT 2002 and STAT 2004.

MATH 1011 Life Sciences Calculus

3 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Assumed knowledge:** HSC Mathematics. **Prohibition:** May not be counted with MATH 1001 or 1901 or 1906. May not be counted by students enrolled in the BSc/BCom combined award course. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1011 is designed to provide calculus for students of the life sciences who do not intend to undertake higher year mathematics and statistics.

This unit of study looks at the fitting of data to various functions, introduces finite difference methods, and demonstrates the use of calculus in optimisation problems. It extends differential calculus to functions of two variables and develops integral calculus, including the definite integral and multiple integrals.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1012 Life Sciences Algebra

3 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Assumed knowledge:** HSC Mathematics. **Prohibition:** May not be counted with MATH 1002 or 1902. May not be counted by students enrolled in the BSc/BCom combined award course. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1012 is designed to provide algebra for students of the life sciences who do not intend to undertake higher year mathematics and statistics.

This unit of study introduces matrices, systems of linear equations and linear programming and counting techniques.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1013 Differential and Difference Equations

3 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Assumed knowledge:** HSC Mathematics. **Prohibition:** May not be counted with MATH 1003 or 1903 or 1907. May not be counted by students enrolled in the BSc/BCom combined award course. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1013 is designed to provide the theory of difference and differential equations for students of the life sciences who do not intend to undertake higher year mathematics and statistics.

This unit of study looks at the solution of equations by bisection and iteration, first and second order difference equations where chaos is met, and examples of modelling using simple first and second order differential equations.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1015 Life Science Statistics

3 credit points. **Semester:** 1, Summer. **Classes:** 2 lec & 1 tut/wk. **Assumed knowledge:** HSC Mathematics. **Prohibition:** May not be counted with MATH 1905 or 1005 or SIAT 1021 or 1022. May not be counted by students enrolled in the BSc/BCom combined award course. **Assessment:** One 1.5 hour examination, assignments and quizzes. MATH 1015 is designed to provide a thorough preparation in statistics for students of the Life Sciences. It offers a comprehensive first introduction to data analysis, probability and sampling, inference including t-tests, confidence intervals and chi-squared goodness of fit tests.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

Mathematics & Statistics Normal units of study

Normal units of study are designed for students who have both the necessary background and the interest in mathematics and who need to study mathematics beyond Junior units of study in order to satisfy their own aspirations or degree requirements.

There are comprehensive details of these units of study in the Junior Mathematics Handbook, available from the School at the time of enrolment.

Assumed knowledge

For the units MATH 1001, MATH 1002 and MATH 1004, knowledge equivalent to the HSC Mathematics Extension 1 course is assumed. The assumed knowledge for MATH 1005 is HSC 2-unit Mathematics. For MATH 1003 the assumed knowledge is MATH 1001 or HSC Mathematics Extension 2. Students who have a very good result in the equivalent of the HSC 2-unit course are encouraged to enrol in the Normal units of study but should discuss their plans with a Mathematics adviser. *Relation to other units of study and recommendations* Students should take at least two units of study in each semester in order to meet the minimum requirement of 12 credit points of Mathematics in the BSc award course. The usual enrolment for Normal level students is in the three units MATH 1001, MATH 1002, MATH 1003 and (at least) one of MATH 1004 and MATH 1005. Passes in Junior units of study at this level qualify students to proceed to Intermediate units of study in mathematics and

statistics. Students should note however that some Intermediate units of study in both mathematics and statistics require specific Junior units of study to be passed as prerequisites. Students obtaining a Credit or better in Normal units of study are encouraged to enrol in other Advanced units of study.

MATH 1001 Differential Calculus

3 credit points. Semester: 1, Summer. Classes: 2 lec & 1 tut/wk. Assumed knowledge: HSC Mathematics Extension 1. Prohibition: May not be counted with MATH 1011 or 1901 or 1906. Assessment: One 1.5 hour examination, assignments and quizzes.

MATH 1001 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit of study looks at complex numbers, functions of a single variable, limits and continuity, vector functions and functions of two variables. Differential calculus is extended to functions of two variables. Taylor's theorem as a higher order mean value theorem.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1002 Linear Algebra

3 credit points. Semester: 1, Summer. Classes: 2 lec & 1 tut/wk. Assumed knowledge: HSC Mathematics Extension 1. Prohibition: May not be counted with MATH 1902 or 1012. Assessment: One 1.5 hour examination, assignments and quizzes.

MATH 1002 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit of study introduces vectors and vector algebra, linear algebra including matrices, determinants, eigenvalues and eigenvectors.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1003 Integral Calculus and Modelling

3 credit points. Semester: 2, Summer. Classes: 2 lec & 1 tut/wk. Assumed knowledge: HSC Mathematics Extension 2 or MATH 1001. Prohibition: May not be counted with MATH 1013 or 1903 or 1907. Assessment: One 1.5 hour examination, assignments and quizzes.

MATH 1003 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit of study first develops the idea of the definite integral from Riemann sums, leading to the Fundamental Theorem of Calculus. Various forms of integration are considered, such as integration by parts. The second part is an introduction to the use of first and second order differential equations to model a variety of scientific phenomena.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1004 Discrete Mathematics

3 credit points. Semester: 2, Summer. Classes: 2 lec & 1 tut/wk. Assumed knowledge: HSC Mathematics Extension 1. Prohibition: May not be counted with MATH 1904. Assessment: One 1.5 hour examination, assignments and quizzes.

MATH 1004 is designed to provide a thorough preparation for further study in Mathematics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirements in the Faculty of Engineering.

This unit provides an introduction to fundamental aspects of discrete mathematics, which deals with 'things that come in chunks that can be counted'. It focuses on the enumeration of a set of numbers, viz. Catalan numbers. Topics include sets and functions, counting principles, Boolean expressions,

mathematical induction, generating functions and linear recurrence relations, graphs and trees.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1005 Statistics

3 credit points. Semester: 2, Summer. Classes: 2 lec & 1 tut/wk. Assumed knowledge: HSC Mathematics. Prohibition: May not be counted with MATH 1905 or 1015 or ECMT1010 or 1020 or STAT 1021 or 1022. Assessment: One 1.5 hour examination, assignments and quizzes.

MATH 1005 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit offers a comprehensive introduction to data analysis, probability, sampling, and inference including t-tests, confidence intervals and chi-squared goodness of fit tests.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

Mathematics & Statistics Junior Advanced units of study

Advanced units of study are designed for students who have a strong background and a keen interest in mathematics and who need to study mathematics at a higher level to satisfy their own aspirations or degree requirements. All students aiming for high achievement, such as an Honours degree or postgraduate study, are advised to enrol in Advanced units of study.

Content

The unit of study content is similar in outline to that of the Normal units of study above but proceeds more deeply and at a faster rate, covers more difficult material and requires more mathematical sophistication.

There are comprehensive details of these units of study in the Junior Mathematics unit of study Handbook, available from the School at the time of enrolment.

Assumed knowledge

Knowledge equivalent to the HSC Mathematics Extension 2 course is assumed. Students who have a very good result in the equivalent of the HSC Mathematics Extension 1 course are encouraged to enrol in these units of study but should discuss their plans with a Mathematics adviser.

Relation to other units of study and recommendation

Students should take two units of study in each semester in order to meet the minimum requirement of 12 credit points of mathematics in the BSc award course. The usual enrolment for Advanced level students is in the units MATH 1901, MATH 1902, MATH 1903 and (at least) one of the units MATH 1904 and MATH 1905. Passes in Junior units of study at this level qualify students to proceed to Intermediate units of study in Mathematics and Statistics at the Normal level. It should be noted that some Intermediate and Senior units of study in both Mathematics and Statistics require specific Junior units of study as prerequisites.

Students who are awarded at least a credit grade in this level are encouraged to proceed to Intermediate units of study in Mathematics and Statistics at the Advanced level.

MATH 1901 Differential Calculus (Advanced)

3 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Assumed knowledge: HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. Prohibition: May not be counted with MATH 1011 or 1001 or 1906. Assessment: One 1.5 hour examination, assignments and quizzes.

MATH 1901 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit of study parallels the normal unit MATH 1001 but goes more deeply into the subject matter and requires more mathematical sophistication.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1902 Linear Algebra (Advanced)

3 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Assumed knowledge:** HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. **Prohibition:** May not be counted with MATH 1002 or 1012. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1902 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit of study parallels the normal unit MATH 1002 but goes more deeply into the subject matter and requires more mathematical sophistication.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

**MATH 1903 Integral Calculus and Modelling
Advanced**

3 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Assumed knowledge:** HSC Mathematics Extension 2 or Credit or better in MATH 1001/1901. **Prohibition:** May not be counted with MATH 1003 or 1013 or 1907. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1903 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit of study parallels the normal unit MATH 1003 but goes more deeply into the subject matter and requires more mathematical sophistication.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1904 Discrete Mathematics (Advanced)

3 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Assumed knowledge:** HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. **Prohibition:** May not be counted with MATH 1004. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1904 is designed to provide a thorough preparation for further study in mathematics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit of study parallels the normal unit MATH 1004 but goes more deeply into the subject matter and requires more mathematical sophistication.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1905 Statistics (Advanced)

3 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Assumed knowledge:** HSC Mathematics Extension 2 or result in Band E2 or better of HSC Mathematics Extension 1. **Prohibition:** May not be counted with MATH 1005 or 1015 or ECMT1010 or 1020 or STAT 1021 or 1022. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1905 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This Advanced level unit of study parallels the normal unit MATH 1005 but goes more deeply into the subject matter and requires more mathematical sophistication.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1906 Mathematics (Special Studies Program) A
3 credit points. **Semester:** 1. **Classes:** 2 lec, 1 sem, 1 tut/wk. **Prerequisite:** UAI of at least 98.5 and result in Band E4 HSC Mathematics Extension 2; by invitation. **Prohibition:** May not be counted with MATH 1001 or 1011 or 1901. **Assessment:** One 1.5hr exam, assignments, classwork.

NB: Permission required for enrolment.

This is an Advanced unit of study. Entry to Mathematics (Special Studies Program) A is restricted to students with a UAI of 98.5 and an excellent school record in Mathematics. Students will cover the material in MATH 1901 Differential Calculus (Advanced). In addition there will be a selection of special topics, which are not available elsewhere in the Mathematics and Statistics program.

There are comprehensive details of this unit of study in the Junior mathematics Handbook distributed at the time of enrolment.

MATH 1907 Mathematics (Special Studies Program) B

3 credit points. **Semester:** 2. **Classes:** 2 lec, 1 sem & 1 tut/wk. **Prerequisite:** Distinction in MATH 1906; by invitation. **Prohibition:** May not be counted with MATH 1003 or 1013 or 1903. **Assessment:** One 1.5hr exam, assignments, classwork.

NB: 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 MATH 1906. Students will cover the material in MATH 1903 Integral Calculus and Modelling (Advanced). In addition there will be a selection of special topics, which are not available elsewhere in the Mathematics and Statistics program.

There are comprehensive details of this unit of study in the Junior mathematics Handbook distributed at the time of enrolment.

Mathematics Intermediate units of study

The School of Mathematics provides a range of Intermediate units of study, each worth 4 credit points covering a variety of topics in Pure and Applied Mathematics. A normal Intermediate load in a discipline is 16 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 4 credit points)

- Analysis MATH 2007
- Analysis (Advanced) MATH 2907
- Fourier Series and Differential Equations MATH 2005
- Graph Theory MATH 2009
- Introduction to Modern Algebra MATH 2008
- Introduction to Modern Algebra (Advanced) MATH 2918
- Introduction to Nonlinear Systems and Chaos MATH 2006
- Introduction to Nonlinear Systems and Chaos (Advanced) MATH 2906
- Linear Algebra (Advanced) MATH 2902
- Matrix Applications MATH 2002
- Vector Calculus and Complex Variables MATH 2001
- Vector Calculus and Complex Variables (Advanced) MATH 2901

Applied units of study (each 4 credit points)

- Financial Mathematics MATH 2033
- Financial Mathematics (Advanced) MATH 2933
- Fourier Series and Differential Equations MATH 2005
- Introduction to Mathematical Computing MATH 2003
- Introduction to Mathematical Computing (Advanced) MATH 2903
- Introduction to Nonlinear Systems and Chaos MATH 2006
- Introduction to Nonlinear Systems and Chaos (Advanced) MATH 2906
- Lagrangian Dynamics MATH 2004

- Lagrangian Dynamics (Advanced) MATH 2904
- Mathematical Methods (Advanced) MATH 2905
- Matrix Applications MATH 2002
- Optimisation MATH 2010
- Vector Calculus and Complex Variables MATH 2001
- Vector Calculus and Complex Variables (Advanced) MATH 2901

Relation to other units of study and recommendations

In general, 2 units of study (8 credit points) of Intermediate mathematics are needed to progress to a Normal Senior mathematics unit of study, and 3 units of study (12 credit points) of Intermediate mathematics to progress to an Advanced Senior unit of study.

If your major interest is in mathematics, then you are strongly encouraged to enrol in 8 units of study (32 credit points) in Intermediate mathematics. If you are considering doing Honours in mathematics, they should include some Advanced units of study.

Students intending to specialise in Applied Mathematics should choose at least 4 units of study from the Applied list above and should include MATH (2001 or 2901) and MATH (2005 or 2905). The standard combination of units of study for students wishing to take a full load of Intermediate Applied Mathematics is as follows:

At Normal level: 2001+ (2003 or 2033) + 2005 + (2004 or 2006 or 2010).

At Advanced level: 2901 + (2903 or 2906) + 2905 + 2904.

Students intending to specialise in Pure Mathematics should choose at least 4 units of study from the Pure list above and should include MATH 2002 or 2902 and 2008 or 2918. Other recommended choices would be 2007 or 2907. The standard combination of units of study for students wishing to take a full load of Intermediate Pure Mathematics is as follows:

At Normal level: (2001 or 2009) + 2002 + (2005 or 2007) + 2008.

At Advanced level: 2901 + 2902 + 2907 + 2918.

Computer Science students may like to include MATH 2009 among their choices.

Physics students would be well-advised to choose MATH 2001 or 2901, and 2005 or 2905.

Prospective teachers of mathematics should consider MATH 2009, and 2007 or 2907.

MATH 2001 Vector Calculus and Complex Variables 4 credit points. Semester: 1, Summer. Classes: 3 lec & 1 tut/wk.

Prerequisite: MATH (1001 or 1901 or 1906) and (1002 or 1902) and (1003 or 1903 or 1907). **Prohibition:** May not be counted with MATH 2901. **Assessment:** One 2hr exam, assignments, tutorial participation, tutorial quizzes.

This unit of study has two major components: firstly, a study of functions of several real variables from a vector point of view, and secondly an introduction to functions of a complex variable. Vector calculus topics include line integrals and multiple integrals, surface integrals, change of variables, theorems of Green, Gauss and Stokes with their physical significance. Complex variables topics include definitions and properties of complex functions, differentiability, Cauchy Riemann conditions and analyticity, contour integration and residues.

MATH 2002 Matrix Applications

4 credit points. Semester: 1, Summer. Classes: 2 lec, 1 tut & 1 computer lab/wk. Prerequisite: MATH 1002 or 1902 or Distinction in MATH 1012. Prohibition: May not be counted with MATH 2902. Assessment: One 2hr exam, assignments, tutorial participation, tutorial quizzes.

This unit of study covers systems of linear equations, vector spaces and eigenspaces. In linear equations the topics include existence of solutions, uniqueness, numerical solution, scaled partial pivoting, and residual correction. In vector spaces the topics include subspaces, linear combinations, spanning set, linear dependence, basis, dimension, Lagrange polynomials, linear transformations, kernel, image space, and rank. In eigenspaces the topics include characteristic equation, computation of eigenspaces, similar matrices, diagonalisation, difference equations, coupled differential equations, iterative solution of $AX=B$.

MATH 2003 Introduction to Mathematical Computing 4 credit points. Semester: 1. Classes: 2 lec & 2 computer lab/wk.

Prerequisite: MATH (1001 or 1901 or 1906) and (1002 or 1902) and (1003 or 1903 or 1907). **Prohibition:** May not be counted with MATH 2903. **Assessment:** One 2hr exam, assignments, quizzes, computer lab participation.

This unit of study consists of two segments, one devoted to computer simulation and modelling and the other to applied computer algebra. In the first, mathematical models will be set up for a range of problems, such as the minimisation of factory pollutants, determination of drug regimes for a diabetic, the modelling of stars, biological patterns and chaos. Students will use computer simulations to explore solutions. The emphasis will be on modelling, rather than programming. The second segment gives hands-on experience with a computer algebra program. Students work through a set of interactive lessons showing them the potential of such programs. Students are required to write programs to solve applied mathematical problems that would be intractable if attempted solely by pen and paper.

MATH 2004 Lagrangian Dynamics

4 credit points. Semester: 2. Classes: 2 lec, 1 prac & 1 tut/wk.

Prerequisite: MATH 2001 or 2901. **Prohibition:** May not be counted with MATH 2904. **Assessment:** 2hr exam, assignments.

This unit of study provides a first course in dynamics from a higher standpoint. It demonstrates that Newton's laws of motion can be derived from a variational principle. The advantage offered by the Lagrangian formulation in solving for the motion is emphasised. The applications, which include planetary dynamics, illustrate the basic concepts of Newtonian dynamics such as conservation laws. Small oscillations about equilibrium states are treated as part of linear stability theory.

MATH 2005 Fourier Series & Differential Equations

4 credit points. Semester: 2, Summer. Classes: 3 lec & 1 tut/wk.

Prerequisite: MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907). **Prohibition:** May not be counted with MATH 2905. **Assessment:** One 2hr exam, assignments, quizzes.

In the Fourier Series segment, periodic phenomena such as wave motion are given a systematic treatment. The basic problem is to represent a periodic function of one variable as the sum of an infinite series of sines and cosines. The theory has extensive applications in engineering, acoustics, internal and surface waves in fluids, etc., as well as in pure mathematics. Then a review of first order equations is followed by a systematic treatment of second order equations using the methods of variation of parameters, undetermined coefficients and the theory of Laplace Transforms. Linear systems of differential equations are treated using matrices and vectors. The final part of the unit of study deals with partial differential equations with the emphasis on the application of the method of separation of variables to first and second order linear equations and on Laplace transforms for initial value problems.

MATH 2006 Nonlinear Systems and Chaos Introduction

4 credit points. Semester: 2. Classes: 2 lec, 1 tut & 1 computer lab/wk.

Prerequisite: MATH (1001 or 1901 or 1906) and (1002 or 1902) and (1003 or 1903 or 1907) or (Credit in MATH 1011 and 1012 and 1013).

Prohibition: May not be counted with MATH 2906. **Assessment:** 2hr exam, assignments, computer lab participation.

This unit of study aims to provide an introduction to the simplest cases of nonlinear dynamics and chaos and their use in modelling systems in a variety of applications taken from chemistry, biology, physiology and economics. Topics covered include first order finite difference equations, bifurcations, chaos, fractals, phase portrait analysis of one and two dimensional differential equations, fixed points, analysis of stability. The computer labs use the Mathematica software package.

MATH 2007 Analysis

4 credit points. Semester: 2. Classes: 3 lec & 1 tut/wk. Prerequisite:

MATH (1001 or 1901 or 1906) and (1003 or 1903 or 1907) or Distinction average in MATH 1011 and 1013. **Prohibition:** May not be counted with MATH 2907. **Assessment:** One 2hr exam, assignments.

This unit of study is concerned with sequences and series. Topics include the definition of the limit of a sequence, the principle of monotonic convergence, elementary limit theorems, convergence of an infinite series, the comparison and integral tests; absolute convergence, the ratio test and Taylor Series. The last part is devoted to series of complex terms, dealing with power series and radius of convergence.

MATH 2008 Introduction to Modern Algebra

4 credit points. Semester: 2. Classes: 2 lec, 1 tut & 1 computer lab/wk.

Prerequisite: MATH 2002 or 2902. **Prohibition:** May not be counted with MATH 2908 or 2918. **Assessment:** One 2hr exam, assignments.

The major topics in this unit of study are inner product spaces and groups. First, it treats the geometric and algebraic properties of inner product spaces and then the geometrical and combinatorial background to groups. Topics covered include the

definitions and elementary properties of groups, subgroups, direct products, the permutation, symmetric and cyclic groups, isomorphisms and homomorphisms, cosets, Lagrange's theorem, conjugate elements, rotations and reflections in the plane, and symmetries of an n -gon.

MATH 2009 Graph Theory

4 credit points. Semester: 1, Summer. Classes: 3 lec & 1 tut/wk. Prerequisite: 6 credit points of Junior Mathematics (at the Distinction level in Life Sciences units). Assessment: One 2hr exam, assignments, quizzes.

Graph theory is a branch of discrete mathematics with important applications in almost every branch of science, and particularly in computer science and engineering. (In graph theory, a graph is a set of points and a set of edges - not the graph of a function.)

Topics covered include: Eulerian graphs, Hamiltonian graphs, trees, shortest paths, planar graphs, colouring of graphs and maps, transport networks, activity networks, matching theory, digraphs.

Many applications are considered, and some famous graph theory problems discussed.

MATH 2010 Optimisation

4 credit points. Semester: 2. Classes: 3 lec & 1 tut/wk. Prerequisite: MATH (1001 or 1901 or 1906) and (1002 or 1902). Prohibition: May not be counted with Econometrics 3510 Operations Research A. Assessment: One 2hr exam, assignments.

This unit of study looks at practical optimisation problems. Theory developed in lectures will be complemented by workstation laboratory sessions using Matlab. Minimal computing experience will be required. Topics will be chosen from linear programming and the simplex algorithm, transportation problems, constrained and unconstrained minimisation of functions, search methods, dynamical programming, least-squares and singular-value decomposition.

MATH 2033 Financial Mathematics 1

4 credit points. Semester: 1. Classes: 2 lec, 1 tut & 0.5 comp lab/wk. Prerequisite: MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) and MATH (1005 or 1905). Prohibition: May not be counted with MATH 2933. Assessment: 2hr exam, quizzes, assignment, computer project.

This unit of study is an introduction to financial mathematics with the main emphasis being on mathematical and statistical techniques used to solve problems of relevance to the finance industry. Topics covered include: riskless interest rate models, present and future value factors, arbitrage, solution of general cash-flow problems in both discrete and continuous time, analysis of bonds, simple optimisation problems in finance, modelling of risky assets, expectations hypothesis, utility theory, state space security price modelling, introduction to options. Mathematical techniques include: solving difference and differential equations, advanced integration and summation techniques, linear and dynamic programming, method of Lagrange multipliers, calculation of distributions and expectations of random variables, linear algebra methods, analysis of simple random walks.

MATH 2901 Vector Calculus and Complex Var (Adv)

4 credit points. Semester: 1. Classes: 3 lec & 1 tut/wk. Prerequisite: MATH (1901 or 1906 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or 1907 or Credit in 1003). Prohibition: May not be counted with MATH 2001. Assessment: One 2hr exam, assignments.

This unit of study is designed to provide the basic tools needed for studying functions of two or more real variables and also an introduction to functions of one complex variable. These subjects are fundamental to many areas of Pure and Applied Mathematics, and are essential for students in Science and Engineering courses. Topics in functions of several variables include the following: local maxima and minima, Lagrange multipliers, inverse function theorem, Jacobians, double integrals, change of variables, triple integrals, line integrals, Green's theorem, surface integrals, Stokes' theorem, triple integrals, Gauss' Theorem, multiple integrals. Elementary complex variable theory includes complex line integrals, Cauchy's Theorem and Integral Formula, residues and real improper integrals.

MATH 2902 Linear Algebra (Advanced)

4 credit points. Semester: 1. Classes: 3 lec & 1 tut/wk. Prerequisite: 12 credit points of Junior Mathematics, including MATH 1902 or Credit in 1002. Prohibition: May not be counted with MATH 2002. Assessment: One 2hr exam, assignments, three quizzes.

This unit of study is primarily concerned with linear transformations. Abstract vector spaces are introduced as the correct context in which to discuss linear transformations, and

the basic structure theorems for finite dimensional vector spaces are proved. The connections between matrices and linear transformations are investigated. Determinants, introduced in first year, are revised and investigated further. Eigenvalues and eigenvectors are discussed and their usefulness for diagonalizing linear transformations is shown. Diagonalisation techniques are applied to solve simple examples of simultaneous differential equations. A partial treatment of the Jordan normal form may be included if time allows.

MATH 2903 Intro to Mathematical Computing (Adv)

4 credit points. Semester: 1. Classes: 2 lec & 2 computer lab/wk. Prerequisite: MATH (1901 or 1906 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or 1907 or Credit in 1003). Prohibition: May not be counted with MATH 2003. Assessment: One 2hr exam, assignments, quizzes, computer lab participation.

The content of this unit of study parallels that of MATH 2003.

MATH 2904 Lagrangian Dynamics (Advanced)

4 credit points. Semester: 2. Classes: 3 lec & 1 tut/wk. Prerequisite: MATH 2901 or Credit in MATH 2001. Prohibition: May not be counted with MATH 2004. Assessment: One 2hr exam, assignments, project.

The content of this unit of study parallels that of MATH 2004.

MATH 2905 Mathematical Methods (Advanced)

4 credit points. Semester: 2. Classes: 3 lec & 1 tut/wk. Prerequisite: MATH 2901 or Credit in MATH 2001. Prohibition: May not be counted with MATH 2005. Assessment: One 2hr exam, assignments.

This unit of study is essentially an advanced version of MATH 2005, the emphasis being on solutions of differential equations in Applied Mathematics. The theory of ordinary differential equations is developed for second order linear, including series solutions, special functions and Laplace transforms. Some use is made of computer programs such as Mathematica. Methods for partial differential equations and boundary-value problems include separation of variables, Fourier series and transforms.

MATH 2906 Nonlinear Systems and Chaos (Advanced)

4 credit points. Semester: 2. Classes: 2 lec, 1 tut & 1 computer lab/wk. Prerequisite: MATH (1901 or 1906 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or 1907 or Credit in 1003). Prohibition: May not be counted with MATH 2006. Assessment: 2hr exam, assignments, computer lab participation.

The content of this unit of study parallels that of MATH 2006.

MATH 2907 Analysis (Advanced)

4 credit points. Semester: 2. Classes: 3 lec & 1 tut/wk. Prerequisite: MATH (1901 or 1906 or Credit in 1001) and (1903 or 1907 or Credit in 1003) (MATH 2901 or 2001 strongly advised). Prohibition: May not be counted with MATH 2007. Assessment: One 2hr exam, assignments.

The aim of the unit of study is to provide a solid grounding to the general theory of infinite processes. We study in a concrete way the limiting behaviour of sequences, series and functions via interesting and enduring examples from classical analysis. This background is essential to understanding the more abstract theories which are studied in third year and beyond, and their myriad of applications in Science, Engineering, Statistics and Economics. Topics will include convergence of sequences and series, power series of real and complex variables, uniform convergence of sequences and series of functions, and Fourier series with applications.

MATH 2918 Introduction to Modern Algebra (Adv)

4 credit points. Semester: 2. Classes: 3 lec & 1 tut/wk. Prerequisite: MATH 2902. Prohibition: May not be counted with MATH 2008 or 2908. Assessment: One 2hr exam, assignments & quizzes.

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 MATH 2902, 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.

The major part of the unit is concerned with introductory group theory, motivated by examples of matrix groups and permutation groups. Topics include actions of groups on sets, including linear actions on vector spaces. Subgroups, homomorphisms and quotient groups are investigated, and the First Isomorphism Theorem is proved.

MATH 2933 Financial Mathematics 1 (Advanced)

4 credit points. Semester: 1. Classes: 2 lec, 1 tut & 0.5 comp lab/wk. Prerequisite: MATH (1901 or 1906 or credit in 1001) and MATH (1902 or credit in 1002) and MATH (1903 or 1907 or credit in 1003) and MATH (1905 or credit in 1005). Prohibition: May not be counted with MATH 2033. Assessment: 2hr exam, quizzes, assignment, computer project. The content of this unit of study parallels that of MATH 2033, but students will be required to undertake all problem solving and assessment tasks at a more advanced level. Some additional topics may also be included.

Statistics Intermediate units of study

The School of Mathematics and Statistics provides Intermediate units of study, each worth 4 credit points, in Statistics. A normal Intermediate load in a discipline is 16 credit points and students intending to specialise in Senior Statistics should take the 4 units of study (16 credit points) of Intermediate Statistics.

Some topics are offered at Normal and Advanced levels and may not be counted together.

The units of study (each 4 credit points) are listed below:

February Semester

- Statistical Distributions STAT 2001
- Introduction to Probability (Advanced) STAT 2901
- Data Analysis STAT 2002

July Semester

- Estimation Theory STAT 2003
- Estimation Theory (Advanced) STAT 2903
- Hypothesis Testing STAT 2004

Further information follows, whilst details of units of study structure, content and assessment procedures are provided in the Intermediate Year unit of study Handbook available from the School at the time of enrolment.

Relation to other units of study and recommendations

Students should note that all Senior Statistics units of study have statistics prerequisites and some require MATH 2001 or 2901. Mathematics 2002 or 2902 is also desirable, in addition.

If your major interest is statistics, then you are encouraged to enrol in 4 units of study (16 credit points) in Intermediate Statistics. If you are considering doing Honours in Statistics, these units of study should include some Advanced units of study, and choices from Intermediate Mathematics should include at least Mathematics 2001 or 2901 and Mathematics 2002 or 2902.

If you do not intend to major in Statistics but want a solid introduction to Applied Statistics, you should take STAT 2002 in your first semester and STAT 2004 in your second semester. This allows you the option of continuing with STAT 3002 and STAT 3004 at Senior level.

STAT 2001 Statistical Distributions

4 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Prerequisite: MATH (1001 or 1901 or 1906 or Credit in 1011) and [MATH (1005 or 1905 or 1015) or MATH (1004 or 1904)]. Prohibition: May not be counted with STAT 2901. Assessment: 2hr exam, assignments, tutorial participation. Distribution theory for discrete and continuous random variables, providing the probabilistic basis for the treatment of samples.

STAT 2002 Data Analysis

4 credit points. Semester: 1. Classes: 2 lec & 1 tut & 1 computer lab/wk. Prerequisite: MATH 1005 or 1905 or 1015 (or STAT 1021 for Arts students). Assessment: 2hr exam, quizzes, tutorial participation, one 1 hr computer practical exam.

Exploratory data analysis, simulation, bootstrapping and an introduction to the use of a statistical computing package.

STAT 2003 Estimation Theory

4 credit points. Semester: 2. Classes: 2 lec & 1 tut/wk. Prerequisite: STAT 2001 or 2901. Prohibition: May not be counted with STAT 2903. Assessment: 2hr exam, assignments.

Bivariate distribution theory, estimation, dependence, maximum likelihood estimation and sampling theory.

STAT 2004 Hypothesis Testing

4 credit points. Semester: 2. Classes: 2 lec & 1 tut & 1 computer lab/wk. Prerequisite: STAT 2002. Assessment: 2hr exam, quizzes, computer lab participation, one 1 hr computer practical exam.

Tests of hypotheses about Normal models, including Analysis of Variance, non parametric tests, and regression theory.

STAT 2901 Introduction to Probability (Advanced)

4 credit points. Semester: 1. Classes: 2 lec & 2 tut/wk. Prerequisite: MATH (1903 or 1907 or Credit in 1003) and MATH (1905 or Credit in 1005). Prohibition: May not be counted with STAT 2001. Assessment: 2hr exam, assignments.

Topics in STAT 2001 are treated at an Advanced level, with extensions. Introduction to the use of generating functions.

STAT 2903 Estimation Theory (Advanced)

4 credit points. Semester: 2. Classes: 2 lec & 2 tut/wk. Prerequisite: STAT 2901 or Credit in STAT 2001. Prohibition: May not be counted with STAT 2003. Assessment: 2hr exam, assignments.

Topics in STAT 2003 are treated at an Advanced level, with extensions.

Mathematics Senior units of study

The School of Mathematics and Statistics provides a range of Senior units of study, each worth 4 credit points, covering a wide variety of topics in Pure and Applied Mathematics. Students may take up to 12 units of study (48 credit points) or more at Senior level. Those intending to proceed to Honours or simply to major in mathematics must take a minimum of 6 units of study (24 credit points) from the Science Discipline Area of Mathematics.

The units of study are taught at either the Normal or the Advanced level. Entry into the advanced units of study is restricted to students who have met various prerequisite conditions. Students should consult the list below for requirements of individual Advanced units of study, and seek advice from the Senior year coordinators.

The School encourages students undertaking an Advanced program to choose 3 or 4 units of study at the Advanced level.

Students wishing to keep open the possibility of undertaking an Honours year are strongly advised to consult a Senior year adviser about their choice of units of study.

For ease of overview, the units of study are arranged under Pure, for students wishing to specialise in Pure Mathematics, and Applied, for those wishing to specialise in Applied Mathematics. Several units of study are suitable to either. Details for each unit of study appear below, whilst full details of the unit of study structure, content and assessment procedures are provided in the Senior units of study Handbook, available from the School at the time of enrolment.

It should be noted that not all units of study are offered each year and any unit may be withdrawn due to resources constraints.

*Pure units of study (each 4 credit points)**Semester 1*

- Algebra I (Advanced) MATH 3902
- Categories and Computer Science (Advanced) MATH 3905 (odd years only)
- Complex Variable (Advanced) MATH 3904
- Differential Geometry (Advanced) MATH 3903
- Elementary Cryptography & Protocols MATH 3024
- History of Mathematical Ideas MATH 3004
- Logic MATH 3005
- Metric Spaces (Advanced) MATH 3901
- Ordinary Differential Equations MATH 3003
- Rings and Fields MATH 3002
- Topology MATH 3001

Semester 2

- Algebra II (Advanced) MATH 3907 (even years only)
- Coding Theory MATH 3007
- Combinatorics (Adv) MATH 3912
- Financial Mathematics 2 MATH 3015
- Financial Mathematics 2 (Advanced) MATH 3933
- Geometry MATH 3006
- Group Representation Theory (Advanced) MATH 3906 (odd years only)
- Information Theory MATH 3010
- Lebesgue Integration & Fourier Analysis (Adv.) MATH 3909
- Nonlinear Analysis (Advanced) MATH 3908
- Number Theory MATH 3009
- Public Key Cryptography (Advanced) MATH 3925
- Real Variables MATH 3008

*Applied units of study (each 4 credit points)**Semester 1*

- Differential Geometry (Advanced) MATH 3903
- Fluid Dynamics (Advanced) MATH 3914
- History of Mathematical Ideas MATH 3004
- Mathematical Computing I MATH 3016
- Mathematical Computing I (Advanced) MATH 3916
- Partial Differential Equations and Waves MATH 3018

- Partial Differential Equations and Waves (Advanced) MATH 3921
- Signal Processing MATH 3019
- Signal Processing (Advanced) MATH 3919

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- Coding Theory MATH 3007
- Financial Mathematics 2 MATH 3015
- Financial Mathematics 2 (Advanced) MATH 3933
- Hamiltonian Dynamics (Advanced) MATH 3917
- Information Theory MATH 3010
- Mathematical Methods (Advanced) MATH 3915
- Nonlinear Analysis (Advanced) MATH 3908
- Nonlinear Systems and Biomathematics MATH 3020
- Nonlinear Systems and Biomathematics (Advanced) MATH 3920

Relation to other units of study and recommendations

In general, 6 units of study (24 credit points) are required in order to major in Mathematics and a credit average is required to progress to an Honours year. Potential Honours students are strongly encouraged to include one or more Advanced level unit(s) of study and seek advice from a Senior year coordinator.

Students intending to major in Pure Mathematics should choose at least 6 units of study from the Pure list above; 3 units of study each semester is the normal choice. Intending Honours students are strongly encouraged to include Mathematics 3901 and 3902.

Students intending to major in Applied Mathematics should choose at least 6 units of study from the Applied list above.

A double major would require a choice of 12 units of study from the lists above.

Particular combinations would be suitable for students with special interests.

Computer Science students: Mathematics 3001, 3002 or 3902, 3005, 3905, 3006, 3007, 3009, 3010, 3912, 3015 or 3933, 3016 or 3916, 3019 or 3919, 3024, 3925.

Engineering (BSc/BE) students: Mathematics 3001 or 3901, 3003, 3005, 3019 or 3919, 3903, 3904, 3007, 3008, 3010, 3908, 3909, 3015 or 3933, 3016 or 3916, 3018, 3020 or 3920, 3914, 3915, 3917, 3024, 3025.

Physics or Chemistry students: Mathematics 3001 or 3901, 3002, 3003, 3914, 3917, 3903, 3904, 3006, 3008, 3009, 3010, 3908, 3909, 3015 or 3933, 3016 or 3916, 3018, 3019 or 3919, 3020 or 3920, 3906, 3915.

Prospective teachers of Mathematics: Mathematics 3001 or 3901, 3002 or 3902, 3003, 3004, 3005, 3006, 3007, 3008, 3009, 3010, 3016 or 3916, 3018, 3019 or 3919, 3020 or 3920.

MATH 3001 Topology

4 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Prohibition: May not be counted with MATH 3901. Assessment: One 2hr exam, assignments. Topology can be considered as a branch of geometry, and it has been called 'rubber sheet geometry', because it originated in the study of figures which are invariant under elastic deformations. It now forms a basic framework for fields such as functional analysis and nonlinear differential equations.

This unit of study covers a number of the more elementary aspects of both general and combinatorial topology. Topics discussed include continuous mappings and homeomorphisms, compactness, and the combinatorial classification of surfaces.

MATH 3002 Rings and Fields

4 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2008 or 2908). Prohibition: May not be counted with MATH 3902. Assessment: One 2hr exam, assignments.

This unit of study is concerned primarily with the algebraic systems such as rings and fields, which are generalizations of familiar examples such as polynomials and real numbers. It generalizes familiar notions of divisibility, greatest common divisors and primality from the integers to other rings, and considers homomorphisms and quotient structures.

MATH 3003 Ordinary Differential Equations

4 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2001 or 2901). Assessment: One 2hr exam, assignments.

This unit of study is an introduction to the theory of systems of ordinary differential equations. Such systems model many types of phenomena in Engineering, Biology and the physical sciences. The emphasis will be not on finding explicit solutions, but instead on the qualitative features of these systems, such as stability, instability and oscillatory behaviour. The aim is to

develop a good geometrical intuition into the behaviour of solutions to such systems. Some background in linear algebra, and familiarity with concepts such as limits and continuity, will be assumed.

MATH 3004 History of Mathematical Ideas

4 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Assessment: One 2hr exam, 2500w essay, tut presentation.

This unit of study looks at the evolution of some basic mathematical concepts: one of the goals is a better understanding of mathematics itself. The main theme is the development of the ideas underlying the calculus from Newton to Hausdorff, over the period 1650 to 1914: the work of Newton, Leibniz, Euler, Lagrange, Cauchy and Weierstrass is discussed in some detail. Independent research is an important part of the work of the unit: more than half of the assessment comes from the essay and the tutorial paper which each student must complete.

MATH 3005 Logic

4 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Prerequisite: (for all but BCST students) 8 credit points of Intermediate Mathematics; (for BCST students) 8 credit points of Intermediate Mathematics or 12 credit points of Junior Mathematics at Advanced level. Assessment: One 2hr exam, assignments.

This unit of study is mainly concerned with a general notion of computability, studied by means of Turing machines (simple abstract computers). In particular, it looks at some problems which cannot be solved by any computer. (Note: no experience with computing is required.) In the second part of the unit of study, the results from the first part are applied to mathematics itself. The conclusion is that there is no systematic way of discovering all mathematical truths.

MATH 3006 Geometry

4 credit points. Semester: 2. Classes: 2 lec & 1 tut/wk. Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 1902 or 1002). Assessment: One 2hr exam, assignments.

Over the last 100 years or so, transformations have come to play an increasingly important role in geometry. In this unit of study, various groups of transformations are studied in some detail. Isometries, affine transformations, projective transformations, and the famous frieze groups are all discussed. The basic approach is via vectors (and matrices), emphasizing the interplay between geometry and linear algebra. Each provides insight into the other. The underlying theme of the unit is the classification of transformation groups in both Euclidean and projective planes.

MATH 3007 Coding Theory

4 credit points. Semester: 2. Classes: 2 lec & 1 tut/wk. Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902). Assessment: One 2hr exam, assignments.

This unit of study provides a general introduction to the theory of error-correcting codes. After studying general error correcting block codes, with the aim of constructing efficient codes which can be practically implemented, it leads to the study of cyclic codes which are a special case of linear codes, with nice algebraic properties. This unit of study concludes with the construction of classes of cyclic codes that are used in the modern digital communication systems, including the code used in the compact disc player to correct errors caused by dust and scratches.

MATH 3008 Real Variables

4 credit points. Semester: 2. Classes: 2 lec & 1 tut/wk. Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2007 or 2901 or 2907). Assessment: One 2hr exam, assignments.

The aim of this unit of study is to present some of the beautiful and practical results which continue to justify and inspire the study of analysis. The unit of study includes a review of sequence, series, power series and Fourier series. It introduces the notions of asymptotic and uniform convergence. Among topics studied are the Bernoulli numbers, Bernoulli polynomials, the Euler-Maclaurin summation formula, the Riemann zeta function and Stirling's approximation for factorials.

MATH 3009 Number Theory

4 credit points. Semester: 2. Classes: 2 lec & 1 tut/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Assessment: One 2hr exam, assignments.

This unit of study is an introduction to elementary number theory, with an emphasis on the solution of Diophantine equations (that is, finding integer solutions to such equations as $x^2 + y^2 = z^2$, $x^2 - 21y^2 = 1$). Three main tools are developed: (i) the theory of divisibility and congruence (up to quadratic

reciprocity), (ii) geometric methods, and (iii) rational approximation (continued fractions).

MATH 3010 Information Theory

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901 and some probability theory). **Assessment:** One 2hr exam, assignments.

This unit of study is a general introduction to the ideas and applications of information theory. The basic concept here is that of entropy, an idea which goes back more than a century to the work of Boltzmann. Interest in the concept was enormously increased by the work of Shannon in the late 1940's. He showed that entropy was a basic property of any (discrete) probability space, and established a fundamental relation between the entropy of a randomly varying signal and the maximum rate at which the signal could be transmitted through a communication line. Another interpretation of entropy is in terms of the financial value of information to a gambler. The unit of study covers applications in both areas; topics studied include data compression, gambling strategies and investment portfolios.

MATH 3015 Financial Mathematics 2

4 credit points. **Semester:** 2. **Classes:** 2 lec, 1 tut & 1 lab/wk. **Prerequisite:** 8 credit points of Intermediate Mathematics including MATH 2033 or 2933 (and strongly advise MATH 2010 and STAT (2001 or 2901)). **Prohibition:** May not be counted with MATH 3933. **Assessment:** One 2hr exam, quizzes, assignment, computer project.

This unit is a follow-on from the Intermediate unit MATH 2033 (Financial Mathematics 1). The first part deals with modern portfolio theory, the second part with options and derivative securities. Topics covered include: mean-variance Markowitz portfolio theory, the Capital Asset Pricing Model, Arbitrage Pricing Theory, log-optimal portfolios and the Kelly criterion; calls and puts, profit-loss profiles for option strategies, arbitrage from mispricing, binomial random walk and the CRR-option pricing model, risk-neutrality, limit to the continuous time Black-Scholes model, sensitivity analysis, introduction to exotic options and derivative securities. Mathematical and statistical methods required: theory of quadratic programming, Lagrange parameters and Kuhn-Tucker theory, linear factor models in a statistical setting, advance probability theory including distributions and expectations, introduction to random walks and stochastic processes.

MATH 3016 Mathematical Computing I

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903 or 1906 or 1907. **Prohibition:** May not be counted with MATH 3916. **Assessment:** One 2hr exam, assignments.

This unit of study provides an introductory unit of study on Fortran 95 programming and numerical methods. Topics covered include computer arithmetic and computational errors, systems of linear equations, interpolation, solution of nonlinear equations, numerical quadrature and initial value problems for ordinary differential equations.

MATH 3018 Partial Differential Equations and Waves

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** MATH (2001 or 2901) and MATH (2005 or 2905). **Prohibition:** May not be counted with MATH 3921. **Assessment:** One 2hr exam, assignments.

After a review of ordinary differential equations this unit of study covers Sturm-Liouville eigenvalue problems and demonstrates their role in solving PDE's. The standard equations of mathematical physics, the wave equation, the diffusion (heat) equation and Laplace's equation, are treated, together with various applications.

MATH 3019 Signal Processing

4 credit points. **Semester:** 1. **Classes:** 2 lec, 1 tut & 1 lab/wk. **Prerequisite:** MATH (2001 or 2901) and MATH (2005 or 2905). **Prohibition:** May not be counted with MATH 3919. **Assessment:** One 2hr exam, assignments, computer project.

This unit of study is an introduction to the mathematical theory of Digital Signal Processing. It consists of both theory and application. A significant component of the unit of study involves computer exercises using MATLAB. Topics treated include analogue and digital signals, transforms, the spectral theory of digit signal and wavelets. Applications include sampling and aliasing, filter design and the basics of image processing.

MATH 3020 Nonlinear Systems and Biomathematics

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 8 credit points of Intermediate Mathematics (strongly advise MATH 2006 or 2906 or 2908 or 3003) and one of MATH 1001 or 1003 or 1901 or 1903. **Prohibition:** May not be counted with MATH 3920. **Assessment:** One 2hr exam, assignments.

This unit of study is concerned with nonlinear ordinary and partial differential equations applied to biological systems. The applications will be drawn from predator-prey systems, transmission of diseases, chemical reactions, beating of the heart, neurons (nerve cells), and pattern formation. The emphasis is on qualitative analysis including phase-plane methods, bifurcation theory and the study of limit cycles. The unit of study will include some computer simulations as illustrations.

MATH 3024 Elementary Cryptography and Protocols

4 credit points. **Semester:** 1. **Classes:** 2 lec & 2 prac/wk. **Prerequisite:** 12 credit points of Intermediate Mathematics. Strongly advise MATH 2008 or 2908. **Assessment:** One 2hr exam plus assignments.

Cryptography is the branch of mathematics that provides the techniques which enable confidential information to be transmitted over public networks. This unit introduces the student to cryptography, with an emphasis on the cryptographic primitives that are in most common use today. Following a review of classical cryptosystems, modern symmetric cryptosystems (chiefly DES) and non-symmetric cryptosystems (chiefly RSA) will be studied. In the second part of the unit, these cryptographic primitives will be used to construct protocols for realising digital signatures, data integrity, identification, authentication and key distribution. An important feature of the course will be weekly exercises in practical cryptography using the Computer Algebra system Magma.

MATH 3901 Metric Spaces (Advanced)

4 credit points. **Semester:** 1. **Classes:** 2 tec & 1 tut/wk. **Prerequisite:** 12 credit points of Intermediate Mathematics (strongly advise MATH 2907). **Prohibition:** May not be counted with MATH 3001. **Assessment:** One 2hr exam, assignments.

Topology, developed at the end of the 19th Century to investigate the subtle interaction of analysis and geometry, is now one of the basic disciplines of mathematics. A working knowledge of the language and concepts of topology is essential in fields as diverse as algebraic number theory and non-linear analysis. This unit develops the basic ideas of topology using the example of metric spaces to illustrate and motivate the general theory. Topics covered include: Metric spaces, convergence, completeness and the contraction mapping theorem; Metric topology, open and closed subsets; Topological spaces, subspaces, product spaces; Continuous mappings and homeomorphisms; Compact spaces; Connected spaces; Hausdorff spaces and normal spaces.

MATH 3902 Algebra I (Advanced)

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 12 credit points of Intermediate Mathematics (strongly advise MATH 2902). **Prohibition:** May not be counted with MATH 3002. **Assessment:** One 2hr exam, assignments.

In this unit the tools of modern algebra are developed as an introduction to Galois Theory, which deals with the solution of polynomial equations in one variable. The same tools provide an analysis of the classical problem of determining whether certain geometrical constructions, such as the bisection of a given angle, can be performed using only ruler and compasses. The unit begins with the definitions and basic properties of rings, homomorphisms and ideals, continues with an investigation of factorization in principal ideal domains such as the Gaussian integers and the ring of polynomials over a field, and concludes with a study of algebraic field extensions and their automorphisms.

MATH 3903 Differential Geometry (Advanced)

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 12 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901, with MATH 3001 or 3901). **Assessment:** One 2hr exam, assignments.

Differential Geometry is an important branch of mathematics in which one uses Calculus to study geometric objects, such as curves, surfaces and higher-dimensional objects. It also has close connections with classical and modern physics. This unit of study covers elementary properties of curves and surfaces in R^3 , following Do Carmo's book, leading to the celebrated Gauss-Bonnet Theorem. If time allows, either the language of differential forms will be introduced or some global theory of differential geometry will be developed.

MATH 3904 Complex Variable (Advanced)

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 12 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901, with MATH 3001 or 3901). **Assessment:** One 2hr exam, assignments.

This unit of study continues the study of functions of complex variables introduced in the Intermediate units of study (Mathematics 2001 or 2901) assuming some knowledge of algebra (for example, that covered in Mathematics 2008). It will be advantageous for students to also take either Mathematics 3901 Metric Spaces (Advanced), or Mathematics 3001 Topology if they intend to do this unit of study. The unit of study begins with a review of elementary properties of analytic functions, Cauchy's integral formula, isolated singularities and the calculus of residues. This will be followed by selected topics from the theory of uniform convergence, entire functions, gamma function, zeta function, elliptic functions, harmonic functions, conformal mappings, Riemann surfaces.

MATH 3905 Categories and Computer Science (Adv)

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 12 credit points of Intermediate Mathematics. **Assessment:** One 2hr exam, assignments.

NB: Permission required for enrolment. This unit of study is offered in odd years only.

Category theory was born in the 1940's as an offshoot of algebraic topology, but since then it has become increasingly clear that it provides a rich and powerful language which can be applied to many areas both inside mathematics and beyond it. One area in which this has proved particularly fruitful is theoretical computer science. This unit of study will provide an introduction to some of the main concepts of category theory, drawing on examples from both mathematics and computer science as motivation. Topics may include: categories, functors, free categories, generators and relations, natural transformations, adjunctions, duality, group actions, imperative programs, and automata.

MATH 3906 Group Representation Theory (Advanced)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 12 credit points of Intermediate Mathematics (strongly advise MATH 3902). **Assessment:** One 2hr exam, assignments.

NB: Permission required for enrolment. This unit is only offered in odd years.

This topic is a natural extension of linear algebra combined with group theory. Groups occur naturally wherever there is symmetry of any kind; linear algebra is the fundamental tool of solving equations. Representation theory provides techniques for analysing symmetrical systems of equations. The central problem of the subject is the decomposition of a complicated representation into simple constituents. The remarkable theory of group characters, which provide the algebraic machinery for this decomposition, is the main topic of the unit of study.

MATH 3907 Algebra II (Advanced)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** MATH 3902 or Credit in MATH 3002, and 12 credit points of Intermediate Mathematics. **Assessment:** One 2hr exam, assignments.

NB: This unit of study is only offered in even years.

This unit deals with generalized linear algebra, in which the field of scalars is replaced by an integral domain. In particular we investigate the structure of modules, which are the analogues of vector spaces in this setting, and which are of fundamental importance in modern pure mathematics. Applications of the theory include the solution over the integers of simultaneous equations with integer coefficients, analysis of the structure of finite Abelian groups, and techniques for obtaining canonical forms for matrices. Students will be assumed to be familiar with the basic concepts of ring theory.

MATH 3908 Nonlinear Analysis (Advanced)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 12 credit points of Intermediate Mathematics (strongly advise MATH 3901). **Assessment:** One 2hr exam, assignments.

The purpose of this unit is to give an introduction to some modern ideas in the study of nonlinear dynamical systems. We concentrate largely on one-dimensional discrete systems. The dynamics of the apparently simple systems we study turn out to be remarkably complicated. We show how seemingly elementary nonlinear maps, such as quadratic maps, give rise to fractal sets. This leads into a discussion of concepts like topological conjugacy, symbolic dynamics, chaos theory, the Sarkovskii Theorem and, in particular, bifurcations of maps. We also study how period doubling bifurcations can lead to chaos;

homeomorphisms of the circle and the rotation number. We give a more general discussion of the important topic of bifurcation theory.

MATH 3909 Lebesgue Int and Fourier Analysis (Adv)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 12 credit points of Intermediate Mathematics (strongly advise MATH 2907 and MATH 3901). **Assessment:** One 2hr exam, assignments.

Integration is a very useful tool in many areas of mathematics. Lebesgue's theory of integration is the one used in most modern analysis, providing very general conditions under which integrals are defined. The theory is based on measure theory, which is a generalisation of the ideas of area and volume. Measure theory is also the foundation of probability theory, and is important for understanding many different subjects from quantum physics to financial mathematics. In this unit, measure theory is applied to the study of Fourier series and integrals. The first part deals with measure, outer measure, construction of measure and Lebesgue measure. The second part covers measurable functions, integration theory, Fatou's lemma, dominated convergence theorem. The third part deals with product measure, convolution, Fourier transform and Fourier inversion. The additional topics expectation, Radon-Nikodym derivative, and conditional probability may be covered, if time permits.

MATH 3912 Combinatorics (Advanced)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 12 credit points of Intermediate Mathematics (strongly advise MATH 2902). **Assessment:** Generally one 2hr exam, assignments.

This course is an introduction to enumerative combinatorics. It begins with a study of some of the important numbers that arise in counting: binomial and multinomial coefficients, Stirling numbers, Fibonacci numbers, etc, in particular in the context of counting functions between finite sets, where functions and sets have special properties. The main tools useful in enumeration problems, including the principle of inclusion-exclusion, generating functions, calculus of differences, are discussed. A feature of the course is a detailed account of Polya's Theory of counting classes of objects possessing some symmetry, for example isomers in chemistry, or non-isomorphic finite simple graphs.

MATH 3914 Fluid Dynamics (Advanced)

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** MATH (2901 or credit in 2001) and MATH (2905 or credit in 2005). **Assessment:** One 2hr exam, assignments.

This unit of study provides an introduction to fluid dynamics, starting with a description of the governing equations and the simplifications gained by using stream functions or potentials. It develops elementary theorems and tools, including Bernoulli's equation, the role of vorticity, the vorticity equation, Kelvin's circulation theorem and Helmholtz's theorem. Topics covered include viscous flows, boundary layers, potential theory and 2-D airfoils, and complex variable methods. The unit of study concludes with an introduction to hydrodynamic stability and the transition to turbulent flow.

MATH 3915 Mathematical Methods (Advanced)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** MATH (2901 or 2905 or 2907 or 3921) or Credit in MATH (2005 or 3018). **Assessment:** One 2hr exam, assignments.

This unit of study begins with a review of analytic functions, complex integration and power series. These techniques are applied to the evaluation of real variable integrals and summation of series. The second part is a study of some of the special functions of mathematical physics in the real and complex domains. Examples include various hypergeometric functions and their connection with certain ordinary and partial differential equations, and also elliptic functions and their connection with the simple pendulum and the spinning top. The third part introduces transforms methods, generalised functions and Green's functions with applications to boundary value problems.

MATH 3916 Mathematical Computing I (Advanced)

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisite:** 8 credit points of Intermediate Mathematics and one of MATH 1903 or 1907 or Credit in MATH 1003. **Prohibition:** May not be counted with MATH 3016. **Assessment:** One 2hr exam, assignments. See entry for MATH 3016 Mathematical Computing I.

MATH 3917 Hamiltonian Dynamics (Advanced)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1hr tut/wk. **Prerequisite:** MATH 2904 or Credit in MATH 2004. **Assessment:** One 2hr exam, assignments.

This unit of study provides a brief recapitulation of the essential features of Lagrange's equations and of the calculus of variations before introducing the Hamiltonian and deriving Hamilton's equations from a variational principle. Canonical transformations, that is, transformations which take a Hamiltonian system into a new Hamiltonian system, then lead in a natural way to the Hamilton-Jacobi equation of mechanics, by means of which any integrable Hamiltonian system is most readily solved. The role of action angle variables in perturbation theory is described, and a brief introduction to the onset of chaos in Hamiltonian systems is given. In the last part the use of Pontriagin's principle in optimisation and control theory is discussed.

MATH 3919 **Signal Processing (Advanced)**

4 credit points. Semester: 1. Classes: 2 lec, 1 tut & 1 lab/wk. Prerequisite: MATH 2905 or Credit in MATH 2005. Prohibition: May not be counted with MATH 3019. Assessment: One 2hr exam, assignments, computer project.

As for MATH 3019 but with more advanced problem solving and assessment tasks. Some additional topics may also be included.

MATH 3920 **Nonlinear Systems & Biomathematics (Adv)**

4 credit points. Semester: 2. Classes: 2 lec & 1 tut/wk. Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 2908 or 3003) and one of MATH 1903 and 1905 or 1903 and 1904 or Credit in MATH 1003 and 1005 or 1003 and 1004. Prohibition: May not be counted with MATH 3020. Assessment: One 2hr exam, assignments. See entry for MATH 3020 Nonlinear Systems and Biomathematics.

MATH 3921 **P D E And Waves (Advanced)**

4 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Prerequisite: MATH (2901 or credit in 2001) and (2905 or credit in 2005). Prohibition: May not be counted with MATH 3018. Assessment: One 2hr exam, assignments.

As for MATH 3018 but with more advanced problem solving and assessment tasks. Some additional topics may also be included.

MATH 3925 **Public Key Cryptography (Advanced)**

4 credit points. Semester: 2. Classes: 2 lec & 2 prac/wk. Prerequisite: 12 credit points from Intermediate or senior mathematics. Strongly recommend MATH 3902. Assessment: One 2hr exam plus assignments. Public Key Cryptography (PKC) enables two parties to communicate securely over a public communications network, without them first having to exchange a secret key. PKC provides secure communications over the Internet, over mobile phone networks and in many other situations. This course draws on ideas from algebra, number theory and geometry to provide the student with a thorough grounding in the mathematical basis of the most popular PKC's. Specifically, the unit treats PKC's based on the difficulty of integer factorization (RSA), the discrete logarithm problem in a finite field (Diffie-Hellman, ElGamal) and the discrete logarithm problem in the group of rational points of an elliptic curve over a finite field. Attacks on these cryptosystems will be treated in some depth.

MATH 3933 **Financial Mathematics 2 (Advanced)**

4 credit points. Semester: 2. Classes: 2 lec, 1 lab & 1 tut/wk. Prerequisite: 8 credit points of Intermediate Mathematics including MATH 2933 or Credit in MATH 2033 (and strongly advise MATH 2010 and STAT (2001 or 2901)). Prohibition: May not be counted with MATH 3015. Assessment: One 2hr exam, quizzes, assignment, computer project. As for Math 3015 but with more advanced problem solving and assessment tasks. Some additional topics may also be included.

Statistics Senior units of study

The School of Mathematics and Statistics provides several Senior units of study, each worth 4 credit points, in Statistics. Students wishing to major in Statistics should take 6 units of study (24 credit points) of Senior Statistics.

Some topics are offered at Normal and Advanced levels and may not be counted together. Entry to some Advanced units of study requires a Credit or better in a Normal level prerequisite or a Pass or better in an Advanced level prerequisite.

The units of study (each 4 credit points) are listed below:

February Semester

- Distribution Theory and Inference STAT 3001
- Applied Linear Models STAT 3002
- Time Series Analysis STAT 3003
- Statistical Theory (Advanced) STAT 3901
- Linear Models (Advanced) STAT 3902

July Semester

- Design of Experiments STAT 3004
- Applied Stochastic Processes STAT 3005
- Sampling Theory and Categorical Data STAT 3006
- Markov Processes (Advanced) STAT 3905
- Multivariate Analysis (Advanced) STAT 3907

Further information follows, whilst details of unit of study structure, content, and assessment procedures are provided in the Senior units of study Handbook available from the School at the time of enrolment.

Relation to other units of study and recommendations

In general 6 units of study (24 credit points) are required in order to major in Statistics, and a credit average is required to progress to an Honours year. Potential Honours students are expected to include at least two Advanced level units of study.

Students intending to major in Statistics should choose 3 units of study of Senior Statistics each semester, making 24 credit points in total.

STAT 3001 **Distribution Theory and Inference**

4 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Prerequisite: MATH (1003 or 1903 or 1907) and STAT (2003 or 2903). Prohibition: May not be counted with STAT 3901. Assessment: One 2hr exam, assignments.

Multivariate distribution theory and linear transformations of variables. Properties of estimators, uniformly most powerful tests and likelihood ratio tests.

STAT 3002 **Applied Linear Models**

4 credit points. Semester: 1. Classes: 2 lec & 1 tut & 1 computer lab/wk. Prerequisite: STAT 2004 (or STAT 1022 for Arts students) and MATH (1002 or 1902). Prohibition: May not be counted with STAT 3902. Assessment: One 2hr exam, assignments, one 1 hr computer practical exam.

Multiple regression diagnostics, principal components, MANOVA, discriminant analysis.

STAT 3003 **Time Series Analysis**

4 credit points. Semester: 1. Classes: 2 lec & 1 tut & 1 computer lab/wk. Prerequisite: STAT 2003 or 2903. Assessment: One 2hr exam, assignments.

Modelling and analysing time-dependent situations containing some dependence structure, ARMA models.

STAT 3004 **Design of Experiments**

4 credit points. Semester: 2. Classes: 2 lec & 1 tut & 1 computer lab/wk. Prerequisite: STAT 3002 or 3902. Assessment: One 2hr exam, assignments, one 1 hr computer practical exam.

Design and analysis of controlled comparative experiments, block designs, Latin squares, split-plot designs, 2ⁿ factorial designs.

STAT 3005 **Applied Stochastic Processes**

4 credit points. Semester: 2. Classes: 2 lec & 1 tut/wk. Prerequisite: MATH (1003 or 1903 or 1907) and STAT (2001 or 2901). Prohibition: May not be counted with STAT 3905. Assessment: One 2hr exam, assignments.

Discrete and continuous time Markov chains, introduction to Brownian motion.

STAT 3006 **Sampling Theory and Categorical Data**

4 credit points. Semester: 2. Classes: 2 lec, 1 tut & 1 computer lab/wk. Prerequisite: STAT 2003 or 2903. Assessment: One 2hr exam, assignments.

Sampling without replacement, stratified sampling, ratio estimation, systematic and cluster sampling, contingency tables, log linear models.

STAT 3901 **Statistical Theory (Advanced)**

4 credit points. Semester: 1. Classes: 2 lec & 2 tut/wk. Prerequisite: (MATH 2001 or 2901) and STAT 2903. Prohibition: May not be counted with STAT 3001. Assessment: One 2hr exam, assignments.

Topics in STAT 3001 are treated at an Advanced level, with extensions.

STAT 3902 **Linear Models (Advanced)**

4 credit points. Semester: 1. Classes: 2 lec, 1 tut & 1 computer lab/wk. Prerequisite: STAT 2004 and (STAT 2903 or Credit in 2003) and (MATH 2002 or 2902). Prohibition: May not be counted with STAT 3002. Assessment: One 2hr exam, assignments, one 1 hr computer practical exam.

Topics in STAT 3002 are treated at an Advanced level, with extensions.

STAT 3905 Markov Processes (Advanced)

4 credit points. **Semester:** 2. **Classes:** 2 lec & 2 tut/wk. **Prerequisite:** STAT 2901 or (Credit in STAT 2001 and MATH (1003 or 1903 or 1907)). **Prohibition:** May not be counted with STAT 3005. **Assessment:** One 2hr exam, assignments.
Topics in STAT 3005 are treated at an Advanced level, with extensions.

STAT 3907 Multivariate Analysis (Advanced)

4 credit points. **Semester:** 2. **Classes:** 2 lec, 1 tut/wk. **Prerequisite:** STAT 3902 and either STAT 3001 or 3901. **Assessment:** One 2hr exam, assignments.

NB: Permission required for enrolment. This unit is only offered in odd years.

This unit of study studies the analysis of data on several variables measured simultaneously.

Mathematics & Statistics Honours

The School of Mathematics and Statistics offers three Honours programs for students who have completed at least 24 credit points of Senior units of study in appropriate subject areas and who are of sufficient merit. The programs are:

- Applied Mathematics
- Mathematical Statistics
- Pure Mathematics

Honours units of study consist of both formal coursework and an essay or project. There is provision for students to take approved units of study from other research areas within the School and from other Departments. The essay or project is a substantial part of the year's assessment and is closely supervised by a staff member. Students are required to prepare a talk about their essay or project topics.

Interested students should contact the fourth year coordinator at some convenient time before pre-enrolment. Senior level students contemplating an Honours year are strongly advised to consult the Senior unit of study handbooks for further advice and to discuss their choice of Senior units of study with the appropriate Senior level coordinator.

Further details of the Honours year are available from the coordinators for Applied Mathematics 4, Mathematical Statistics 4 and Pure Mathematics 4 and the respective unit of study handbooks.

■ 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.

■ Molecular Biology and Genetics

Molecular Biology and Genetics units of study in second year will be taught by staff from the School of Molecular and Microbial Biosciences and the School of Biological Sciences. The first semester units, MBLG 2001, MBLG 2101 and MBLG 2901 are coordinated by the School of Molecular and Microbial Biosciences while the second semester units, MBLG 2002, MBLG 2102 and MBLG 2902 are coordinated by the School of Biological Sciences.

MBLG 2001 Molecular Biology and Genetics A

8 credit points. Associate Professor Whiteiaw, Dr Hancock. **Semester:** 1, Summer. **Classes:** 3 lec & 5 prac/wk & voluntary tutorials. **Prerequisite:** 12 credit points of Junior Chemistry. **Qualifying:** BIOL 1001 or 1901 except for students co-enrolled in BCHM 2011, or with permission of the unit Coordinator. **Prohibition:** May not be counted with AGCH 2001 or BCHM 2001 or 2101 or 2901 or MBLG 2101 or 2901. **Assessment:** One 2hr exam, one 2hr theory of prac exam, prac tasks.

The lectures in this unit of study introduce the main principles of molecular biology and genetics - ie, the molecular basis of life. In the beginning, the students are introduced to the information macromolecules in living cells: DNA, RNA and protein. This is followed by a review of how DNA is organised into chromosomes and genes and this leads on to discussion of gene expression and replication. The unit of study then moves on to discuss how the amino acid sequence of proteins determines the diverse array of protein functions. The unit covers modern molecular biology techniques: plasmids, transposons, bacteriophage and restriction enzymes and the techniques used to manipulate genetic information; gene libraries, DNA sequencing and the polymerase chain reaction.

Practical: The practical component complements the theory component of MBLG 2001 by exposing students to experiments which investigate the regulation of gene expression, the manipulation of DNA molecules and the purification of proteins. During the unit of study, students will acquire a wide range of generic skills; including computing skills, communication and articulation skills (written and oral), criticism and data analysis/evaluation skills, experimental design and hypothesis testing skills. Students perform practical sessions in small groups and, therefore, problem solving and team work form an integral part of each activity. In addition to the generic skills, students will learn important laboratory/technical abilities with an emphasis on the equipment used in molecular biology and genetics research.

Textbooks

Garrett RH & Grisham CM. Biochemistry. Saunders 1999; Resource Manual for MBLG 2001 Practical Sessions, Sem 1.

MBLG 2101 Molecular Biology & Genetics A (Theory)

4 credit points. Associate Professor Whiteiaw, Dr Hancock. **Semester:** 1, Summer. **Classes:** 3 lec wk. **Prerequisite:** 12 credit points of Junior Chemistry. **Qualifying:** BIOL 1001 or 1901 or by permission of the unit Coordinator. **Prohibition:** May not be counted with AGCH 2001 or BCHM 2001 or 2101 or 2901 or MBLG 2001 or 2901. **Assessment:** One 3 hr theory exam.

This unit of study is comprised of the lecture component of MBLG 2001.

Textbooks

Garrett RH & Grisham CM. Biochemistry. Saunders 1999.

MBLG 2901 Molecular Biology and Genetics A (Adv)

8 credit points. A/Prof Whiteiaw, Dr Hancock. **Semester:** 1. **Classes:** 3 lec & 5 prac/wk. **Prerequisite:** 12 credit points of Junior Chemistry. **Qualifying:** BIOL 1001 or 1901 except for students co-enrolled in BCHM 2011. **Prohibition:** May not be counted with AGCH 2011 or BCHM 2001 or 2101 or 2901 or MBLG 2001 or 2101. **Assessment:** One 2hr exam, one 2hr theory of prac exam, continuous lab reports.

NB: Entry requires a Distinction in one of the Qualifying or Prerequisite units of study, or permission of the unit Coordinator. Extension of concepts taught in MBLG 2001 which will be taught in the context of practical laboratory experiments.

Textbooks

Garrett RH & Grisham CM. Biochemistry. Saunders 1999; Resource Manual for MBLG 2001 Practical Sessions, Sem 1.

MBLG 2002 Molecular Biology and Genetics B

8 credit points. Dr K Raphael. **Semester:** 2. **Classes:** 3 lec & 5 prac/wk. **Prerequisite:** MBLG 2001. **Prohibition:** May not be counted with BIOL 2005 or 2105 or 2905 or MBLG 2102 or 2902. **Assessment:** One 2 hour theory exam, one 2 hour theory of practical exam, laboratory reports, quizzes, project.

This unit of study will build on the concepts introduced in MBLG 2001 and show how modern molecular biology is being applied to the study of the genetics of all life forms from bacteria through to complex multicellular organisms including plants, animals and humans. The course begins with a discussion of classical Mendelian genetics and its extensions, including linkage, sex-linkage and gene interactions. Lectures in this section also cover statistical analysis of genetic data, crossing over, tetrad analysis, gene mapping. Eukaryotic chromosome structure and variations in chromosome number and structure are examined as well as inheritance of cytoplasmic genes and gene mutation.

Topics in bacterial genetics and evolution include transfer of genetic information between bacteria via fertility factors and plasmids, bacterial genomics, population genetics, recombinant micro-organisms and their use in vaccine production and in agriculture. The application of recombinant DNA to the production of important biologicals will be examined as well as the utility of transgenesis and gene knockouts. The study of eukaryotic genomes will begin with a comparison of classical and molecular gene mapping, and results and lessons from

eukaryotic sequencing projects, including the Human Genome Project, will be examined. The way in which modern molecular techniques have increased our knowledge in the field of developmental biology will be examined by lectures on the developmental genetics of plants, animals and insects, control of gene expression, regulation of the cell cycle.

Topics in population genetics and molecular evolution include changes in gene frequency, Hardy-Weinberg equilibrium, inbreeding selection, genetic drift, molecular and gene evolution, conservation and ecological genetics, plant and animal breeding. Practical: Laboratory exercises will utilize a variety of prokaryotic and eukaryotic organisms to illustrate aspects of the lecture material, while developing familiarity and competence with practical equipment, microscopes, computers, and statistical tests.

MBLG 2102 Molecular Biology & Genetics B (Theory)
4 credit points. Dr K Raphael. **Semester:** 2. **Classes:** 3 lec & 1 tut/wk. **Prerequisite:** MBLG 2001 or 2101. **Prohibition:** May not be counted with BIOL 2005, 2105 or 2905, or MBLG 2002 or 2902. **Assessment:** One 2 hour theory exam, one essay.

This unit of study has the same lectures and tutorials as MBLG 2002 Molecular Biology and Genetics B, but no practical work. It does not lead on to Senior Biology units of study in genetics. It is suitable for students who wish to gain an understanding of theoretical aspects of genetics in greater depth, for applications to other areas of their career.

MBLG 2902 Molecular Biology and Genetics B (Adv)
8 credit points. Dr K Raphael. **Semester:** 2. **Classes:** 3 lec & 5 prac/wk. **Qualifying:** Distinction or better in MBLG 2001 or 2901. This requirement may be varied and students with lower marks should consult the unit Executive Officer. **Prohibition:** May not be counted with BIOL 2005 or 2105 or 2905 or MBLG 2002 or 2102. **Assessment:** One 2 hour theory exam, one 2 hour theory of practical exam, laboratory reports, quizzes, project.

Qualified students will participate in alternative components of MBLG 2002 Molecular Biology and Genetics B. The content and nature of these components may vary from year to year. This is a core Intermediate unit of study in the BSc (Molecular Biology and Genetics) award course. See prerequisites for Senior units of study in Biology.

■ School of Molecular and Microbial Biosciences

The School brings together the disciplines of Biochemistry, Microbiology and the Human Nutrition unit with separate study codes BCHM, MICR 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 entry headed Molecular Biology and Genetics in this section].

Location

The Biosciences Building (G08) is across City Road in the Darlington area behind the Wentworth Building.

Biochemistry

The School introduces the fundamentals of molecular biology and teaches biochemistry to Science students from an intermediate level. Biochemistry communicates the fundamental principles governing the structure, function and interactions of biological molecules and leads to an understanding of the molecular nature of life.

The intermediate program in biochemistry includes Biochemistry (BCHM 2011-8 credit points) and Molecules, Metabolism and Cells (BCHM 2002-8 credit points) and a faculty unit of study Molecular Biology & Genetics A (MBLG 2001-8 credit points). For those students who have completed junior Biology and Chemistry, MBLG 2001 and BCHM 2002 together provide the basic program for (a) students who wish to do only one year's study in the subject area and (b) for students who wish to continue on to the Senior units of study. An alternate intermediate program includes BCHM 2011 which more broadly introduces biochemistry and is recommended (together with intermediate chemistry and MBLG 2001) for those students interested in studying both Chemistry and Biochemistry. For those students who have not completed BIOL 1001 but have 12 credit points of Junior Chemistry the combination of BCHM 2011 and MBLG 2001 also allows students to progress to the Senior units of study.

The senior program consists of Molecular Biology and Structural Biochemistry (BCHM 3001-12 credit points), Functional Genomics and Proteomics (BCHM 3098-6 credit points) and Cellular and Medical Biochemistry (BCHM 3002-12 credit points). Taken together the combination of BCHM 3001 and BCHM 3002 constitute a major in Biochemistry. In addition BCHM 3098 links core biochemistry to recent innovations in biomedical science and biotechnology.

Advanced units of study based on the four one-semester units of study, MBLG 2901, BCHM 2902, BCHM 3901 and BCHM 3902 are available to qualified students. Additional theory only Intermediate units of study are offered in MBLG 2101 (4 credit points) and BCHM 2102 (4 credit points).

Advice on units of study

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

Slimmer School

This School offers some units of study in The Sydney Summer School. Consult The Sydney Summer School Web site for more information: www.summer.usyd.edu.au/

Biochemistry Intermediate units of study

MBLG 2001 Molecular Biology and Genetics A
8 credit points. Associate Professor Whitelaw, Dr Hancock. **Semester:** 1, Summer. **Classes:** 3 lec & 5 prac/wk & voluntary tutorials. **Prerequisite:** 12 credit points of Junior Chemistry. **Qualifying:** BIOL 1001 or 1901 except for students co-enrolled in BCHM 2011, or with permission of the unit Coordinator. **Prohibition:** May not be counted with AGCH 2001 or BCHM 2001 or 2101 or 2901 or MBLG 2101 or 2901. **Assessment:** One 2hr exam, one 2hr theory of prac exam, prac tasks.

The lectures in this unit of study introduce the main principles of molecular biology and genetics - ie, the molecular basis of life. In the beginning, the students are introduced to the information macromolecules in living cells: DNA, RNA and protein. This is followed by a review of how DNA is organised into chromosomes and genes and this leads on to discussion of gene expression and replication. The unit of study then moves on to discuss how the amino acid sequence of proteins determines the diverse array of protein functions. The unit covers modern molecular biology techniques: plasmids, transposons, bacteriophage and restriction enzymes and the techniques used to manipulate genetic information; gene libraries, DNA sequencing and the polymerase chain reaction.

Practical: The practical component complements the theory component of MBLG 2001 by exposing students to experiments which investigate the regulation of gene expression, the manipulation of DNA molecules and the purification of proteins. During the unit of study, students will acquire a wide range of generic skills; including computing skills, communication and articulation skills (written and oral), criticism and data analysis/evaluation skills, experimental design and hypothesis testing skills. Students perform practical sessions in small groups and, therefore, problem solving and team work form an integral part of each activity. In addition to the generic skills, students will learn important laboratory/technical abilities with an emphasis on the equipment used in molecular biology and genetics research.

Textbooks

Garrett RH & Grisham CM. Biochemistry. Saunders 1999; Resource Manual for MBLG 2001 Practical Sessions, Sem 1.

MBLG 2101 Molecular Biology & Genetics A (Theory)
4 credit points. Associate Professor Whitelaw, Dr Hancock. **Semester:** 1, Summer. **Classes:** 3 lec wk. **Prerequisite:** 12 credit points of Junior Chemistry. **Qualifying:** BIOL 1001 or 1901 or by permission of the unit Coordinator. **Prohibition:** May not be counted with AGCH 2001 or BCHM 2001 or 2101 or 2901 or MBLG 2001 or 2901. **Assessment:** One 3 hr theory exam.

This unit of study is comprised of the lecture component of MBLG 2001.

Textbooks

Garrett RH & Grisham CM. Biochemistry. Saunders 1999.

MBLG 2901 Molecular Biology and Genetics A (Adv)
8 credit points. A/Prof Whitelaw, Dr Hancock. Semester: 1. Classes: 3 lec & 5 prac/wk. Prerequisite: 12 credit points of Junior Chemistry. Qualifying: BIOL 1001 or 1901 except for students co-enrolled in BCHM 2011. Prohibition: May not be counted with AGCH 2011 or BCHM 2001 or 2101 or 2901 or MBLG 2001 or 2101. Assessment: One 2hr exam, one 2hr theory of prac exam, continuous lab reports.
NB: Entry requires a Distinction in one of the Qualifying or Prerequisite units of study, or permission of the unit Coordinator. Extension of concepts taught in MBLG 2001 which will be taught in the context of practical laboratory experiments.

Textbooks

Garrett RH & Grisham CM. Biochemistry. Saunders 1999;
Resource Manual for MBLG 2001 Practical Sessions, Sera 1.

BCHM 2011 Biochemistry

8 credit points. Dr Collyer, Dr Hancock. Semester: 1. Classes: 3 lec & 5 hr prac/wk. **Assumed knowledge:** CHEM (1101 and 1102).

Prerequisite: 12 credit points of Junior Chemistry. Corequisite: Recommended concurrent units of study: MBLG (2001 or 2901) for progression to Senior Biochemistry, and/or Intermediate Chemistry. **Assessment:** One 3hr exam, one 2hr theory of prac exam and prac tasks.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended

This unit of study introduces biochemistry by describing the physical and chemical activities of proteins, the role of carbohydrates and the functioning of membranes in cells. The biochemistry describes details of protein interactions with other cellular components and the relationship of protein structure and function. Techniques in protein chemistry and analysis, including proteomics are introduced together with key experiments which reveal the physical basis of the functioning of proteins. This course complements the protein science presented in MBLG 2001 and BCHM 2002 and is ideally suited to students studying intermediate Chemistry together with Biochemistry. The practical course will nurture technical skills in biochemistry that will include protein preparation, the analysis of protein structure, protein-protein interactions and functional assays.

Textbooks

Mathews, Van Holde & Ahem, Biochemistry, 3rd Edition Addison Wesley Longman 2000
Brandon & Tooze, Introduction to Protein Structure, 2nd Edition, Garland 1999

BCHM 2002 Molecules, Metabolism and Cells

8 credit points. Prof Kuchel, Dr Hancock, Biochemistry staff. Semester: 2, Summer. Classes: 3 lec & 5 prac/wk & voluntary tutorials. Prerequisite: MBLG 2001 or 2901. Prohibition: May not be counted with AGCH 2001 or BCHM 2102 or 2902. Assessment: One 3hr exam, one 2hr theory of prac exam, prac tasks.

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

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

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

Practical: The practical component complements the theory component of BCHM 2002 by exposing students to experiments which investigate the effects of diet on the constituents of urine,

the diagnosis of chronic disease using blood enzyme patterns, the measurement of glucose metabolism using radioactive tracers and the design of biochemical assays. During the unit of study, the generic skills developed in the practical component of MBLG 2001 will be nurtured by frequent use of computers and problem solving activities. However, student exposure to generic skills will be extended by the introduction of exercises designed to teach oral communication, instruction writing and feedback articulation skills. The techniques of radioisotope handling, enzyme and metabolite assay design, spectrophotometry and metabolic flux measurement will be taught as well as the basic laboratory abilities mastered in MBLG 2001.

Textbooks

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

BCHM 2102 Molecules, Metabolism and Cells Theory

4 credit points. Prof Kuchel, Dr Hancock, Biochemistry staff. Semester: 2, Summer. Classes: 3 lec/wk. Prerequisite: MBLG (2001 or 2901). Prohibition: May not be counted with AGCH 2001 or BCHM 2002 or 2902. Assessment: One 3hr exam.

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

Textbooks

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

BCHM 2902 Molecules, Metabolism and Cells (Adv)

8 credit points. Prof Kuchel, Dr Hancock, Biochemistry staff. Semester: 2. Classes: 3 lec & 5 prac/wk, voluntary tutorials & advanced tutorials. Qualifying: Distinction in MBLG 2001 or 2901. Prohibition: May not be counted with AGCH 2001 or BCHM 2002 or 2102. Assessment: One 3hr & one 1hr theory exam, one 2hr theory of prac exam, prac tasks, special assignments.

The lecture and practical components are the same as for BCHM 2002. Selected students will be set special advanced assignments, and attend advanced tutorials.

Textbooks

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

Biochemistry Senior units of study

BCHM 3001 Mol Biology and Structural Biochemistry

12 credit points. Dr Easterbrook-Smith, Mrs Johnston, Biochemistry staff. Semester: 1. Classes: 4 lec & 8 prac/wk. Qualifying: For enrolment in 2002: MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). Prohibition: May not be counted with BCHM 3901. Assessment: One 3hr exam, one 2hr exam, prac work.

NB: From 2003 the entry requirements will be: MBLG (2001 or 2901) and [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504)

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

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

Practical: The practical component is designed to complement the lecture series and to provide students with experience in a wide range of techniques used in molecular biology and protein biochemistry laboratories. Practical classes run for an average of 8 hours over 2 days. Students are allocated to the Monday/Tuesday class or to the Wednesday/Thursday class according to their other subjects.

Textbooks

Lewin B. Genes VII. OUP. 2000
Brandon C. and Tooze J. Introduction to Protein Structure. 2nd edition, Garland

BCHM 3002 Cellular and Medical Biochemistry

12 credit points. Dr Easterbrook-Smith, Mrs Johnston, Biochemistry staff.
Semester: 2. Classes: 4 lec & 8 prac/wk. **Qualifying:** For enrolment in 2002: MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). **Prohibition:** May not be counted with BCHM 3902/3904. **Assessment:** One 3hr exam, one 2hr exam, prac work.

NB: From 2003 entry requirements will be: MBLG (2001 or 2901) and [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504)

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

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

Practical: The practical component is designed to complement the lecture series and to provide students with experience in a wide range of techniques used in modern biochemistry laboratories. Practical classes run for an average of 8 hours over 2 days. Students are allocated to the Monday/Tuesday class or to the Wednesday/Thursday class according to their other subjects.

Textbooks

Cooper GM. The Cell: A Molecular Approach. ASM Press, 2000

BCHM 3098 Functional Genomics and Proteomics

6 credit points. Dr Downard. **Semester: 1. Classes:** 3 lec, 2 workshops & 1 tut/wk. **Assumed knowledge:** BCHM 2011. **Qualifying:** MBLG (2001 or 2901) or at least 32 credit points of intermediate BMED units including BMED (2501 and 2502 and 2504). **Assessment:** One 3 hour theory exam (50%), weekly tutorials (26%), and 4 workshop / assignments (24%).

This unit will introduce students to the emerging fields of functional genomics and proteomics and will focus on the principles and methodologies associated with the mapping of genomes, understanding gene function and expression, and identifying the structure and function of the proteins that these genes express. Four sections (each comprising approximately 10-12 lectures, a one day workshop or an assignment) will cover the following areas: Genomes and their relationships with Protein Structure; Functional and structural genomics; Proteomics from a global and functional perspective; Data mining strategies associated with the management and manipulation of Genomic and proteomic based data. Specific content will include: the evolution of genomes, genomic relationships, gene hunting, gene expression, manipulating gene products, sequencing methods, statistical analysis, expressed sequence tags and gene expression arrays, global versus functional proteomics, platforms and technologies for automated protein identification and quantification, two dimensional gel electrophoresis, mass spectrometry, mass maps and tags, protein sequencing, automation and sample handling, robotics, membranes and other supports, genome and protein databases, HTML and other Web based languages, tools for sequence identification and alignment, protein structure prediction, homology and molecular modeling.

BCHM 3901 Mol Biology and Structural Biochem (Adv)

12 credit points. Dr Easterbrook-Smith, Mrs Johnston, Biochemistry staff.
Semester: 1. Classes: 4 lec & 8 prac/wk & 4 seminars. **Qualifying:** Distinction in MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902; or 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504). **Prohibition:** May not be counted with BCHM 3001. **Assessment:** One 3hr exam, one 2hr exam, assignment, prac work.

NB: From 2003 the requirements will be: Distinction in MBLG (2001 or 2901) and in [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504)

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

Textbooks

Lewin B. Genes VII, OUR 2000

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

BCHM 3902 Cellular and Medical Biochemistry (Adv)

12 credit points. Dr Easterbrook-Smith, Mrs Johnston, Biochemistry staff.
Semester: 2. Classes: 4 lec & 8 prac/wk & 4 seminars. **Qualifying:** For enrolment in 2002: Distinction in MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902; or 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504). **Prohibition:** May not be counted with BCHM 3002/3904. **Assessment:** One 3hr exam, one 2hr exam, assignment, prac work.

NB: From 2003 the entry requirements will be: Distinction in MBLG(2001 or 2901) and in [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504)

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

Textbooks

Cooper GM. The Cell: A Molecular Approach. ASM Press. 2000

Biochemistry Honours

Dr Crossley, Biochemistry Staff

An Honours program of study designed for those wishing to enter research or to undertake work leading to a higher degree is conducted in the fourth year.

The program runs from early February until mid-November. It provides the opportunity for research on a project supervised by a particular staff member, as well as the study of advanced and developing aspects of Biochemistry. During the year each student is required to write one essay, for which there is a choice of topics. Assessment of the year's work is based largely on the student's performance on the research project, and a written report on the project. During the second semester of the Senior Biochemistry units of study students are invited to apply for permission to enrol in the Honours units of study and are provided with a list of possible research projects. Potential research topics currently offered to students include:

- Anticancer drugs: synthesis and mechanism of action.
- Biochemistry of cellular signal transduction
- The cause of diabetes and/or obesity
- Structure and function of clusterin, a molecular chaperonin
- X-ray crystallography of proteins and drug DNA complexes
- Metabolic pathways in boar spermatozoa
- NMR studies of the solution structure of DNA binding proteins
- NMR studies of membrane transport and metabolism in cells
- Eukaryotic transcription factors
- Bioavailability of trace elements and biochemical indicators of their nutritional status
- Studies on the collagens of marsupials
- The effect of fibre on blood and urinary estrogens
- Chromosome replication and cell division in bacteria
- Molecular biology of humans and yeasts
- Gene expression in transgenic mice
- Nutrition and cardiovascular risk factors
- Effects of dietary fatty acids on platelet function
- Glycaemic index of foods; oligosaccharides in human milk.

Students must arrange to speak with potential supervisors. An application form is attached to the list of possible research projects provided to students 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 related training may be admitted by permission of the Head of School. It should be noted that the number of students accepted into the Honours program may be limited because of resource restrictions (eg, availability of a supervisor and/or laboratory space) and that, in the event of there being more applicants than resources will allow, offers will be made on the basis of academic merit.

The Honours unit of study codes are listed in the Honours Table at the end of this chapter.

Microbiology

The Division of Microbiology offers units of study that equip students for a career in microbiology in fields of health, industry and basic research.

In addition, it provides introductory units of study to students of agriculture, pharmacy and science. These units of study will help students who wish to specialise in related fields where microorganisms are often used in studying life processes - eg, biochemistry, genetics and botany.

Microbiology Intermediate units of study

MICR 2001 Introductory Microbiology

8 credit points. Mrs Dalins (Coordinator), Prof. Reeves, Dr New, Dr Carter, Dr Duxbury. **Semester:** 1. **Classes:** 3 lec, 1 tut & 4 prac/wk. **Prerequisite:** 6 credit points of Junior Chemistry. **Qualifying:** 6 credit points of Junior Biology. **Prohibition:** May not be counted with MICR 2003 or 2901. **Assessment:** One 3hr exam, continuous assessment in prac, 2 assignments, prac exam.

NB: It is highly recommended that students complete 12 credit points of Junior Biology and MBLG 2001 or 2101 or 2901.

This unit of study aims to give the student sufficient knowledge and technical skills to provide a foundation for future study of microbiology. It is also suitable for students requiring a working knowledge of microbiology while specialising in related fields - eg, molecular biology.

Topics covered include history and scope of microbiology, methodology, comparative study of the major groups of microorganisms (bacteria, algae, protozoa, fungi and the viruses), a detailed study of bacteria including structure, classification and identification, growth, death and control.

An introduction to microbial ecology (soil, aquatic and agricultural microbiology, as well as examples of microbial interactions) illustrates the significance of microorganisms in the global, natural cycles of synthesis and degradation.

The practical component focuses on basic, safe microbiological techniques and the use of these to study examples of microbial activity which are illustrative of the lecture series.

Textbooks

Prescott L M et al. Microbiology. 4th edn, WCB/McGraw-Hill, 1999.

MICR 2002 Applied Microbiology

8 credit points. Mrs Dalins (Coordinator), Dr Carter, Prof. Reeves, Dr Duxbury. **Semester:** 2. **Classes:** 3 lec, 1 tut & 4 prac/wk. **Prerequisite:** MICR 2001 or 2901. **Prohibition:** May not be counted with MICR 2004 or 2902. **Assessment:** One 3hr exam, continuous assessment in prac, 2 assignments, prac exam.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study is designed to expand the understanding of, and technical competence in, microbiology, building on the knowledge and skills acquired in Microbiology 2001 or 2901.

The lectures cover two broad topics: molecular microbiology of the organism and microbial biotechnology and applications. The molecular microbiology covers aspects of microbial genetics, the structure and functioning of procaryotic cells and aspects of microbial taxonomy and microbial evolution.

The microbial biotechnology section covers food microbiology (production, spoilage and preparation, as well as the safety of foods) and aspects of public health and medical microbiology (host parasite relationships, host defences, epidemiology of selected diseases, prevention of disease). Industrial microbiology deals with large scale production, traditional products, recombinant DNA products, biosensors and biocontrol agents, biodeterioration and bioremediation.

Practical classes enable the study of material which both complements and supplements the lecture topics. Excursions to industrial concerns are included.

Work experience

On completion of Microbiology 2002 students will be offered the opportunity to undertake work experience for approximately one month in a microbiology laboratory of choice (hospital, food, research, environmental etc).

Textbooks

As for MICR 2001

MICR 2003 Theoretical Microbiology A

4 credit points. Mrs Dalins (Coordinator), Dr Carter, Prof Reeves, Dr New, Dr Duxbury. **Semester:** 1. **Classes:** 3 lec/wk. **Qualifying:** 6 credit points of Junior Biology. **Prohibition:** May not be counted with MICR 2001 or 2901. **Assessment:** One 2 hr exam.

NB: It is highly recommended that students complete 12 credit points of Junior Biology and MBLG 2001 or 2101 or 2901.

This unit of study is suitable for students who are majoring in other aspects of biology and wish to acquire a broad background knowledge in microbiology. Students attend the same lectures as those enrolled in Microbiology 2001. There is no practical or tutorial component.

Textbooks

As for MICR 2001

MICR 2004 Theoretical Microbiology B

4 credit points. Mrs Dalins (Coordinator), Dr Carter, Prof. Reeves, Dr Duxbury. **Semester:** 2. **Classes:** 3 lec/wk. **Prerequisite:** MICR 2001 or 2003 or 2901. **Prohibition:** May not be counted with MICR 2002 or 2902. **Assessment:** One 2hr exam.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study is suitable for students who are majoring in other aspects of biology and wish to expand their knowledge of microbiology beyond that acquired in Microbiology 2001, 2003 or 2901 with further theoretical considerations of the subject.

Students attend the same lectures as those enrolled in Microbiology 2002. There is no practical or tutorial component.

Textbooks

As for MICR 2001

MICR 2901 Introductory Microbiology (Advanced)

8 credit points. Mrs Dalins (Coordinator), Prof. Reeves, Dr New, Dr Carter, Dr Duxbury. **Semester:** 1. **Classes:** 3 or 4 lec, 1 tut & 3 or 4 prac/wk. **Qualifying:** 6 credit points of Junior Chemistry and Distinction in 6 credit points of Junior Biology. **Prohibition:** May not be counted with MICR 2001 or 2003. **Assessment:** As for MICR 2001, plus one 2hr exam.

NB: It is highly recommended that students complete 12 credit points of Junior Biology and MBLG 2001 or 2101 or 2901.

This unit of study will be available to students who have performed well in the Biology and Chemistry Junior units of study. The unit of study is based on MICR 2001 with alternative components. The content and nature of these components may vary from year to year. Selection criteria for entry into the unit of study will be available from the coordinator at the time of enrolment.

Textbooks

As for MICR 2001.

MICR 2902 Applied Microbiology (Advanced)

8 credit points. Mrs Dalins (Coordinator), Dr Carter, Prof. Reeves, Dr Duxbury, Dr Ferenci. **Semester:** 2. **Classes:** 3 or 4 lec, 1 tut & 3 or 4 prac/wk. **Qualifying:** Distinction in MICR 2001 or 2901. **Prohibition:** May not be counted with MICR 2002 or 2004. **Assessment:** As for MICR 2002 plus one 2hr exam.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

The unit of study is based on MICR 2002 with alternative components. The content and nature of these components may vary from year to year.

Textbooks

As for MICR 2001

Microbiology Senior units of study

MICR 3001 General and Medical Microbiology

12 credit points. Dr Duxbury, Dr New, Dr Carter, Dr Ferenci and others. **Semester:** 1. **Classes:** 3 lec, 6-7 prac & 2-3 other/wk. **Prerequisite:** Except for BMedSc: BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). **Qualifying:** Except for BMedSc: MICR 2002 or 2012 or (2001 and 2004) or 2902. For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2506. **Prohibition:** May not be counted with MICR 3901. **Assessment:** One 2hr exam and one 1.5hr exam, essay, prac.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study extends some of the topics covered in MICR 2001 and 2002, and BMED 2506. General Microbiology includes microbial growth and metabolism, microbial ecology, and food microbiology. The lecture series on microbial growth and metabolism covers aspects of biomass formation, growth rate and nutrient uptake, chemostat cultures, growth yield, aerobic and anaerobic growth, and growth under stress. Microbial ecology introduces the principles which underlie the behaviour of microorganisms in all environments whether they be soil, water, food, medical or industrial. Food microbiology includes the causes and prevention of foodborne disease, microbiological analysis of foods, the indicator concept, hazard analysis and critical control points, modified atmosphere

packaging, fungal spoilage of foods and mycotoxins. Medical Microbiology covers aspects of epidemiology, host defences, sexually transmitted diseases, and other important bacterial, viral, fungal, protozoal, helminth and zoonotic infections.

The practical component is designed to enhance students' practical skills and to complement the lecture series.

M1CR 3002 Molecular/Environmental Microbiology
12 credit points. Dr Duxbury, Dr New, Dr Ferenci, Prof. Reeves, Dr Carter.
Semester: 2. **Classes:** 3 lec, 6-7 prac & 2-3 other/wk. **Prerequisite:** BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). **Qualifying:** MICR 2002 or (2001 and 2004) or 2902. **Prohibition:** May not be counted with MICR 3902. **Assessment:** One 2hr exam and one 1.5hr exam, prac.
NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study extends some of the topics covered in Microbiology 2001 and 2002. Molecular Microbiology covers aspects of bacterial structure and physiology and principles of molecular pathogenicity. Lectures on bacterial structure and physiology include structural aspects of surface components, membranes, periplasm and peptidoglycan, and a discussion of drug resistance mechanisms. Principles of Molecular Pathogenicity covers clones in pathogenic species, modes of pathogenesis and adhesion, bacterial toxins, antigenic variation, and vaccines. Environmental Microbiology includes plant microbiology, particularly in relation to nitrogen fixation systems, agrobacterium and crown gall, root colonisation, and endophytes. The unit of study also covers aspects of the distribution and activities of microbes in terrestrial and aquatic ecosystems, including their roles in the biodegradation and bioremediation of organic pollutants.

The practical component is designed to enhance students' practical skills and to complement the lecture series. Project work may form part of the practical component subject to the availability of resources.

MICR 3901 General and Medical Microbiology (Adv)
12 credit points. Dr Duxbury, Dr New, Dr Carter, Dr Ferenci and others.
Semester: 1. **Classes:** 4 lec, 6-7 prac & 1-2 other/wk. **Prerequisite:** Except for BMedSc: BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). **Qualifying:** Except for BMedSc: At least 12 credit points of Intermediate Microbiology including Distinction in MICR (2001 or 2002 or 2004 or 2901 or 2902) For BMedSc: 32 credit points of Intermediate BMED units including Distinction or better in BMED 2506. **Prohibition:** May not be counted with MICR 3001. **Assessment:** Two 2hr exams and one 1.5hr exam, essay, prac.
NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study is based on Microbiology 3001. It is available to students who have performed well in Microbiology 2001 or 2901, and 2002, 2004 or 2902. The unit of study consists of a series of additional lectures related to the research interests in the Department. Consequently, the unit of study content may change from year to year. The selection criteria for entry into the unit of study will be available from the Coordinator at the time of enrolment.

MICR 3902 Molecular/Environmental Microbiology Adv
12 credit points. Dr Duxbury, Dr New, Dr Ferenci, Prof. Reeves, Dr Carter.
Semester: 2. **Classes:** 4 lec, 6-7 prac & 1-2 other/wk. **Prerequisite:** BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). **Qualifying:** At least 12 credit points of Intermediate Microbiology including Distinction in MICR (2001 or 2002 or 2004 or 2901 or 2902). **Prohibition:** May not be counted with MICR 3002. **Assessment:** Two 2hr exams and one 1.5hr exam, essay, prac.
NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study is based on MICR 3002. It will be available to students who have performed well in MICR 2001 or 2901, and 2002, 2004 or 2902. The unit of study consists of a series of additional lectures related to the research interests in the Department. Consequently, the unit of study content may change from year to year. The selection criteria for entry into the unit of study will be available from the Coordinator at the time of enrolment.

Microbiology Honours

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 by the end of the semester before the Honours year, on a form to be lodged with the Honours Coordinator. Entry into the Honours year is usually dependent on an average of Credit level performance in Senior microbiology units of study.

a Nanoscience and Technology

Nanoscience and Technology is an interdisciplinary major offered within the BSc. It is directed at students interested in understanding the emerging science of working and building at and near the molecular level. It incorporates study of the fundamental sciences in order to understand the structure of matter, as well as technological elements of the mechanical properties of materials. Students undertaking this major are strongly encouraged to take suitable units from the Faculty of Engineering in combination with Physics and Chemistry.

A student seeking to complete this major should study Physics and Chemistry in their Junior and Intermediate years together with some Engineering and Mathematics. In the Senior year it is possible to focus on two of the three discipline areas, or to continue to study elements of all three. This major may also be seen as a complement to a traditional major in Chemistry or Physics. Refer to Table 1 for an enrolment guide and to entries under the contributing schools and departments for unit descriptions. Engineering units are described in Engineering Handbook. •

■ Neuroscience

Coordinator: Assoc. Prof. JanProvis (Anatomy)

'Neuroscience' is an interdisciplinary major within the BSc which cuts across boundaries between traditional subject areas. As reflected in the structure of the program, it ranges from concern with processes within nerve cells at the molecular level to complex phenomena such as perception and emotion; from the regulation of breathing and blood pressure through movement, to our ability to learn, remember and think. Students wishing to major in Neuroscience can take various combinations of units of study, mainly ones offered by the Departments of Anatomy, Pharmacology, Physiology and Psychology.

Refer to Table I for an enrolment guide and to entries under the contributing departments for unit of study descriptions. Please note that this major requires certain combinations of units of study in the Junior and Intermediate years, as well as the Senior year.

There is no equivalent Honours program but students who take appropriate additional units of study may be eligible for entry into the Honours programs offered by the Departments of Anatomy, Pharmacology, Physiology and Psychology. These Honours programs require the equivalent of a further year of full time study.

a Department of Pharmacology

This Department offers a general training in pharmacology to students in the Faculty of Science. It provides two Intermediate 4 credit point units of study, one Intermediate 8 credit point unit of study and four Senior 12 credit point units of study.

PCOL2001 Pharmacology Fundamentals
4 credit points. Dr H. Lloyd. **Semester:** 1. **Classes:** 2 lec/wk & 4 prac/computer sessions. **Prerequisite:** 6 credit points of Junior Chemistry and 6 credit points of Junior Biology. **Assessment:** One 1.5hr exam, classwork.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study introduces students to the basic concepts of pharmacology - how drugs act and how they reach their sites of action. The molecular sites of action of drugs are described and the relationships between drug activity and chemical structure explored. The roles of absorption, distribution, metabolism and elimination of drugs in determining the actions of drugs in the body are also considered.

Textbooks

Foster RW. Basic Pharmacology, 4th edn, Butterworth-Heinemann, 1996

OR

Rang HP, Dale MM & Ritter JM, Pharmacology, 4th edn, Churchill Livingstone, 1999

Study aids

Dale MM, Dickenson AH & Haylett DG, Companion to Pharmacology, 2nd edn, Churchill Livingstone, 1995

Neal MJ. Medical Pharmacology at a Glance. 3rd edn, Blackwell Scientific Publications, 1997

Reference books

Hardman JG et al, Goodman and Gilman's The Pharmacological Basis of Therapeutics, 9th edn, McGraw-Hill, 1996

Patrick GL, An Introduction to Medicinal Chemistry, Oxford University Press, 1995

PCOL 2002 Intro Pharmacology: Drugs and People 4 credit points. Dr H Lloyd. **Semester:** 2. **Classes:** 2 lec/wk & 4 prac/tut sessions. **Prerequisite:** 6 credit points of Junior Chemistry and 6 credit points of Junior Biology. **Prohibition:** May not be counted with PCOL 2003. **Assessment:** One 1.5hr exam, classwork.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Students are strongly advised to complete PCOL 2001 before enrolling in PCOL 2002

This unit of study explores how drugs produce their effects in the body and what these effects are. The effects of drugs on the autonomic nervous system and the types and actions of drugs used for the treatment of pain and inflammation are discussed. The social use of drugs and the effects of some commonly abused drugs are examined. There is also a brief introduction to the toxicology of natural poisons, in particular snake and spider venoms.

Textbooks

Rang HP, Dale MM & Ritter JM, Pharmacology, 4th edn, Churchill Livingstone, 1999

Study aids

Dale MM et al, Companion to Pharmacology, 2nd edn, Churchill Livingstone, 1995

Neal JM, Medical Pharmacology at a Glance, 3rd edn, Blackwell Scientific Publications, 1997

Reference books

Hardman JG et al (eds), Goodman and Gilman's The Pharmacological Basis of Therapeutics, 9th edn, McGraw-Hill, 1996

PCOL 2003 Pharmacology: Drugs and Society 8 credit points. Dr H Lloyd. **Semester:** 2. **Classes:** 3 lec, 3 prac & 2 wkshps/wk. **Prerequisite:** 6 credit points of Junior Biology and 6 credit points of Junior Chemistry. **Prohibition:** May not be counted with PCOL 2002. **Assessment:** One 2hr theory exam; three lab reports and reflective statements, six on-line quizzes, one presentation, 5 written assignments from case studies.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Students are strongly advised to complete PCOL 2001 before enrolling in PCOL 2003

This unit of study will consist of six modules covering the following topics: drug action in the peripheral and central nervous system; a consideration of drugs used to treat inflammation, allergy and disorders of the gut; drug development from an industry perspective and an introduction to the toxicology of natural poisons such as snake and spider venom; an exploration of endocrine drugs such as oral contraceptives and anabolic steroids; the social and economic impact of drugs in society; and a consideration of drugs used for recreational purposes. Unit delivery will involve lectures, practicals, computer-aided learning and workshops. In the practicals emphasis will be placed on the acquisition of technical and teamwork skills and an understanding of the basics of experimental design, data interpretation and how to write scientific reports. Workshops will be largely problem based, using case reports of drug use in the community or will involve a presentation on a selected pharmacological research paper. On-line quizzes will accompany each module to aid students in monitoring their progress.

Textbooks

Rang HP, Dale MM & Ritter JM, Pharmacology, 4th edn, Churchill Livingstone, 1999

Study aids

Dale MM et al, Companion to Pharmacology, 2nd edn, Churchill Livingstone, 1995

Neal JM, Medical Pharmacology at a Glance, 3rd edn, Blackwell Scientific Publications, 1997

Reference books

Hardman JG et al (eds), Goodman and Gilman's The Pharmacological Basis of Therapeutics, 9th edn, McGraw-Hill, 1996

PCOL 3001 Molecular Pharmacology and Toxicology

12 credit points. Dr Ian Spence. **Semester:** 1. **Classes:** 4 lec, 2 tut & 6 prac/wk. **Prerequisite:** PCOL 2001 and (2002 or 2003) or 32 credit points from Intermediate BMED units of study. **Prohibition:** PCOL 3901.

Assessment: Two 3hr exams, classwork.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study covers two major areas of pharmacology: (1) toxicology, and (2) drug design and development.

The toxicology area covers metabolism of toxic substances, toxicity to major organs, epidemiology and carcinogenesis. It aims to provide an overview of the topic with detailed examination of selected issues in toxicology. Drug design and development looks at the principles guiding the development of new therapeutic agents, for example new histamine antagonists, and the use of new methods to study drug distribution and action such as positron emission tomography (PET) and single photon emission computerised tomography (SPECT) scanning.

Textbooks

Patrick GL. An Introduction to Medicinal Chemistry. Oxford Uni Press, 1995

Reference books

Hardman JG et al (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 9th edn, McGraw-Hill, 1996

Klaassen CD. Casarett & Doull's Toxicology: The Basic Science of Poisons. Macmillan, 1996

Krogsgaard-Larsen P et al (eds). A Textbook of Drug Design and Development. 2nd edn. Harwood Academic Publishers, 1996

PCOL 3002 Neuro- and Cardiovascular Pharmacology

12 credit points. Prof. G Johnston. **Semester:** 2. **Classes:** 4 lec, 2 tut & 6 prac/wk. **Prerequisite:** PCOL 2001 and (2002 or 2003) or 32 credit points from Intermediate BMED units of study. **Prohibition:** May not be counted with PCOL 3902. **Assessment:** Two 3hr exams, classwork.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

The lecture series provides a comprehensive, systematic study of three major areas of pharmacology: (1) neuropharmacology, (2) cardiovascular pharmacology, and (3) respiratory pharmacology. The neuropharmacology component examines the actions of psychoactive drugs at all levels from single cells through to behaviour. The cardiovascular and respiratory components examine therapeutic intervention in disease states such as hypertension and asthma, and the mechanisms of drug action. As part of the unit of study all students prepare a drug profile - a document similar to that required by regulatory authorities when a new drug is introduced. This provides students with the opportunity to become familiar with, firstly, regulatory procedures and, secondly, with the detailed pharmacology of one particular compound.

In addition to the core component students choose an elective selected from a number offered by the Department. These cover specific topics in depth and some are laboratory based. Details of these are available from the Department before the commencement of the July semester.

Textbooks

Rang HP, Dale MM & Ritter JM. Pharmacology. 4th edn, Churchill Livingstone, 1999

Study aids

Neal MJ. Medical Pharmacology at a Glance. 3rd edn, Blackwell Scientific Publications, 1997

Reference books

Cooper JR, Bloom EE & Roth RH1. The Biochemical Basis of Neuropharmacology. 7th edn, Oxford, 1996

Hardman JG, et al (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 9th edn, McGraw-Hill, 1996

PCOL 3901 Molecular Pharmacology & Toxicology Adv

12 credit points. Dr I Spence. **Semester:** 1. **Classes:** 4 lec, 2 tut & 6 prac/wk. **Qualifying:** Distinction average in PCOL 2001 and (2002 or 2003) or in 32 credit points from Intermediate BMED units of study. **Prohibition:** May not be counted with PCOL 3001. **Assessment:** Two 3hr exams, classwork.

NB: Permission required for enrolment. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Entry to this unit requires Departmental permission.

This unit will consist of the lecture and practical components of PCOL 3001. Students selected for PCOL 3901 will be set special advanced assignments related to the material covered in core areas. These may also involve advanced practical work or detailed investigation of a theoretical problem.

Reference books

Hardman JG et al (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 9th edn, McGraw-Hill, 1996

Klaassen CD, Casarett & Doull's Toxicology: The Basic Science of Poisons. Macmillan, 1996

Krogsgaard-Larsen P et al (eds). A Textbook of Drug Design and Development. 2nd edn. Harwood Academic Publishers, 1996

PCOL 3902 **Neuro & Cardiovascular Pharmacology Adv**

12 credit points. Prof. G Johnston. **Semester: 2. Classes:** 4 lec, 2 tut & 6 prac/wk. **Qualifying:** Distinction average in PCOL 2001 and (2002 or 2003) or in 32 credit points from Intermediate BMED units of study. **Prohibition:** May not be counted with PCOL 3002. **Assessment:** Two 3hr exams, classwork.

NB: Permission required for enrolment. The completion of MBLG2001 or 2101 or 2901 is highly recommended. Entry to this unit requires Departmental permission.

Advanced students will complete the same core lecture material as students in PCOL 3002 but carry out advanced level elective projects, practicals and tutorials. They will sit the same written examinations as students in PCOL 3002, while the elective projects, practicals and tutorials will be assessed separately.

Textbooks

Rang HP, Dale MM & Ritter JM. Pharmacology. 4th edn, Churchill Livingstone, 1999

Study aids

Neal MJ. Medical Pharmacology at a Glance. 3rd edn, Blackwell Scientific Publications, 1997

Reference books

Cooper JR, Bloom FE & Roth RH. The Biochemical Basis of Neuropharmacology. 7th edn, Oxford, 1996

Hardman J G et al (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 9th edn, MacGraw-Hill, 1996

Pharmacology Honours

Associate Professor R Einstein

Subject to a satisfactory standard being attained in Pharmacology, a student may arrange to read for the Honours degree in this subject area. Much of the work will be arranged to suit the interest of the individual. The student will participate in a research project in progress in the Department. A research plan, literature review and a 50 page thesis on the research project must be prepared. Seminars on the literature review, the project and another chosen topic will be given by the student.

■ School of Physics

The School of Physics provides undergraduate units of study in Physics at Junior, Intermediate, Senior and Honours levels. Appropriate unit of study choices are available for candidates who wish to major in Physics, to proceed to Honours in Physics, or to combine Physics with a major in another subject area. Several other Faculties and other Departments within the Faculty of Science require that Junior Physics be taken as part of the students' preparation for later studies in their more specialised fields. Similarly, Intermediate Physics units of study are taken by many Faculty of Engineering students, as well as by many Faculty of Science students who intend to major in other subjects.

The School of Physics provides units of study at the Junior and Intermediate level for students wishing to complement other studies with Physics units of study which have an environmental emphasis, and for students wishing to major in Physics within the BSc (Environmental) award course program.

Location

Physics Junior units of study: lectures in Physics Building, laboratories in Carslaw Building.

Physics Intermediate, Senior and Honours units of study: Physics Building.

Noticeboards

On the balcony outside the Carslaw Physics laboratories and in the Physics Building as appropriate for each unit of study.

Registration

Junior units of study: In assigned laboratory periods during the first week of each semester.

Intermediate units of study: At first lecture, in the Physics Building. See noticeboard for allocation of lecture theatres.

Senior units of study: At first lecture, in the Physics Building. Consult noticeboard early in orientation period.

Advice on units of study

A member of the physics staff is normally present among Faculty advisers during enrolment week to advise students. The Undergraduate 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

Physics Junior units of study

There are seven different semester length units of study offered at the Junior level. Physics 1001 (Regular), Physics 1002 (Fundamentals) and Physics 1901 (Advanced) are offered in the February semester only and Physics 1004 (Environmental and Life Sciences), Physics 1902 (Advanced) and Physics 1500 (Astronomy) are offered in the July semester only. Physics 1003 (Technological) is offered in both February and July semesters. Completion of one unit of study in each semester provides a solid foundation for further studies in Physics in higher years. Physics 1500 Astronomy cannot be counted towards the 12 credit points of Junior Physics needed as a prerequisite for Intermediate Physics.

The February semester laboratory work provides an introduction to experimental techniques while reinforcing concepts of physics introduced in lectures. In the July semester the laboratory work provides a further introduction to experimental physics and students are given the opportunity to undertake short projects.

Information booklet

Further information about Junior Physics units of study is contained in a booklet for intending commencing students available at enrolment or during Orientation or from the Junior year administrative assistant. It is also available on the School's Web site at www.physics.usyd.edu.au

PHYS1001 **Physics 1 (Regular)**

6 credit points. **Semester:** 1. **Classes:** 3 lec & 3 prac/tut/wk. **Assumed knowledge:** HSC Physics. **Corequisite:** Recommended concurrent units of study: MATH 1001 and 1002 or 1901 and 1902. **Prohibition:** May not be counted with PHYS 1002 or 1901. **Assessment:** One 3hr exam, lab & assignments.

This unit of study is for students who gained 65 marks or better in HSC 2-unit Physics or equivalent. The lecture series contains three four-week modules on the topics of mechanics, thermal physics, and waves.

Textbooks

Physics Laboratory Manual - School of Physics Publication

Other books to be advised.

PHYS 1002 **Physics 1 (Fundamentals)**

6 credit points. **Semester:** 1. **Classes:** 3 lec & 3 prac/tut/wk. **Assumed knowledge:** No assumed knowledge of Physics. **Corequisite:** Recommended concurrent units of study: MATH (1001 and 1002) or (1901 and 1902). **Prohibition:** May not be counted with PHYS 1001 or 1901. **Assessment:** One 3hr exam, lab & assignments.

This unit of study is designed for students who have not studied Physics previously. The lecture series contains three four-week modules on the Language of Physics, Mechanics, and Waves.

Textbooks

Physics Laboratory Manual - School of Physics Publication

Other books to be advised

PHYS 1003 **Physics 1 (Technological)**

6 credit points. **Semester:** 1,2. **Classes:** 3 lec & 3 prac/tut/wk. **Assumed knowledge:** HSC Physics or PHYS 1001 or 1002 or 1901 or equivalent. **Corequisite:** For Science students: Recommended concurrent units MATH (1003 and 1005) or (1903 and 1905). **Prohibition:** May not be counted with PHYS 1004 or 1902. **Assessment:** One 3hr exam, lab & assignments.

This unit of study is designed for students majoring in the physical and engineering sciences and emphasis is placed on applications of physical principles to the technological world. The lecture series contains three four-week modules on the topics of fluids and fields, electromagnetism, and quantum and materials physics.

Textbooks

Physics Laboratory Manual - School of Physics Publication

Other books to be advised

PHYS 1004 **Physics 1 (Environmental & Life Science)**

6 credit points. **Semester:** 2. **Classes:** 3 lec & 3 prac/tut/wk. **Assumed knowledge:** HSC Physics or PHYS 1001 or 1002 or 1901 or equivalent. **Corequisite:** Recommended concurrent units of study: MATH 1003 and 1005 or 1903 and 1905. **Prohibition:** May not be counted with PHYS 1003 or 1902. **Assessment:** One 3hr exam, lab & assignments.

This unit of study has been designed specifically for students interested in further study in environmental and life sciences. The lecture series contains three four-week modules on the topics of electromagnetism, properties of matter, and atoms, nuclei and quanta.

Textbooks

Physics Laboratory Manual - School of Physics Publication

Other books to be advised

PHYS 1500 Astronomy

6 credit points. Semester: 2. Classes: 3 lec, 1 tut & 2 lab/wk. Assumed knowledge: No assumed knowledge of Physics. Assessment: 1 hr exam, 2 essays, prac, assignments.

This unit of study provides a broad understanding of the structure, scale and diversity of the universe and an appreciation of the scientific methods used to achieve this understanding. Current areas of investigation, new ideas and concepts which often receive wide media attention will be used to demonstrate how science attempts to understand new and remote phenomena and how our ideas of our place in the universe are changing. The range of topics includes the planets, the solar system and its origin, spacecraft discoveries, stars, supernovas, black holes, galaxies, quasars, cosmology and the Big Bang. It also includes day and night sky observing sessions.

This unit of study cannot be counted as part of the 12 credit points of Junior Physics necessary for enrolment in Intermediate Physics.

Textbooks

Seeds MA. Horizons: Exploring the Universe. 6th edn, Brooks/Cole Publishing Company: pacific Grove CA USA, 2000

PHYS 1901 Physics 1A (Advanced)

6 credit points. Semester: 1. Classes: 3 lec & 3 prac/tut/wk. Prerequisite: UAI of at least 95 or HSC Physics result in the 98th percentile or better, or Distinction or better in a University level Physics unit, or by invitation. Corequisite: Recommended concurrent units of study: MATH (1001 and 1002) or (1901 and 1902). Prohibition: May not be counted with PHYS 1001 or 1002. Assessment: One 3hr exam, lab & assignments.

NB: Permission required for enrolment.

Physics 1901 (Advanced) A is intended for students who have a strong background in Physics and an interest in studying more advanced topics. It proceeds faster than Physics 1001 (Regular), covering further and more difficult material. The lecture series contains three four-week modules on the topics of mechanics, thermal physics, and waves. The laboratory work also provides an introduction to computational physics using chaos theory as the topic of study.

Textbooks

Physics Laboratory Manual - School of Physics Publication

Other books to be advised

PHYS 1902 Physics 1B (Advanced)

6 credit points. Semester: 2. Classes: 3 lec/tut & 3 prac/wk. Prerequisite: UAI of at least 95 or HSC Physics result in the 98th percentile or better, or Distinction or better in a University level Physics unit, or by invitation. Corequisite: Recommended concurrent units of study: MATH (1003 and 1005) or (1903 and 1905). Prohibition: May not be counted with PHYS 1003 or 1004. Assessment: One 3hr exam, lab & assignments.

NB: Permission required for enrolment.

This unit of study is a continuation of Physics 1901 (Advanced) A. Students who have completed Physics 1001 (Regular) or Physics 1002 (Fundamentals) at Distinction level may enrol. It proceeds faster than Physics 1003 (Technological), covering further and more difficult material. The lecture series contains three four-week modules on the topics of fluids and fields, electromagnetism, quantum and materials physics, and superconductivity.

Textbooks

Physics Laboratory Manual - School of Physics Publication

Other books to be advised

Physics Intermediate units of study

The School of Physics offers 3 units of study in semester one and 2 in semester two, at the Intermediate level. A full year Intermediate program in Physics should be selected from PHYS 2001 and 2002. PHYS 2901 and 2902 are the advanced physics units of study for students who have achieved a pass or better in PHYS 1901 and 1902, or who have achieved a Credit or better in PHYS 1003 or 1004. Either of these two combinations form the qualifying units of study for Senior level physics. One other unit of study, PHYS 2105, is a shorter unit for students with an interest in the medical sciences who do not plan to continue with physics at a Senior level.

Full details of Intermediate Physics unit of study structures, contents and assessment policies are provided in the Intermediate Physics Information for Students booklet available at the time of enrolment and also on the School's Web site.

PHYS 2001 Physics (Regular)

8 credit points. Semester: 1. Classes: 3 lec, 3 prac & 2 microlab/wk. Prerequisite: 12 credit points of Junior Physics (excluding PHYS 1500 and 1600) and 12 credit points of Junior Mathematics other than MATH 1011,1012,1013 and 1015 or Credit or better in MATH 1011,1012,1013 and 1015. Prohibition: May not be counted with PHYS 2101 or 2103 or 2901. Assessment: One 3hr exam, four computer based assignments, microlab (report & test), prac work and report.

This unit of study is designed for students continuing with the study of physics at the general intermediate level.

The lecture topics are quantum physics with an emphasis on quantum mechanics and applications to solid state and molecular physics, stellar astrophysics and an introduction to instrumentation for physical, environmental and biological sciences.

Microlab: Computational Physics is taught in a PC based computing laboratory (MicroLab). An introductory session is held at the beginning of the semester for students who are not familiar with personal computers. Students work in teams of three and using simple Matlab programming they develop computational solutions to problems in quantum mechanics. Computational Physics is assessed by a short written report and a one hour test administered individually.

Practical: Experimental Physics is taught as a laboratory module and includes experiments in the areas of instrumentation, quantum physics, properties of matter analysis of stellar images and environmental sensing and measurement. Assessment is based on mastery of the all aspects of each attempted experiment. At the end of the semester students prepare a short report on one experiment and present a oral report on it. The report and the presentation are also assessed.

Textbooks

Serway Moses and Moyer, Modern Physics, Saunders College Publishing, 2e 1997

Tango, Introduction to Stellar Astrophysics, published by the School of Physics

Experimental Physics Notes, published by the School of Physics

PHYS 2002 Physics (Technological)

8 credit points. Semester: 2. Classes: 3 lec, 3 prac & 2 microlab/wk. Prerequisite: 12 credit points of Junior Physics (excluding PHYS 1500 and 1600) and 12 credit points of Junior Mathematics other than MATH 1011,1012,1013 and 1015 or Credit or better in MATH 1011,1012,1013 and 1015. Prohibition: May not be counted with PHYS 2102 or 2104 or 2902. Assessment: One 3hr exam, 2 prac reports, four computer based lab assignments, microlab (report & test), prac work and report.

This unit of study is designed for students majoring in the physical and engineering sciences. The lecture topics are electromagnetic properties of matter, instrumentation for the physical and environmental sciences, and optics for communications and sensing.

Microlab: The computational physics component is similar to that of PHYS 2001, except that the material for the unit of study will be drawn from optics topics.

Practical: As for Physics 2001, except that in the last part of the July semester students work in teams on a project, write a report on it and present the results in an oral report to other members of the class.

Textbooks

Experimental Physics Notes. School of Physics Publication

PHYS 2105 Physics for Medical Sciences

4 credit points. Semester: 2. Classes: 2 lec, 1 tut & 1 prac/wk. Prerequisite: 12 credit points of Junior Physics, excluding PHYS 1500 & 1600. Assessment: One 2 hr exam, assignments, prac work and report. This unit of study is primarily intended for students in the Bachelor of Medical Science program, but is also available in other degree programs. It covers a number of physics topics relevant to medical science: sound and ultrasound, light and optics, fluid flow, electrical properties of the cells and the nervous system, heat and temperature. The topics are presented in the context of their relevance and applications to medical science. In addition to lectures, on alternate weeks there are two hour workshop tutorials and laboratory sessions involving both practical and simulation.

PHYS 2901 Physics (Advanced) A

8 credit points. Semester: 1. Classes: 3 lec, 3 prac & 2 microlab/wk. Prerequisite: 12 credit points of Junior Physics at the Advanced level (PHYS 1901 or 1902) or a result of Credit or better in units (PHYS 1001, 1002,1003,1004) but excluding PHYS 1500 and 1600; 12 credit points of Junior Mathematics other than MATH 1011,1012,1013 and 1015 or Credit or better in MATH 1011,1012,1013 and 1015. Prohibition: May

not be counted with PHYS 2001 or 2101 or 2103. Assessment: One 3hr exam, four computer based assignments, microlab (report & test), prac work and report.

This advanced intermediate unit of study is designed for students who have a strong interest in Physics. The advanced lecture topics are generally more rigorous and cover material in greater depth than is done in the regular lectures. The assessment of the advanced subjects will reflect the more challenging nature of the material presented. Lectures as for PHYS 2001.

Microlab: As for PHYS 2001.

Practical: As for Physics 2001.

Textbooks

Eisberg & Resnick, Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles, John Wiley, 2e 1985

Tango, Introduction to Stellar Astrophysics published by the School of Physics

Experimental Physics Notes, published by the School of Physics

PHYS 2902 Physics (Advanced) B

8 credit points. Semester: 2. Classes: 3 lec, 3 prac & 2 microlab/wk. Prerequisite: 12 credit points of Junior Physics at the Advanced level (PHYS 1901 and 1902) or a result of Credit or better in units (PHYS 1001, 1002, 1003, 1004) but excluding PHYS 1500 and PHYS 1600; 12 credit points of Junior Mathematics other than MATH 1011, 1012, 1013 and 1015 or a result of Credit or better in MATH 1011, 1012, 1013 and 1015. Prohibition: May not be counted with PHYS 2002 or 2102 or 2104.

Assessment: One 3hr exam, four computer based assignments, microlab (report & test), prac work and report.

Refer to PHYS 2901 for an overall description of the advanced Intermediate program. The lectures in Physics 2902 include advanced electrodynamics, advanced optics, and instrumentation for the physical and environmental sciences.

Microlab: As for PHYS 2002.

Practical: As for Physics 2002.

Textbooks

Griffiths DJ. Introduction to Electrodynamics. Prentice Hall, (3rd edn 1999)

Experimental Physics Notes. School of Physics Publication

Physics Senior units of study

The School of Physics offers a range of 4 credit point lecture-based units of study, and 4 and 8 credit point laboratory based units of study for Senior students. Most units of study are offered at either the normal or the Advanced level.

Students intending to major in Physics, or to proceed to Physics Honours, must take a minimum of 24 credit points of Senior Physics units of study, which must include:

- (a) Physics 3003;
- (b) Physics 3005;
- (c) at least one of Physics 3004, 3006, 3301 and 3303;
- (d) at least 8 credit points selected from any of: (i) either Physics 3008 or Physics 3009, (ii) either Physics 3101 or Physics 3102, or (iii) either Physics 3103 or Physics 3104; and
- (e) at least one other unit of study selected from the units of study in (c) and (d).

The corresponding Advanced units may be substituted for any of the above units of study. Entry into the Advanced units of study is restricted to students who have met various qualifying unit of study conditions. At least 8 credit points of the minimum 24 must be in experimental physics or special project units. The special project unit of study is undertaken in a research group of the Physics School and may be on an experimental or theoretical topic. Entry is subject to approval. It is possible to take up to 48 credit points in Senior Physics units of study.

Students not majoring in Physics may take any of the above units of study. In addition there are a number of 4 credit point units, designed for such students, which offer study of particular topics in Physics and combine lectures and a small number of experiments on the topic. These units of study are: PHYS 3004 Condensed Matter Physics and Photonics, PHYS 3105 Astrophysics, PHYS 3106 Plasma Physics, PHYS 3107 Modern Optics, PHYS 3108 Nuclear and Particle Physics, and PHYS 3200 Quantum Mechanics.

Further information concerning Senior Physics is available on the School's Web site at www.physics.usyd.edu.au

PHYS 3003 Quantum Mechanics and Relativity

4 credit points. Semester: 1. Classes: 3 lec/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3903 or 3200. Assessment: 3hr exam, assignments.

The non-relativistic theory of quantum mechanics is treated, with particular emphasis on applications, such as in atomic and molecular physics. The theory of special relativity and its

applications in classical mechanics and electromagnetism are also covered.

Textbooks

Eisberg R, & Resnick R. Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles. 2nd edn

Reference books

Griffiths DJ. Introduction to Electrodynamics. 2nd edn

Taylor EF, & Wheeler JA. Spacetime Physics. 2nd edn

PHYS 3004 Condensed Matter Physics and Photonics

4 credit points. Semester: 1. Classes: 3 lec/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3904. Assessment: 3hr exam, assignments.

This unit of study covers two of the most important, and closely related, areas of research in contemporary physics and application to technology and engineering. The physics of condensed matter, in particular the solid state, is studied, as well as topics in photonic technology such as optical fibres.

Reference book

Kittel C. Introduction to Solid State Physics. 6th edn

PHYS 3005 Topics in Modern Physics A

4 credit points. Semester: 2. Classes: 3 lec/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3905 or 3105 or 3106 or 3107 or 3108 or 3109. Assessment: 3hr exam, assignments.

This unit of study covers thermal physics and energy physics, plus a choice of one subject covering an important research area of contemporary physics. Thermal physics covers the laws of thermodynamics, and energy physics explores the technological, environmental and practical uses and consequences of thermodynamics. The option subjects are in the areas covered by the research departments of the School of Physics: Astrophysics, Plasma Physics, Modern Optics, and Nuclear and Particle Physics. Not all of these option subjects may be offered in the one year.

Textbooks

Eisberg R, & Resnick R. Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles. 2nd edn (for Nuclear and Particle Physics)

Reference book

Zemansky and Dittman. Heat and Thermodynamics.

Chen. Introduction to Plasma Physics and Controlled Fusion. (Vol 1) (for Plasma Physics)

PHYS 3006 Topics in Modern Physics B

4 credit points. Semester: 2. Classes: 3 lec/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3906 or 3105 or 3106 or 3107 or 3108 or 3109. Assessment: 3hr exam, assignments.

This unit of study covers a choice of two subjects covering important research areas of contemporary physics: Astrophysics, Plasma Physics, Modern Optics, and Nuclear and Particle Physics. Not all of these option subjects may be offered in the one year. The option subjects cover the same topics as for Physics 3005.

PHYS 3008 Experimental Physics A

4 credit points. Semester: 1,2. Classes: 4hr prac/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3908 or 3009 or 3909. Assessment: Prac assessment.

Six experiments drawn from a range of experiments in the area of waves and optics, nuclear physics and the properties of matter.

PHYS 3009 Experimental Physics B

8 credit points. Semester: 1,2. Classes: 8hr prac/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3008 or 3908 or 3909. Assessment: Prac assessment.

Twelve experiments drawn from a range of experiments in the areas of waves and optics, nuclear physics and the properties of matter.

PHYS 3101 Experimental Physics C

4 credit points. Semester: 1, 2. Classes: 4hr prac/wk. Qualifying: PHYS 3008 or 3009 or 3908 or 3909. Prohibition: May not be counted with PHYS 3102 or 3801 or 3802. Assessment: Prac assessment.

Six experiments are undertaken, drawn from a range of experiments in the fields of waves and optics, nuclear physics and the properties of matter.

PHYS 3102 Experimental Physics D

8 credit points. Semester: 1, 2. Classes: 8hr prac/wk. Qualifying: PHYS 3008 or 3009 or 3908 or 3909. Prohibition: May not be counted with PHYS 3101 or 3801 or 3802. Assessment: Prac assessment. Twelve experiments drawn from a range of experiments in the area of waves and optics, nuclear physics and the properties of matter.

PHYS 3103 Special Project A

4 credit points. Semester: 1. Classes: 4hr prac/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3104 or 3803 or 3804. Assessment: Written report and oral presentation. *NB: Permission required for enrolment. Enrolling students should contact the lecturer in charge of Senior Physics to arrange a suitable project and supervisor.* The equivalent of 4 hours per week is spent in a research group within the School of Physics, working on a research experiment or theoretical project supervised by a researcher. Approval for this unit must be obtained from the Lecturer in charge of Senior Physics.

PHYS 3104 Special Project B

4 credit points. Semester: 2. Classes: 4hr prac/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3103 or 3803 or 3804. Assessment: Written report and oral presentation. *NB: Enrolling students should contact the lecturer in charge of Senior Physics to arrange a suitable project and supervisor.* As for PHYS 3103, but in the July semester.

PHYS 3301 Scientific Computing

4 credit points. Semester: 1. Classes: 2 lec & 2hr computer lab/wk. Prerequisite: 16 credit points of Intermediate units of study in Science Subject Areas. Prohibition: May not be counted with PHYS 3931. Scientific computing now stands beside theory and experiment/observation as a third way to pursue scientific investigations and technological developments. This course presents students with a wide variety of tools and techniques used in scientific computing. Abundant tutorials provide hands-on experience with a selection of the powerful computer facilities of Vislab. The unit of study deals with general principles and is suitable for students in any scientific or engineering discipline.

PHYS 3303 Scientific Visualisation

4 credit points. Semester: 2. Classes: 2 lec & 2hr computer lab/wk. Prerequisite: 16 credit points of Intermediate units of study in Science Subject Areas. Prohibition: May not be counted with PHYS 3933. Assessment: Examination, assignments and practical work. This unit of study includes an introduction to visualisation, 2D image processing, visualisation of 2D data in 2 and 3 dimensions, dealing with different image formats, 3D scientific data volumes, visualisation techniques (volume, iso-surface, mesh), use/abuse of colour, volume visualisation, 3D geometric datasets, using a generic visualisation package (AVS), incorporating computational models within a visualisation, real-time visualisation, producing output, conceptual visualisation, experience with computer animation programs. As this unit of study deals with general principles it is suitable for students in any scientific discipline.

PHYS 3903 Quantum Mechanics and Relativity (Adv)

4 credit points. Semester: 1. Classes: 3 lec/wk. Prerequisite: 16 credit points of Intermediate Mathematics. Qualifying: PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. Prohibition: May not be counted with PHYS 3003 or 3200. Assessment: 3hr exam, assignments.

This unit of study covers the same topics as PHYS 3003, with extension material. The formal foundations of Quantum Mechanics are emphasized.

Textbooks

Bransden BH, & Joachain CJ. Introduction to Quantum Mechanics.

Reference book

Griffiths DJ. Introduction to Electrodynamics. 2nd edn

PHYS 3904 Condensed Matter Physics & Photonics Adv

4 credit points. Semester: 1. Classes: 3 lec/wk. Prerequisite: 16 credit points of Intermediate Mathematics. Qualifying: PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. Prohibition: May not be counted with PHYS 3004. Assessment: 3hr exam, assignments.

This unit of study covers the same topics as PHYS 3004, with some more challenging material.

PHYS 3905 Topics in Modern Physics A (Advanced)

4 credit points. Semester: 2. Classes: 3 lec/wk. Prerequisite: 16 credit points of Intermediate Mathematics. Qualifying: PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. Prohibition: May not be counted with PHYS 3005 or 3105 or 3106 or 3107 or 3108 or 3109. Assessment: 3hr exam, assignments. This unit of study covers the same topics as in PHYS 3005, except that Energy Physics may be replaced by Statistical Mechanics, which provides the molecular basis of thermodynamics. Some more challenging material is also provided.

Textbooks

Eisberg R, & Resnick R. Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles. 2nd edn (for Nuclear and Particle Physics)

Reference book

Zemansky and Dittman. Heat and Thermodynamics.

Chen. Introduction to Plasma Physics and Controlled Fusion. (Vol 1) (for Plasma Physics)

PHYS 3906 Topics in Modern Physics B (Advanced)

4 credit points. Semester: 2. Classes: 3 lec/wk. Prerequisite: 16 credit points of Intermediate Mathematics. Qualifying: PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. Prohibition: May not be counted with PHYS 3006 or 3105 or 3106 or 3107 or 3108 or 3109. Assessment: 3hr exam, assignments. This unit of study is as for the unit of study PHYS 3006, with some more challenging material.

PHYS 3908 Experimental Physics A (Advanced)

4 credit points. Semester: 1,2. Classes: 4hr prac/wk. Prerequisite: 16 credit points of Intermediate Mathematics. Qualifying: PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. Prohibition: May not be counted with PHYS 3008 or 3009 or 3909. Assessment: Prac assessment. As for PHYS 3008 with some more challenging material.

PHYS 3909 Experimental Physics B (Advanced)

8 credit points. Semester: 1,2. Classes: 8hr prac/wk. Prerequisite: 16 credit points of Intermediate Mathematics. Qualifying: PHYS 2901 and 2902, or Credit or better in PPHYS or 2101 and Credit or better in PHYS 2002 or 2102. Prohibition: May not be counted with PHYS 3008 or 3009 or 3908. Assessment: Prac assessment. As for PHYS 3009 with some more challenging material.

PHYS 3801 Experimental Physics C (Advanced)

4 credit points. Semester: 1,2. Classes: 4hr prac/wk. Qualifying: PHYS 3908 or 3909. Prohibition: May not be counted with PHYS 3101 or 3102 or 3802. Assessment: Prac assessment. As for PHYS 3101 with some more challenging material.

PHYS 3802 Experimental Physics D (Advanced)

8 credit points. Semester: 1,2. Classes: 8hr prac/wk. Qualifying: PHYS 3908 or 3909. Prohibition: May not be counted with PHYS 3101 or 3102 or 3801. Assessment: Prac assessment. As for PHYS 3102 with some more challenging material.

PHYS 3803 Special Project A (Advanced)

4 credit points. Semester: 1. Classes: 4hr prac/wk. Prerequisite: 16 credit points of Intermediate Mathematics. Qualifying: PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. Prohibition: May not be counted with PHYS 3103 or 3104 or 3804. Assessment: Written report and oral presentation. *NB: Permission required for enrolment. Enrolling students should contact the lecturer in charge of Senior Physics to arrange a suitable project and supervisor.* As for PHYS 3103, but at a more challenging level. Approval for this unit must be obtained from the Lecturer in charge of Senior Physics.

PHYS 3804 Special Project B (Advanced)

4 credit points. Semester: 2. Prerequisite: 16 credit points of Intermediate Mathematics. Qualifying: PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. Prohibition: May not be counted with PHYS 3103 or 3104 or 3803. Assessment: Written report and oral presentation. *NB: Enrolling students should contact the lecturer in charge of Senior Physics to arrange a suitable project and supervisor.* As for PHYS 3104, but at a more challenging level.

PHYS 3931 Scientific Computing (Advanced)

4 credit points. Semester: 1. Classes: 2 lec & 2 prac/wk. Prerequisite: 16 credit points at a level of Credit or better of Intermediate units of study in Science Subject Areas. Prohibition: May not be counted with PHYS 3301. Assessment: 1 hr exam, competency tests, and project. As for PHYS 3301 with some more challenging material.

PHYS 3933 Scientific Visualisation (Advanced)

4 credit points. Semester: 2. Classes: 2 lec, 2 computer lab/wk. Prerequisite: 16 credit points at a level of Credit or better of Intermediate units of study in Science Subject Areas. Prohibition: May not be counted with PHYS 3303. Assessment: Exam (40%), assignments (20%) and project (40%).
As for PHYS 3303 with some more challenging material.

PHYS 3200 Quantum Physics

4 credit points. Semester: 1. Classes: 2 lec & 2hr prac/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3003 or 3903. Assessment: 2hr exam, assignments, prac assessment. This unit of study is intended for students not majoring in physics. The lecture component is the same as for the quantum physics component of PHYS 3003. Several experiments illustrating the principles of quantum physics are also undertaken in the physics laboratory.

PHYS 3105 Astrophysics

4 credit points. Semester: 2. Classes: 2 lec & 2hr prac/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3005 or 3006 or 3905 or 3906. Assessment: 2hr exam, assignments, prac assessment.

This unit of study is intended for students not majoring in physics. The lecture component is the same as for the astrophysics component of Physics 3005. Several experiments illustrating the principles of astrophysics are also undertaken in the physics laboratory.

PHYS 3106 Plasma Physics

4 credit points. Semester: 2. Classes: 2 lec & 2hr prac/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3005 or 3006 or 3905 or 3906. Assessment: 2hr exam, assignments, prac assessment.

This unit of study is intended for students not majoring in physics. The lecture component is the same as for the plasma physics component of PHYS 3005. Several experiments illustrating the principles of plasma physics are also undertaken in the physics laboratory.

PHYS 3107 Modern Optics

4 credit points. Semester: 2. Classes: 2 lec & 2hr prac/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3005 or 3006 or 3905 or 3906. Assessment: 2hr exam, assignments, prac assessment.

This unit of study is intended for students not majoring in physics. The lecture component is the same as for the modern optics component of PHYS 3005. Several experiments illustrating the principles of modern optics are also undertaken in the physics laboratory.

PHYS 3108 Nuclear and Particle Physics

4 credit points. Semester: 2. Classes: 2 lec & 2hr prac/wk. Prerequisite: 8 credit points of Intermediate Mathematics. Qualifying: 16 credit points of Intermediate Physics. Prohibition: May not be counted with PHYS 3005 or 3006 or 3905 or 3906. Assessment: 2hr exam, assignments, prac assessment.

NB: Permission required for enrolment. Entry requires permission from the School

This unit of study is intended for students not majoring in physics. The lecture component is the same as for the nuclear and particle physics component of PHYS 3005. Several experiments illustrating the principles of nuclear and particle physics are also undertaken in the physics laboratory.

(May not be available every year - check with the Senior Physics coordinator)

Physics Honours

Dr Anne Green

Qualifying: 24 credit points of Senior Physics or equivalent. Classes: 120 lec & research project. Assessment: Six 2hr or 3hr exams, one 9000w report.

Students of sufficient merit may be admitted to Honours in fourth year. They must devote their whole time to work in connection with Physics. Physics Honours comprises coursework (weight 50%) and a research project (weight 50%).

The series of lectures and prescribed reading cover quantum mechanics, statistical mechanics and kinetic theory, electromagnetic theory, condensed matter physics, plasma physics, modern optics, sub-atomic physics, astrophysics and relativistic quantum mechanics. Additional options, which may not be offered every year, include general relativity, materials

physics, laser physics, cosmology, practice of physics, biomedical imaging, signal and image processing, solar energy, fundamentals of physics, plasma astrophysics, space physics, and astrophysical shock theory.

Honours students are associated with one of the research groups in the School of Physics, and their research project is a part of the research activity of that group. Students are required to submit a formal report on their research work.

Honours students are encouraged to participate along with staff and research students in all activities within the School. They are provided with office accommodation, and are expected to attend colloquiums and seminars. They may be employed for several hours per week in Junior teaching.

Department of Physiology

The Department of Physiology provides 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.

Registration

All students (including repeat students and non degree students) must complete a registration form (available in the Office) during the orientation period or earlier. Tutorial/practical class times will be included on personal timetables and more detailed information will be provided at the first class.

PHSi 2001 Introductory Physiology A

4 credit points. Dr M. Frommer, assisted by Ms I. Schneider. Semester: 1. Classes: 2 lec & 2 tut or prac/wk. Prerequisite: 6 credit points of any March semester Junior Chemistry unit of study (eg, CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. Prohibition: May not be counted with PHSi 2101. Assessment: One 2hr theory exam, data tests, one essay, one oral presentation.

NB: Biology and Physics are strongly recommended prerequisites. PHSi 2001 is one of the recommended qualifying units for Senior Physiology units of study. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study gives a basic introduction to the functions of the nervous system, including excitable cell (nerve and muscle) physiology, sensory and motor systems, and central processing. It also incorporates gastrointestinal physiology and haematology. The practical component involves simple experiments on humans or using computer simulations, with an emphasis on data analysis. Both oral and written communication skills are emphasized.

Textbooks

Sherwood L. Human Physiology: From Cells to Systems, 3rd edn, 1997

PHSi 2002 Introductory Physiology B

4 credit points. Dr M. Frommer assisted by Ms I. Schneider. Semester: 2. Classes: 2 lec & 2 tut or prac/wk. Prerequisite: 6 credit points of any March semester Junior Chemistry unit of study (eg, CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. Prohibition: May not be counted with PHSi 2102. Assessment: One 2hr theory exam, data tests, one essay, one oral presentation.

NB: PHSi 2002 is one of the recommended qualifying units for Senior Physiology units of study. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study gives a basic introduction to the functions of the remaining body systems: cardiovascular, respiratory, endocrine, reproductive and renal. The practical component involves simple experiments on humans or using computer simulations, with an emphasis on data analysis. Both oral and written communication skills are emphasized.

Textbooks

Sherwood L. Human Physiology: From Cells to Systems, 3rd edn, 1997

PHSi 2101 Physiology A

8 credit points. Dr M. Frommer assisted by Ms I. Schneider. Semester: 1. Prerequisite: 6 credit points of any March semester Junior Chemistry unit of study (eg, CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. Prohibition: May not be counted with PHSi 2001. Assessment: One 3hr theory exam, data tests, one essay, one oral presentation.

NB: Biology and Physics are strongly recommended prerequisites, PHSi 2101 is one of the recommended Physiology qualifying units of study for PHSi 3001. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study incorporates PHSI2001 but deals with the physiology topics covered there in more detail. These include nervous system function (nerve and muscle cells, sensory and motor systems, central processing), gastrointestinal physiology and haematology. It entails additional lectures, more complex practicals, and a component of problem-based group learning. Skills in hypothesis generation and testing, data analysis, and oral and written communication will be emphasized.

Textbooks

Sherwood L. Human Physiology: From Cells to Systems, 3rd edn, 1997

PHSI2102 Physiology B

8 credit points. Dr M. Frommer assisted by Ms I Schneider. Semester: 2. Prerequisite: 6 credit points of any March semester Junior Chemistry unit of study (eg, CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. Prohibition: May not be counted with PHSI 2002. Assessment: One 3hr theory exam, data tests, one essay, one oral presentation.

NB: Biology and Physics are strongly recommended

prerequisites. PHSI 2101 is one of the recommended Physiology qualifying units of study for PHSI 3001. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit of study incorporates PHSI 2002 but deals with the physiology topics covered there in more detail. These include the cardiovascular, respiratory, endocrine, reproductive and renal systems. It entails additional lectures, more complex practicals, and a component of problem-based group learning. Skills in hypothesis generation and testing, data analysis, and oral and written communication will be emphasized.

Textbooks

Sherwood L. Human Physiology: From Cells to Systems, 3rd edn, 1997

PHSI 3001 Neuroscience

12 credit points. A/Prof P. Martin, Dr J Mitrofanis. Semester: 1. Classes: 4 lec & 8 prac/wk. Prerequisite: Except for BMedSc students: (MBLG 2001 or 2101 or 2901 or BCHM2001 or 2101 or 2901) plus at least 8 credit points of Intermediate Science units of study. Qualifying: PHSI (2101 or 2001) or ANAT 2003 or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). Prohibition: May not be counted with PHSI 3901. Assessment: Two 2hr exams, spot test, essay, prac report, seminar presentation.

NB: A minimum of 8 credit points of Intermediate Physiology and/or Anatomy is recommended

The aim of this unit of study is to give the student a comprehensive view of the structure and function of the human nervous system. Our current knowledge of how the brain works is based on the analysis of the normal structure of the nervous system and its pathways, the functional effects of lesions and neurological diseases in different parts of the nervous system, and the way that nerve cells work at the molecular, cellular and integrative level. The lecture series addresses the different topics, each of which offers special insight into the normal function of the nervous system in health and disease.

Practical: The practical component of this unit of study consists of small group tutorials in neuroanatomy, experimental and computer based sessions on physiological methods, and small group sessions in which you will discuss current research papers related to the lecture topics. You will have the opportunity to examine human brain specimens during the tutorials, and in the Wilson Museum in the Department of Anatomy and Histology. Computer based facilities which allow you to learn the brain structures by simulated dissection are also available.

Textbooks

Kandel E, Schwartz J, & Jessell T. Principles of Neural Science (4th ed), McGraw Hill

PHSI 3901 Neuroscience (Advanced)

12 credit points. A/Prof P. Martin, Dr J Mitrofanis. Semester: 1. Classes: 4 lec, 1 tut & 7 prac/wk. Prerequisite: Except for BMedSc students: (MBLG 2001 or 2101 or 2901 or BCHM2001 or 2101 or 2901) plus at least 8 credit points of Intermediate Science units of study. Qualifying: PHSI (2101 or 2001) or ANAT 2003 or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). Prohibition: May not be counted with PHSI 3001. Assessment: Two 2hr exams, spot test, essay, prac report, seminar presentation.

NB: Permission required for enrolment. A minimum of 8 credit points of Intermediate Physiology and/or Anatomy is recommended. Available to selected students who have achieved a mark of at least 65 in the qualifying unit/s of study.

The lecture component and practical component are the same as for PHSI 3001. Selected students will be set special advanced assignments and attend tutorials on those assignments during the practical sessions.

PHSI 3002 Neuroscience - Cellular and Integrative

12 credit points. Dr K Keay, Professor M Bennett. Semester: 2. Classes: 3 lec, 2 tut & 6hr research/wk. Prerequisite: For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. Prohibition: May not be counted with PHSI 3902. Assessment: One 2hr exam, tutorial participation, research report.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This second semester unit is designed to introduce students to 'cutting edge' issues in the neurosciences. In a combination of small lectures, discussion groups and laboratory or library based research projects, new, innovative or controversial issues in neuroscience research are covered. These usually include discussion of findings published in the most recent editions of scientific journals and often research in progress in the departments of Anatomy and Histology and Physiology (Institute of Biomedical Research). The unit follows two general 'strands', the first deals with cellular and molecular approaches, and the second, integrative approaches to understanding nervous system function and dysfunction. Some of the issues covered in recent years have included mechanisms of neurotoxicity and how to prevent neurodeath, how to prevent shock following trauma, the design of novel anti-schizophrenic and anti-parkinsonian drugs, the ways in which development of the brain is organised and what happens when it goes wrong.

PHSI 3902 Neuroscience- Cellular & Integrative Adv

12 credit points. Dr K Keay, Professor M Bennett. Semester: 2. Classes: 3 lec, 2 tut & 6 prac/wk. Prerequisite: For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. Qualifying: Credit or better in PHSI 3001. Prohibition: May not be counted with PHSI 3002. Assessment: One 2hr exam, tutorial participation, research report.

NB: Permission required for enrolment. Available to selected students who have achieved a mark of at least 65 in the qualifying unit/s of study for PHSI 3002 and approved by course coordinators. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

The lecture and practical component are the same as for PHSI 3002. Selected students will be set special advanced assignments and attend tutorials on those assignments during the practical sessions.

PHSI 3003 Heart and Circulation

12 credit points. Dr J Hoh assisted by Ms I Schneider. Semester: 2. Classes: 4 lec, 2 tut & 6hr prac/wk. Prerequisite: Except for BMedSc: (MBLG 2001 or 2101 or 2901 or BCHM2001 or 2101 or 2901) and (BCHM 2002 or 2102 or 2902 or MBLG 2002 or 2102 or 2902) plus at least 8 credit points of Intermediate Science units of study. Qualifying: PHSI (2102 or 2002) or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). Prohibition: May not be counted with PHSI 3903. Assessment: One 3hr exam, essays, prac reports, seminar presentations.

NB: A minimum of 8 credit points of Intermediate Physiology and BCHM 2002 or 2102 or 2902 are strongly recommended.

This unit of study offers an up to date and in depth treatment of the structure and function of the cardiovascular system at the organ system, cellular and molecular levels. There is a particular focus on exercise physiology and the way in which the heart, circulation and muscle contribute to the limits of sporting achievement. The excitability, contractility and energetics of the heart and blood vessels are studied, and the regulation of these organs by local (physical and chemical) factors, hormones and the nervous system are discussed, with emphasis on cellular and molecular mechanisms. At the systemic level, the unit of study deals with short term (neural) mechanisms controlling the blood pressure, and how the system behaves during exercise and other stresses. Long term (hormonal) mechanisms regulating blood pressure via the renal control of extracellular fluid volume, and the pathophysiology of atherosclerosis and hypertension are also discussed.

Practical: Lectures are combined with practical laboratory experiments on animals and human subjects.

PHSI3903 Heart and Circulation (Advanced)

12 credit points. Dr J Hoh assisted by Ms I Schneider. **Semester: 2.** **Classes:** 4 lec, 2 tut & 6hr prac/wk. **Prerequisite:** Except for BMedSc: (MBLG2001 or 2101 or 2901 or BCHM2001 or 2101 or 2901) and (BCHM 2002 or 2102 or 2902 or MBLG 2002 or 2102 or 2902) plus at least 8 credit points of Intermediate Science units of study. **Qualifying:** PHSI (2102 or 2002) or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). **Prohibition:** May not be counted with PHSI 3003. **Assessment:** One 3hr exam, essays, prac reports, seminar presentations.

NB: Permission required for enrolment. A minimum of 8 credit points of Intermediate Physiology and BCHM 2002 or 2102 or 2902 are strongly recommended. Available to selected students who have achieved a mark of at least 65 in the qualifying unit/s of study.

The lecture and practical component are the same as for PHSI 3003. Selected students will be set special advanced assignments and attend tutorials on those assignments as negotiated with a member of the academic staff.

PHSI 3004 Human Cellular Physiology

12 credit points. Dr Bill Phillips. **Semester:** 1. **Classes:** 4 lec, 6 prac & 2 small group PBUwk. **Prerequisite:** Except for BMedSc: PHSI (2001 or 2101) and PHSI (2002 or 2102) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901). For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). **Prohibition:** May not be counted with PHSI 3003. **Assessment:** One 3hr exam, 1 essay, practical reports, oral presentations.

The aim of this unit of study is to examine key cellular processes involved in the growth, maintenance and reproduction of human life. Processes to be studied include the regulation of cell division and differentiation in developing and adult tissues, the regulation of body fluids through ion transport across epithelia, mechanisms of hormonal and nervous system signaling and the regulation of muscle contraction. Lectures and practical classes will relate the molecular underpinnings to physiological functions: our current interpretation of how ion channels, hormone receptors and exocytotic complexes mediate tissue function and human life.

The significance of these molecular mechanisms will be highlighted by considering how mutations and other disorders affect key proteins and genes and how this might lead to disease states such as cancer, cystic fibrosis and osteoporosis. **Practical:** A problem-based learning (PBL) stream will introduce students to reading and interpreting scientific papers. It involves reading lists structured to address written biological problems. A Methods series of lectures will provide an overview of techniques widely employed in cellular physiology to aid in students' interpretation of published experimental evidence. Finally, the practical course will emphasize experimental design and interpretation. Collectively, the PBL, Methods lecture series and practical classes are intended to begin to develop skills and outlook to prepare students for the Honours year of research.

PHSI 3904 Human Cellular Physiology (Advanced)

12 credit points. Dr Bill Phillips. **Semester:** 1. **Classes:** 4 lec, 6 prac & 2 small group PBUwk. **Prerequisite:** Except for BMedSc students: PHSI (2001 or 2101) and PHSI (2002 or 2102) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901). For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). **Prohibition:** May not be counted with PHSI 3004. **Assessment:** One 3hr exam, 1 essay, practical reports, oral presentations.

NB: Permission required for enrolment. Available to selected students who have achieved an average of at least 65 in the prerequisite units of study

The lecture and practical component are the same as for PHSI 3004. Selected students will be set special advanced assignments and attend tutorials on those assignments as negotiated with a member of the academic staff.

Physiology Honours

During fourth year, no formal series of lectures is provided but students are given a relevant problem to investigate. This problem usually represents a small facet of one of the major current research projects within the Department, and the students work in collaboration with members of the staff. Students write a thesis embodying the results of their work.

Department of Psychology

Psychology is the study of behaviour. As a study it is approached on a scientific basis, with provision for professional training at the postgraduate level. The research activities of the Department cover almost all of the main branches of the subject.

Extensive information about the subject and the Department is available on the Departmental web-site: www.psych.usyd.edu.au

A normal three year sequence required for a major in Psychology is: PSYC 1001, 1002, 2111, 2112, 2113, 2114, and eight Senior units of study selected from PSYC 3201*, 3202*, 3203, 3204, 3205, 3206, 3208, 3209, 3210, 3211, 3212 and 3214 (♦Required for entry to Fourth Year). Mid year entry is possible and involves modification of this sequence.

The units of study available are:

PSYC 1001, 6 credit points
 PSYC 1002, 6 credit points
 PSYC 2111, 4 credit points
 PSYC 2112, 4 credit points
 PSYC 2113, 4 credit points
 PSYC 2114, 4 credit points
 PSYC 3201, 4 credit points
 PSYC 3202, 4 credit points
 PSYC 3203, 4 credit points
 PSYC 3204, 4 credit points
 PSYC 3205, 4 credit points
 PSYC 3206, 4 credit points
 PSYC 3208, 4 credit points
 PSYC 3209, 4 credit points
 PSYC 3210, 4 credit points
 PSYC 3211, 4 credit points
 PSYC 3212, 4 credit points

Students who have completed PSYC 1001 and/or 3002 must obtain the permission of the Head of Department of Psychology before enrolling in any of PSYC 3201 to 3214.

Registration and noticeboards

Students in all years must register during the orientation period. Psychology 1001 students register by going to the Carlaw Building during orientation and collecting a personalised computer generated timetable, which will indicate the lecture times and the tutorial group to which they have been allocated. Further information will be posted at the Enrolment Centre and on the Junior Psychology noticeboard on the 4th Floor of the Griffith-Taylor Building.

Information about registration meetings for Intermediate and Senior Psychology students will also be posted at the Enrolment Centre, and on the Departmental noticeboards on the 5th floor of the Griffith-Taylor Building, as well as the Departmental web-site.

Enquiries

The main enquiry office of the Department is Room 416, Griffith-Taylor Building (phone (02) 9351 2872). Staff members available to discuss particular courses may be contacted directly or through this office.

Honours

In order to be eligible to enter Psychology 4 Honours, it is necessary (except as provided in the by-laws or resolutions) to gain a year average of Pass with at least Credit average in Intermediate and in Senior Psychology units of study. These Psychology units include Psychology 2111, 2112, 2113, 2114, 3201, 3202, and at least six other Senior Psychology units from Psychology 3203, 3204, 3205, 3206, 3208, 3209, 3210, 3211, 3212 and 3214. Students wishing to graduate with Honours in Psychology are urged to discuss their choice of other subjects with a Faculty adviser as soon as practicable. There is currently a quota on entry to Psychology 4.

Examinations

Undergraduate units of study are examined at the end of each semester and include classwork by way of essays, reports or practical/laboratory work. At the beginning of each unit of study students are advised of the contributions of exam and classwork for assessment purposes.

Summer School: January-February

PSYC 1001 Psychology 1001 is offered in the Sydney Summer School. Consult the Sydney Summer School Web site for more information, www.summer.usyd.edu.au/

PSYC 1001 Psychology 1001

6 credit points. **Semester:** 1, Summer. **Classes:** 3 lec, one 2hr demonstration/tut/wk. **Assessment:** One 3hr exam, one 1000w essay, one tut test, experimental participation.

Psychology 1001 is a general introduction to the main topics and methods of psychology, and is the basis for advanced work as well as being of use to those not proceeding with the subject. Psychology 1001 covers the following areas: subject matter and

methods of psychology; basic statistics and measurement; behavioural neuroscience; sensory processes; social psychology; personality theory.

Summer School: January-February

This department offers PSYC 1001 in the Sydney Summer School. Consult The Sydnet Summer School Web site for more information, www.usyd.edu.au/summerschool/

Textbooks

Psychology 1001 Handbook (2001) and others as advised.

PSYC 1002 Psychology 1002

6 credit points. **Semester:** 2. **Classes:** 3 lec & 2hr demonstration/tut/wk.

Assessment: One 3hr exam, one 1250w prac report, one tut test, experimental participation.

Psychology 1002 covers the following areas: human development; human mental abilities; learning, motivation and abnormal psychology; visual perception; cognitive processes.

Textbooks

Psychology 1002 Handbook (2001) and others as advised.

PSYC 2111 Learning, Neuroscience and Perception

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 prac/wk. **Qualifying:** PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). **Assessment:** Multiple choice exam, lab report, tutorial quiz.

This unit of study examines a range of phenomena and principles in perception and learning and their relations to 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. Perceptual phenomena include recognition of faces and 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 Departmental handout

PSYC 2112 Psychological Statistics

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 prac/wk, 1 computer tut/fortnight. **Qualifying:** PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). **Assessment:** Class tests, Group project, Multiple choice exam.

The aim of this unit of study is to introduce students to some of the fundamental concepts in statistics as used in Psychology. These include summary descriptive statistics and an introduction to the principles and practice of experimental design and inferential statistics. Building upon this ground work, the unit of study aims to develop student's expertise in understanding the rationale for, and application of a variety of statistical tests to the sorts of data typically obtained in psychological research.

Textbooks

See Departmental handout

PSYC 2113 Cognitive Processes & Social Psychology

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 prac/wk. **Qualifying:** PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). **Assessment:** Class quiz and multiple choice exam.

The aim of the Cognitive Processes component is to acquaint students with current theoretical and experimental work in cognitive psychology. The aim of the Social Psychology component is to extend some of the Social Psychology topics introduced in Psychology 1001 and to introduce some new topics. Students are expected to gain an understanding of two main areas of Social Psychology: (1) Group and intergroup relationships and (2) Interpersonal processes, with a focus on altruism and helping behaviour and affiliation and attraction.

Textbooks

See Departmental handout

PSYC 2114 Personality and Individual Differences

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut & 1 hr self-paced computer/library research/wk. **Qualifying:** PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). **Assessment:** Personality: 1 hr exam & essay; Individual Differences: 1 hr exam and quiz.

PSYC 2114 is made up of two components: Personality and Individual Differences. The aim of the Personality component is to introduce the student to various psychodynamic theories of personality, Eysenck's biological typology and current trait theory. Students will be exposed to conceptual analysis and encouraged to critically evaluate the various theories covered.

The aim of the Individual Differences component is to introduce the major issues in individual differences and group differences in human abilities. It is divided into two parts: 5 lectures on individual differences and 8 lectures on group differences. Students are expected to gain an understanding about the major theories of intelligence and of the facts related to the traditional areas of group differences.

Textbooks

See Departmental handout

PSYC 3201 Statistics and Psychometrics

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 prac & 1 hr unsupervised computer practice/wk. **Qualifying:** 8 credit points of Intermediate Psychology including PSYC 2112. **Assessment:** Class test, assignment, examination.

NB: 32 credit points of Senior (thirdyear) Psychology is required for a major

PSYC 3201 consists of two components, Statistics and Psychometrics. The aim of the Statistics component is to teach students the structure of experiments for which analysis of variance would be an appropriate means of analysis. The unit of study aims to develop students' ability to ask more focused questions than can be answered by omnibus F tests, specifically by the testing of contrasts. The problems of multiple inferences, and the control of the Type I error rate, are an integral aspect of the unit of study.

The objective of the Psychometrics component is to introduce students to measurement as understood in Psychology, to a range of quantitative theories and to the basic concepts of classical psychometrics, item analysis and test construction.

Textbooks

See Departmental handout

PSYC 3202 History and Philosophy of Psychology

4 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut & 1 hr self paced library research/wk. **Qualifying:** 12 credit points of Intermediate Psychology. **Assessment:** 1.5hr exam, 1 x 2000 word essay.

NB: 32 credit points of Senior (thirdyear) Psychology is required for a major

PSYC 3202 consists of two components: History of Psychology and Philosophy of Psychology. The History of Psychology introduces the historical foundations of Western psychology from Descartes through to the cognitive revolution in the 1960's. In covering important individuals, movements and themes, attention is drawn to debate about interpretation of the historical process, and to analysis of the form and structure of the various arguments presented in favour of certain psychological theories. The Philosophy of Psychology introduces traditional and contemporary themes in the philosophy of science, with focus on the relevance to psychology. Students are expected to become aware that metatheoretical analysis has a central place in psychology alongside empirical methods, that the basic concepts and theories of psychology involve philosophical assumptions which can be articulated and examined.

Textbooks

See Departmental handout

PSYC 3203 Abnormal Psychology

4 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Qualifying:** PSYC 2111 and PSYC (2113 or 2114). **Assessment:** 1.5hr exam, report/presentation.

NB: 32 credit points of Senior (thirdyear) Psychology is required for a major

This unit of study examines core issues in Abnormal Psychology. The unit of study will cover aspects of adult abnormality and child abnormality and will include topics such as:

- (a) Adult abnormal psychology: Anxiety disorders (specific phobias, panic disorder, agoraphobia, OCD); Addictive disorders (drug, alcohol, gambling); Eating disorders (anorexia nervosa, bulimia nervosa); Mood disorders (dysthymia, major depressive disorder, cyclothymia, bipolar disorder); Schizophrenia, Personality disorders.
- (b) Child abnormal psychology: Learning disabilities, Mental retardation, Intellectual and educational assessment of children; Pervasive developmental disorders; Attention deficit disorder; Conduct disorder; Anxiety disorders in children and adolescents; Depression.

Textbooks

See Departmental handout

PSYC 3204 Behavioural Neuroscience

4 credit points. **Semester: 2. Classes: 2 lec & 1 prac/wk. Qualifying:** 8 credit points of Intermediate Psychology including PSYC 2111. **Assessment:** 1.5hr exam, class quiz, poster presentation, class participation.

NB: 32 credit points of Senior (thirdyear) Psychology is required for a major

This unit of study carries on from the Neuroscience component of PSYCH 2111, providing some more specialised coverage in the areas of psychopharmacology, molecular neuroscience, human brain imaging and cognitive neuroscience. Topics to be covered include: Psychopharmacology (basic actions of drugs on the brain, mechanism of action of antidepressant, antipsychotic and anxiolytic drugs, effects of recreational drugs (cannabis, MDMA, alcohol, opiates) on brain, behaviour and cognition); Molecular Neuroscience (effects of drugs on gene expression, the use of knockout mice and antisense techniques); Brain Imaging Technologies (findings in psychiatry and neurology, what we can learn about the fundamentals of brain function from brain imaging) and Cognitive Neuroscience (neural basis of cognitive abnormalities in schizophrenia and other disorders). In the first few weeks of the unit, tutorials consist of demonstrations covering basic neuroanatomy, histology and neuropharmacology. In the latter part of the course, tutorials involve groups of students giving poster presentations of recent 'hot' papers in the neuroscience field.

Textbooks

See Departmental Handout

PSYC 3205 Cognitive Psychology

4 credit points. **Semester: 1. Classes: 2 lec & 1 tut/wk. Qualifying:** PSYC 2112 and 2113. **Assessment:** Class quiz, laboratory report, multiple choice exam.

NB: 32 credit points of Senior (thirdyear) Psychology is required for a major

This unit of study deals with current research in memory, attention and pattern recognition and is approached in a practical way. Students participate in experiments as subjects and experimenters and are encouraged to think and act as experimenters in order to prepare them for their empirical projects in fourth year honours. In tutorial sessions students are set problems in the derivation of hypotheses from theory and the design of experiments to test these hypotheses.

Textbooks

See Departmental Handout

PSYC 3206 Developmental Psychology

4 credit points. **Semester: 1. Classes: 2 lec & 1 tut/wk. Qualifying:** 8 credit points of Intermediate Psychology. **Assessment:** 1.5hr exam, tutorial assessments.

NB: 32 credit points of Senior (thirdyear) Psychology is required for a major

This unit of study examines various theoretical approaches to and selected issues within Developmental Psychology. The major issues/controversies in Developmental theory are examined in relation to a number of the more influential theoretical approaches. Students are expected to gain an understanding of current developmental theory and research. In addition the unit introduces students to a range of issues in selected areas of contemporary Developmental Psychology. Students are expected to gain knowledge of these areas, and to develop a critical approach to the analysis of current research and theoretical issues. They are also required to apply their knowledge in practical exercises involving observations of children.

Textbooks

See Departmental handout.

PSYC 3208 Intelligence

4 credit points. **Semester: 2. Classes: 2 lec & 1 tut/wk. Qualifying:** PSYC 2112 and 2114. **Assessment:** 1.5hr exam, tutorial quizzes.

NB: 32 credit points of Senior (thirdyear) Psychology is required for a major

The aim is to provide an overview and critical platform to evaluate recent studies of individual differences in human cognitive abilities. The unit introduces major contemporary issues in individual differences in human abilities and intelligence. The emphasis of the latter part is on recent work on the topics related to (a) Psychometric research on intelligence; (b) Experimental cognitive correlates approach to intelligence; (c) Biological aspects of intelligence; and (d) the role of metacognitive abilities in intelligence. Some of the work carried out at this University is also discussed.

Textbooks

See Departmental handout.

PSYC 3209 Learning and Motivation

4 credit points. **Semester: 1. Classes: 2 lec & 1 tut/wk. Qualifying:** PSYC 2111 and 2112. **Assessment:** Report, exam.

NB: 32 credit points of Senior (thirdyear) Psychology is required for a major

PSYC 3209 introduces the fundamental concepts and more important research findings of contemporary learning theory and selected approaches to motivation. It examines the application of such fundamental research to issues such as drug tolerance, food choice, stress, health promotion and risk taking. It is designed to develop skills in reading primary sources in this area; and to provide the opportunity for hands-on experience of planning and carrying out a research project.

Textbooks

See Departmental handout.

PSYC 3210 Perceptual Systems

4 credit points. **Semester: 2. Classes: 2 hrs lec & 1 hr lab/wk. Qualifying:** PSYC 2111 and 2112. **Assessment:** 1.5hr exam, tutorial assessment.

NB: 32 credit points of Senior (thirdyear) Psychology is required for a major

This unit covers at an advanced level selected topics in Perception from both the psychophysical and neuroscientific perspectives. Students are expected to gain an understanding of the main theoretical perspectives in current research, to appreciate the significance and relevance of basic perceptual research for understanding normal perceptual functioning, and to be able to evaluate the conceptual and empirical worth of research contributions.

PSYC 3211 Psychological Assessmt. & Organisational

4 credit points. **Semester: 1. Classes: 2 lec & 1 tut/wk. Qualifying:** PSYC 2112 and 2114. **Prohibition:** May not be counted with PSYC 3207 (except with permission from the Head of Department). **Assessment:** 1.5hr exam, tutorial evaluation.

NB: 32 credit points of Senior (thirdyear) Psychology is required for a major

The Psychological Assessment component covers fundamental issues in the construction, evaluation and administration of psychological tests with particular emphasis on tests of personality. Students will be given 'hands-on' experience with a variety of psychological instruments including those used for personality, aptitude and clinical assessment. A variety of psychometric 'skills' (eg. calculating reliability, rudiments of scale construction) will also be taught. This component of the unit will conclude with an introduction of state of the art issues in psychological assessment including demonstrations of adaptive and computerised testing and discussion of item response theory (IRT) and confirmatory factor analysis (CFA).

The Organisational Psychology component focuses on performance in the work place and the influence of social factors on such performance. Various aspects of the workplace will be examined, including leadership, workplace conflict, job satisfaction, selection and appraisal.

Textbooks

See Departmental handout

PSYC 3212 Social Psychology

4 credit points. **Semester: 1. Classes: 2 lec & 1 tut/wk. Qualifying:** 8 credit points of Intermediate Psychology including PSYC 2113. **Assessment:** 1.5hr exam, classwork quiz.

NB: 32 credit points of Senior (thirdyear) Psychology is required for a major

PSYC 3212 continues the coverage of topics in Social Psychology begun in the unit PSYC 2113. The unit is divided into topic areas where the focus is on evaluating theories and the relevant evidence. In any one year approximately four topics will be covered from the following list: affiliation and attraction, social motivation (especially aggression), social cognition, social competence, the impact of aspects of the physical environment on social behaviour, jury decision making, interpersonal communication, and social development through the lifespan. Tutorials provide first hand experience of research by involving students in a range of research projects on the topics covered in the lectures. The tutorials also provide an opportunity for discussion of issues associated with the topics covered in lectures.

PSYC 3214 Communication and Counselling

4 credit points. **Semester: 2. Classes: 2 lec & 1 tut/wk. Qualifying:** PSYC 2113 and 2114. **Assessment:** 1.5 hour examination, tutorial assessments.

NB: 32 credit points of Senior (thirdyear) Psychology is required for a major

The focus of the Communication component is the way in which the meaning communicated by the spoken word is modified by non-lexical features. Topics covered include the three phase structure of communication, conversation structure, prosodic features of speech; paralanguage; and non-vocal communication. These topics are considered in the context of the type of information communicated: knowledge, attitudes, feelings and emotions. Cultural differences in communication are highlighted. Special topics include the concept and role of body language, the detection of deception, and conversational control.

The aims of the Counselling component are to provide an introduction to counselling psychology, to critically examine the theoretical foundations of counselling processes and to consider relevant empirical research. The topics to be covered are: The work of the counsellor: Defining counselling, distinguishing between counselling, education, interviewing and psychotherapy. Goals of counselling. Skills-oriented and stage-oriented models of counselling (eg, Egan's Helping Model), Theoretical Models: The organising principles of counselling, and their status, as variously proposed within the following viewpoints; Psychodynamic theories (Freud and the neo-Freudians), behavioural theories (eg, Wolpe, Skinner, Bandura), cognitive theories (eg, Ellis, Beck), existentialist-humanistic theories (eg, Rogers), Gestalt theories (eg, Perls). More recent approaches (examples to be selected by the lecturer), Integrating theory and skills: Single-model approaches versus forms of eclecticism, Introduction to professional issues: Supervision and ethics.

Recommended Reading

- Corey, G. (1996). *Theory and Practice of Counseling and Psychotherapy*. Pacific Grove, Brooks-Cole.
 Egan, G. (1998). *The Skilled Helper: A Problem Management Approach to Helping*. Pacific Grove, Brooks-Cole.
 Ellis, A. & Beattie G. (1986). *Psychology of Language and Communication*. London, Weidenfeld and Nicol.

Psychology Honours

Prerequisite: Average of Credit or better in 16 credit points of Intermediate Psychology, and also in at least 32 credit points of Senior Psychology which must include PSYC 3201 and 3202. BPsych students should consult resolutions in chapter 5. Departmental permission required. Assessment: Formal exams in Ethics and Issues in Psychology and in Methods; report of empirical research project; theoretical thesis or take-home examination in three Special Fields modules.

Due to restricted resources for research supervision, the intake to Psychology 4 Honours will be limited to approximately 55 students and will be determined by academic merit in Intermediate and Senior Psychology.

Students are required to:

- (a) devise, conduct and report upon an empirical research project (research area dependent on interests & specialities of staff members);
- (b) write a theoretical thesis or attend three Special Fields seminars and write three essays; and
- (c) attend one lecture series in Ethics and Issues in Psychology and two Method lecture series.

■ Bachelor of Science (Advanced) degree program

Summary of requirements

The Bachelor of Science (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.

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:

- no more than 48 credit points from junior units of study
- at least 16 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 are completed at the advanced level or as TSP units in a single Science subject area
- at least 12 credit points from the Science subject areas of Mathematics and Statistics.

You should also 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.

The Resolutions of the Senate and Faculty governing candidature for the degree of Bachelor of Science listed in chapter 5 also govern the BSc (Advanced) degree program. Students should refer to the table of units of study for the BSc (Table I: Bachelor of Science on page 13).

Progression requirements

A minimum requirement for progression in the BSc (Advanced) will be set annually and will be based on WAM and performance in advanced units of study. Students in advanced degree programs are expected to obtain a credit average in each year of study.

Universities Admissions Index (UAI)

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

Transferring into the BSc (Advanced) degree program

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

Degree resolutions

See chapter 5.

■ Bachelor of Science (Advanced Mathematics) degree program

Summary of requirements

The Bachelor of Science (Advanced Mathematics) 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.

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:

- no more than 48 credit points from junior units of study
- at least 16 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
- 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

You should also 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.

The Resolutions of the Senate and Faculty governing candidature for the degree of Bachelor of Science listed in chapter 5 also govern the BSc (Advanced Mathematics) degree

program. Students should refer to the table of units of study for the BSc (Table I: Bachelor of Science on page 13).

Progression requirements

A minimum requirement for progression in the BSc (Advanced Mathematics) will be set annually and will be based on WAM and performance in advanced units of study. Students in advanced degree programs are expected to obtain a credit average in each year of study.

Universities Admissions Index (UAI)

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

Transferring into the BSc (Advanced Mathematics) degree program

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

Degree resolutions

See chapter 5.

■ Bachelor of Science (Bioinformatics) degree program

Summary of requirements

The Bachelor of Science (Bioinformatics) 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.

Enrolment guide

To complete your degree you must gain credit for at least 144 credit points as specified in Table IA.

The Resolutions of the Senate and Faculty governing candidature for the degree of Bachelor of Science listed in

chapter 5 also govern the BSc (Bioinformatics) degree program.. Students should also refer to Table I: Bachelor of Science on page 13.

Universities Admissions Index (UAI)

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

Transferring into the BSc (Bioinformatics)

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

Degree resolutions

See chapter 5.

Table IA: Bachelor of Science (Bioinformatics)

Unit of study CP A: Assumed knowledge P: Prerequisite Q: Qualifying C: Corequisite N: Prohibition Semester

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; and
- (ii) 12 credit points from Junior units of study in each of the Science Subject Areas of Biology, Chemistry and Computer Science/Information Systems.

B. Intermediate units of study

Candidates are required to enrol in and complete:

- (i) 8 credit points of Intermediate units of study in the Science Subject Areas of Computer Science and/or Information Systems;
- (ii) MBLG (2001 or 2901);
- (iii) at least 16 credit points from MBLG (2002 or 2102 or 2902) or from other Intermediate units of study from the Science Subject Areas of Biochemistry, Biology, Microbiology or Pharmacology; and
- (iv) a further 16 credit points of additional units of study at the Intermediate level chosen from the Science Subject Areas of Computer Science, Information Systems or Statistics or from the following Mathematics units of study: MATH 2002/2902, MATH 2003/2903, MATH 2006/2906, MATH 2010.

C. Senior units of study

Candidates are required to enrol in and complete:

- (i) 12 credit points of Senior units of study in the Science Subject Areas of Computer Science and/or Information Systems including the unit of study COMP 3206;
- (ii) 24 credit points of Senior units of study in the Science Subject Areas of Biology, Biochemistry, Microbiology and/or Pharmacology; 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 or Statistics or from the following Mathematics and Physics units of study: MATH 3007, MATH 3010, MATH 3016/3916, MATH 3020/3920, PHYS 3301/3901, PHYS 3303/3903.

COMP 3206 Bioinformatics Project 4 P 16 credit points of Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and genetics and/or Pharmacology.
 Q COMP 2004 or 2904 or SOFT 2004 or 2904.
 c COMP 3008 or 3100 or 3908 or 3800.
NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809.

■ Bachelor of Science (Environmental) degree program

Summary of requirements

The Bachelor of Science (Environmental) 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.

Enrolment guide

To complete your degree you must gain credit for at least 144 credit points as specified in Table IB.

The Resolutions of the Senate and Faculty governing candidature for the degree of Bachelor of Science listed in

chapter 5 also govern the BSc (Environmental) degree program. Students should also refer to Table I: Bachelor of Science on page 13.

Universities Admissions Index (UAI)

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

Transferring into the BSc (Environmental)

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

Degree resolutions

See chapter 5.

Table IB: Bachelor of Science (Environmental)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|------------------------------------|----------------------|--|---------------|----------------|----------------|----------|
| A: Junior units of study | | | | | | | |
| Candidates are required to enrol in and complete: | | | | | | | |
| (i) ENVI1001 and ENVI 1002; | | | | | | | |
| (ii) 12 credit points of Junior units of study from the Science Subject Area of Biology; | | | | | | | |
| (iii) 12 credit points of Junior units of study from the Science Subject Area of Chemistry; and | | | | | | | |
| (iv) 12 credit points of Junior units of study from the Science Subject Area of Mathematics. | | | | | | | |
| ENVI 1001 | Global Geology | 6 | | | | | 1 |
| ENVI 1002 | Geomorphic Environments and Change | 6 | | | | | 2 |
| B. Intermediate units of study | | | | | | | |
| Candidates are required to enrol in and complete: | | | | | | | |
| (i) ENVI 2001 and ENVI 2002; and | | | | | | | |
| (ii) 32 credit points of Junior or Intermediate units of study from the Science Subject Areas of Agricultural Chemistry, Biology, Chemistry, Geography, Geology and Geophysics, Marine Science, Microbiology, Physics, and Soil Science. Units of study in History and Philosophy of Science may be taken on approval of the Chair of the Program Committee for Environmental Science. | | | | | | | |
| ENVI 2001 | Biological Environmental Processes | 8 | P ENVI 1001 and ENVI 1002. | | | | 1 |
| <i>NB: This unit of study is only available to students enrolled in the BSc(Environmental).</i> | | | | | | | |
| ENVI 2002 | Physical Environmental Processes | 8 | P ENVI 1001 and ENVI 1002. | | | | 2 |
| <i>NB: This unit of study is only available to students enrolled in the BSc(Environmental).</i> | | | | | | | |
| C. Senior units of study | | | | | | | |
| Candidates are required to enrol in and complete: | | | | | | | |
| (i) ENVI 3001 and ENVI 3002; and | | | | | | | |
| (ii) 24 credit points of Intermediate or Senior units of study from the Science Subject Areas of Agricultural Chemistry, Biology, Chemistry, Geography, Geology and Geophysics, Marine Science, Microbiology, Physics, and Soil Science. Units of study in History and Philosophy of Science may be taken on approval of the Chair of the Program Committee for Environmental Science. | | | | | | | |
| ENVI 3001 | Environmental Law and Planning | 12 | P ENVI 2001 and 2002. | | | | 1 |
| <i>NB: This unit of study is only available to students enrolled in the BSc(Environmental) or BSc (Marine Science).</i> | | | | | | | |
| ENVI 3002 | Environmental Assessment | 12 | P ENVI 2001 and 2002. | | | | 2 |
| <i>NB: This unit of study is only available to students enrolled in the BSc(Environmental) or BSc (Marine Science).</i> | | | | | | | |
| ENVI 3003 | Law and the Environment | 4 | P Entry by permission of Course Coordinator only. | | | | 1 |
| N May not be counted with ENVI 3001. | | | | | | | |
| <i>NB: Permission required for enrolment. Available for Study Abroad students and students enrolled in Land and Water Science only.</i> | | | | | | | |
| ENVI 3004 | Environmental Impact Assessment | 4 | P Entry by permission of Course Coordinator only. | | | | 2 |
| N May not be counted with ENVI 3002. | | | | | | | |
| <i>NB: Permission required for enrolment. Available for Study Abroad students and students enrolled in Land and Water Science only.</i> | | | | | | | |
| AGCH 3012 | Rural Environmental Chemistry | 4 | P AGCH 2002 or ENVI 2001 and 2002. | | | | 1 |
| <i>NB: This unit is offered to students enrolled in BSc(Environmental), BLWSc and, subject to numbers, may be available to BScAgr. A maximum quota of 30 may exist. Contact Professor Kennedy.</i> | | | | | | | |
| CHEM 3601 | Chemistry 3A (Environmental) | 4 | P CHEM 1102 or 1902 and ENVI 2002. | | | | 1 |
| N May not be counted with CHEM 3101, 3102, 3201, 3202, 3311, 3901, 3902 or 3903. | | | | | | | |
| CHEM 3602 | Chemistry 3B (Environmental) | 4 | p CHEM 1102 or 1902, and ENVI 2002. | | | | 2 |
| N May not be counted with CHEM 3101, 3102, 3201, 3202, 3311, 3901, 3902 or 3903. | | | | | | | |
| PHYS 3600 | Energy and the Environment | 4 | P ENVI 2002 or 12 credit points of Junior Physics. | | | | 1 |
| <i>NB: This unit of study is available to students in the Bachelor of Science (Environmental) only.</i> | | | | | | | |

■ Bachelor of Science (Environmental) units of study

Bachelor of Science (Environmental) Junior units of study

ENV11001 Global Geology

6 credit points. **Semester:** 1. **Classes:** 3 lec & prac/tut/wk. **Assessment:** One 2hr exam, class work.

The unit of study serves as an introduction to environmental geology by examining global geological processes and their controls on the human environment. The unit of study explores the origin of the Earth within the developing Solar System and traces the evolution of the Earth's hydrosphere, atmosphere and biosphere through geological time. Other topics include plate tectonics, and the influence of volcanic activity, earthquakes and other geological hazards on human occupation of the planet. The unit of study includes an examination of minerals and rocks as an introduction to the study of the Earth's mineral and energy resources.

Students considering enrolling in this unit of study should study the pamphlet on the Junior unit of study in Geology, obtainable from the Enquiry Office in the Edgeworth David Building. It gives details of unit of study content, text and reference books, staffing and other relevant matters.

ENV11002 Geomorphic Environments and Change

6 credit points. **Semester:** 2. **Classes:** 3 lec & prac/tut/wk. **Assessment:** One 2hr exam, class work.

This unit of study completes the introduction to environmental earth sciences by examining geographical scales of environmental concern, such as catchments, river basins, hydrology and land-use. The unit then progresses on to the basic microbiological aspects of the environment and how we can use these to our benefit. Students will begin to learn how to integrate information from related disciplines to understand relationships between the sciences and the environment and to produce solutions to environmental problems. This will be a continuing theme throughout the Environmental Science program.

Bachelor of Science (Environmental) Intermediate units of study

You must complete both Environmental Science Intermediate units of study (ENVI 2001 and ENVI 2002).

ENVI 2001 Biological Environmental Processes

8 credit points. **Semester:** 1. **Classes:** 3 lec, 1 prac & 2 tut/wk, field excursions. **Prerequisite:** ENV11001 and ENV11002. **Assessment:** One 2hr exam, prac assignments.

NB: This unit of study is only available to students enrolled in the BSc(Environmental).

ENVI 2002 Physical Environmental Processes

8 credit points. **Semester:** 2. **Classes:** 3 lec, 2 tut & 1 prac/wk, field excursions. **Prerequisite:** ENV11001 and ENV11002. **Assessment:** One 2hr exam, prac assignments.

NB: This unit of study is only available to students enrolled in the BSc(Environmental).

Environmental Science 2 provides the integrated framework for understanding the natural environment in terms of its chemical, physical, biological, ecological and earth-scientific components. This is used to identify and understand the impact of humans on our environments at scales from local rivers to global patterns of climate. ENVI 2001 concentrates on the biological, microbiological and earth science aspects of natural processes within the environment as well as how these are impacted upon by human activities. ENVI 2002 considers the physical and chemical aspects, from climate and hydrology through to geomorphology to pollution. Emphasis is on practical measurement and interpretation to provide professional training in the use of numerous relevant disciplines.

Bachelor of Science (Environmental) Senior units of study

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

ENVI 3001 Environmental Law and Planning

12 credit points. **Semester:** 1. **Classes:** 8 lec/wk; 3 field-units.

Prerequisite: ENVI 2001 and 2002. **Assessment:** Continual assessment throughout the semester by essay, report and prac assignments.

NB: This unit of study is only available to students enrolled in the BSc(Environmental) or BSc (Marine Science)

ENVI 3001 covers topics and issues in environmental ethics, law, resource economics, planning, regulation and management for the built and natural environments, and energy production and alternate processes. This is an intensive unit of study that examines issues not normally considered 'environmental' but which impact to a large degree on how we interact with our environment.

ENVI 3002 Environmental Assessment

12 credit points. **Semester:** 2. **Classes:** 8 lec & 4 prac/tut/wk.

Prerequisite: ENVI 2001 and 2002. **Assessment:** Continual assessment throughout the semester by essay, report and prac assignments.

NB: This unit of study is only available to students enrolled in the BSc(Environmental) or BSc (Marine Science)

ENVI 3002 covers all issues concerning environmental impact assessment, including topics in conservation, risk assessment and ecotoxicology, as well as providing an examination of the logical structure of environmental sampling. The latter introduces the theory of sampling design for measurements at different scales of biological systems, statistical analysis of data and the interpretation of magnitude and scale of environmental disturbances, with topics including the nature of variables, univariate and multivariate measures, correlation of environmental variables and interpretation of data.

AGCH 3012 Rural Environmental Chemistry

4 credit points. Prof I R Kennedy. **Semester:** 1. **Classes:** 1 two hour tutorial and laboratory session per week. A 6-day field trip held in Orientation week. **Prerequisite:** AGCH 2002 or ENVI 2001 and 2002. **Assessment:** One 2hr exam, practical assessment (report) (50%).

NB: This unit is offered to students enrolled in BSc(Environmental), BLWSc and, subject to numbers, may be available to BScAgr. A maximum quota of 30 may exist. Contact Professor Kennedy.

This unit of study is based on a field excursion to areas such as the Namoi Valley near Narrabri, and the Macquarie Marshes in the Macquarie Valley, where agriculture based on irrigation has been developed. The elementary aspects of soil formation and profiling will be examined and the extent of environmental impacts of these agricultural enterprises and human settlement assessed. Observations will be made in the field and samples of water, sediment and soil brought back for analysis at the University, covering tests such as pH, oxygen content, redox potential, salt content, nutrient content, water and solute transport and pesticide content. An interactive computer exercise will be used to foster knowledge gained from this excursion and its associated sample analyses.

CHEM 3601 Chemistry 3A (Environmental)

4 credit points. **Semester:** 1. **Classes:** 2 lec and 2hr prac/workshop/wk. **Prerequisite:** CHEM 1102 or 1902 and ENVI 2002. **Prohibition:** May not be counted with CHEM 3101,3102,3201,3202,3311, 3901,3902 or 3903. **Assessment:** Exam (67%), prac reports (33%).

The aim of this unit of study is to provide students enrolled in the Environmental degree program with the advanced chemistry required for an understanding of the subject. The biological, environmental and industrial chemistry of the main group elements and their compounds will be considered, as well as spectroscopic identification of organic compounds. Further information is available from the Senior Chemistry Handbook.

CHEM 3602 Chemistry 3B (Environmental)

4 credit points. **Semester:** 2. **Classes:** 2 lec and 2hr prac/workshop/wk. **Prerequisite:** CHEM 1102 or 1902, and ENVI 2002. **Prohibition:** May not be counted with CHEM 3101,3102,3201,3202,3311,3901,3902 or 3903. **Assessment:** Exam (67%), prac reports (33%).

The biological and environmental chemistry of the transition elements will be covered as well as atmospheric and photochemistry. Further information is available from the Senior Chemistry Handbook.

PHYS 3600 Energy and the Environment

4 credit points. **Semester:** 1. **Classes:** 1 lec & 1 sem & 2hrs made up of sem, field trips, project work and pres/wk. **Prerequisite:** ENVI 2002 or 12 credit points of Junior Physics. **Assessment:** 2000w essay (25%), 2000w case study & oral presentation (45%), seminars following field trips (30%).

NB: This unit of study is available to students in the Bachelor of Science (Environmental) only.

This unit of study covers the following aspects of energy and the environmental: energy use, power generation including alternative methods, environmental impact of energy use and power generation including the greenhouse effect, atmospheric impacts: ozone depletion and pollution, transportation and pollution, energy management in buildings, solar thermal energy, photovoltaics, nuclear energy, risk assessment, socio-economic and political issues related to energy use and power generation.

The unit of study will consist of one lecture and one seminar per week, with a further two hours per week made up of 3 field trips, work on a project and oral presentation of an essay and the results of the project.

Honours in the Bachelor of Science (Environmental Science)

Students of sufficient merit may be admitted to an Honours course in the Bachelor of Science (Environmental Science). In the Honours year, a student will undertake an interdisciplinary research exercise in association with one or more supervising members of the academic staff at the University of Sydney, write a thesis based upon the research, and 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'.)

■ Bachelor of Science (Marine Science) degree program

Summary of requirements

The Bachelor of Science (Marine Science) 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.

Enrolment guide

To complete your degree you must gain credit for at least 144 credit points as specified in Table IC.

The 144 credit points required for the degree must include:

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

You should also note the following:

- A major in Tropical Marine Science is available within this degree program. A major in Tropical Marine Science must include:
 - 36 credit points from Senior units of study in Marine Science (MARS) and from the Tropical Marine Network Program (NTMP);
 - at least 18 credit points but no more than 30 credit points must be from NTMP units of study;

- NTMP units of study are offered in block/intensive mode during Easter and July breaks, (consult the Marine Studies Centre for further information);
- NTMP units of study are conducted at the following field stations in Queensland: North Stradbroke Island, Heron Island, Lizard Island, Orpheus Island, One Tree Island;
- Students are responsible for their own travel and accommodation costs;
- Students may enrol in NTMP units of study in their Intermediate year (students must contact the Faculty Office for permission to enrol in these units of study);
- The number of places in NTMP units of study are limited and entry will be based on merit.

The Resolutions of the Senate and Faculty governing candidature for the degree of Bachelor of Science listed in chapter 5 also govern the BSc (Marine Science) degree program. Students should also refer to Table I: Bachelor of Science on page 13.

Universities Admissions Index (UAI)

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

Transferring to the BSc (Marine Science)

Students may be permitted to transfer from other courses offered by the Faculty of Science or from other Universities into the B Sc (Marine Science) with permission of the Dean.

Degree resolutions

See chapter 5.

Table IC: Bachelor of Science (Marine Science)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---------------|----|----------------------|-----------------|---------------|----------------|----------------|----------|
|---------------|----|----------------------|-----------------|---------------|----------------|----------------|----------|

A. Junior units of study

Candidates are required to enrol in and complete:

- 12 credit points of Junior units of study from the Science Subject Area of Biology;
- 12 credit points of Junior units of study from the Science Subject Areas of Geography and/or Geology;
- 12 credit points of Junior units of study from the Science Subject Area of Mathematics;
- 6 credit points of Junior units of study from the Science Subject Area of Physics (excluding PHYS 1500); and
- CHEM 1001 or 1101.

Some study of Biology, Chemistry, Mathematics or Physics at the Advanced level is recommended but not compulsory.

B. Intermediate units of study

Candidates are required to enrol in and complete:

- MARS 2001, MARS 2002, MARS 2003 and MARS 2004;
- 16 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
- 16 credit points of Intermediate units of study from Science Subject Areas and/or Civil Engineering units of study CIVL 3401 and CIVL 3402.

Approved students may substitute up to 12 credit points from the Tropical Marine Network Program (NTMP) units of study from section C of this table (no more than 30 credit points of NTMP units may count toward the degree).

| | | | | | | | |
|-----------|-------------------------------|---|---|--|--|--|---|
| MARS 2001 | Introductory Marine Science A | 4 | p | 24 credit points of Junior units of study from Science Discipline Areas. This is a qualifying unit of study for MARS 3001 and 3002. Some options in Senior Marine Science have additional prerequisites. | | | 1 |
| MARS 2002 | Introductory Marine Science B | 4 | P | 24 credit points of Junior units of study from Science Discipline Areas. This is a qualifying unit of study for MARS 3001 and 3002. Some options in Senior Marine Science have additional prerequisites. N May not be counted with GEOG 2002. | | | 2 |
| MARS 2003 | Marine Science Field School | 4 | p | 48 credit points of Junior units of study from Science Subject Areas. c MARS 2001. | | | 1 |
| MARS 2004 | Marine Techniques | 4 | p | 48 credit points of units of study from Junior Science Subject Areas and MARS 2003. C MARS 2002. | | | 2 |

C. Senior units of study

Bachelor of Science (Marine Science)

Candidates majoring in Marine Science are required to enrol in and complete:

- at least 36 credit points of senior units of study from the Science subject area of Marine Science; and
- at least 12 credit points of Intermediate or Senior units of study from the Science subject areas of Biology, Environmental Science, Geography, Geology, Marine Science or Tropical Marine Network Program (NTMP) units.*

Bachelor of Science (Marine Science) -Tropical Marine Science

Approved candidates majoring in Tropical Marine Science are required to enrol in and complete:

- at least 36 credit points from Senior units of study in the Science subject area of Marine Science and from the Tropical Marine Network Program (NTMP), of which at least 18 credit points must be from NTMP units#; and
- at least 12 credit points of Intermediate or Senior units of study from the Science subject areas of Biology, Environmental Science, Geography, Geology, Marine Science or NTMP units.t

#No more than 30 credit points of NTMP units may count toward the degree.

| | | | | | | | |
|-----------|------------------|----|---|--|--|--|---|
| MARS 3001 | Marine Science A | 12 | p | MARS 2001 and MARS 2002. There are additional prerequisites for some options, see options entries. | | | 1 |
|-----------|------------------|----|---|--|--|--|---|

Table IC: Bachelor of Science (Marine Science) (continued)

| Unit of study | CP | A: Assumed knowledge P: Prerequisite Q: Qualifying C: Corequisite N: Prohibition | Semester |
|---|----|--|----------|
| MARS Marine Science C 3101 | 12 | P MARS 2001 and 2002 and 2003 and 2004. There are additional prerequisites for some options, see options entries. | 1 |
| MARS Marine Science B 3002 | 12 | P MARS 2001 and MARS 2002. There are additional prerequisites for some options, see option entries. | 2 |
| MARS Marine Science D 3102 | 12 | P MARS 2001 and 2002 and 2003 and 2004. There are additional prerequisites for some options, see options entries. | 2 |
| NTMP Coral Reef Ecosystems 3001 | 6 | A General concepts in Biology. P MARS 2001 plus 16 credit points from Intermediate Science units of study. Q MARS 2003. <i>NB: Permission required for enrolment.</i> | 2 |
| NTMP Marine Biotechnology 3002 | 6 | A General concepts in Biology. P MARS 2001 plus 16 credit points from Intermediate Science units of study. Q MARS 2003. <i>NB: Permission required for enrolment.</i> | 1 |
| NTMP Fisheries Biology and 3003 Management | 6 | A General concepts in Biology. p MARS 2001 plus 16 credit points from Intermediate Science units of study. Q MARS 2003. <i>NB: Permission required for enrolment.</i> | 2 |
| NTMP Aquaculture 3004 | 6 | A General concepts in Biology. P MARS 2001 plus 16 credit points from Intermediate Science units of study. Q MARS 2003. <i>NB: Permission required for enrolment.</i> | 2 |
| NTMP Coastal Management 300S | 6 | A General concepts in Biology. P MARS 2001 plus 16 credit points from Intermediate Science units of study. Q MARS 2003. <i>NB: Permission required for enrolment.</i> | 2 |
| NTMP Coastal Oceanography 3006 | 6 | A General concepts in Biology. P MARS 2001 plus 16 credit points from Intermediate Science units of study. Q MARS 2003. <i>NB: Permission required for enrolment.</i> | 1 |

■ Bachelor of Science (Marine Science) units of study

MARS 2001 Introductory Marine Science A

4 credit points. **Semester:** 1. **Classes:** 3 lec & 1 tut/wk. **Prerequisite:** 24 credit points of Junior units of study from Science Discipline Areas. This is a qualifying unit of study for MARS 3001 and 3002. Some options in Senior Marine Science have additional prerequisites. **Assessment:** One 2hr exam, classwork.

Introduction to oceanography and its history; the morphology, geology and history of the continental shelves, continental slopes and ocean basins; ocean properties and circulation, ocean-atmosphere and ocean-sea floor relationships.

MARS 2002 Introductory Marine Science B

4 credit points. **Semester:** 2. **Classes:** 3 lec & 1 tut/wk, 1 day excursion, 1/2 day excursion. **Prerequisite:** 24 credit points of Junior units of study from Science Discipline Areas. This is a qualifying unit of study for MARS 3001 and 3002. Some options in Senior Marine Science have additional prerequisites. **Prohibition:** May not be counted with GEOG 2002. **Assessment:** One 2hr exam, classwork.

Introduction to physical processes affecting the coastal zone; chemical cycles within the oceans; major biological systems of the oceans; biological adaptation.

MARS 2003 Marine Science Field School

4 credit points. **Semester:** 1. **Classes:** Field school and prac/Sem 2hr/wk. **Prerequisite:** 48 credit points of Junior units of study from Science Subject Areas. **Corequisite:** MARS 2001. **Assessment:** Participation in field school, participation in practicals, assignments.

Marine Scientists are generally involved in a wide variety of fieldwork throughout their careers. A detailed knowledge of field methods and techniques is therefore a necessary component in the education of marine scientists. This unit of study introduces students to a range of field issues within the coastal and marine environment during a five day field school held 19-23 February, prior to commencement of lectures. Many of the field methods focussed on are generic across the marine disciplines. In addition, techniques specific to the disciplines of Biological Sciences and Geosciences are taught. Students will be expected to participate in a hands-on way, undertaking small project-based data collection exercises during the field school. These data will provide resources for the practical/seminar part of the course undertaken during semester.

Practical: The practical classes are intended to familiarise the student with data processing techniques and the seminars are intended to draw the connection between fieldwork and

theoretical issues discussed in the Introductory Marine Science units.

MARS 2004 Marine Techniques

4 credit points. **Semester:** 2. **Classes:** Prac 3 hrs/wk, two 2-day field excursions. **Prerequisite:** 48 credit points of units of study from Junior Science Subject Areas and MARS 2003. **Corequisite:** MARS 2002. **Assessment:** Participation in the field excursions and practicals, assignments.

Marine scientists are involved in the study of the largest and most diverse and dynamic environment on the planet. A multidisciplinary approach is required to investigate the complex physical, biological and chemical interactions that compose this environment. This course will build on MARS 2003, and systematically introduce students to a range of field and laboratory techniques used in the acquisition and analysis of marine biological and marine geoscience data. During the course students will collect data in the field, undertake laboratory analysis, and input the results into spreadsheet/databases, and finally prepare and present a final report on their findings. Field techniques will include vibrocore, surveying, dredging, and biomass sampling, laboratory techniques will include core, sediment and water quality analysis, as well as computer drafting, spreadsheet, database and report preparation, with an oral presentation of the results.

Practical: The practical classes are intended to familiarise the student with data processing techniques and the seminars are intended to draw the connection between field work and the theoretical issues discussed in the Introductory Marine Science Course.

Marine Science Senior units of study

MARS 3101 Marine Science C

12 credit points. **Semester:** 1. **Classes:** See options. **Prerequisite:** MARS 2001 and 2002 and 2003 and 2004. There are additional prerequisites for some options, see options entries. **Assessment:** See individual options.

The lectures will be presented in options (each option runs for a half-semester and comprises 18 lectures, plus up to 6 hr practicals per week, and excursions, with the number of practical hours and length of excursions varying between options).

Options taken in MARS 3001 cannot be taken in MARS 3101.

- Students must take two options one from each half semester (ie, Semester 1 weeks 1-6 and Semester 1 weeks 7-13).
- Note students taking MARS 3001 and MARS 3002 cannot take more than three options from the same discipline streams (ie, A: Geography, B: Geology/Geophysics or C: Biology)

Semester 1 (weeks 1-6)

- MS 1 Coastal Depositional Environment (stream A)
 MS 3 Marine Geophysical Data Analysis (stream B)
 MS 5 Ecophysiology (stream C)

Semester 2 (weeks 7-13)

- MS 2 Coastal Morphodynamics (stream A)
 MS 4 Dynamics of Ocean Basins and Margins (stream B)
 MS 6 Marine Biology (stream C)

MARS 3102 Marine Science D

12 credit points. Semester: 2. Classes: See individual options.
 Prerequisite: MARS 2001 and 2002 and 2003 and 2004. There are additional prerequisites for some options, see options entries.
 Assessment: See individual options.

The lectures will be presented in options (each option runs for a half-semester and comprises 18 hr lectures, plus up to 6 hr practicals per week, and excursions, with the number of practical hours and length of excursions varying between options).

Options taken in MARS 3002 cannot be taken in MARS 3102.

- Students must take two options one from each half semester (ie, Semester 2 weeks 1-6 and Semester 2 weeks 7-13).
- Note students taking MARS 3101 and MARS 3102 cannot take more than three options from the same discipline streams (ie, A. Geography, B. Geology or C Biology)

Semester 2 (weeks 1-6)

- MS 8 Geographical Information Systems (stream A)
 MS 9 Physical Sedimentology: Shallow Marine Environments (stream B)
 MS 11/12 Marine Ecology (stream C)

Semester 2 (weeks 7-13)

- MS 7 Coastal Zone Management (stream A)
 MS 10 The Physical Marine Habitat (stream B)
 MS 11/12 Marine Ecology (stream C)

Enrolling in Senior BSc(Marine Science) options

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

Notes

- (a) Because of limited facilities available for some units of study it may be necessary to restrict number of students taking options MS5,6 and 11/12 and all Tropical Marine Network Program options. If this need arises selection will be based on academic merit and/or other NTMP units completed.
- (b) All students intending to enrol in any of the marine biology options must consult the booklet Information for Students Considering Senior Biology units of study available from the School of Biological Sciences Office during the last few weeks of the academic year prior to this enrolment. Each student should also complete a preliminary enrolment form in the School of Biological Sciences before first semester commences.

Enrolment and registration

In addition to complying with enrolment procedures required by the University, all students in Senior Marine Sciences, including the Tropical Marine Network program, must register with the Marine Studies Centre (Room 469 Madsen) during the first week of lectures. Enquiries should be made to the Administrative Officer (Dr Craig Barnes). All enrolments must also be approved by the Director.

Summaries of options

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

Option descriptions for MARS 3001, 3101, 3002 and 3102 follow.

MS 1 Coastal Depositional Environments

6 credit points. Prof. Andy Short. Semester: 1 (weeks 1-6). Prerequisite: MARS 2001,2002. Prohibition: May not be counted with GEOG 3001. Classes: 3 lec, 1 prac, one half day and 1 weekend excursion. Assessment: excursion report, two 1500 word assignments, 1 hr exam.

Coastal depositional environments dominate the coast of Australia and most shorelines. They are dynamic systems responding to input sediments and processes as well as boundary conditions. This unit focuses on high energy wave and wind dominated depositional systems manifest as beaches, dunes and barrier systems. It examines the background to the study of these systems and their global variation, before systematically looking at the beach-surf zone, backshore, dunes and barriers, including their Holocene evolution. The impact of lower waves and tides,

embayments, structures and other environmental parameters are also considered. The surface morphology and stratigraphy of representative systems is examined on the excursions and in the practicals. The practicals also introduce students to field and laboratory techniques used in core logging and analysis of sediments. One assignment is based on the excursion and practical work, the second is based on library research of a section of the Australian coast.

Textbook: Short, A.D, 1999, Beach and Shoreface Morphodynamics (available at University Copy Centre)

MS 2 Coastal Morphodynamics

6 credit points. Dr Peter Cowell. Semester: 1 (weeks 7-13). Prerequisite: MARS 2001,2002. Prohibition: May not be counted with GEOG 3001. Classes: 3 lec, 1 6hrprac/wk (Tue 12-6pm), excursion (over 1 weekend). Assessment: assignments, 1 hr exam.

Coastal Morphodynamics is an option in the modeling of complex environmental systems. Specifically, this option concerns the interactions between fluid dynamics and changes in coastal geomorphology over a wide range of scale in space and time. More generally, the coast is used for exploring development and application of computer models for simulating the behaviour of complex environmental processes. Such processes involve non-linear dynamical problems that go beyond the realm of classical mathematics and physics. Computer simulation of these problems provides practical insights into the application of chaos theory to the evolutionary behaviour of coasts. The option aims to provide: (1) skills in managing complex problems in general, (2) an analytical understanding of coastal processes in particular, and (3) experience in application of computer simulation programs and vocationally relevant, commercial software packages. Practical work involves extensive use of computers.

MS 3 Marine Geophysical Data Analysis

6 credit points. Dr Dietmar Muller. Prerequisite: Physics I, Mathematics I, Geology 2001 or 8 credit points of Intermediate Marine Science. Semester: 1 (weeks 1-7). Prohibition: This module cannot be taken with GEOP 3201. Classes: 12 hours of lectures & practical classes per wk, one weekend field excursion. Assessment: one 2 hr theory & laboratory exams, computer assignments and class work.

This class is aimed at teaching the basics of signal processing and analysis relevant to marine geophysical data. The class covers the basics of data collection, signal processing and statistical techniques, applied to a variety of problems and data from the deep ocean basins to the surf zone. The ocean basins cover 70% of the Earth's surface, and there are still many areas of the seafloor that we know less about than the surface topography of Venus. Exploring the sediments/rocks that make up the deep ocean floor and the continental shelves requires the use of remote sensing techniques, and the analysis of geophysical data. This unit teaches analytical and interpretive skills in both these areas, with a focus on: basic signal properties, convolution and correlation, numerical transforms, time series (harmonic and spectral) analysis, and filtering. The unit is relevant to students interested in either geological or physical oceanography, and coastal geomorphology since it covers a variety of data types including: wave and current data, seismic reflection and refraction data, multibeam data, gravity and magnetic data, and satellite altimetry.

Textbook: Muller, R D, Marine geophysical data analysis, (available at University Copy Center).

MS 4 Dynamics of ocean basins and margins

6 credit points. Dr Dietmar Muller. Semester: 1 (weeks 7-13). Prerequisite: Physics I, Mathematics I, Geology 2001 or 8 credit points of Intermediate Marine Science. Prohibition: May not be taken with GEOP 3201. Classes: 12 hours of lectures & practical classes per wk, one weekend field excursions. Assessment: one 1 hr theory & laboratory exam, computer assignments and class work.

This unit explores the processes that have shaped the abyssal plains, deep-sea trenches, continental shelves and slopes of the ocean basins. It also examines the processes leading to the formation of marine resources, in particular hydrocarbons. The class introduces the basics of geodynamics as well as research at the cutting edge of modelling our dynamic Earth. Different types of data are presented which are used to constrain geodynamic models, including topography, gravity, magnetics, heatflow, reflection seismic data and satellite altimetry. The unit introduces an integrated up-to-date approach to continental margin and sedimentary basin analysis and modelling. The physical

mechanisms forming different types of basins are examined and their relevance for petroleum resources is explored. Computer exercises introduce a variety of thermal and mechanical models for the evolution of sedimentary basins.

Textbook: Muller, R D, Dynamics of ocean basins and margins, (available at University Copy Center).

MS 5 Ecophysiology

6 credit points. Prof. Hume, Dr McGee, Dr Seebacher, Assoc. Professor Thompson. Semester: 1 (weeks 1-6). Qualifying: 16 credit points of Intermediate Biology including BIOL 2002 or 2003 or 2006 or 2902 or 2903 or 2906. Prohibitions: May not be counted with BIOL 3011 or 3911. Classes: 4 lec & 8hr prac/wk. Assessment: One 1.5hr exam, field trip quiz, lab reports.

Ecophysiology covers physiological interactions between organisms and their environments. The range of environments inhabited by organisms is outlined and the influences of important environmental parameters including temperature, water, salt and pH are investigated. Physiological interactions among animals, plants and fungi are discussed. Animal examples will have an emphasis on vertebrates and on marine organisms. Plants from marine and terrestrial environments and the interaction with fungi are examined. Some emphasis will be placed on marine plants.

MS 6 Marine Biology

6 credit points. Assoc. Prof. Hinde and others. Semester: 1 (weeks 7—13). Qualifying: 16 credit points of Intermediate Biology, including BIOL 2001 or 2002 or 2003 or 2004 or 2901 or 2902 or 2903 or 2904. Prohibition: May not be counted with BIOL 3013 and BIOL 3913. Classes: 4 lec & 8hr prac/wk, field courses, Timetable 2. Assessment One 1.5hr exam, assignments.

Marine biology diversity is discussed with particular attention to the main types of marine habitats represented along the Australian coastline. Emphasis is placed on exposing students to the key ideas, researchers and methodologies within selected fields of marine biology. Students will develop skills in areas such as protistology, the identification of algae, the biology of corals and other reef-associated animals, as well as the techniques used to study marine animals and plants. Discussion sessions will review major marine biological themes. Laboratory sessions will develop hand-on experience with marine organisms, and there may be a field trip.

MS 7 Coastal Zone Management

6 credit points. Dr David Chapman. Semester: 2 (weeks 7-13). Classes: 3 lec, 4-6hr lab/wk. Prohibition: May not be counted with GEOG 3002. Assessment: assignments, exams.

Aims of the unit: To assist you to identify significant problems in resource management in the coastal zone, to enhance your understanding of the origins of these problems at the interface between the natural and human environments, and the nature of human responses to them. To equip you with some conceptual models for the management of problems in resource management in the coastal zone, and to teach you some of the fundamental skills in analysis of environmental problems, including the use of remotely sensed information in resource management.

MS 8 Geographical Information Systems

6 credit points. Dr Peter Cowell. Semester: 2 (weeks 1-6). Classes: 3 lec, 6hr prac/wk (Tue 12-6pm). Prohibition: May not be counted with GEOG 3002. Assessment: assignments, 1 hr exam.

Specific aims of the unit are to provide: i) an introduction to technical issues in Geographic Information Systems (GIS), ii) experience in using GIS techniques ('hands on'), and iii) insights in application of GIS to coastal studies. The lectures illustrate how Geographic Information Systems can be applied by people working in marine sciences, and provide an introduction to the nuts and bolts of GIS. The technical lectures are based on a leading GIS text book. The practical work focuses on application of GIS techniques to coastal management problems. Practical work involves extensive use of computers.

MS 9 Physical Sedimentology; Shallow Marine Environments

6 credit points. Dr. Michael Hughes. Semester: 2 (weeks 1-7). Prerequisite: Geology 2001 or 8 credit points of Intermediate Marine Science. Prohibition: May not be counted with GEOL 3104. Classes: 12 hours of lectures & practical classes per wk, one weekend field excursion. Assessment: one 2 hr theory & laboratory exam, assignment and class work.

This module provides a detailed understanding of the physical processes responsible for producing sedimentary textures, bed-

forms and structures observed in both modern and ancient depositional environments. The theory content of the course is divided into three themes. The fluid dynamics theme addresses boundary layer processes, in particular, turbulence and shear stress production at the fluid/sediment boundary. Both unidirectional (currents) and oscillatory (waves) flows are considered. The sediment dynamics theme describes the mechanics of sediment entrainment, transport and deposition for both cohesionless (sandy) and cohesive (muddy) sediments. The final theme explains how the interaction of fluid and sediment dynamics produces the wide variety of bedforms and structures observed in both modern sediments and ancient sedimentary rocks. The practical content of the course will develop student's skills in field experimentation and sampling, and the quantitative interpretation of physical processes from the study of sedimentary textures and structures. A weekend field excursion forms part of the practical program, and students will be required to cover the cost of hostel accommodation for one night.

MS 10 The Physical Marine Habitat

6 credit points. Assoc. Prof. J Keene. Semester: 2 (weeks 7-13). Prerequisite: Geology 2001 or MARS 2001 and MARS 2002. Classes: 12 hours of lectures & practical classes per week, one weekend field excursion. Prohibition: May not be counted with GEOL 3104. Assessment: One 2 hr theory & laboratory exam, assignment and class work.

This unit examines the interaction of physical, chemical and biological processes active on, and in, the sea floor of Planet Earth. A variety of continental margins will be compared together with the deep sea floor. Samples from the shelf, slope and deep-sea will enable examination of the role of plants and animals in modifying sediment texture and composition, unravelling the history of how sediments became rocks and enable an understanding of how and why ocean basin sedimentary deposits have changed through time. The past 200 million years will be analysed using Ocean Drilling Program data. The aim of this module is to provide the student with skill to analyse sea floor environments, sediments and rocks and interpret a variety of geological, geophysical, oceanographic and biological data. Laboratory work will emphasise both techniques of sediment/rock analysis and interpretation of data from direct sampling. Includes a one-day excursion on Sydney Harbour.

MS 11/12 Marine Ecology

12 credit points. Dr Dickman, Dr Holloway, Dr Hochuli, Dr Wardle, Prof. Underwood, Dr M Chapman and others. Semester: 2. Qualifying: 16 credit points of Intermediate Biology, including BIOL 2001 or 2901 or 2002 or 2902 or 2004 or 2904. Prohibition: May not be counted with BIOL 3023/3923 or 3024/3924. Classes: 4 lec & 8hr prac/wk, one 8-day field course in vacation before Sem 2. Timetable 2. Assessment: exam and laboratory and field reports.

Students enrol in Ecological Methods (MS 11/BIOL3023) and Ecology (MS 12/BIOL3024) including its field course. Ecological Methods will consider ecology as a theoretical, quantitative, experimental science concerned with the analysis of patterns of distribution, abundance, dynamics, demography and life-histories of natural populations with an appraisal of the nature of scientific investigations, from a philosophical viewpoint and the practicalities of testing hypotheses in the real world. Application of ecological theory and methods to practical problems will be integrated throughout the unit of study. Lectures will be on sound philosophical and experimental principles and useful for the more informed management, conservation and utilization of natural populations and habitats. Practical classes will deal with practical methods of determining patterns of distribution and abundance, problems of sampling, estimation of ecological variables and methods of statistical analysis of field data. Computer simulations and analyses will be used where appropriate.

Tropical Marine Network Program

Students enrolled in the BSc (Marine Science) are eligible to enrol in units of study offered as part of the Tropical Marine Network Program. The TMNP is a joint program of the University of Sydney, the University of Queensland and James Cook University, and will offer six units of study in tropical marine science, all to be taught at marine island research stations off the Queensland coast. The following stations will be used:

- Lizard Island (Australian Museum field station, north of Cairns)

- Orpheus Island (James Cook University field station, off Townsville)
- Heron Island (University of Queensland field station, off Gladstone)
- One Tree Island (University of Sydney field station, off Gladstone)
- North Stradbroke Island (University of Queensland field station, off Brisbane)

The program contains six units of study, each worth 6 credit points and all of which are field schools offered only during the Easter (Semester 1 mid semester) break and the July mid-year break. Each field school will run for approximately 10 days, with all assessment completed within this period. Assessment will be based on participation and reports completed during the field school. The Coral Reef Ecosystems unit will be offered each year, the other five units will be offered every other year (see below). The prerequisites for all units will be the successful completion of the first year of the B.Sc.(Marine Science) course or equivalent, and the qualifying course MARS 2003.

Students may enrol in these units in academic year 2 and year 3 as part of the BSc(Marine Science). In order to major in Tropical Marine Science, students must successfully complete at least 3 and no more than 5 of the NTMP units of study.

The following combinations of units of study are recommended:

- Coral Reef Ecosystems, Fisheries Biology Management and Coastal Management
- Coral Reef Ecosystems, Marine Biotechnology and Aquaculture
- Coral Reef Ecosystems, Fisheries Biology Management and Aquaculture
- Coral Reef Ecosystems, Aquaculture and Coastal Management
- Marine Biotechnology/ Coastal Oceanography & Marine Geology, Coral Reef Ecosystems and Fisheries Biology Management.

Students enrolling in the units of study will be selected from the three participating Universities, as well as some overseas Study Abroad students. Preference will however be given to students enrolled in the program at the three participating universities. Owing to the size of facilities and accommodation at the island research stations all course will have a quota with entry based on merit.

NTMP 3001 Coral Reef Ecosystems

6 credit points. Semester: 2. Classes: Fieldwork, 80 hours block mode. Assumed knowledge: General concepts in Biology. Prerequisite: MARS 2001 plus 16 credit points from Intermediate Science units of study. Qualifying: MARS 2003. Assessment: Report. *NB: Permission required for enrolment.*

Coral Reef Ecosystems is an intensive unit that will be held at either the Heron Island or One Tree Island Tropical Research Stations on the Great Barrier Reef. The unit focuses on the dominant taxa in reef environments and linkages between them. Emphasis is given to corals, other reef associated invertebrates (eg, Echinoderms and plankton) and fishes. Ecological and physiological aspects of key organisms are explored. Aspects covered include: distribution of corals; coral bleaching; coral symbionts and the health of the corals based on photosynthetic activity; predation on corals; the input of plankton to reefs; and, the role of fishes in reef environments.

NTMP 3002 Marine Biotechnology

6 credit points. Semester: 1. Classes: Fieldwork, 80 hours block mode. Assumed knowledge: General concepts in Biology. Prerequisite: MARS 2001 plus 16 credit points from Intermediate Science units of study. Qualifying: MARS 2003. Assessment: Assignment and report. *NB: Permission required for enrolment.*

Marine Biotechnology is an intensive unit that will be held at the Heron Island Tropical Research Station on the Great Barrier Reef. The unit focuses on novel attributes of coral reef environments that are the basis of an expanding industry of biotechnology. Marine Biotechnology is the application of knowledge of reef-based life to improve our quality of life. Emphasis is given to the abilities of corals and other reef associated organisms (eg, Sponges) to protect themselves against the sun, repel and/or destroy non-self cells, and to immunise themselves against some diseases. Aspects covered include: collection of organisms; field experiments; and, molecular and genetic techniques to separate and identify 'useful proteins'.

NTMP 3003 Fisheries Biology and Management

6 credit points. Semester: 2. Classes: Fieldwork, 80 hours block mode. Assumed knowledge: General concepts in Biology. Prerequisite: MARS 2001 plus 16 credit points from Intermediate Science units of study. Qualifying: MARS 2003. Assessment: Report. *NB: Permission required for enrolment.*

Fisheries Biology and Management is an intensive unit that will be held at the tropical research station on Orpheus Island in the Great Barrier Reef. The unit focuses on approaches to quantitative fisheries biology in tropical marine environments. Emphasis is given to sampling design and hypothesis testing, underwater visual census surveys, fishery surveys, assessments of habitat types, and tagging and trapping of organisms. Most field aspects will be covered while diving and data storage will be dealt with at the end of each day. The assessment will focus on the manipulation of data and reporting.

NTMP 3004 Aquaculture

6 credit points. Semester: 2. Classes: Fieldwork, 80 hours block mode. Assumed knowledge: General concepts in Biology. Prerequisite: MARS 2001 plus 16 credit points from Intermediate Science units of study. Qualifying: MARS 2003. Assessment: Assignments and report. *NB: Permission required for enrolment.*

Aquaculture is an intensive unit that will be held at the tropical research station on Orpheus Island in the Great Barrier Reef. The unit focuses on approaches to aquaculture in tropical marine environments. Emphasis is given to aquaculture of tropical invertebrates (especially bivalves and clams) and fishes. Some aspects of the unit may also be done using the aquarium system on campus at James Cook University. Aspects covered include: the design of aquarium facilities; water quality; rearing of algae; rearing of planktonic food; stocking densities; and, growth and genetics of the target species.

NTMP 3005 Coastal Management

6 credit points. Semester: 2. Classes: Fieldwork, 80 hours block mode. Assumed knowledge: General concepts in Biology. Prerequisite: MARS 2001 plus 16 credit points from Intermediate Science units of study. Qualifying: MARS 2003. Assessment: Assignment and report. *NB: Permission required for enrolment.*

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.

NTMP 3006 Coastal Oceanography

6 credit points. Semester: 1. Classes: Fieldwork, 80 hours block mode. Assumed knowledge: General concepts in Biology. Prerequisite: MARS 2001 plus 16 credit points from Intermediate Science units of study. Qualifying: MARS 2003. Assessment: Report. *NB: Permission required for enrolment.*

Coastal Oceanography is an intensive unit that will be held at the tropical research station on North Stradbroke Island in the Great Barrier Reef. The unit focuses on approaches to studying the physical and biological attributes of coastal and pelagic environments. Emphasis is given to measuring horizontal and vertical attributes of the water column (eg, Salinity and temperature) as well as the composition of planktonic assemblages from low salinity waters to the shelf break. Aspects covered include: the use of physical oceanographic equipment (static sampling and logger); analyses of nutrients; and, the use of plankton nets.

■ Bachelor of Science (Molecular Biology and Genetics) degree program

The course offers an integrated and comprehensive coverage of aspects of modern molecular biology and genetics. This is an advanced program. Students will have the opportunity to develop a full understanding (at the chemical and physical levels) of the structure, information content and replication of the genetic material (DNA, RNA), the organisation and expression of the encoding genes, and the structure and reactivity of the gene products (proteins). This will provide a background for the introduction of advanced topics including genetic and protein engineering, macromolecular interactions and recognition, the molecular mechanisms of cellular differentiation and organism development, the molecular basis of inherited disease and pathogenesis, biotechnology, and medical diagnostic molecular biology. All students will also participate as a group in a three-year program of seminars and discussions to give a broad perspective of the field. Graduates with the Honours degree would be highly sought after in a wide variety of biological and medical research laboratories and in hospitals and industry. In addition, the course will prepare the graduate for PhD training in many of the cutting-edge biological and medical research areas.

Summary of requirements

The Bachelor of Science (Molecular Biology and Genetics) degree program requires 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.

Enrolment guide

To complete your degree you must gain credit for at least 144 credit points as specified in Table ID.

All students in the Bachelor of Science (Molecular Biology and Genetics) must complete at least 24 credit points of junior advanced units of study (or qualify for admission to 16 credit points of intermediate advanced units of study), at least 16 credit points of intermediate advanced units of study and at least 24 credit points of senior advanced units of study. Units of study taken under the Faculty's Talented Student Program may be substituted for advanced units of study.

The Resolutions of the Senate and Faculty governing candidature for the degree of Bachelor of Science also govern the BSc (Molecular Biology and Genetics) degree program. Students should also refer to Table I: Bachelor of Science on page 13.

Progression requirements

Students are expected to obtain a credit average in each year of study.

Students will also be required to perform at a standard that will allow them to be admitted into Honours.

Universities Admissions Index (UAI)

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

Transferring into the BSc (Molecular Biology and Genetics)

Students may be permitted to transfer from other courses offered by the Faculty of Science or from other Universities into the BSc (Molecular Biology and Genetics) with the permission of the Dean.

Degree resolutions

See chapter 5.

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

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|---|----------------------|--|---------------|----------------|----------------|----------|
| A. Junior units of study | | | | | | | |
| Candidates are required to enrol in and complete: | | | | | | | |
| (i)(a) BIOL 1901 and BIOL (1904 or 1905); | | | | | | | |
| (i)(b) CHEM (1101 or 1901 or 1903 or 1905 or 1906 or 1907) and CHEM (1102 or 1902 or 1904 or 1909) The combination of CHEM 1907 and 1909 is the preferred option; | | | | | | | |
| (ii) 12 credit points of Junior units of study from the Science Subject Area of Mathematics (excluding MATH 1011, 1012, 1013, and 1015) (It is recommended that students include some statistics in their choice of Mathematics units of study); and | | | | | | | |
| (iii) 12 credit points of other Junior units of study from BSc units of study (Table I). It is recommended that the extra 12 credit points be selected from <u>Junior units of study in Physics or in Computer Science.</u> | | | | | | | |
| BIOL 1904 | Living Systems Molecular (Advanced) | 6 | A HSC 2-unit Biology or BIOL 1901 or equivalent. N May not be counted with BIOL 1002 or 1003 or 1902 or 1903 or 1905 or 1500. <i>NB: Students must be enrolled in the Bachelor of Science (Molecular Biology and Genetics) degree.</i> | | | | 2 |
| BIOL 1905 | Human Biology Molecular (Advanced) | 6 | A 2-unit HSC Biology or BIOL 1901 or equivalent. N May not be counted with BIOL 1002 or 1003 or 1902 or 1903 or 1904 or 1500. <i>NB: Students must be enrolled in the Bachelor of Science (Molecular Biology and Genetics) degree.</i> | | | | 2 |
| CHEM 1905 | Chemistry 1A Molecular (Advanced) | 6 | p UAI of at least 93 and HSC Chemistry result in the 80th percentile or better, 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 May not be counted with CHEM 1001 or 1101 or 1901 or 1903 or 1906 or 1909. <i>NB: Permission required for enrolment.</i> | | | | 1 |
| CHEM 1906 | Chemistry 1A Mol (Special Studies Prog) | 6 | p UAI of at least 98.7 and HSC Chemistry result in the 94th percentile or better, or Distinction or better in a University level Chemistry unit, or by invitation. Students in the Faculty of Science Talented Students Program are automatically eligible. C Recommended concurrent unit of study: 6 credit points of Junior Mathematics. N May not be counted with CHEM 1001 or 1101 or 1901 or 1903 or 1905 or 1909. <i>NB: Permission required for enrolment. Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.</i> | | | | 1 |
| CHEM 1907 | Chemistry 1 Life Sciences A Mol (Adv) | 6 | p UAI of at least 93 and HSC Chemistry result in the 80th percentile or better, 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 May not be counted with CHEM 1002 or 1102 or 1902 or 1904 or 1908. | | | | 1 |
| CHEM 1909 | Chemistry 1 Life Sciences B Mol (Adv) | 6 | P CHEM 1907 or 1908 or equivalent. C Recommended concurrent units of study: 6 credit points of Junior Mathematics. N May not be counted with CHEM 1001 or 1101 or 1901 or 1903 or 1905 or 1906. | | | | 2 |

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

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---------------|----|----------------------|-----------------|---------------|----------------|----------------|----------|
|---------------|----|----------------------|-----------------|---------------|----------------|----------------|----------|

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.

In the Intermediate year candidates are required to enrol in and complete:

(i) MBLG (2001 or 2901) and (2002 or 2902);

(ii) CHEM2903;

(iii) MICR 2909; and

(iv) 16 Credit points of Intermediate science units of study (BCHM 2002 or 2902 and BIOL 2006 or 2906 are preferred options).

NOTE: At least 16 credit points must be completed from Intermediate Advanced units of study.

| | | | | | | | | |
|-----------|--|---|--|---|--|--|---|---|
| CHEM 2903 | Chemistry Life Sciences (Advanced) | 8 | | P | | | 12 credit points of Junior Mathematics. O CHEM 1902,1904 or 1909. N May not be counted with CHEM2001 or 2101 or 2301 or 2311 or 2312 or 2502 or 2901. | 1 |
| MICR 2909 | Fundamental and Applied Microbiology Adv | 8 | | P | | | BIOL 1901 and 1904/1905 and CHEM 1902 or 1904 or 1905 or 1906 or 1907 or 1909. N May not be counted with MICR 2005,2006,2906 or 2009. | 2 |

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.

In the Senior year candidates are required to enrol in and complete:

(i) Semester 1 core units of study:

(a) BCHM 3001 or 3901;

(b) BIOL (3018 or 3918) and (3027 or 3927); and

(ii) Semester 2 elective units of study:

Select 24 credit points from BCHM 3904, BIOL 3025 or 3928, BIOL 3026 or 3929, CHEM 3903, MICR 3004 or 3904.

NOTE: At least 24 credit points must be completed from Senior Advanced units of study and in July semester enrolment must include a unit of study which incorporates the seminar and discussion program.

Other suitable options incorporating molecular biology and genetics would be considered by the Program Committee.

| | | | | | | | | |
|-----------|--|----|--|---|--|--|--|---|
| BCHM 3904 | Cellular and Med Biochemistry Mol (Adv) | 12 | | Q | | | For enrolment in 2002: Distinction in MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902. N May not be counted with BCHM 3002 or 3902. <i>NB: From 2003 the entry requirements will be: Distinction in MBLG (2001 or 2901) and in [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)].</i> | 2 |
| BIOL 3928 | Evolutionary Genetics Molecular (Adv) | 6 | | Q | | | Distinction average in 16 credit points of Intermediate Biology including BIOL 2905 or in MBLG (2001/2901 and 2002/2902). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. N May not be counted with BIOL (3025 or 3925). <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| BIOL 3929 | Developmental Genetics Molecular (Adv) | 6 | | Q | | | Distinction average in 16 credit points of Intermediate Biology including BIOL 2905 or in MBLG (2001/2901 and 2002/2902). N May not be counted with BIOL 3026 or 3926. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | 2 |
| CHEM 3903 | Chemistry 3 Life Sciences (Advanced) | 12 | | P | | | For BSc (Molecular Biology and Genetics): CHEM 2903. Q For BMedSc: 32 credit points of Intermediate BMED units and Credit average in CHEM (2311 and 2312). N May not be counted with CHEM 3101,3102, 3201,3202,3311, 3601, 3602, 3901 or 3902. | 2 |
| MICR 3004 | Molecular Biology of Pathogens Molecular | 12 | | Q | | | MICR 2005 or 2906 or 2909. N May not be counted with MICR 3904. | 2 |
| MICR 3904 | Molecular Biology of Pathogens Mol (Adv) | 12 | | Q | | | MICR 2005 or 2906 or 2909. N May not be counted with MICR 3004. | 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 Biology and Genetics) units of study

BIOL 1904 Living Systems Molecular (Advanced)

6 credit points. Dr G M Wardle, Dr K Raphael. Semester: 2. Classes: 3 lec & 3hr prac/wk & 7 discussion sessions. Assumed knowledge: HSC 2-unit Biology or BIOL 1901 or equivalent. Prohibition: May not be counted with BIOL 1002 or 1003 or 1902 or 1903 or 1905 or 1500.

Assessment: One 2hr exam, assignments, classwork and an assignment based on discussion sessions.

NB: Students must be enrolled in the Bachelor of Science (Molecular Biology and Genetics) degree.

This unit of study is the same as BIOL 1902 except for the addition of 7 special molecular biology and genetics discussion sessions, which consist of topical seminars and discussions in this discipline. An essay based on these discussions can be included as part of the assessment of the unit of study. Students must be enrolled in the Molecular Biology and Genetics Degree Program.

BIOL 1905 Human Biology Molecular (Advanced)

6 credit points. Semester: 2. Classes: 3 lec & 3hr prac/wk & 7 discussion sessions. Assumed knowledge: 2-unit HSC Biology or BIOL 1901 or equivalent. Prohibition: May not be counted with BIOL 1002 or 1003 or 1902 or 1903 or 1904 or 1500. Assessment: One 2hr exam, assignments, classwork and an assignment based on discussion sessions.

NB: Students must be enrolled in the Bachelor of Science (Molecular Biology and Genetics) degree.

This unit of study is the same as BIOL 1903 except for the addition of 7 special molecular biology and genetics discussion sessions, which consist of topical seminars and discussions in this discipline. An essay based on these discussions can be included as part of the assessment of the unit of study.

Students must be enrolled in the Molecular Biology and Genetics Degree Program.

CHEM 1905 Chemistry 1A Molecular (Advanced)

6 credit points. Semester: 1. Classes: 3 lec/tut & 3hr prac/wk for 10 weeks & 7 discussion sessions. Prerequisite: UAI of at least 93 and HSC Chemistry result in the 80th percentile or better, or Distinction or better in a University level Chemistry unit, or by invitation. Corequisite: Recommended concurrent unit of study: 6 credit points of Junior

Mathematics. **Prohibition:** May not be counted with CHEM 1001 or 1101 or 1901 or 1903 or 1906 or 1909. **Assessment:** One 3hr closed book exam (70%), prac reports and quizzes (15%), assignments (5%), essay based on discussion sessions (10%).

NB: Permission required for enrolment.

This unit of study is the same as Chemistry 1901 except for the addition of 7 special molecular biology and genetics discussion sessions, which consist of topical seminars and discussions in this discipline. An essay based on these discussions is included as part of the assessment of the unit of study.

CHEM 1906 Chemistry 1A Mol (Special Studies Prog)

6 credit points. **Semester:** 1. **Classes:** 3 lec/tut & 3hr prac/wk & 7 discussion sessions. **Prerequisite:** UAI of at least 98.7 and HSC Chemistry result in the 94th percentile or better, or Distinction or better in a University level Chemistry unit, or by invitation. Students in the Faculty of Science Talented Students Program are automatically eligible. **Corequisite:** Recommended concurrent unit of study: 6 credit points of Junior Mathematics. **Prohibition:** May not be counted with CHEM 1001 or 1101 or 1901 or 1903 or 1905 or 1909. **Assessment:** One 3hr closed book exam (70%), prac reports (15%), assignments (5%), essay based on discussion sessions (10%).

NB: Permission required for enrolment. Entry is by invitation.

This unit of study is deemed to be an Advanced unit of study.

This unit of study is the same as Chemistry 1903 except for the addition of 7 special molecular biology and genetics discussion sessions, which consist of topical seminars and discussions in this discipline. An essay based on these discussions is included as part of the assessment of the unit of study.

CHEM 1907 Chemistry 1 Life Sciences A Mol (Adv)

6 credit points. **Semester:** 1. **Classes:** Total of 6hrs per week consisting on average of 3 lectures, 1 tutorial/discussion session and 2hrs of practical work. **Prerequisite:** UAI of at least 93 and HSC Chemistry result in the 80th percentile or better, or Distinction or better in a University level Chemistry unit, or by invitation. **Corequisite:** Recommended concurrent units of study: 6 credit points of Junior Mathematics. **Prohibition:** May not be counted with CHEM 1002 or 1102 or 1902 or 1904 or 1908. **Assessment:** Exam 75%, practicals 15%, essay based on discussion sessions 10%.

Lectures (39 hr): A strong background in junior chemistry is essential for understanding molecular structures and processes. This unit of study provides the basis for understanding fundamental chemical processes and structures at an advanced level, with particular emphasis on how this applies to the life sciences. Topics to be covered include: atomic structure, chemical bonding and organic chemistry of functional groups with applications in life sciences.

Tutorials/Discussions (13 hr): These will provide aspects of problem solving and will include special lectures on aspects of molecular biology and genetics from external experts.

Practical: (30 hr): These will be designed to develop practical skills based on the theory presented in the lectures.

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1909 Chemistry 1 Life Sciences B Mol (Adv)

6 credit points. **Semester:** 2. **Classes:** Total of 6hrs per week consisting on average of 2 lectures, 1 tutorial/discussion session and 3hrs of practical work. **Prerequisite:** CHEM 1907 or 1908 or equivalent. **Corequisite:** Recommended concurrent units of study: 6 credit points of Junior Mathematics. **Prohibition:** May not be counted with CHEM 1001 or 1101 or 1901 or 1903 or 1905 or 1906. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

Lectures (26 hr): A strong background in junior chemistry is essential for understanding molecular structures and processes. This unit of study provides the basis for understanding fundamental chemical processes and structures at an advanced level, with particular emphasis on how these apply to the life sciences. Topics to be covered include: chemical equilibria, solutions, acids and bases, ions in solution, redox reactions, colloids and surface chemistry, the biological periodic table, chemical kinetics and radiochemistry with applications to life sciences.

Tutorials/Discussions (13 hr): These will provide aspects of problem solving relevant to the unit of study.

Practical: (30 hr) These will be designed to develop practical skills based on the theory presented in the lectures

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 2903 Chemistry Life Sciences (Advanced)

8 credit points. **Semester:** 1. **Classes:** 4 lec & 4hr prac/wk. **Prerequisite:** 12 credit points of Junior Mathematics. **Qualifying:** CHEM 1902, 1904 or 1909. **Prohibition:** May not be counted with CHEM 2001 or 2101 or 2301 or 2311 or 2312 or 2502 or 2901. **Assessment:** Theory (67%) and lab exercises (33%).

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.

Textbooks

As for CHEM 2001

MICR 2909 Fundamental and Applied Microbiology Adv

8 credit points. Dr Carter. **Semester:** 2. **Classes:** 3 lec, 1 tut & 4hr prac/wk & 9 advanced seminars. **Prerequisite:** BIOL 1901 and 1904/1905 and CHEM 1902 or 1904 or 1906 or 1907 or 1909. **Prohibition:** May not be counted with MICR 2005, 2006, 2906 or 2009. **Assessment:** Two 2 hr exams, continuous prac assessment, assignment.

This unit of study is designed to provide students with the knowledge and technical skills needed to understand and manipulate microorganisms as part of the field of molecular biology and genetics. In the first part of the unit of study, students are introduced to the nature and scope of microbiology, and to practical methods for handling and analysing microorganisms. The latter part of the unit focuses on the role of microorganisms in health and disease, and on industrial processes involving microorganisms, including recombinant DNA products, biocontrol agents and bioremediation. An advanced seminar series accompanies the latter part of the unit, and focuses on recent research topics in molecular microbiology.

Textbooks

As for MICR 2001

BCHM 3904 Cellular and Med Biochemistry Mol (Adv)

12 credit points. Dr Easterbrook-Smith, Mrs Johnston, Biochemistry staff. **Semester:** 2. **Classes:** 4 lec & 8hr/wk & 4 seminars. **Qualifying:** For enrolment in 2002: Distinction in MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902. **Prohibition:** May not be counted with BCHM 3002 or 3902. **Assessment:** One 3hr exam, one 2hr exam, assignment, prac work.

NB: From 2003 the entry requirements will be: Distinction in MBLG (2001 or 2901) and in [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)].

This unit of study is the same as BCHM 3002/3902 except for the addition of seminars and discussions in this discipline.

Textbooks

Cooper GM. The Cell: A Molecular Approach. ASM Press, 2000

BIOL 3928 Evolutionary Genetics Molecular (Adv)

6 credit points. Prof. Shine, Dr Oldroyd. **Semester:** 2. **Classes:** 4 lec & 8 prac/wk. **Qualifying:** Distinction average in 16 credit points of Intermediate Biology including BIOL 2905 or in MBLG (2001/2901 and 2002/2902). For BMedSc students: 32 credit points of Intermediate BMed units including Distinction in BMed 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. **Prohibition:** May not be counted with BIOL (3025 or 3925). **Assessment:** One 2hr exam, assignments, seminar and an essay based on discussion sessions.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit is the same as BIOL 3925 Evolutionary Genetics and Animal Behaviour (Advanced), except for the addition of topical seminars and discussions in this discipline.

BIOL 3929 Developmental Genetics Molecular (Adv)

6 credit points. Assoc. Prof. Gillies, Dr Raphael, Dr Saleeba. **Semester:** 2. **Classes:** 4 lec & 8 prac/wk. **Qualifying:** Distinction average in 16 credit points of Intermediate Biology including BIOL 2905 or in MBLG (2001/2901 and 2002/2902). **Prohibition:** May not be counted with BIOL 3026 or 3926. **Assessment:** One 2hr exam, assignments, seminar and an essay based on discussion sessions.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

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

CHEM 3903 Chemistry 3 Life Sciences (Advanced)

12 credit points. Semester: 2. Classes: 4 lec & 8 prac/wk & 4 compulsory discussion sessions. Prerequisite: For BSc (Molecular Biology and Genetics): CHEM 2903. Qualifying: For BMedSc: 32 credit points of Intermediate BMED units and Credit average in CHEM (2311 and 2312). Prohibition: May not be counted with CHEM 3101, 3102, 3201, 3202, 3311, 3601, 3602, 3901 or 3902. Assessment: Exams (60%), prac reports (30%), assignment based on discussion sessions (10%).

The aim of this unit of study is to provide students enrolled in the Molecular Biology and Genetics Degree Program with some advanced chemistry required for an understanding of the subject. The unit consists of modules dealing with the biological and environmental chemistry of the transition elements; medicinal and biological chemistry; biophysical chemistry plus one other module to be chosen from a variety of other options that are important for understanding chemical processes or techniques used in molecular biology and genetics. A list of modules and more detailed descriptions are given in the Senior Chemistry Handbook available from the School. A special practical component is designed to illustrate the principles given in the lectures. In addition, 4 seminars from specialists in molecular biology and genetics will be given to illustrate recent research in the area.

**MICR 3004 Molecular Biology of Pathogens
Molecular**

12 credit points. Dr Carter. Semester: 2. Classes: 3 lec & 9hrs prac/wk and 4 discussion sessions. Qualifying: MICR 2005 or 2906 or 2909. Prohibition: May not be counted with MICR 3904. Assessment: Two 2hr exams, practicals, and an essay based on discussion sessions.

This unit of study is the same as that in Microbiology 3003, except for the addition of 4 special molecular biology and genetics discussion sessions, which consist of topical seminars and discussions in this discipline. An essay based on these discussions is included as part of the assessment of the unit of study.

MICR 3904 Molecular Biology of Pathogens Mol (Adv)

12 credit points. Dr Carter. Semester: 2. Classes: 4 lec & 8hrs prac/wk and 4 discussion sessions. Qualifying: MICR 2005 or 2906 or 2909. Prohibition: May not be counted with MICR 3004. Assessment: Two 2hr exams, practicals, and an essay based on discussion sessions. Same details as MICR 3004, with advanced components.

■ Bachelor of Science (Molecular Biotechnology) degree program

The BSc (Molecular Biotechnology) course provides rigorous education in the field coupled with an applications-driven perspective. The course is aimed at providing Pass and Honours graduates who are equipped to address industry needs in molecular biotechnology and information bioscience. Graduates are likely to be employed in areas that emphasise molecular biotechnology and healthcare. Examples include a variety of careers in the biotechnology, biological, medical and health sciences. Students who undertake an Honours year may proceed to postgraduate research in their chosen field. The degree emphasises applications in the biotechnology industry and aims to provide a solid foundation for entry into the private sector, for example biotechnology-based companies, related industries and hospitals. The course also provides a solid foundation for PhD training in these rapidly expanding high profile biological and medical fields.

The BSc (Molecular Biotechnology) degree program is taught mainly by departments in the Faculty of Science and by industry. Molecular biotechnology, molecular biology, biochemistry, biology, chemistry, computer science, microbiology and pharmacology are taught by departments in the Faculty of Science. The course comprises a series of interdisciplinary study modules on molecular biotechnology with molecular biology and genetics. It includes business case studies, ethics and patents, small and large therapeutics, opportunities for medical and veterinary treatments, diagnostic tools, proteomics and bioinformatics. The regular participation by industry partners ensures relevance and access to current areas of emphasis in this rapidly expanding field.

Summary of requirements

The Bachelor of Science (Molecular Biotechnology) degree program requires the equivalent of three years of full-time study.

Students must include 48 credit points from intermediate units of study and 48 credit points from senior units of study. An Honours program is available and requires the equivalent of a further year of full time study. Entry into the honours year is competitive and is based upon performance in the proceeding undergraduate years of the program.

Enrolment guide

To complete your degree you must gain credit for at least 144 credit points as specified in Table IE.

The Resolutions of the Senate and Faculty governing candidature for the degree of Bachelor of Science also govern the BSc (Molecular Biotechnology) degree program. Students should also refer to Table I: Bachelor of Science on page 13.

Honours

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.

Universities Admissions index (UAI)

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

Transferring into the BSc (Molecular Biotechnology)

Students may be permitted to transfer from other courses offered by the Faculty of Science or from other Universities into the BSc (Molecular Biotechnology) with the permission of the Dean.

Degree resolutions

See chapter 5.

Table IE: Bachelor of Science (Molecular Biotechnology)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---|--|----------------------|--|---------------|----------------|----------------|----------|
| A. Junior units of study | | | | | | | |
| Candidates are required to enrol in and complete: | | | | | | | |
| (i) at least 12 credit points of Junior units of study from the Science Subject Area of Biology; | | | | | | | |
| (ii) CHEM 1908 and CHEM 1909 or at least 12 credit points of Junior units of study from the Science Subject Area of Chemistry; and | | | | | | | |
| (iii) at least 12 credit points of Junior units of study from the Science Subject Area of Mathematics. | | | | | | | |
| The study of Computer Science is highly recommended. | | | | | | | |
| B. Intermediate units of study | | | | | | | |
| Candidates are required to enrol in and complete 48 credit points of Intermediate units of study including: | | | | | | | |
| (i) MOBT 2001 and MOBT 2002; | | | | | | | |
| (ii) MBLG (2001 or 2901) and MBLG (2002 or 2902); | | | | | | | |
| (iii) CHEM 2311 and CHEM 2312; and | | | | | | | |
| (iv) at least 8 credit points chosen from Intermediate units of study in the Subject Areas of: Animal Science, Biochemistry, Biological Sciences, Chemical Engineering, Chemistry, Computer Science, Crop Sciences, Information Systems, Mathematics and Statistics, Microbiology, Nutrition, and Pharmacology. | | | | | | | |
| MOBT 2001 | Molecular Biotechnology 2A | 4 | P 12 cp of Junior BIOL and 12cp of Junior CHEM. | | | | 1 |
| MOBT 2002 | Molecular Biotechnology 2B | 4 | P MOBT 2001. | | | | 2 |
| CHEM 2311 | Chemistry 2 (Biological Sciences) Theory | 4 | P 12 credit points of Junior Chemistry. N May not be counted with CHEM 2001 or 2101 or 2301 or 2901 or 2903 or 2502. | | | | 1 |
| CHEM 2312 | Chemistry 2 (Biological Sciences) Prac | 4 | P 12 credit points of Junior Chemistry. c CHEM 2311. N May not be counted with CHEM 2001 or 2101 or 2301 or 2901 or 2903 or 2502. | | | | 1,2 |
| C. Senior units of study | | | | | | | |
| Candidates are required to enrol in and complete 48 credit points of Senior units of study including: | | | | | | | |
| (i) MOBT 3001 and MOBT 3002; | | | | | | | |
| (ii) at least 6 credit points from AGCH 3024, BCHM 3098, BIOL 3027, CHEM 3311; and | | | | | | | |
| (iii) 24 credit points from Senior units of study, which must include at least 12 credit points from the Subject areas of: Agricultural Chemistry, Animal Science, Biochemistry, Biological Sciences, Chemical Engineering, Chemistry, Computer Science, Crop Sciences, Information Systems, Mathematics and Statistics, Microbiology, Nutrition, Pharmacology. | | | | | | | |
| MOBT 3001 | Molecular Biotechnology 3A | 6 | P MBLG 2002 and MOBT 2002 and CHEM (2311 and 2312). | | | | 1 |
| MOBT 3002 | Molecular Biotechnology 3B | 12 | P MOBT 3001. | | | | 2 |
| AGCH 3024 | Chemistry and Biochemistry of Foods | 6 | P MBLG 2001 and 2002; and either CHEM 2311 and 2312, or BCHM 2002, or BCHM 2902. N May not be counted with AGCH 3017 or 3003 or 3005. | | | | 1 |

Table IE: Bachelor of Science (Molecular Biotechnology) (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|-----------------|---------------|----------------|--------------------------------------|----------|
| BIOL 3027 Bioinformatics and Genomics | 6 | Q MBLG (2001 or 2101 or 2901) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. | | | | N May not be counted with BIOL 3927. | 1 |
| BCHM 3098 Functional Genomics and Proteomics | 6 | A BCHM 2011. Q MBLG (2001 or 2901) or at least 32 credit points of intermediate BMED units including BMED (2501 and 2502 and 2504). | | | | | 1 |
| CHEM 3311 Drug Design and Characterisation | 6 | P MOBT 2001 and MOBT 2002. Q CHEM 2311 and CHEM 2312. N May not be counted with CHEM 3101,3601,3602,3901 or 3903. | | | | | 1 |

■ Bachelor of Science (Molecular Biotechnology) units of study

MOBT 2001 Molecular Biotechnology 2A

4 credit points. **Semester:** 1. **Classes:** 3 lec & 1 tut/wk. **Prerequisite:** 12 cp of Junior BIOL and 12cp of Junior CHEM. **Assessment:** One 3 hour theory exam, quizzes and associated tasks.

The major purpose of this unit of study is to introduce students to the concepts of modern molecular biotechnology. It assumes students will be taught Molecular Biology and Genetics through MBLG 200X. It commences with case studies of overseas and local molecular biotechnology companies, then considers the roles of intellectual property and patenting in Australia and overseas, in combination with regulatory issues. This is followed by an appreciation of the societal impact and ethics of biotechnology, implications of patent-driven research and development, issues facing start-ups, interactions with big companies, informative interactions with the public, and needs for feedback and relevance. This information is disseminated through discussion sessions and problem-based learning. It leads on to an introduction to industrial macromolecule production, covering areas of sugar-based macromolecules in surgical treatment, engineered protein pharmaceuticals, medicinal enzymes and enzymes in food. This proceeds to considering the chemical synthesis of pharmaceuticals with specific example, including structure-activity relationships, use and modification of natural products in drug design, drugs from virus structures including anti-influenza drugs, new drug targets from genomics and cell-targeting, and bioinorganic drugs. Finally students are taken through large molecule drug discovery, screening in drug development, phage display of molecular targets, molecular diversity of peptides, synthetic peptide combinatorial libraries, molecular diversity of oligonucleotides and examples from industry.

MOBT 2002 Molecular Biotechnology 2B

4 credit points. **Semester:** 2. **Classes:** 3 lec & 1 tut/wk. **Prerequisite:** MOBT 2001. **Assessment:** One 3 hour theory exam, quizzes and associated tasks.

The major purpose of this unit of study is to build on MOBT 2001 and provide further concepts of modern molecular biotechnology. It assumes students will be taught molecular biology and genetics through MBLG 200X. 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. This is followed by an appreciation of the uses of multicellular factories, illustrated with case studies. It extends biomaterials and wound repair, covering issue diversities, connective tissue candidates, recruitment of wound repair reactions, biomimetics and composites, and the prospects of bioartificial organs. The impact of proteomics in these and related areas will be explored in terms of its interplay with genomics, organ and organismal variety, disease states, quantitative vs. qualitative profiles, database management, computer tools and proteome databases and its major interplay with bioinformatics. Finally students are taken through biosensors, where they will learn about amperometric and potentiometric sensing, optical and fluorescence detection, immobilisation of enzymes on biosensor surfaces, ion-gating or

ion-channel biosensors, illustrated with examples, including glucose biosensor for diabetics. Teaching will be augmented through discussion sessions and problem-based learning.

CHEM 2311 Chemistry 2 (Biological Sciences) Theory

4 credit points. Dr Robert Baker. **Semester:** 1. **Classes:** 4 lec/wk. **Prerequisite:** 12 credit points of Junior Chemistry. **Prohibition:** May not be counted with CHEM 2001 or 2101 or 2301 or 2901 or 2903 or 2502. **Assessment:** 3 hr exam (80%), continuous assessment (20%).

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).

CHEM 2312 Chemistry 2 (Biological Sciences) Prac

4 credit points. Dr Robert Baker. **Semester:** 1, 2. **Classes:** 1x4 hour practical/week. **Prerequisite:** 12 credit points of Junior Chemistry. **Corequisite:** CHEM 2311. **Prohibition:** May not be counted with CHEM 2001 or 2101 or 2301 or 2901 or 2903 or 2502. **Assessment:** Practical reports.

This unit of study aims to assist students in developing the knowledge and skills required to carry out practical work on the chemistry underlying biological systems. The course 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.

MOBT 3001 Molecular Biotechnology 3A

6 credit points. **Semester:** 1. **Classes:** 3 lec, 2 prac & 1 tut/wk. **Prerequisite:** MBLG 2002 and MOBT 2002 and CHEM (2311 and 2312). **Assessment:** One 2hr theory exam, quizzes and associated tasks.

This Senior unit of study explores major current issues in the field and extends builds on the concepts of modern molecular biotechnology taught in MOBT 2001 and MOBT 2002. It commences with a detailed exploration of drug discovery by combinatorial chemistry and molecular diversity. This will be followed with the theory and practice of computer-assisted drug design. Genomic studies will interface with predictive concepts and then proceed to an appreciation of therapeutic design in the post-genomic era. Students are then taken through essential aspects of genome annotation and functional analysis, then in-silico directed metabolic models and testing. To gain an appreciation of key stages in developing concepts and inventions, these approaches and earlier topics are combined through examples and viewing classical development paths for molecular biotechnology products.

Main subject areas include drug discovery by combinatorial chemistry and molecular diversity; fundamentals of computer assisted drug discovery and optimisation; therapeutic design in the post-genomic era; therapeutic targets, pharmacogenomics and functional analysis; development of molecular diagnostics; and in silico-directed metabolic models and testing.

MOBT 3002 Molecular Biotechnology 3B

12 credit points. **Semester:** 2. **Classes:** 1 lec, 1 tut & 10 placement/wk. **Prerequisite:** MOBT 3001. **Assessment:** In-industry placements within the Program will be assessed by an academic staff member of the Molecular Biotechnology Program through communication with both the student and industry appointed liaison officer.

This Senior unit of study builds on knowledge gained in earlier units of modern molecular biotechnology. It emphasises the needs for experience and preparation for invention, product design research and development, and the importance of recognising industry trends. Students are given practical

experience through an industry-placement program. This will typically involve either participation on-site at locations of industry partners in association with University staff or in an industry-associated university laboratory. Lectures will address emerging areas in molecular biotechnology and business management. To maximise future opportunities, students will learn about funding, research and development models, partly through Australian and overseas case studies. Guest lecturers will contribute and help students develop an appreciation of emerging areas in molecular biotechnology.

As well as relevant practical experience gained through the industry placement, subject areas including Agricultural Biotechnology; Environmental Biotechnology including remediation strategies and green manufacturing technologies; Bioprocess Technologies (scaling-up and micro-processing); Commercial Biotechnology; management fundamentals for biotechnology-based product marketing with relevant case studies; biotechnology and society; ethics of modern biotechnology; funding, research and development models; and emerging areas in molecular biotechnology will be covered.

AGCH 3024 Chemistry and Biochemistry of Foods
6 credit points. Assoc Prof Copeland. Semester: 1. Classes: 3 lec & 1 tut/wk. 8x3hr pract. Prerequisite: MBLG 2001 and 2002; and either CHEM 2311 and 2312, or BCHM 2002, or BCHM 2902. Prohibition: May not be counted with AGCH 3017 or 3003 or 3005. Assessment: One 2hr exam (50%), One major assignment (25%), Practical Reports (25%). 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 doughs 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. Each practical will incorporate a tutorial introducing the background to the characterisation technique employed. Particular emphasis will be placed on the development of practical skills and critical thinking about the implications of experimental data. 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.

The tutorials will provide an introduction to each of the practical exercises, and will also cover topical issues in food science, including food quality, food labelling and food security and genetically modified foods.

BIOL 3027 Bioinformatics and Genomics
6 credit points. Dr Firth, Dr Jermiin, Dr Saleeba and others. Semester: 1. Classes: 4 lec & 8 prac/wk. **Qualifying:** MBLG (2001 or 2101 or 2901) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. Prohibition: May not be counted with BIOL 3927. Assessment: One 2 hr exam, assignments, seminar.

A unit of study of 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 such as protein structures, chemical structures and pharmaceuticals are considered, together with classical taxonomy and biodiversity.

The unit begins with the assembly and management of nucleotide sequence data and an introduction to the databases that are normally used for the storage and retrieval of biological data, and continues with signal detection and analysis of deduced products, sequence alignment, and database search methods. Phylogenetic reconstruction based on distance-based methods, parsimony methods and maximum-likelihood methods is described and students are introduced to the idea of tree-space, phylogenetic uncertainty, and taught to evaluate phylogenetic trees and identify factors that will confound phylogenetic inference. Finally, whole genome analysis and comparative

genomics are considered. The unit gives students an appreciation of the significance of bioinformatics in contemporary biological science by equipping them with skills in the use of a core set of programs and databases for 'in silico' biology, and an awareness of the breadth of bioinformatics resources and applications.

BCHM 3098 Functional Genomics and Proteomics
6 credit points. Dr Downard. **Semester: 1. Classes:** 3 lec, 2 workshops & 1 tut/wk. **Assumed knowledge:** BCHM 2011. **Qualifying:** MBLG (2001 or 2901) or at least 32 credit points of intermediate BMED units including BMED (2501 and 2502 and 2504). **Assessment:** One 3 hour theory exam (50%), weekly tutorials (26%), and 4 workshop / assignments (24%).

This unit will introduce students to the emerging fields of functional genomics and proteomics and will focus on the principles and methodologies associated with the mapping of genomes, understanding gene function and expression, and identifying the structure and function of the proteins that these genes express. Four sections (each comprising approximately 10-12 lectures, a one day workshop or an assignment) will cover the following areas: Genomes and their relationships with Protein Structure; Functional and structural genomics; Proteomics from a global and functional perspective; Data mining strategies associated with the management and manipulation of Genomic and proteomic based data. Specific content will include: the evolution of genomes, genomic relationships, gene hunting, gene expression, manipulating gene products, sequencing methods, statistical analysis, expressed sequence tags and gene expression arrays, global versus functional proteomics, platforms and technologies for automated protein identification and quantification, two dimensional gel electrophoresis, mass spectrometry, mass maps and tags, protein sequencing, automation and sample handling, robotics, membranes and other supports, genome and protein databases, HTML and other Web based languages, tools for sequence identification and alignment, protein structure prediction, homology and molecular modeling.

CHEM 3311 Drug Design and Characterisation
6 credit points. Semester: 1. Classes: 2 lec, 3 prac, 1 tut/wk. Prerequisite: MOBT 2001 and MOBT 2002. Qualifying: CHEM 2311 and CHEM 2312. Prohibition: May not be counted with CHEM 3101, 3601, 3602, 3901 or 3903. Assessment: One 3hr exam. Continuous practical and workshop assessment.

This unit of study comprises two lectures, one hour of workshops/tutorials and 3 hours of practical work per week. The lectures consist of two 13-lecture modules. The first module, titled 'Spectroscopic Identification of Medicinal Compounds' aims to provide the fundamental principles for identifying drugs and analysing their molecular structure by various spectroscopic techniques, including, mass spectrometry, NMR and infrared spectroscopies. The second module: 'Molecular Modelling in Medicinal Chemistry' provides the necessary basic theory to understand what constitutes molecular modelling packages used widely in rational drug design. Theories include Quantitative Structure-Activity Relationships (QSAR), the role of stereochemistry, computational methods in drug design, and theories of solvation and hydrogen bonding in biological chemistry. These modules are supported by one hour per week of tutorials and workshops. The laboratory program is structured as 10 four-hour practical sessions. The program has been designed to accentuate chemical techniques that are of most importance to drug design, both in the synthesis and analysis of compounds.

■ Bachelor of Science (Nutrition) degree program

If you are interested in a career in nutrition and dietetics the Human Nutrition unit within the Department of Biochemistry offers three specialist courses. These are the BSc (Nutrition), the Master of Nutrition & Dietetics and the Master of Nutritional Science.

Students who enrol in the BSc (Nutrition) in order to achieve accreditation as a dietitian will need to complete the clinical strand in the Honours year of the degree program.

Summary of requirements

The Bachelor of Science (Nutrition) 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.

Enrolment guide

To complete your degree you must gain credit for at least 144 credit points as specified in Table IF.

The Resolutions of the Senate and Faculty governing candidature for the degree of Bachelor of Science listed in chapter 5 also govern the BSc (Nutrition) degree program.

Students should also refer to Table I: Bachelor of Science on page 13.

Honours

Candidates for the Honours degree in Nutrition shall complete an Honours program by coursework or research.

Progression requirements

A minimum requirement for progression in the BSc (Nutrition) will be set annually and will be based on WAM and performance in advanced units of study. Students must achieve a WAM of 60 in Junior year and a WAM of 65 in Intermediate year.

Universities Admissions Index (UAI)

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

Transferring into the BSc (Nutrition)

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

Degree resolutions

See chapter 5.

Table IF: Bachelor of Science (Nutrition)

Unit of study CP A: Assumed knowledge P: Prerequisite Q: Qualifying C: Corequisite N: Prohibition Semester

A. Junior units of study

Candidates are required to enrol in and complete:

- (i) BIOL (1001 or 1901) and BIOL (1002 or 1902 or 1003 or 1903);
- (ii) Life Sciences Chemistry (CHEM 1908 and 1909) or CHEM (1101 or 1901 or 1903) and CHEM (1102 or 1902 or 1904);
- (iii) 12 credit points of Junior units of study from the Science Subject Area of Mathematics; and
- (iv) 12 credit points of other Junior units of study from the Science Subject Areas of Computer Science, Physics or Psychology.

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 Junior year.

In the Intermediate year candidates are required to enrol in and complete:

- (i) NUTR 2901 and 2902;
- (ii) MBLG (2001 or 2901) and BCHM (2002 or 2902);
- (iii) PHSI 2001 and 2002; and
- (iv) MICR 2011 and 2012 or at least 8 credit points of Intermediate units of study (4 credit points each semester) from the Science Subject Areas of Chemistry or Pharmacology.

| | | | | | |
|-----------|--|---|---|---|---|
| NUTR 2901 | Introductory Food Science (Advanced) | 8 | P | BIOL (1001 or 1901) and (1002 or 1003 or 1902 or 1903) and CHEM (1101 or 1901 or 1903 or 1909) and CHEM (1102 or 1902 or 1904 or 1908). | 1 |
| NUTR 2902 | Introductory Nutritional Science (Adv) | 8 | P | NUTR 2901. | 2 |
| MICR 2011 | Introductory Microbiology (Nutrition) | 4 | P | BIOL (1001 or 1901) and BIOL (1002 or 1003 or 1902 or 1903) and 6 credit points of Junior Chemistry. | 1 |
| MICR 2012 | Applied Microbiology (Nutrition) | 4 | p | MICR 2011. N MICR 2002 or 2902 or 2004. | 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 Intermediate year.

In the Senior year candidates are required to enrol in and complete:

- (i) NUTR 3901 and 3902;
- (ii) BCHM 3002 or 3902; and
- (iii) AGCH (3017 and 3018 and 3019) or 12 credit points from the following Senior units of study: BCHM 3001, BCHM 3901, MICR 3001, PHSI3001 or PHSI3901.

| | | | | | |
|-----------|-------------------------------------|----|---|------------|---|
| NUTR 3901 | Nutrition in Individuals (Advanced) | 12 | P | NUTR 2902. | 1 |
| NUTR 3902 | Nutrition in Populations (Advanced) | 12 | p | NUTR 2902. | 2 |

D. Honours units of study

Candidates for the Honours degree must achieve minimum grades of Credit in Senior units of study

- (i) Honours year by coursework

Candidates are required to enrol in and complete: NUTR 4001; and NUTR 4002

- (ii) Honours year by research

Candidates are required to enrol in and complete: NUTR 4101, 4102, 4103 and 4104.

■ Bachelor of Science (Nutrition) units of study

NUTR 2901 Introductory Food Science (Advanced)

8 credit points. Associate Professor J Brand Miller. **Semester:** 1. **Classes:** 3 lec & 5 hr prac/wk. **Prerequisite:** BIOL (1001 or 1901) and (1002 or 1003 or 1902 or 1903) and CHEM (1101 or 1901 or 1903 or 1909) and CHEM (1102 or 1902 or 1904 or 1908). **Assessment:** One 3 hr exam (50%), practical (50%).

Foods as commodities

Food use around the world, including the origin, history, cultural and nutritional importance of each of the following major human foods: Animal foods, seafood, cereals (wheat, rice, maize), sugar, fats and oils, milk products, legumes and nuts, roots and tubers, green leafy vegetables, herbs and spices, alcohol, fruit, novel proteins.

Food Behaviour

Physical and chemical composition of various commodities (fruit and vegetables, carbohydrate foods, wheat and baked goods, eggs, dairy products, fats and oils, meat and poultry), behaviour and function of the commodity during culinary processes, spoilage of the commodity.

Geography of foods

Understanding of the global food distribution, food abundance and food scarcity, the problems of nutrition in very poor countries and the potential of food aid to minimise food problems.

Macronutrients

Energy, protein, fat, carbohydrate, fibre, water, alcohol consumption patterns, requirements for health, absorption, metabolism and health/disease significance.

Practical: Organoleptic assessment of food: vision, smell, taste and tactile. Food pigments, the five tastes, genetic differences, food volatiles, food flavour, texture and consistency. Enzymic and non-enzymic browning in foods: desirable versus undesirable browning reactions, prevention, limitation, effect of peeling, cutting, oxygen, sugar, salt sulphur dioxide, vitamin C, acids. Vegetables and fruits - various parts of the plant, types of tissue, cell structure, soluble and insoluble constituents (cell wall, vacuoles, chloroplasts, chromoplasts, oil droplets, intercellular layers), pectic substances, cooking of fruit and vegetables, spoilage reactions. Carbohydrate foods 1 Sugars: types of sugars, crystal structures, mouthfeel, texturising, flavour modifying, fermentation. Carbohydrate foods 2 Starch: Chemical and physical structure, amylose, amylopectin, texturising, thickening properties, viscosity effects, effect of addition of sugar, acid, emulsifiers, origin of starch (rice, wheat, potato). Wheat - effect of milling, gluten structure, leavening agents, ingredients (shortening, emulsifiers, gluten, starch, salt, sugar). Eggs - functional properties of the albumen and yolk, coagulation of proteins, foaming properties, browning, emulsification, clarification, colour and flavour, deterioration and storage. Dairy products - physical structure and chemical composition of milk and dairy products such as butter, cheese, cream and dried milk, effect of whipping, acidity, fermentation, spoilage. Fats and oils - Physical and chemical structure of different fats and oils, functional properties, flavour, lubrication, texturisation, heat transfer, preservation, what happens when a food is fried, requirements of deep frying fats and oils. Meat and poultry - chemical and physical composition of red vs white meat, types of tissues (muscle, adipose, connective), conversion of live muscle to meat, effect of marination, ageing, pigment changes, cooking (dry vs moist), spoilage. Fish and shellfish - types, oily vs non-oily, differences in chemical and physical structure from meat, effect of cooking, problems, spoilage.

Textbooks

Mann J, Truswell AS (eds). Essentials of Human Nutrition. Oxford: OUP, 1998
Griswald N. The Experimental Study of Foods.

NUTR 2902 Introductory Nutritional Science (Adv)

8 credit points. Associate Professor J Brand Miller. **Semester:** 2. **Classes:** 3 lec & 5 hr prac/wk. **Prerequisite:** NUTR 2901. **Assessment:** One 3 hr exam (50%), practical (50%).

Vitamins

Consumption patterns, requirements for health, absorption, metabolism, nutritional/disease significance, deficiency state in regard to Vitamins A, B1, B2, B6, B12, niacin, folate, biotin, pantothenic acid, Vitamin C, Vitamin D, Vitamin E, Vitamin K.

Minerals, trace elements

Consumption patterns, requirements for health, absorption, metabolism, nutritional/disease significance, deficiency state in regard to calcium, iron, sodium, potassium, zinc, selenium, copper, carnitine, choline.

Food Science and Technology

Principles of food preservation, Cereal technology, Milk and dairy technology, Fat and oil technology, Sugar technology, Meat technology, Processing and nutrient changes, Food legislation, Food additives, Naturally-occurring toxicants, Food pollutants, Food safety

Food Hygiene

Food microbiology, Food hygiene, Critical control points and hazards analysis.

Practical: Energy and fatty acid ratios in 24 h food intake
Students will collect 24 hour food intake on themselves and one of the following - a young child, an office worker and a trained athlete. Students will homogenise all foods eaten in a 24 h period, sample representatively and analyse energy content by bomb calorimetry and determine fat, protein, starch, total sugars, dietary fibre and fatty acid composition. Nitrogen balance
Students will conduct a study in rats comparing nitrogen balance on a nitrogen free diet, normal diet and high protein diet. After a baseline period on the diets, students will collect rat urine and faeces over 3 days and analyse N content. Findings will be compared with analysed N content of diet. Supermarket sleuth
Students will be responsible in groups of gathering information in supermarkets on health claims on food labels, fat and energy content of full fat and reduced fat products, normal and low sugar products and variations in meat cuts. They will report the finding to the whole class in the final practical.

Textbooks

Mann J, Truswell AS (1998). Essentials of human nutrition. Oxford University Press, Oxford.
Proudlove R.K. The Science & Technology of Foods. Forbes London, 1985.
Hobbs BC Food poisoning and food hygiene. (5th ed) Ballimore, Mad; E. Arnold 1987.

MiCR 2011 Introductory Microbiology (Nutrition)

4 credit points. Semester: 1. Prerequisite: BIOL (1001 or 1901) and BIOL (1002 or 1003 or 1902 or 1903) and 6 credit points of Junior Chemistry. Assessment: One 2 hr theory exam, one 3hr prac exam, continuous assessment in prac, one assignment.

This unit of study aims to give the students some background knowledge and technical skills to provide a foundation for further study of the applied aspects of microbiology.

Topics covered include methodology, a comparative study of the major groups of bacteria, a detailed study of bacteria including their structure, classification and identification, growth, death and control. The practical component focuses on basic, safe microbiological techniques, the principles of asepsis, and the use of these to study examples of microbial activity which are illustrative of the lecture course.

Textbooks

Prescott L M et al. Microbiology. 4th edn, WCB/McGraw Hill 1999.

MiCR 2012 Applied Microbiology (Nutrition)

4 credit points. **Semester:** 2. Prerequisite: MiCR 2011. Prohibition: MiCR 2002 or 2902 or 2004. Assessment: One 2 hr theory exam, one 3hr prac exam, continuous assessment in prac, one assignment.

This unit of study is designed to expand the understanding of, and technical competence in microbiology, building on the skills and knowledge acquired in MiCR 2011. The lectures cover aspects of applied microbiology. Food microbiology covers production, spoilage and preparation as well as the safety of food and aspects of public health. Medical microbiology deals with host-parasite relationship, host defence mechanisms, epidemiology of selected diseases, transmission of disease and prevention and control of disease.

Practical classes enable the study of materials which complement and supplement the lecture topics.

Textbooks

As for MiCR 2011

NUTR 3901 Nutrition in Individuals (Advanced)

12 credit points. Dr D Volker. **Semester:** 1. **Classes:** 4 lec & 8 hr prac/wk. **Prerequisite:** NUTR 2902. **Assessment:** One 3 hr exam (50%), practical project (50%).

Lectures: Dietary intake assessment: basic concepts in nutritional status; four methods of dietary assessment in individuals, advantages and limitations; validation of dietary methods; nutritional guidelines, targets and recommended dietary intakes; computerised nutrient analysis; Atwater

conversion factors; limitations of food composition analysis; critical interpretation of nutrient analysis

Behavioural influences on food intake

Clinical assessment and biochemical evaluation: nutritional assessment of individuals through clinical examination and commonly used laboratory biochemical tests for nutritional status; methods used to diagnose nutritional deficiencies; specificity, reliability of biochemical tests

Anthropometry and body composition: techniques for measuring body composition; soft tissue measurements; percent body fat; reference standards; growth standards and percentiles

Nutritional metabolism: biochemical interrelationships between nutrients and the supply of energy to the body; effects of nutritional state on energy metabolism (exercise, starvation, obesity, diabetes)

Nutritional epidemiology: basic concepts (causality, randomised control trials, cohort studies, case-control studies, cross sectional and ecological studies); advantages and limitations of epidemiological methods; biological markers of chronic diseases; use of biostatistical tools in epidemiology; critical interpretation of published data.

Research design: qualitative research methods; questionnaire design

Statistics for nutrition: basic concepts (mean, median, standard deviation); association and regression in the relationship between two continuous variables; parametric and non parametric tests for group comparisons); statistical methods used to analyse dietary intake and epidemiological studies; data management and analysis.

Practical: Formats will include practical classes, problem-based learning with case histories and small group tutorials.

Textbooks

Cameron ME, Van Staveren WA eds. *Manual on Methodology for Food Consumption studies*. Oxford: Oxford University Press, 1988.

Willett W. *Nutritional Epidemiology*. Oxford: Oxford University Press, 1990.

Gibson RS. *Nutritional Assessment: A Laboratory Manual*. Oxford: Oxford University Press, 1993.

NUTR 3902 Nutrition in Populations (Advanced)

12 credit points. Ms Sue Amanatidis. Semester: 2. Classes: 4 lec & 8 hr prac/wk. **Prerequisite:** NUTR 2902. **Assessment:** One 3 hr exam (50%), practical project (50%).

Nutrition through the lifecycle: nutritional needs of infants, children, adolescents, pregnant and lactating women and older people.

Food Habits: theories of food habits; factors affecting food habits of individuals and societies; food habits of major ethnic and cultural groups in Australia.

Nutritional problems in contemporary communities and selected target groups: nutritional problems in Aboriginal communities, low income groups and non-English speaking communities.

Nutritional health and chronic disease: chronic diseases related to nutrition including, obesity, cancer, coronary heart disease, hypertension, non-insulin dependant diabetes, dental caries, osteoporosis, iron deficiency, iodine deficiency, vitamin A deficiency and folate deficiency; nutritional problems in developing countries.

Food and nutrition policies and guidelines: dietary guidelines; dietary goals and targets; Recommended Dietary Intakes; food selection guides; national and food and nutrition policies; local government food policies.

Food and Nutrition Systems: the food and nutrition system in Australia; food regulation in Australia

Principles of Public Health nutrition: history and philosophy of public health nutrition; the Ottawa Charter for health Promotion; needs assessment and program planning for populations; evaluation.

Public Health Nutrition Strategies and programs: theories of behaviour change; types of public health nutrition program in Australia; successful strategies for public health nutrition programs.

Principles of Nutrition Education: small group dynamic theories; Adult learning principles; learning styles; small group education strategies; program planning and evaluation; resource development.

Nutrition controversies: fad diets and alternative practitioners. Practical: The aim of the practicals is to allow students to put into practice what is covered in the lectures. The practical sessions will include problem based learning with cases studies and small group tutorials. Practical project Students will

work in groups on a major project over the entire semester. Students will be asked to plan a community intervention for a specific target group. The project will require the students to conduct a needs assessment with the target group and to seek information from various community sources including government and non-government organisations and food industries. The students will write a report and present their project to the class.

Nutrition Honours

Students who have completed the three year Bachelor of Science (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

Students in this strand enrol in and complete:

NUTR 4001 Clinical Nutritional Science A

NUTR 4002 Clinical Nutritional Science B

The contact hours per week are a minimum of 15 and during intensive practicals will be 35. With problem based learning it is expected that a student will need to spend minimum of 20 h in self-directed learning.

At the completion of this course students will be able:

- to describe the pathophysiology and biochemistry of disease processes where nutrition is an important part of prevention and/or treatment;
- to construct appropriate treatment regimes and prevention strategies for these diseases using their nutritional science knowledge.

Nutrition Research

Students in this strand enrol in and complete:

NUTR 4101 Nutrition Research A

NUTR 4102 Nutrition Research B

NUTR 4103 Nutrition Research C

NUTR 4103 Nutrition Research D

Students will be involved in full-time research under the supervision of a staff member within the Human Nutrition unit, the Department of Biochemistry 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.

■ Combined Science/Law degrees (BSc/LLB)

Summary of requirements

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

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

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 on page 13, and 48 credit points from Law units of study set out in Table II: Law units of study on page 121, including:

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

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

For commencing 2002 students, Law units of study are taken in the following sequence:

- in the first year of attendance the student will take LAWS 1006, LAWS 1008 and LAWS 1010
- in the second year of attendance the student will take LAWS 1002, LAWS 1003 and LAWS 1009
- in the third year of attendance the student will take LAWS 3000 and Law, Lawyers and Justice.

In the combined Science/Law course students will spend the first three years on the main University grounds during which time the Science degree is completed along with the equivalent of one year's study towards the Law degree. The remainder of the course will be completed at the Law School in the city (St James campus) over a period of two years. Full details of the units of study to be completed during this time are included in the

Faculty of Law handbook. General enquiries about the combined Science/Law course can be directed to staff in the Faculty of Science Office.

BSc (Advanced)/LLB and BSc (Advanced Mathematics)/LLB

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 16 credit points of intermediate units of study 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 also 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.

Honours

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

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

Universities Admissions Index (UAI)

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

Degree resolutions

See chapter 5.

Table II: Law units of study

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|-----------------|---------------|----------------|----------------|-------------|
| LAWS 1006 Legal Institutions | 6 | <i>NB: Unit is part of the Combined Law program.</i> | | | | | 1, Summer |
| LAWS 1010 Torts | 6 | N LAWS 3001 Torts. | | | | | 2, Summer |
| <i>NB: Unit is part of the Combined Law program for students commencing in 2002.</i> | | | | | | | |
| LAWS 1008 Legal Research | 0 | | | | | | 1,2 |
| LAWS 1002 Contracts | 8 | | | | | | 1,2, Summer |
| LAWS 1003 Criminal Law | 8 | | | | | | 1,2 |
| LAWS 1009 Legal Writing | 0 | | | | | | 1,2 |
| LAWS 3000 Federal Constitutional Law | 10 | <i>NB: Unit is part of the Combined Law program.</i> | | | | | 2 |
| LAWS 3002 Law, Lawyers and Justice | 10 | <i>NB: Permission required for enrolment. Part of the combined degree.</i> | | | | | 1 |

■ Law units of study

LAWS 1006 Legal Institutions

6 credit points. Ms Jenni Millbank (Convenor). Semester: 1, Summer. Classes: One 1 hr lecture & Two 2 hr seminars per week.

NB: Unit is part of the Combined Law program.

This unit of study provides a foundation core for the study of law. We aim to provide a practical overview of the Australian legal system, an introduction to the skills of legal reasoning and analysis which are necessary to complete your law degree, and an opportunity for critical engagement in debate about the role of law in our lives.

The course will introduce students to issues such as:

- the development of judge made and statute law
- the relationship between courts and parliament
- the role and function of courts, tribunals and other forms of dispute resolution
- understanding and interrogating principles of judicial reasoning and statutory interpretation
- the relationship between law, government and politics
- what are rights in Australian law, where do they come from and where are they going

We will have a particular focus on indigenous Australia in exploring many of these issues, for example through the landmark Mabo decision.

LAWS 1010 Torts

6 credit points. Ms Barbara McDonald (Convenor). Semester: 2, Summer. Classes: Two 2 hr seminars per week. Prohibition: LAWS 3001 Torts.

NB: Unit is part of the Combined Law program for students commencing in 2002.

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, detainee and conversion)
- (f) Trespass to land;
- (g) The action on the case for intentional injury;
- (h) Defences to trespass, including consent, intellectual disability, childhood, necessity and contributory negligence;
- (i) Development and scope of the modern tort of negligence, including detailed consideration of duty of care, breach of duty, causation and remoteness of damage and assessment of damages;
- (j) Injuries to relational interests, including compensation to relatives of victims of fatal accidents;
- (k) Concurrent and vicarious liability;
- (l) Defences to negligence;
- (m) Breach of statutory duty;
- (n) Nuisance; and
- (o) Liability for animals.

LAWS 1002 Contracts

8 credit points. Mr Saul Fridman. Semester: 1,2, Summer. Classes: Two 2 hr seminars per week.

February Semester classes are for students in Combined Law and July Semester classes are for students in Graduate Law.

Contract law provides the legal background for transactions involving the supply of goods and services and is, arguably the most significant means by which the ownership of property is transferred from one person to another. It vitally affects all members of the community and a thorough knowledge of contract law is essential to all practising lawyers. In the context of the law curriculum as a whole, Contracts provides background which is assumed knowledge in many other units.

The aims of the unit are composite in nature. The central aim is to provide an understanding of the basic principles of the common law, equity and statutes applicable to contracts. A second aim is to provide students an opportunity to critically evaluate and make normative judgments about the operation of the law. As Contracts is basically a case law unit, the final aim of

the unit of study is to provide experience in problem solving through application of the principles derived from decided cases. Successful completion of this unit of study is a prerequisite to the option Advanced Contracts.

LAWS 1003 Criminal Law

8 credit points. Professor Mark Findlay (Convenor). Semester: 1,2. Classes: Two 2 hr seminars per week.

February Semester classes are for students in Graduate Law and July Semester classes are for students in Combined Law.

The Graduate Law class will commence in Week 2, to accommodate the Legal Institutions intensive. This unit of study is designed to assist students in developing the following understandings:

- (1) A critical appreciation of certain key concepts which recur throughout the substantive criminal law.
- (2) A knowledge of the legal rules in certain specified areas of criminal law.
- (3) A preliminary understanding of the working criminal justice system as a process and the interaction of that process with the substantive criminal law.
- (4) A preliminary knowledge of how the criminal law operates in its broader societal context.

The understandings referred to in the foregoing paragraphs will have a critical focus and will draw on procedural, substantive, theoretical and empirical sources. Race, gender, class and the interaction of these factors will be key themes.

LAWS 1008 Legal Research

No credit points. Mr Graeme Coss (Convenor). Semester: 1, 2. Classes: 1 hr per week over eleven weeks for Combined Law; 2hrs per week over seven weeks for Graduate Law.

This unit is a compulsory component of the Bachelor of Laws degree.

- Combined Law students undertake tuition at the Law School in their first year, with classes offered in either first or second semester depending on timetabling. The semester 1 'host' law unit will be Legal Institutions, and in semester 2 the 'host' law unit will be Torts.
 - Graduate Law students undertake tuition in first semester of the first year. The 'host' substantive law subject will be Criminal Law.
- The subject Legal Research aims:
- to promote the proficient use by all students of a law library;
 - to introduce students to major Australian legal research aids, both in hard-copy and electronic format, and to discourage dependency;
 - to provide students with practice in finding and analysing relevant primary and secondary materials;
 - to promote efficient and effective research methods.

Legal Research is graded on a Pass/Fail basis. Attendance at all classes is mandatory. Classes will be of one hour duration, one per week, for eleven weeks for Combined Law students; of two hours duration, one per week, for seven weeks for Graduate Law students. Numbers will be limited to a maximum of 16 in each class. There will be continuous assessment throughout the semester. Also the 'host' law subject will require students to complete a research assignment, and this will obviously be marked partly with research skills in mind.

LAWS 1009 Legal Writing

No credit points. Semester: 1, 2. Classes: one 2 hr seminar per semester.

Students are required to satisfactorily complete Legal Writing. This unit requires attendance at a legal writing seminar which is taught in conjunction with a host unit (Contracts for Combined students, and Criminal Law for Law School students). Class times will be made available early in the semester. The seminar will address common issues in legal writing at this level. Writing strategies will be developed in the context of preparing for the written assessment task in the host subject.

Legal Writing is graded on a Pass/Fail basis. Attendance at the seminar is mandatory.

LAWS 3000 Federal Constitutional Law

10 credit points. Dr Isabel Karpin (Convenor). Semester: 2. Classes: Two 2 hr seminars per week.

NB: Unit is part of the Combined Law program.

This unit of study aims to achieve an understanding of the principles of Australian constitutional law. The unit commences with a development of an understanding of Australia's constitutional independence, parliamentary sovereignty, indigenous rights and the concepts of representative and

responsible government. Further topics covered include federalism (including the external affairs power and the relationship between Commonwealth and state laws); economic and financial power and relations (including the corporations power, the trade and commerce power, freedom of interstate trade, and excise); the doctrine of separation of powers and judicial power of the Commonwealth; express and implied constitutional rights; and principles of constitutional interpretation. The unit aims to develop a capacity to evaluate the principles critically, with regard to political theory and the social context within which cases have been decided.

LAWS 3002 Law, Lawyers and Justice

10 credit points. Mr Bernard Dunne (convenor). **Semester: 1. Classes:** Two 2 hr seminars per week.

NB: Permission required for enrolment. Part of the combined degree

As for graduate law, LAWS 1001

■ Combined Science/Arts & Arts/ Science degrees

Summary of requirements

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

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

Enrolment guide

To qualify for the award of the pass degrees in the BA/B Sc 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 100 credit points from junior units of study
- a major in a Science area
- at least 72 credit points of senior units of study in Arts subject areas, including a major from Part A of the table of undergraduate units of study in the Faculty of Arts.

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

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

- include no more than 48 credit points from junior units of study
- include at least 16 credit points of intermediate units of study at either the advanced level or as TSP units
- 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
- units of study taken must include 12 credit points of Mathematics and Statistics.
- maintain in intermediate and senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

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 no more than 48 credit points from junior units of study
- include at least 16 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
- 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.
- maintain in intermediate and senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

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.

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.

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

Universities Admissions Index (UAI)

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

Degree resolutions

See chapter 5.

■ Combined Engineering/Science degrees

Summary of requirements

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

- 80 credit points from Science subject areas and 160 credit points from prescribed Engineering units of study;
- a major in a Science area.

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 56 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
- 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))
- maintain in intermediate and senior Science units of study an average mark of 65 or greater in each year of enrolment.

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

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.

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

Universities Admissions Index (UAI)

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

Degree resolutions

See chapter 5.

■ Combined Science/Engineering degrees

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, of which no more than 12 credit points are from units of study with the grade of Pass (Concessional)
- 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.

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:

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

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 80 credit points of intermediate/Senior Science units of study
- 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))

- maintain in Intermediate and Senior Science units of study an average mark of 65 or greater in each year of enrolment.

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 40 but less than 48 credit points in the prescribed time limits may in the following year of enrolment in the BE complete the remaining units to satisfy the requirements of the Faculty of Science. Students who complete less than 40 credit points may apply to be readmitted to the degree, subject to Resolutions relating to credit transfer.

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

Degree resolutions

See chapter 5.

■ Combined Science/Commerce degrees

Summary of requirements

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

- 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 (B Sc), not including those listed in (b), and
 - (b) 12 credit points in Junior units of study from the subject area of Econometrics or the following combination of Mathematics and Statistics units of study: MATH 1005/1905 and either MATH 1003/1903 or MATH 1004/1904 and STAT 2002 and STAT 2004;
 - (c) 12 credit points in Junior units of study from each of Accounting and Economics;
 - (d) at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
 - (e) at least 96 credit points from Science subject areas;
- no more than 100 credit points from junior units of study
- at least 64 credit points of senior units of study in Economics and Business subject areas, and
- a major in a Science area, and two majors in Economics and Business subject areas.

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

- include no more than 48 credit points from junior Science units of study
- include at least 16 credit points of intermediate units of study at either the advanced level or as TSP units
- 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
- units of study taken must include 12 credit points of Mathematics and Statistics.
- maintain in intermediate and senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

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 no more than 48 credit points from junior Science units of study
- include at least 16 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
- 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.

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

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.

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.

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

Universities Admissions Index (UAI)

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

Degree resolutions

See chapter 5.

■ Combined Nursing/Science degrees

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. A student may proceed concurrently to the degrees of Bachelor 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
- 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
- no more than 60 credit points from Junior units of study
- at least 132 credit points of units of study listed in the table of units for the degree of BN.

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

- include no more than 48 credit points from junior Science units of study
- include at least 16 credit points of intermediate units of study at either the advanced level or as TSP units
- 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
- units of study taken must include 12 credit points of Mathematics and Statistics
- maintain in intermediate and senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

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 no more than 48 credit points from junior units of study
- include at least 16 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
- 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
- maintain in intermediate and senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

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.

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.

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

Universities Admissions Index (UAI)

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

Degree resolutions

See chapter 5.

■ Combined Education/Science degrees

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. A student may proceed concurrently to the degrees of Bachelor of Education and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics) or Bachelor of Science (Psychology)

Enrolment guide

BEd (Secondary: Science)/BSc

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

- at least 96 credit points from Science subject areas and 132 credit points from prescribed Education units of study
- at least 12 credit points from the Science subject areas of Mathematics and Statistics
- at least 24 credit points of junior units of study from at least two Science subject areas other than Mathematics or Statistics
- a major in a Science area
- a major in Education
- at least 32 credit points of units of study in Methods and Practice of Teaching
- 32 credit points in Teaching and Learning including successful completion of the practicum.

BEd (Secondary: Mathematics)/BSc

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

- at least 96 credit points from Science subject areas and 132 credit points from prescribed Education units of study
- at least 12 credit points from the Science subject areas of Mathematics and Statistics
- at least 24 credit points of junior units of study from at least two Science subject areas other than Mathematics or Statistics
- a major in the Science subject area of Mathematics or Statistics
- a major in Education
- at least 32 credit points of units of study in Methods and Practice of Teaching
- 32 credit points in Teaching and Learning including successful completion of the practicum.

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

- include no more than 48 credit points from junior Science units of study
- include at least 16 credit points of intermediate units of study at either the advanced level or as TSP units
- 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
- units of study taken must include 12 credit points of Mathematics and Statistics.
- maintain in intermediate and senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

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 no more than 48 credit points from junior Science units of study

- include at least 16 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
- 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.
- maintain in intermediate and senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

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.

BEd(Secondary)/BSc (Psychology)

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

Years I to III

- 48 credit points from prescribed Education units of study
- in Year I, 12 credit points from Junior units of study in Mathematics and Statistics, Psychology and either Chemistry or Physics
- in Year II, 16 credit points from Intermediate units of study in Psychology and 16 credit points from Intermediate units of study in Mathematics and Statistics, Chemistry or Physics
- in Year III, 32 credit points from Senior units of study in Psychology

Years IV & V

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

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.

Supervision of all students in the combined degrees will be the responsibility of the Faculty of Education.

Universities Admissions Index (UAI)

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

Degree resolutions

See chapter 5.

■ Bachelor of Liberal Studies (BLibStud) degree program

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 Faculties of Arts and Sciences jointly administer the degree. The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5 of this Handbook) which should be read by all intending candidates.

Enrolment guide

B Liberal Studies

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

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

All students, notwithstanding any credit transfer, must complete a major from each of the Faculties of Arts and Science taken at The University of Sydney.

A major in the Faculty of Arts requires 32 credit points from Senior units of study in an Arts subject area listed in Part A of the Table of units of study for the Bachelor of Arts, including any units of study specified in the Table of units of study as compulsory for that major, or of at least 16 senior credit points from a Part A subject area combined with no more than 16 senior credit points from units of study approved by the Dean of the Faculty of Arts for cross-listing with the major, except in the case of Semiotics, Medieval Studies, and European Studies where the entire major may be cross-listed.

A major in a the Faculty of Science 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 I as compulsory for that major. A student may not count a unit of study toward more than one major. (A major in Psychology requires 16 credit points from Intermediate and 32 credit points from Senior units of study in Psychology).

Students are required to nominate their choice of majors no later than the beginning of the fifth semester of candidature, but with the permission of the Deans of Arts and Science as appropriate, may change the majors during the candidature.

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

Units of study completed at The University of Sydney Summer School which correspond to units of study in Parts A and B of the Table of units of study for the Bachelor of Arts or from the Table of Undergraduate units of study I for the Bachelor of Science may be credited towards the course requirements.

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.

B Liberal Studies (International)

The requirements for this stream of the degree are the same as those for the BLibStud except that a minimum of 24 credit points (one semester equivalent) of study must be completed at an overseas university while enrolled as an exchange student as part of The University of Sydney Exchange Program. The Exchange Program is usually undertaken in the second or third year of enrolment, and students will comply with the rules of and be

under the administration of the Exchange Program during the period of exchange. To qualify for participation in the Exchange Program a student must have completed at least 48 credit points towards the BLibStud and have an average mark of 65 or greater over all units of study completed.

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

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

Honours

There will be honours courses in all Arts and Science subject areas.

- To qualify to enrol in honours, students must have:
- completed the requirements for the award of the Bachelor of Liberal Studies with the grade of Distinction or High Distinction, or be a pass graduate holding an equivalent qualification from another institution;
 - completed a major at credit average in the subject area relating to the intended honours course (or equivalent at another institution);
 - satisfy any additional criteria set by the Head or Chair of Department concerned

To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in the Table of units of study for the Bachelor of Arts or in the Table of Undergraduate units of study for the Bachelor of Science, as prescribed by the Head or Chair of Department concerned.

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

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.

The maximum enrolment in a single Arts subject area is 18 Junior credit points and 64 Senior credit points.

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 65 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.

Universities Admissions Index (UAI)

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

Degree Resolutions

See chapter 5.

■ Bachelor of Science (Liberal Studies) units of study

ENGL 1005 Language and Image

6 credit points. Dr Williams. Semester: 1,2. Classes: 1 one-hour lecture & 1 two-hour seminar. Prohibition: ENGL 1050. Assessment: 1500 word essay, 1000 assignment, oral presentation and 1 hour exam.

In this unit you will study the construction of texts in different media, of language and image, using Michael Ondaatje's novel 'The English Patient', and the film of the novel, as a particular focus. A range of other literary, academic and media texts will be considered. You will learn to analyse some methods of constructing meaning in language and images, taught in small-group workshops. This detailed textual work will assist you to improve your own academic writing. You will also be introduced, in lectures, to more descriptive topics, such as social shifts in relations between language and image and in the cultural practices which were associated with them, such as narrative organisation, categories of text, and social agency and power in the production of text.

Textbooks

A Resource Book will be available from the University Copy Centre. An anthology of Australian short stories will be specified.

LNGS1005 Introduction to English Linguistics

6 credit points. Dr J Simpson. **Semester: 1. Classes:** (three 1 hr lectures & one 1 hr tutorial)/wk. **Prohibition:** may not be taken as well as LNGS 1001 or LNGS 1004. **Assessment:** one 3hr exam, various written assignments or essays.

This course looks at the structure of English from the point of view of modern structural linguistics and focusses on written and spoken academic English.. It will be especially valuable to non-native speakers of English in giving them an overview of how and why English works the way it does. Topics covered include: English phonetics; intonation; word types; count and mass nouns; verb types and sentence structures; auxiliary verbs and tense and mood; voice, topicality and information structure.

■ Bachelor of Computer Science and Technology (BCST) degree program

Summary of requirements

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

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 92 credit points from Table III associated with the degree of Bachelor of Information Technology, including:
 - (a) at least 20 credit points from HI(i)
 - (b) at least 8 credit points from in (ii)
 - (c) at least 36 credit points from HI (iv) and/or HI (v)
 - (d) at least 8 credit points from EI (v)
- at least 16 credit points from the Science subject areas of Mathematics and Statistics
- at least 40 credit points from units of study which have codes starting other than INFO, COMP, ISYS, MULT, NETS, SOFT
- no more than 18 credit points from units of study in which a grade of Pass (Concessional) has been awarded
- at most 72 credit points from Junior units of study
- a major in in Information Technology subject area (which requires completion of units of study as included in Table IJJA associated with the Bachelor of Information Technology)

You should also note the following:

- units of study completed at The University of Sydney Summer School which correspond to units of study in the table of undergraduate units of study may be credited towards the course requirements
- a standard full time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part time
- you may not enrol in more than 32 credit points in any one semester without permission
- in order to enrol in a unit of study, you have to meet any 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 are limited (details can be obtained from Departments)
- a student may not enrol without first obtaining permission from the Dean in additional units of study once the degree requirements of 144 credit points have been satisfied
- 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.

Honours

There will be honours courses in Computer Science and Information Systems. Please refer to Honours in the Faculty of Science on page 157.

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. Universities Admissions Index (UAI)

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

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.

Degree resolutions

See chapter 5.

■ Bachelor of Computer Science and Technology (Advanced) degree program

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.

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:

- no more than 48 credit points from junior units of study
- at least 16 credit points of intermediate units of study from Table HJ (i) or HJ (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 HI (iv) and/or HI (v) 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 Progression requirements

In order to enrol in the necessary number of Advanced units of study specified, students must achieve at least Distinction performance in the pre-requisite 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 other degree programs if their mark averaged over all attempted units of study is 75 or greater, and they are able to enrol in the required number of advanced level units or TSP units.

Degree resolutions

See chapter 5.

■ Bachelor of Information Technology (BIT) degree program

Summary of requirements

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

Enrolment guide

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 are from Table HI: Bachelor of Information Technology on page 130, including
 - (a) at least 20 credit points from HI (i) with results of Credit or better
 - (b) at least 16 credit points from IH (ii) with results of Credit or better
 - (c) at least 72 credit points from ni (iv) and/or HI (v)
 - (d) either INFO 3600 or INFO 4900
- at least 16 credit points are from the Science subject areas of Mathematics and/or Statistics
- at least 40 credit points are from units which have codes starting other than INFO, COMP, ISYS, MULT, NETS, SOFT

- at most 72 credit points are from Junior units
 - at least 84 credit points are 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 Systems and Computational Science as defined in Table EIA: Bachelor of Information Technology majors on page 135 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 time¹ -
 - you may not enrol in more than 32 credit points in any one semester without permission
 - in order to enrol in a unit of study, you have to meet any 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 are limited (details can be obtained from Departments)
 - a student may not enrol without first obtaining permission from the Dean in additional units of study once the degree requirements of 192 credit points have been satisfied
 - 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.

Honours

The BIT may be awarded as an Honours degree. Students may enroll in the Honours course after completion of 144 credit point, if they meet the specified performance conditions. There will be Honours courses in Principles of Computer Science, Information Systems, Multimedia Technology, Networks and Systems, Software Development and Digital Systems. Please refer to Honours in the Faculty of Science on page 157.

Universities Admissions Index (UAI)

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

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.

Degree resolutions

See chapter 5.

Table III: Bachelor of Information Technology

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--------------------------------------|--------------------------------------|----------------------|--|---------------|----------------|----------------|-----------|
| (i) Core Software Development | | | | | | | |
| ■ Junior units of study | | | | | | | |
| SOFT 1001 | Software Development 1 | 6 | A HSC Mathematics Extension 1. N May not be counted with SOFT 1901 or COMP (1001 or 1901). | | | | 1,2 |
| SOFT 1901 | Software Development 1 (Adv) | 6 | A HSC Mathematics Extension 1. P UAI at least that for acceptance into BSc (Advanced) degree program. Requires departmental permission. N May not be counted with SOFT 1001 or COMP (1001 or 1901). <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| SOFT 1002 | Software Development 2 | 6 | Q SOFT (1001 or 1901) or COMP (1001 or 1901). N May not be counted with SOFT 1902 or COMP (1002 or 1902). | | | | 1,2 |
| SOFT 1902 | Software Development 2 (Adv) | 6 | Q Distinction in SOFT (1001 or 1901) or COMP (1001 or 1901). N May not be counted with SOFT 1002 or COMP (1002 or 1902). <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| ■ Intermediate units of study | | | | | | | |
| SOFT 2001 | Concurrent Programming | 4 | Q SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with SOFT 2901. | | | | 2 |
| SOFT 2901 | Concurrent Programming (Adv) | 4 | Q Distinction in [SOFT (1002 or 1902 or 2004 or 2904) or COMP (1002 or 1902)]. N May not be counted with SOFT 2001. | | | | 2 |
| SOFT 2004 | Software Development Methods 1 | 4 | Q SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with SOFT 2904 or COMP (2004 or 2904). | | | | 1 |
| SOFT 2904 | Software Development Methods 1 (Adv) | 4 | Q Distinction in [SOFT (1002 or 1902 or 2001 or 2901) or COMP (1002 or 1902)]. N May not be counted with SOFT 2004 or COMP (2004 or 2904). | | | | 1 |
| (ii) Foundation electives | | | | | | | |
| ■ Intermediate units of study | | | | | | | |
| COMP 2003 | Languages and Logic | 4 | P MATH 1004 or 1904 or Econometrics or MATH 2009. Q SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with COMP 2903. | | | | 2 |
| COMP 2903 | Languages and Logic (Advanced) | 4 | P MATH 1004 or 1904 or Econometrics or MATH 2009. Q Distinction in SOFT (1902 or 1002) or COMP (1001 or 1901 or 2111 (jr2811)). N May not be counted with COMP 2003. | | | | 2 |
| COMP 2111 | Introduction to Algorithms 1 | 4 | Q (SOFT (1002 or 1902) or COMP (1002 or 1902)) and MATH (1004 or 1904 or 2009). N May not be counted with COMP (2811 or 2002 or 2902). | | | | 1 |
| COMP 2811 | Introduction to Algorithms 1 (Adv) | 4 | Q Distinction in [SOFT (1002 or 1902) or COMP (1002 or 1902 or 2003 or 2903)]. N May not be counted with COMP (2111 or 2002 or 2902). | | | | 1 |
| INFO 2000 | System Analysis and Design | 4 | Q INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). | | | | 1, Summer |
| INFO 2005 | Personal Database Tools | 4 | Q INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). N May not be counted with COMP 3005 or 3905. | | | | 2 |

Table III: Bachelor of Information Technology (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|----------------------|---|---------------|---|---|----------|
| INFO 2007 Distributed Information Systems | 4 | Q | ISYS 2006. | | | | 2 |
| ISYS 2006 Information Systems in Organisations | 4 | A | Use of basic PC tools such as spreadsheets, Internet, email and word processing software. | Q | INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). | NB: Enrolment Restriction: Entry is restricted to students who have a credit or better in at least one of the qualifying units. | 1 |
| NETS 2008 Computer System Organisation | 4 | Q | SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). | N | May not be counted with NETS 2908 or COMP (2001 or 2901). | | 1 |
| NETS 2908 Computer System Organisation (Adv) | 4 | Q | Distinction in SOFT (1001 or 1901 or 1002 or 1902) or COMP (1001 or 1901 or 1002 or 1902) or NETS (2009 or 2909). | N | May not be counted with NETS 2008 or COMP (2001 or 2901). | | 1 |
| NETS 2009 Network Organisation | 4 | Q | SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). | N | May not be counted with NETS 2909. | | 2 |
| NETS 2909 Network Organisation (Adv) | 4 | Q | Distinction in SOFT (1001 or 1901 or 1002 or 1902) or COMP (1001 or 1901 or 1002 or 1902) or NETS (2008 or 2908). | N | May not be counted with NETS 2009. | | 2 |

(iii) Junior and Intermediate IT-related electives

■ Junior units of study

| | | | | | | | |
|---|---|---|---|--|--|--|-----------|
| ACCT 1003 Financial Accounting Concepts | 6 | N | Terminating unit. Cannot be counted with ACCT 1001 and ACCT 1002. | | | | 1 |
| ACCT 1004 Management Accounting Concepts | 6 | N | Terminating unit. Cannot be counted with ACCT 1001 and ACCT 1002. | | | | 2 |
| ARIN 1000 History and Theory of Informatics | 6 | c | ISYS 1003. NB: Permission required for enrolment. Available to BA Informatics students only. | | | | 1 |
| CLAW 1001 Commercial Transactions A | 6 | | | | | | 1,2 |
| CLAW 1002 Commercial Transactions B | 6 | P | CLAW 1001. | | | | 2 |
| COSC 1001 Computational Science in Matlab | 3 | N | May not be counted with COSC 1901. | | | | 2 |
| COSC 1901 Computational Science in Matlab (Adv) | 3 | p | UAI of at least 90, or COSC 1902, or a distinction or better in COSC 1002, SOFT 1001, 1002, 1901 or 1902. N May not be counted with COSC 1001. NB: Permission required for enrolment. | | | | 2 |
| COSC 1002 Computational Science in C | 3 | N | May not be counted with COSC 1902. | | | | 2 |
| COSC 1902 Computational Science in C (Adv) | 3 | P | UAI of at least 90, or COSC 1901, or a distinction or better in COSC 1001, SOFT 1001, 1002, 1901 or 1902. N May not be counted with COSC 1002. NB: Permission required for enrolment. | | | | 2 |
| DECO 1001 Digital Image Representation and Design | 3 | | NB: Permission required for enrolment. | | | | 1 |
| DECO 1002 Web-based Design Information Systems | 4 | A | DECO 1001 Digital Image Representation and Design or equivalent. NB: Permission required for enrolment. | | | | 2 |
| DECO 1003 CAD Modelling | 4 | | NB: Permission required for enrolment. | | | | 2 |
| DECO 1004 Understanding Design | 3 | | | | | | 1 |
| ELEC 1101 Foundations of Computer Systems | 6 | A | HSC Maths Extension 1. | | | | 1, Summer |
| ELEC 1102 Foundations of Electronic Circuits | 6 | A | HSC Physics. p Advisory Prerequisite: MATH 1001 Differential Calculus. | | | | 2 |
| ISYS 1003 Foundations of Information Technology | 6 | N | May not be counted with INFO 1000. | | | | 1,2 |
| MATH 1011 Life Sciences Calculus | 3 | A | HSC Mathematics. N May not be counted with MATH 1001 or 1901 or 1906. May not be counted by students enrolled in the BSc/BCom combined award course. | | | | 1 |
| MATH 1012 Life Sciences Algebra | 3 | A | HSC Mathematics. N May not be counted with MATH 1002 or 1902. May not be counted by students enrolled in the BSc/BCom combined award course. | | | | 2 |
| MATH 1013 Differential and Difference Equations | 3 | A | HSC Mathematics. N May not be counted with MATH 1003 or 1903 or 1907. May not be counted by students enrolled in the BSc/BCom combined award course. | | | | 2 |
| MATH 1015 Life Science Statistics | 3 | A | HSC Mathematics. N May not be counted with MATH 1905 or 1005 or STAT 1021 or 1022. May not be counted by students enrolled in the BSc/BCom combined award course. | | | | 1, Summer |
| MATH 1001 Differential Calculus | 3 | A | HSC Mathematics Extension 1. N May not be counted with MATH 1011 or 1901 or 1906. | | | | 1, Summer |
| MATH 1901 Differential Calculus (Advanced) | 3 | A | HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. N May not be counted with MATH 1011 or 1001 or 1906. | | | | 1 |
| MATH 1002 Linear Algebra | 3 | A | HSC Mathematics Extension 1. N May not be counted with MATH 1902 or 1012. | | | | 1, Summer |
| MATH 1902 Linear Algebra (Advanced) | 3 | A | HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. N May not be counted with MATH 1002 or 1012. | | | | 1 |

Table III: Bachelor of Information Technology (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|---|-----------------|---------------|----------------|----------------|-----------|
| MATH 1003 Integral Calculus and Modelling | 3 | A HSC Mathematics Extension 2 or MATH 1001. N May not be counted with MATH 1013 or 1903 or 1907. | | | | | 2, Summer |
| MATH 1903 Integral Calculus and Modelling Advanced | 3 | A HSC Mathematics Extension 2 or Credit or better in MATH 1001/1901. N May not be counted with MATH 1003 or 1013 or 1907. | | | | | 2 |
| MATH 1004 Discrete Mathematics | 3 | A HSC Mathematics Extension 1. N May not be counted with MATH 1904. | | | | | 2, Summer |
| MATH 1904 Discrete Mathematics (Advanced) | 3 | A HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. N May not be counted with MATH 1004. | | | | | 2 |
| MATH 1005 Statistics | 3 | A HSC Mathematics. N May not be counted with MATH 1905 or 1015 or ECMT 1010 or 1020 or STAT 1021 or 1022. | | | | | 2, Summer |
| MATH 1905 Statistics (Advanced) | 3 | A HSC Mathematics Extension 2 or result in Band E2 or better of HSC Mathematics Extension 1. N May not be counted with MATH 1005 or 1015 or ECMT 1010 or 1020 or STAT 1021 or 1022. | | | | | 2 |
| ■ Intermediate units of study | | | | | | | |
| ACCT 2003 Accounting and Business Info Systems | 8 | P ACCT 1002 or ACCT 1004. | | | | | 2 |
| CLAW 2006 Legal Issues for eCommerce | 8 | P 48 credit points at level 1000. | | | | | 1,2 |
| DECO 2001 3D Modelling and Photorealism | 4 | | | | | | 1 |
| DECO 2002 Interactive Multimedia Design | 4 | | | | | | 1 |
| DECO 2003 Knowledge-Based Design | 4 | A COMP 1001 Introductory Programming or equivalent. | | | | | 1 |
| DECO 2004 Product Modelling | 4 | A INFO 2005 Personal Database Tools or equivalent. | | | | | 2 |
| DECO 2005 Computer-Supported Collaborative Design | 4 | | | | | | 2 |
| DECO 2601 Design Grammars | 4 | A DECO 2003 and either COMP 1001 or SOFT 1001. NB: Permission required for enrolment. | | | | | 2 |
| DECO 2602 Evolutionary Design | 4 | A COMP 1001 or SOFT 1001. NB: Permission required for enrolment. | | | | | 2 |
| DECO 2603 Agents in Design | 4 | A COMP 1001 or SOFT 1001. NB: Permission required for enrolment. | | | | | 1 |
| ELEC 2101 Circuit Analysis | 4 | P Advisory Prerequisite: ELEC 1102 Foundations of Electronic Circuits. N ELEC 2001 Electrical and Electronic Engineering, and ELEC 2002 Electrical Technology, and ELEC 2003 Electrical and Electronic Engineering A. | | | | | 1 |
| ELEC 2301 Signals and Systems | 4 | P Advisory Prerequisite: MATH 1001 Differential Calculus, and MATH 1002 Linear Algebra, and MATH 1003 Integral Calculus and Modelling. N Prohibition: MATH 3019 Signal Processing and MATH 3919 Signal Processing (Adv). | | | | | 2 |
| ELEC 2401 Introductory Electronics | 4 | P Advisory Prerequisite: ELEC 1102 Foundations of Electronic Circuits. N ELEC 2001 Electrical and Electronic Engineering, and ELEC 2002 Electrical Technology, and ELEC 2003 Electrical and Electronic Engineering A. | | | | | 2 |
| ELEC 2601 Microcomputer Systems | 4 | P Advisory Prerequisite: ELEC 1101 Foundations of Computer Systems. N ELEC 2001 Electrical and Electronic Engineering and ELEC 2003 Electrical and Electronic Engineering A. | | | | | 1 |
| MATH 2001 Vector Calculus and Complex Variables | 4 | P MATH (1001 or 1901 or 1906) and (1002 or 1902) and (1003 or 1903 or 1907). N May not be counted with MATH 2901. | | | | | 1, Summer |
| MATH 2901 Vector Calculus and Complex Var (Adv) | 4 | P MATH (1901 or 1906 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or 1907 or Credit in 1003). N May not be counted with MATH 2001. | | | | | 1 |
| MATH 2002 Matrix Applications | 4 | P MATH 1002 or 1902 or Distinction in MATH 1012. N May not be counted with MATH 2902. | | | | | 1, Summer |
| MATH 2902 Linear Algebra (Advanced) | 4 | P 12 credit points of Junior Mathematics, including MATH 1902 or Credit in 1002. N May not be counted with MATH 2002. | | | | | 1 |
| MATH 2003 Introduction to Mathematical Computing | 4 | P MATH (1001 or 1901 or 1906) and (1002 or 1902) and (1003 or 1903 or 1907). N May not be counted with MATH 2903. | | | | | 1 |
| MATH 2903 Intro to Mathematical Computing (Adv) | 4 | P MATH (1901 or 1906 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or 1907 or Credit in 1003). N May not be counted with MATH 2003. | | | | | 1 |
| MATH 2004 Lagrangian Dynamics | 4 | P MATH 2001 or 2901. N May not be counted with MATH 2904. | | | | | 2 |
| MATH 2904 Lagrangian Dynamics (Advanced) | 4 | P MATH 2901 or Credit in MATH 2001. N May not be counted with MATH 2004. | | | | | 2 |
| MATH 2005 Fourier Series & Differential Equations | 4 | P MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907). N May not be counted with MATH 2905. | | | | | 2, Summer |
| MATH 2905 Mathematical Methods (Advanced) | 4 | P MATH 2901 or Credit in MATH 2001. N May not be counted with MATH 2005. | | | | | 2 |
| MATH 2006 Nonlinear Systems and Chaos Introduction | 4 | P MATH (1001 or 1901 or 1906) and (1002 or 1902) and (1003 or 1903 or 1907) or (Credit in MATH 1011 and 1012 and 1013). N May not be counted with MATH 2906. | | | | | 2 |

Table III: Bachelor of Information Technology (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|--|---------------|----------------|----------------|-----------|
| MATH 2906 Nonlinear Systems and Chaos (Advanced) | 4 | p MATH (1901 or 1906 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or 1907 or Credit in 1003). | N May not be counted with MATH 2006. | | | | 2 |
| MATH 2007 Analysis | 4 | p MATH (1001 or 1901 or 1906) and (1003 or 1903 or 1907) or Distinction average in MATH 1011 and 1013. | N May not be counted with MATH 2907. | | | | 2 |
| MATH 2907 Analysis (Advanced) | 4 | P MATH (1901 or 1906 or Credit in 1001) and (1903 or 1907 or Credit in 1003) (MATH 2901 or 2001 strongly advised). | N May not be counted with MATH 2007. | | | | 2 |
| MATH 2008 Introduction to Modern Algebra | 4 | P MATH 2002 or 2902. | N May not be counted with MATH 2908 or 2918. | | | | 2 |
| MATH 2918 Introduction to Modern Algebra (Adv) | 4 | p MATH 2902. | N May not be counted with MATH 2008 or 2908. | | | | 2 |
| MATH 2009 Graph Theory | 4 | P 6 credit points of Junior Mathematics (at the Distinction level in Life Sciences units). | | | | | 1, Summer |
| MATH 2010 Optimisation | 4 | P MATH (1001 or 1901 or 1906) and (1002 or 1902). | N May not be counted with Econometrics 3510 Operations Research A. | | | | 2 |
| MATH 2033 Financial Mathematics 1 | 4 | p MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) and MATH (1005 or 1905). | N May not be counted with MATH 2933. | | | | 1 |
| MATH 2933 Financial Mathematics 1 (Advanced) | 4 | 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) and MATH (1905 or credit in 1005). | N May not be counted with MATH 2033. | | | | 1 |
| STAT 2001 Statistical Distributions | 4 | p MATH (1001 or 1901 or 1906 or Credit in 1011) and [MATH (1005 or 1905 or 1015) or MATH (1004 or 1904)]. | N May not be counted with STAT 2901. | | | | 1 |
| STAT 2901 Introduction to Probability (Advanced) | 4 | P MATH (1903 or 1907 or Credit in 1003) and MATH (1905 or Credit in 1005). | N May not be counted with STAT 2001. | | | | 1 |
| STAT 2002 Data Analysis | 4 | p MATH 1005 or 1905 or 1015 (or STAT 1021 for Arts students). | | | | | 1 |
| STAT 2003 Estimation Theory | 4 | P STAT 2001 or 2901. | N May not be counted with STAT 2903. | | | | 2 |
| STAT 2903 Estimation Theory (Advanced) | 4 | p STAT 2901 or Credit in STAT 2001. | N May not be counted with STAT 2003. | | | | 2 |
| STAT 2004 Hypothesis Testing | 4 | p STAT 2002. | | | | | 2 |

(iv) Senior and Honours IT-related electives**■ Senior units of study**

Many of the Senior units of study will be available for the first time in 2003. Those planned include: COMP 3111, COMP 3811, COMP 3116, COMP 3816, MULT 3004, MULT 3904, MULT 3018, MULT 3918, MULT 3019, MULT 3919, MULT 3027, MULT 3927, MULT 3028, MULT 3928, NETS 3007, NETS 3907, NETS 3009, NETS 3909, NETS 3016, NETS 3916, NETS 3017, NETS 3917, SOFT 3101, SOFT 3801, SOFT 3102, SOFT 3802, SOFT 3103, SOFT 3803, SOFT 3104, SOFT 3804, SOFT 3105, SOFT 3805. Students are advised to cross reference Table HIA, and to consult the Basser Department of Computer Science or their Web site (www.cs.usyd.edu.au) for further information.

| | | | | | | | |
|--|---|--|--|--------------------------------------|--|--|---|
| ACCT 3005 IT Assurance and Control | 8 | A INFO 1000. | P ACCT 2003. | | | | 1 |
| ACCT 3006 eCommerce Business Models | 8 | A INFO 1000. | P 48 credit points at level 1000. | | | | 2 |
| BIOL 3027 Bioinformatics and Genomics | 6 | Q MBLG (2001 or 2101 or 2901) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. | N May not be counted with BIOL 3927. | | | | 1 |
| COMP 3002 Artificial Intelligence | 4 | P COMP 2003 or 2903 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | N May not be counted with COMP 3902. | | | 1 |
| COMP 3902 Artificial Intelligence (Advanced) | 4 | P COMP 2003 or 2903 and 16 credit points of Intermediate or Senior Computer Science with Distinction average and 8 credit points of Intermediate MATH and/or Statistics and/or Econometrics. | Q COMP 2004 or 2904 or SOFT 2004 or 2904. | N May not be counted with COMP 3002. | | | 1 |
| COSC 3601 Parallel Computing | 4 | A Some familiarity is assumed with Unix and a programming language (eg, C or Fortran). | P At least one of SOFT (2004 or 2904) or COMP (2004 or 2904) or PHYS (3301 or 3901) or MATH 2903 or MATH (3016 or 3916). | | | | 2 |
| ELEC 3303 Digital Signal Processing | 4 | P Advisory Prerequisite: ELEC 2301 Signals and Systems. | N Prohibition: ELEC 4303 Digital Signal Processing. | | | | 1 |
| ELEC 3401 Electronic Devices and Circuits | 4 | P Advisory Prerequisites: ELEC 2401 Introductory Electronics. | | | | | 1 |
| ELEC 3402 Communications Electronics | 4 | P Advisory Prerequisite: ELEC 3401 Electronic Devices and Circuits. | | | | | 2 |
| ELEC 3403 Switching Devices and Electronics | 4 | P Advisory Prerequisite: ELEC 3401 Electronic Devices and Circuits. | | | | | 2 |
| ELEC 3502 Random Signals and Communications | 4 | P Advisory Prerequisite: ELEC 2301 Signals and Systems. | | | | | 1 |
| ELEC 3503 Introduction to Digital Communications | 4 | P Advisory Prerequisite: ELEC 2301 Signals and Systems. | | | | | 2 |

Table III: Bachelor of Information Technology (continued)

| Unit of study | CP | A: Assumed knowledge P: Prerequisite Q: Qualifying C: Corequisite N: Prohibition | Semester |
|---|----|--|----------|
| ELEC 3601 Digital Systems Design | 4 | P Advisory Prerequisite: ELEC 2601 Microcomputer Systems or COMP 2001 Computer Systems. | 2 |
| ELEC 3604 Internet Engineering | 4 | P Advisory prerequisites :ELEC 1101 Foundations of Computer systems, COMP 2002 Design and Data Structures and COMP 2004 Programming Practice. N ELEC 5609 Internet Engineering, COMP 3007 Networked systems. | 2 |
| ELEC 3701 Management for Engineers | 4 | | 1 |
| INFO 3005 Organisational Database Systems | 4 | Q INFO 2005. N May not be counted with INFO 3905 or COMP 3005 or COMP 3905. | 1 |
| INFO 3905 Organisational Database Systems (Adv) | 4 | P 16 credit points of Intermediate or Senior Computer Science units of study with Distinction average. Q INFO 2005. N May not be counted with COMP 3005 or COMP 3905 or INFO 3005. | 1 |
| ISYS 3000 Information Systems Management | 4 | Q INFO 2000 or ISYS 2006. | 2 |
| ISYS 3012 Project Management and Practice | 4 | Q INFO 2000. | 1 |
| ISYS 3015 Analytical Methods for IS Professionals | 4 | P 16 credit points of Intermediate or Senior units of study. Q ISYS 2006 and INFO 2000 and [ARTN 1000 or ENGL (1050 or 1005) or LNCS (1001 or 1002 or 1005) or ECOF (1001 or 1002)]. <i>NB: Enrolment Restriction: Entry is restricted to students who have a credit or better in at least one of the Qualifying units. Alternatively, for 2002 only, a student who has completed ISYS 2006 with a Credit or better, and 24 credit points of Intermediate units of study including Sep pom INFO or ISYS units of study will be also be admitted to the unit.</i> | 1 |
| ISYS 3113 Arts Informatics Systems | 4 | Q INFO 2005. | 1 |
| MATH 3002 Rings and Fields | 4 | P 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2008 or 2908). N May not be counted with MATH 3902. | 1 |
| MATH 3902 Algebra I (Advanced) | 4 | P 12 credit points of Intermediate Mathematics (strongly advise MATH 2902). N May not be counted with MATH 3002. | 1 |
| MATH 3005 Logic | 4 | P (for all but BCST students) 8 credit points of Intermediate Mathematics; (for BCST students) 8 credit points of Intermediate Mathematics or 12 credit points of Junior Mathematics at Advanced level. | 1 |
| MATH 3007 Coding Theory | 4 | P 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902). | 2 |
| MATH 3009 Number Theory | 4 | P 8 credit points of Intermediate Mathematics. | 2 |
| MATH 3010 Information Theory | 4 | P 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901 and some probability theory). | 2 |
| MATH 3016 Mathematical Computing I | 4 | P 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903 or 1906 or 1907. N May not be counted with MATH 3916. | 1 |
| MATH 3916 Mathematical Computing I (Advanced) | 4 | P 8 credit points of Intermediate Mathematics and one of MATH 1903 or 1907 or Credit in MATH 1003. N May not be counted with MATH 3016. | 1 |
| MATH 3019 Signal Processing | 4 | P MATH (2001 or 2901) and MATH (2005 or 2905). N May not be counted with MATH 3919. | 1 |
| MATH 3919 Signal Processing (Advanced) | 4 | P MATH 2905 or Credit in MATH 2005. N May not be counted with MATH 3019. | 1 |
| MATH 3024 Elementary Cryptography and Protocols | 4 | P 12 credit points of Intermediate Mathematics. Strongly advise MATH 2008 or 2908. | 1 |
| MATH 3925 Public Key Cryptography (Advanced) | 4 | P 12 credit points from Intermediate or senior mathematics. Strongly recommend MATH 3902. | 2 |
| PHYS 3301 Scientific Computing | 4 | P 16 credit points of Intermediate units of study in Science Subject Areas. N May not be counted with PHYS 3931. | 1 |
| PHYS 3303 Scientific Visualisation | 4 | P 16 credit points of Intermediate units of study in Science Subject Areas. N May not be counted with PHYS 3933. | 2 |
| STAT 3002 Applied Linear Models | 4 | P STAT 2004 (or STAT 1022 for Arts students) and MATH (1002 or 1902). N May not be counted with STAT 3902. | 1 |
| STAT 3902 Linear Models (Advanced) | 4 | P STAT 2004 and (STAT 2903 or Credit in 2003) and (MATH 2002 or 2902). N May not be counted with STAT 3002. | 1 |
| STAT 3003 Time Series Analysis | 4 | P STAT 2003 or 2903. | 1 |
| STAT 3004 Design of Experiments | 4 | P STAT 3002 or 3902. | 2 |
| ■ Honours units of study | | | |
| Many of the Honours units of study will be available for the first time in 2004. Those planned include: COMP 4021, COMP 4022, COMP 4023, INFO 4000, INFO 4601, INFO 4602, INFO 4603, INFO 4604, MULT 4020, MULT 4029, NETS 4024, NETS 4025, NETS 4026, SOFT 4107, SOFT 4108. Students are advised to cross reference Table IIIA, and to consult the Basser Department of Computer Science or their Web site (www.cs.usyd.edu.au) for further information. | | | |
| ELEC 4302 Image Processing and Computer Vision | 4 | P Advisory Prerequisites: ELEC 2301 Signals and Systems, and ELEC 4303 Digital Signal Processing. <i>NB: Permission required for enrolment.</i> | 2 |
| ELEC 4402 Integrated Circuit Design | 4 | P Advisory Prerequisite: ELEC 3401 Electronic Devices and Circuits. | 1 |

Table III: Bachelor of Information Technology (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---|----|----------------------|---|---------------|----------------|----------------|----------|
| ELEC 4501 Data Communication Networks | 4 | p | Advisory Prerequisites: ELEC 3502 Random Signals and Communications, and ELEC 3503 Introduction to Digital Communications. | | | | 1 |
| ELEC 4502 Digital Communication Systems | 4 | P | Advisory Prerequisites: ELEC 3502 Random Signals and Communications, and ELEC 3503 Introduction to Digital Communications. | | | | 1 |
| ELEC 4503 Error Control Coding | 4 | p | Advisory Prerequisites: ELEC 3502 Random Signals and Communications, and ELEC 3503 Introduction to Digital Communications. | | | | 1 |
| ELEC 4601 Computer Design | 4 | P | Advisory Prerequisites: ELEC 3403 Switching Devices and High Speed Electronics, and ELEC 3601 Digital Systems Design. | | | | 1 |
| ELEC 4602 Real Time Computing | 4 | P | Advisory Prerequisites: ELEC 3601 Digital Systems Design and COMP 3100 Software Engineering. | | | | 1 |
| ELEC 4604 Engineering Software Requirements | 4 | P | Advisory Prerequisite: COMP 3100 Algorithms, COMP 3205 Product Development Project, ELEC 3601 Digital Systems Design. | | | | 2 |
| ELEC 4701 Project Management | 4 | p | Advisory Prerequisite: ELEC 3701 Management for Engineers. | | | | 2 |
| ELEC 5501 Advanced Communication Networks | 4 | P | Advisory Prerequisites: ELEC 3502 Random Signals and Communications, ELEC 3503 Introduction to Digital Communications and ELEC 4501 Data Communication Networks. <i>NB: Permission required for enrolment.</i> | | | | 2 |
| ELEC 5502 Satellite Communication Systems | 4 | p | Advisory Prerequisites: ELEC 3502 Random Signals and Communications, ELEC 3503 Introduction to Digital Communications and ELEC 4502 Digital Communication Systems. | | | | 2 |
| ELEC 5503 Optical Communication Systems | 4 | P | Advisory Prerequisites: ELEC 3402 Communications Electronics, ELEC 3502 Random Signals and Communications, and ELEC 3503 Introduction to Digital Communications. | | | | 1 |
| ELEC 5504 Cellular Radio Engineering | 4 | p | Advisory Prerequisites: ELEC 3502 Random Signals and Communications, and ELEC 3503 Introduction to Digital Communications. | | | | 1 |
| ELEC 5505 Advanced Digital Transmissions | 4 | p | Advisory Prerequisites: ELEC 3502 Random Signals and Communications, and ELEC 3503 Introduction to Digital Communications. | | | | 2 |
| ELEC 5506 Optical Networks | 4 | p | Advisory Prerequisites: ELEC 3502 Random Signals and Communications, and ELEC 3503 Introduction to Digital Communications. | | | | 2 |
| ELEC 5601 Advanced Real Time Computing | 4 | P | Advisory Prerequisite: ELEC 4602 Real Time Computing. <i>NB: Permission required for enrolment.</i> | | | | 2 |
| ELEC 5603 Biologically Inspired Signal Processing | 4 | | <i>NB: Permission required for enrolment.</i> | | | | 2 |
| ELEC 5604 Adaptive Pattern Recognition | 4 | | <i>NB: Permission required for enrolment.</i> | | | | 2 |
| ELEC 5606 Multimedia Systems and Applications | 4 | P | Advisory Prerequisites: COMP 3100 Software Engineering, ELEC 3303 Digital Signal Processing, and ELEC 4501 Data Communication Systems. <i>NB: Permission required for enrolment.</i> | | | | 2 |
| ELEC 5610 Computer and Network Security | 4 | P | Advisory Prerequisites: ELEC 3604 Internet Engineering and ELEC 4501 Data Communication Networks. | | | | 2 |
| ELEC 5611 Advanced Computer Engineering | 4 | P | Advisory Prerequisite: ELEC 4601 Computer Design. | | | | 2 |

(v) Senior and Honours projects

Many of the Senior and Honours units of study will be available for the first time in 2003. Those planned include: INFO 3600, SOFT 3200, SOFT 3700, SOFT 3206, INFO 4900. Students are advised to cross-reference Table IIIA, and to consult the Basser Department of Computer Science or their Web site (www.cs.usyd.edu.au) for further information.

| | | | | | | | |
|---------------------------------------|---|---|--|--|--|--|---|
| ISYS 3207 Information Systems Project | 8 | p | INFO3005orISYS3000or3012or3113. Q ISYS 3015 or ARIN 2000. | | | | 2 |
|---------------------------------------|---|---|--|--|--|--|---|

Table IIIA: Bachelor of Information Technology majors

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|----------------------|---|---------------|----------------|----------------|-----------|
| (i) Major in Principles of Computer Science | | | | | | | |
| Students are required to complete all the core units, or their Advanced equivalents. | | | | | | | |
| ■ Core Junior units of study | | | | | | | |
| MATH 1002 Linear Algebra | 3 | A | HSC Mathematics Extension 1. N May not be counted with MATH 1902 or 1012. | | | | 1, Summer |
| MATH 1004 Discrete Mathematics | 3 | A | HSC Mathematics Extension 1. N May not be counted with MATH 1904. | | | | 2, Summer |
| SOFT 1001 Software Development 1 | 6 | A | HSC Mathematics Extension 1. N May not be counted with SOFT 1901 or COMP (1001 or 1901). | | | | 1,2 |
| SOFT 1002 Software Development 2 | 6 | Q | SOFT (1001 or 1901) or COMP (1001 or 1901). N May not be counted with SOFT 1902 or COMP (1002 or 1902). | | | | 1,2 |
| ■ Core Intermediate units of study | | | | | | | |
| COMP 2003 Languages and Logic | 4 | p | MATH 1004or 1904orEconometrics orMATH2009. Q SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with COMP 2903. | | | | 2 |
| COMP 2111 Introduction to Algorithms 1 | 4 | Q | (SOFT (1002 or 1902) or COMP (1002 or 1902)) and MATH (1004 or 1904 or 2009). N May not be counted with COMP (2811 or 2002 or 2902). | | | | 1 |
| MATH 2002 Matrix Applications | 4 | P | MATH 1002 or 1902 or Distinction in MATH 1012. N May not be counted with MATH 2902. | | | | 1, Summer |

Table IIIA: Bachelor of Information Technology majors (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|----------------------|--|---------------|----------------|----------------|-----------|
| MATH 2009 Graph Theory | 4 | p | 6 credit points of Junior Mathematics (at the Distinction level in Life Sciences units). | | | | 1, Summer |
| SOFT 2001 Concurrent Programming | 4 | Q | SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with SOFT 2901. | | | | 2 |
| SOFT 2004 Software Development Methods 1 | 4 | a | SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with SOFT 2904 or COMP (2004 or 2904). | | | | 1 |
| ■ Core Senior units of study | | | | | | | |
| COMP 3002 Artificial Intelligence | 4 | P | COMP 2003 or 2903 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. Q COMP 2004 or 2904 or SOFT 2004 or 2904. N May not be counted with COMP 3902. | | | | 1 |
| COMP 3111 Introduction to Algorithms 2 | | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| COMP 3116 Comparative Programming Languages | | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| Students are required to complete 12 credit points from the elective units, or their Advanced equivalents. | | | | | | | |
| ■ Elective Senior units of study | | | | | | | |
| MATH 3005 Logic | 4 | P | (for all but BCST students) 8 credit points of Intermediate Mathematics; (for BCST students) 8 credit points of Intermediate Mathematics or 12 credit points of Junior Mathematics at Advanced level. | | | | 1 |
| MATH 3007 Coding Theory | 4 | P | 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902). | | | | 2 |
| MATH 3010 Information Theory | 4 | P | 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901 and some probability theory). | | | | 2 |
| MATH 3024 Elementary Cryptography and Protocols | 4 | P | 12 credit points of Intermediate Mathematics. Strongly advise MATH 2008 or 2908. | | | | 1 |
| MULT 3004 Computer Graphics | | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| ■ Elective Honours units of study | | | | | | | |
| COMP 4021 Intractability and Optimisation | | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| COMP 4022 Computational Geometry | | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| COMP 4023 Knowledge, Discovery and Data Mining | | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| (ii) Major in Information Systems | | | | | | | |
| Students are required to complete all the core units, or their Advanced equivalents. | | | | | | | |
| ■ Core Intermediate units of study | | | | | | | |
| INFO 2000 System Analysis and Design | 4 | Q | INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). | | | | 1, Summer |
| INFO 2005 Personal Database Tools | 4 | Q | INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). N May not be counted with COMP 3005 or 3905. | | | | 2 |
| INFO 2007 Distributed Information Systems | 4 | Q | ISYS 2006. | | | | 2 |
| ISYS 2006 Information Systems in Organisations | 4 | A | Use of basic PC tools such as spreadsheets, Internet, email and word processing software. a INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). NB: Enrolment Restriction: Entry is restricted to students who have a credit or better in at least one of the qualifying units. | | | | 1 |
| ■ Core Senior units of study | | | | | | | |
| ISYS 3000 Information Systems Management | 4 | Q | INFO 2000 or ISYS 2006. | | | | 2 |
| ISYS 3015 Analytical Methods for IS Professionals | 4 | p | 16 credit points of Intermediate or Senior units of study. Q ISYS 2006 and INFO 2000 and [ARIN 1000 or ENGL (1050 or 1005) or LNGS (1001 or 1002 or 1005) or ECOF (1001 or 1002)]. NB: Enrolment Restriction: Entry is restricted to students who have a credit or better in at least one of the Qualifying units. Alternatively, for 2002 only, a student who has completed ISYS 2006 with a Credit or better, and 24 credit points of Intermediate units of study including 8cp from INFO or ISYS units of study will be also be admitted to the unit. | | | | 1 |
| ISYS 3207 Information Systems Project | 8 | p | INFO 3005 or ISYS 3000 or 3012 or 3113. Q ISYS 3015 or ARIN 2000. | | | | 2 |
| Students are required to complete 12 credit points from the elective units, or their Advanced equivalents. | | | | | | | |
| ■ Elective Senior units of study | | | | | | | |
| INFO 3005 Organisational Database Systems | 4 | Q | INFO 2005. N May not be counted with INFO 3905 or COMP 3005 or COMP 3905. | | | | 1 |
| ISYS 3012 Project Management and Practice | 4 | Q | INFO 2000. | | | | 1 |
| ISYS 3113 Arts Informatics Systems | 4 | Q | INFO 2005. | | | | 1 |

Table IIIA: Bachelor of Information Technology majors (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|--|----------------------|---|---------------|----------------|----------------|--------------|
| (iii) Major in Multimedia Technology | | | | | | | |
| Students are required to complete all the core units, or their Advanced equivalents. | | | | | | | |
| ■ Core Junior units of study | | | | | | | |
| MATH 1001 | Differential Calculus | 3 | A HSC Mathematics Extension 1. N May not be counted with MATH 1011 or 1901 or 1906. | | | | 1, Summer |
| MATH 1002 | Linear Algebra | 3 | A HSC Mathematics Extension 1. N May not be counted with MATH 1902 or 1012. | | | | 1, Summer |
| MATH 1003 | Integral Calculus and Modelling | 3 | A HSC Mathematics Extension 2 or MATH 1001. N May not be counted with MATH 1013 or 1903 or 1907. | | | | 2, Summer |
| SOFT 1001 | Software Development 1 | 6 | A HSC Mathematics Extension 1. N May not be counted with SOFT 1901 or COMP (1001 or 1901). | | | | 1,2 |
| SOFT 1002 | Software Development 2 | 6 | Q SOFT (1001 or 1901) or COMP (1001 or 1901). N May not be counted with SOFT 1902 or COMP (1002 or 1902). | | | | 1,2 |
| ■ Core Intermediate units of study | | | | | | | |
| COMP 2111 | Introduction to Algorithms 1 | 4 | Q (SOFT (1002 or 1902) or COMP (1002 or 1902)) and MATH (1004 or 1904 or 2009). N May not be counted with COMP (2811 or 2002 or 2902). | | | | 1 |
| ELEC 2301 | Signals and Systems | 4 | p Advisory Prerequisite: MATH 1001 Differential Calculus, and MATH 1002 Linear Algebra, and MATH 1003 Integral Calculus and Modelling. N Prohibition: MATH 3019 Signal Processing and MATH 3919 Signal Processing (Adv). | | | | 2 |
| SOFT 2001 | Concurrent Programming | 4 | Q SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with SOFT 2901. | | | | 2 |
| SOFT 2004 | Software Development Methods 1 | 4 | Q SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with SOFT 2904 or COMP (2004 or 2904). | | | | 1 |
| ■ Core Senior units of study | | | | | | | |
| MULT 3018 | Multimedia Interaction | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| MULT 3019 | Digital Media | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| Students are required to complete 16 credit points from the elective units, or their Advanced equivalents. | | | | | | | |
| ■ Elective Senior units of study | | | | | | | |
| MULT 3004 | Computer Graphics | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| MULT 3027 | Object-Oriented Techniques in Multimedia | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| MULT 3028 | Multimedia Authoring & Production | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| PHYS 3303 | Scientific Visualisation | 4 | p 16 credit points of Intermediate units of study in Science Subject Areas. N May not be counted with PHYS 3933. | | | | 2 |
| SOFT 3102 | User Interface Design and Programming | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| ■ Elective Honours units of study | | | | | | | |
| ELEC 4302 | Image Processing and Computer Vision | 4 | P Advisory Prerequisites: ELEC 2301 Signals and Systems, and ELEC 4303 Digital Signal Processing. NB: Permission required for enrolment. | | | | 2 |
| ELEC 5604 | Adaptive Pattern Recognition | 4 | NB: Permission required for enrolment. | | | | |
| ELEC 5606 | Multimedia Systems and Applications | 4 | p Advisory Prerequisites: COMP 3100 Software Engineering, ELEC 3303 Digital Signal Processing, and ELEC 4501 Data Communication Systems. NB: Permission required for enrolment. | | | | 2 |
| MULT 4020 | Multimedia Retrieval & Delivery | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| MULT 4029 | Multimedia Agents & CSCW Technology | | <i>Unavailable in 2002. Details may change.</i> | | | | |
| (iv) Major in Networks & Systems | | | | | | | |
| Students are required to complete all the core units, or their Advanced equivalents. | | | | | | | |
| ■ Core Junior units of study | | | | | | | |
| SOFT 1001 | Software Development 1 | 6 | A HSC Mathematics Extension 1. N May not be counted with SOFT 1901 or COMP (1001 or 1901). | | | | 1,2 |
| SOFT 1002 | Software Development 2 | 6 | Q SOFT (1001 or 1901) or COMP (1001 or 1901). N May not be counted with SOFT 1902 or COMP (1002 or 1902). | | | | 1,2 |
| ■ Core Intermediate units of study | | | | | | | |
| NETS 2008 | Computer System Organisation | 4 | O. SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). N May not be counted with NETS 2908 or COMP (2001 or 2901). | | | | 1 |
| NETS 2009 | Network Organisation | 4 | Q SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). N May not be counted with NETS 2909. | | | | 2 |
| SOFT 2001 | Concurrent Programming | 4 | Q SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with SOFT 2901. | | | | 2 |
| SOFT 2004 | Software Development Methods 1 | 4 | Q SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with SOFT 2904 or COMP (2004 or 2904). | | | | 1 |

Table 11 IA: Bachelor of Information Technology majors (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|--|---|-----------------|---|----------------|----------------|-----------|
| ■ Core Senior units of study | | | | | | | |
| NETS 3007 | Fundamentals of Computer Networking | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| NETS 3009 | Operating Systems | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| N ETS 3016 | Computer Network Security | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| NETS 3017 | Network Programming & Distributed Apps | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| Students are required to complete 12 credit points from the elective units, or their Advanced equivalents. | | | | | | | |
| ■ Elective Senior units of study | | | | | | | |
| COMP 3111 | Introduction to Algorithms 2 | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| SOFT 3105 | Distributed Software Systems | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| ■ Elective Honours units of study | | | | | | | |
| ELEC 4501 | Data Communication Networks | 4 | p | Advisory Prerequisites: ELEC 3502 Random Signals and Communications, and ELEC 3503 Introduction to Digital Communications. | | | 1 |
| ELEC 4601 | Computer Design | 4 | p | Advisory Prerequisites: ELEC 3403 Switching Devices and High Speed Electronics, and ELEC 3601 Digital Systems Design. | | | 1 |
| ELEC 5501 | Advanced Communication Networks | 4 | P | Advisory Prerequisites: ELEC 3502 Random Signals and Communications, ELEC 3503 Introduction to Digital Communications and ELEC 4501 Data Communication Networks. <i>NB: Permission required for enrolment.</i> | | | 2 |
| ELEC 5502 | Satellite Communication Systems | 4 | P | Advisory Prerequisites: ELEC 3502 Random Signals and Communications, ELEC 3503 Introduction to Digital Communications and ELEC 4502 Digital Communication Systems. | | | 2 |
| ELEC 5503 | Optical Communication Systems | 4 | P | Advisory Prerequisites: ELEC 3402 Communications Electronics, ELEC 3502 Random Signals and Communications, and ELEC 3503 Introduction to Digital Communications. | | | 1 |
| ELEC 5504 | Cellular Radio Engineering | 4 | P | Advisory Prerequisites: ELEC 3502 Random Signals and Communications, and ELEC 3503 Introduction to Digital Communications. | | | 1 |
| NETS 4024 | Network Performance | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| NETS 4025 | Distributed Systems | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| N ETS 4026 | Designing Computer Networks | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| (v) Major in Software Development | | | | | | | |
| Students are required to complete all the core units, or their Advanced equivalents. | | | | | | | |
| ■ Core Junior units of study | | | | | | | |
| SOFT 1001 | Software Development 1 | 6 | A | HSC Mathematics Extension 1. N May not be counted with SOFT 1901 or COMP (1001 or 1901). | | | 1,2 |
| SOFT 1002 | Software Development 2 | 6 | Q | SOFT (1001 or 1901) or COMP (1001 or 1901). N May not be counted with SOFT 1902 or COMP (1002 or 1902). | | | 1,2 |
| ■ Core Intermediate units of study | | | | | | | |
| SOFT 2001 | Concurrent Programming | 4 | Q | SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with SOFT 2901. | | | 2 |
| SOFT 2004 | Software Development Methods 1 | 4 | Q | SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with SOFT 2904 or COMP (2004 or 2904). | | | 1 |
| INFO 2000 | System Analysis and Design | 4 | Q | INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). N May not be counted with COMP 3005 or 3905. | | | 1, Summer |
| INFO 2005 | Personal Database Tools | 4 | Q | INFO 1000 or ISYS 1003 or SOFT (1001 or 1901) or COMP (1001 or 1901 or 1002 or 1902). N May not be counted with COMP 3005 or 3905. | | | 2 |
| ■ Core Senior units of study | | | | | | | |
| SOFT 3101 | Object Oriented Software Design | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| SOFT 3103 | Software Validation and Verification | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| SOFT 3104 | Software Development Methods 2 | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| SOFT 3200 | Software Development Project | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| Students are required to complete 8 credit points from the elective units, or their Advanced equivalents. | | | | | | | |
| ■ Elective Senior units of study | | | | | | | |
| INFO 3005 | Organisational Database Systems | 4 | Q | INFO 2005. N May not be counted with INFO 3905 or COMP 3005 or COMP 3905. | | | 1 |
| ISYS 3012 | Project Management and Practice | 4 | Q | INFO 2000. | | | 1 |
| SOFT 3102 | User Interface Design and Programming | <i>Unavailable in 2002. Details may change.</i> | | | | | |

Table IIIA: Bachelor of Information Technology majors (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|---|---|---------------|----------------|----------------|-----------|
| SOFT 3105 Distributed Software Systems | | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| ■ Elective Honours units of study | | | | | | | |
| ELEC 4602 Real Time Computing | 4 | P | Advisory Prerequisites: ELEC 3601 Digital Systems Design and COMP 3100 Software Engineering. | | | | 1 |
| ELEC 4604 Engineering Software Requirements | 4 | P | Advisory Prerequisite: COMP 3100 Algorithms, COMP 3205 Product Development Project, ELEC 3601 Digital Systems Design. | | | | 2 |
| ELEC 4704 Software Project Management | 4 | p | Advisory Prerequisites: COMP 3100 Algorithms, ELEC 3601 Digital Systems Design. | | | | 1 |
| SOFT 4107 Software Architecture | | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| SOFT 4108 Program Analysis and Re-engineering | | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| (vi) Major in Digital Systems | | | | | | | |
| Students are required to complete all the core units, or their Advanced equivalents. | | | | | | | |
| ■ Core Junior units of study | | | | | | | |
| ELEC 1101 Foundations of Computer Systems | 6 | A | HSC Maths Extension 1. | | | | 1, Summer |
| SOFT 1001 Software Development 1 | 6 | A | HSC Mathematics Extension 1. N May not be counted with SOFT 1901 or COMP (1001 or 1901). | | | | 1,2 |
| SOFT 1002 Software Development 2 | 6 | Q | SOFT (1001 or 1901) or COMP (1001 or 1901). N May not be counted with SOFT 1902 or COMP (1002 or 1902). | | | | 1,2 |
| ■ Core Intermediate units of study | | | | | | | |
| ELEC 2601 Microcomputer Systems | 4 | p | Advisory Prerequisite: ELEC 1101 Foundations of Computer Systems. N ELEC 2001 Electrical and Electronic Engineering and ELEC 2003 Electrical and Electronic Engineering A. | | | | 1 |
| SOFT 2001 Concurrent Programming | 4 | Q | SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with SOFT 2901. | | | | 2 |
| SOFT 2004 Software Development Methods 1 | 4 | Q | SOFT (1002 or 1902) or COMP (1002 or 1902). N May not be counted with SOFT 2904 or COMP (2004 or 2904). | | | | 1 |
| ■ Core Senior units of study | | | | | | | |
| ELEC 3601 Digital Systems Design | 4 | p | Advisory Prerequisite: ELEC 2601 Microcomputer Systems or COMP 2001 Computer Systems. | | | | 2 |
| ■ Core Honours units of study | | | | | | | |
| ELEC 4601 Computer Design | 4 | p | Advisory Prerequisites: ELEC 3403 Switching Devices and High Speed Electronics, and ELEC 3601 Digital Systems Design. | | | | 1 |
| ELEC 4602 Real Time Computing | 4 | P | Advisory Prerequisites: ELEC 3601 Digital Systems Design and COMP 3100 Software Engineering. | | | | 1 |
| Students are required to complete 16 credit points from the elective units, or their Advanced equivalents. | | | | | | | |
| ■ Elective Senior units of study | | | | | | | |
| ELEC 3401 Electronic Devices and Circuits | 4 | p | Advisory Prerequisites: ELEC 2401 Introductory Electronics. | | | | 1 |
| ELEC 3403 Switching Devices and Electronics | 4 | P | Advisory Prerequisite: ELEC 3401 Electronic Devices and Circuits. | | | | 2 |
| ELEC 3604 Internet Engineering | 4 | P | Advisory prerequisites: ELEC 1101 Foundations of Computer systems, COMP 2002 Design and Data Structures and COMP 2004 Programming Practice. N ELEC 5609 internet Engineering, COMP 3007 Networked systems. | | | | 2 |
| NETS 3009 Operating Systems | | <i>Unavailable in 2002. Details may change.</i> | | | | | |
| ■ Elective Honours units of study | | | | | | | |
| ELEC 4402 Integrated Circuit Design | 4 | p | Advisory Prerequisite: ELEC 3401 Electronic Devices and Circuits. | | | | 1 |
| ELEC 5603 Biologically Inspired Signal Processing | 4 | | <i>NB: Permission required for enrolment.</i> | | | | 2 |
| ELEC 5606 Multimedia Systems and Applications | 4 | p | Advisory Prerequisites: COMP 3100 Software Engineering, ELEC 3303 Digital Signal Processing, and ELEC 4501 Data Communication Systems. <i>NB: Permission required for enrolment.</i> | | | | 2 |
| ELEC 5610 Computer and Network Security | 4 | p | Advisory Prerequisites: ELEC 3604 Internet Engineering and ELEC 4501 Data Communication Networks. | | | | 2 |
| ELEC 5611 Advanced Computer Engineering | 4 | p | Advisory Prerequisite: ELEC 4601 Computer Design. | | | | 2 |
| (vii) Major in Computational Science | | | | | | | |
| Students are required to complete all the core units, or their Advanced equivalents. | | | | | | | |
| ■ Core Senior units of study | | | | | | | |
| MATH 3016 Mathematical Computing I | 4 | P | 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903 or 1906 or 1907. N May not be counted with MATH 3916. | | | | 1 |
| PHYS 3301 Scientific Computing | 4 | P | 16 credit points of Intermediate units of study in Science Subject Areas. N May not be counted with PHYS 3931. | | | | 1 |

Table li IA: Bachelor of Information Technology majors (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|-----------------|---------------|----------------|----------------|----------|
| PHYS 3303 Scientific Visualisation | 4 | P 16 credit points of Intermediate units of study in Science Subject Areas. N May not be counted with PHYS 3933. | | | | | 2 |
| Students are required to complete 12 credit points from the elective units, or their Advanced equivalents. | | | | | | | |
| ■ Elective Senior units of study | | | | | | | |
| BIOL 3023 Ecological Methods | 6 | Q 16 credit points of Intermediate Biology including BIOL 2001 or 2901 or 2002 or 2902 or 2004 or 2904. N May not be counted with BIOL 3923. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 2 |
| BIOL 3027 Bioinformatics and Genomics | 6 | Q MBLG (2001 or 2101 or 2901) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. N May not be counted with BIOL 3927. | | | | | 1 |
| COMP 3004 Computer Graphics | 4 | P COMP 2002 or 2902 or 2111 or 2811 and MATH 1002 or 1902 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. Q COMP 2004 or 2904 or SOFT 2004 or 2904. N May not be counted with COMP 3904. | | | | | 2 |
| COMP 3205 Product Development Project | 4 | P COMP 3008 or 3908. <i>NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204 or 3205, 3206 or 3809.</i> | | | | | 1,2 |
| COMP 3206 Bioinformatics Project | 4 | P 16 credit points of Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and genetics and/or Pharmacology. Q COMP 2004 or 2904 or SOFT 2004 or 2904. c COMP 3008 or 3100 or 3908 or 3800. <i>NB: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204, 3205, 3206 or 3809.</i> | | | | | 2 |
| COSC 3601 Parallel Computing | 4 | A Some familiarity is assumed with Unix and a programming language (eg, C or Fortran). P At least one of SOFT (2004 or 2904) or COMP (2004 or 2904) or PHYS (3301 or 3901) or MATH 2903 or MATH (3016 or 3916). | | | | | 2 |
| GEOP 3201 Modelling Earth Processes | 12 | P 6 credit points of Junior Mathematics and 16 credit points of Intermediate Science units of study. N May not be counted with GEOP 3001, 3002 and 3004. | | | | | 1 |
| MATH 3003 Ordinary Differential Equations | 4 | P 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2001 or 2901). | | | | | 1 |
| MATH 3018 Partial Differential Equations and Waves | 4 | P MATH (2001 or 2901) and MATH (2005 or 2905). N May not be counted with MATH 3921. | | | | | 1 |
| MATH 3019 Signal Processing | 4 | P MATH (2001 or 2901) and MATH (2005 or 2905). N May not be counted with MATH 3919. | | | | | 1 |
| STAT 3002 Applied Linear Models | 4 | P STAT 2004 (or STAT 1022 for Arts students) and MATH (1002 or 1902). N May not be counted with STAT 3902. | | | | | 1 |
| STAT 3003 Time Series Analysis | 4 | P STAT 2003 or 2903. | | | | | 1 |
| STAT 3004 Design of Experiments | 4 | P STAT 3002 or 3902. | | | | | 2 |

■ Bachelor of Medical Science (BMedSc) degree program

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points. Enrolment guide To complete your degree you must gain credit for at least 144 credit points. The 144 credit points required for the degree must include:

- at least 48 credit points from junior units of study, comprising 12 credit points each from Biology, Chemistry, Mathematics and Physics; with the permission of the Faculty 12 credit points of Biology may be replaced with junior units of study in Computer Science or Psychology
- 40 credit points of core intermediate units of study
- a minimum of 36 credit points from senior units of study taken from the subject areas of Anatomy and Histology, Biology (Genetics), Biochemistry, Cell Pathology, Immunology, Infectious Diseases, Microbiology, Pharmacology and Physiology
- at least 12 credit points to be taken from any other intermediate or senior units of study.

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

You should also note the following:

- you cannot count any unit of study with the grade Pass (Concessional) toward the degree
- units of study completed at The University of Sydney Summer School which correspond to units of study in the table of undergraduate units of study may be credited towards the course requirements
- a standard full time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part time
- you may not enrol in more than 32 credit points in any one semester without permission
- in order to enrol in a unit of study, you have to meet any 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 are limited (details can be obtained from Departments)
- a student may not enrol without first obtaining permission from the Dean in additional units of study once the degree requirements of 144 credit points have been satisfied
- if a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.
- The combination MATH 1003 and 1004 or 1903 and 1904 is not recommended in this degree. Students wishing to study Statistics/Calculus are advised to select from MATH 1003, 1005, 1903, 1905, 1013, 1015.

Table IV: Bachelor of Medical Science

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---------------------------------|---------------------|----------------------|--|---------------|----------------|----------------|--------------|
| A. Junior units of study | | | | | | | |
| Biology | | | | | | | |
| BIOL 1001 | Concepts in Biology | 6 | A HSC Biology. N May not be counted with BIOL 1901 or 1500. | | | | 1, Summer |
| BIOL 1002 | Living Systems | 6 | A HSC 2-unit Biology course. N May not be counted with BIOL 1902 or 1500. | | | | 2 |
| BIOL 1003 | Human Biology | 6 | A HSC Biology. N May not be counted with BIOL 1903 or 1500 or EDUH 1016. | | | | 2, Summer |

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 on page 157.

Universities Admissions Index (UAI)

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

Transferring into the BMedSc degree program

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

BMedSc degree resolutions

See chapter 5.

■ Combined Engineering/Medical Science degrees

Summary of requirements

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

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

Enrolment guide

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

- at least 160 credit points from prescribed Engineering units of study (this total to include the 12 credit points from the Interdisciplinary Thesis)
- 40 credit points of intermediate core units of study listed in Table IV: Bachelor of Medical Science on page 141
- at least 24 credit points of senior units of study from the subject areas listed in Table IV
- 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.

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.

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

Universities Admissions Index (UAI)

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

Degree resolutions

See chapter 5.

Table IV: Bachelor of Medical Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|-----------------|---------------|----------------|----------------|-----------|
| BIOL 1901 Concepts in 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 May not be counted with BIOL 1001 or 1500. NB: <i>Permission required for enrolment.</i> | | | | | 1 |
| BIOL 1902 Living Systems (Advanced) | 6 | P UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. N May not be counted with BIOL 1002 or 1904 or 1905 or 1500. NB: <i>Permission required for enrolment.</i> | | | | | 2 |
| BIOL 1903 Human Biology (Advanced) | 6 | P UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. N May not be counted with BIOL 1003 or 1904 or 1905 or 1500 or EDUH 1016. NB: <i>Permission required for enrolment.</i> | | | | | 2 |
| Chemistry | | | | | | | |
| CHEM 1001 Fundamentals of Chemistry 1A | 6 | A There is no assumed knowledge of chemistry for this unit of study, but students who have not undertaken an HSC chemistry course are strongly advised to complete a chemistry bridging course before lectures commence. N May not be counted with CHEM 1101 or 1901 or 1903 or 1905 or 1906 or 1909. | | | | | 1 |
| CHEM 1002 Fundamentals of Chemistry 1B | 6 | p CHEM 1001 or 1101 or equivalent. N May not be counted with CHEM 1102 or 1902 or 1904 or 1907 or 1908. | | | | | 2 |
| CHEM 1101 Chemistry IA | 6 | A HSC Chemistry and Mathematics. c Recommended concurrent units of study: 6 credit points of Junior Mathematics. N May not be counted with CHEM 1001 or 1901 or 1903 or 1905 or 1906 or 1909. | | | | | 1,2 |
| CHEM 1102 Chemistry IB | 6 | Q CHEM 1101 or a Distinction in CHEM 1001 or equivalent. C Recommended concurrent units of study: 6 credit points of Junior Mathematics including MATH 1003 or 1903. N May not be counted with CHEM 1002 or 1902 or 1904 or 1907 or 1908. | | | | | 1,2 |
| CHEM 1901 Chemistry IA (Advanced) | 6 | P UAI of at least 93 and HSC Chemistry result in the 80th percentile or better, 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 May not be counted with CHEM 1001 or 1101 or 1903 or 1905 or 1906 or 1909. NB: <i>Permission required for enrolment.</i> | | | | | 1 |
| CHEM 1902 Chemistry IB (Advanced) | 6 | Q CHEM 1901 or 1903 or Distinction in CHEM 1101 or equivalent. c Recommended concurrent unit of study: 6 credit points of Junior Mathematics including MATH 1003 or 1903. N May not be counted with CHEM 1002 or 1102 or 1904 or 1907 or 1908. NB: <i>Permission required for enrolment. Entry is by invitation.</i> | | | | | 2 |
| CHEM 1903 Chemistry IA (Special Studies Program) | 6 | P UAI of at least 98.7 and HSC Chemistry result in the 94th percentile or better, or Distinction or better in a University level Chemistry unit, or by invitation. Students in the Faculty of Science Talented Students Program are automatically eligible. C Recommended concurrent unit of study: 6 credit points of Junior Mathematics. N May not be counted with CHEM 1001 or 1101 or 1901 or 1905 or 1906 or 1909. NB: <i>Permission required for enrolment. Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.</i> | | | | | 1 |
| CHEM 1904 Chemistry IB (Special Studies Program) | 6 | P Distinction in CHEM 1903. c Recommended concurrent units of study: 6 credit points of Junior Mathematics including MATH 1003 or 1903. N May not be counted with CHEM 1002 or 1102 or 1902 or 1907 or 1908. NB: <i>Permission required for enrolment. Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.</i> | | | | | 2 |
| CHEM 1908 Chemistry 1 Life Sciences A (Advanced) | 6 | p UAI of at least 93 and HSC Chemistry result in the 80th percentile or better, 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 May not be counted with CHEM 1002 or 1102 or 1902 or 1904 or 1907. NB: <i>Permission required for enrolment.</i> | | | | | 1 |
| CHEM 1909 Chemistry 1 Life Sciences B Mol(Adv) | 6 | P CHEM 1907 or 1908 or equivalent. C Recommended concurrent units of study: 6 credit points of Junior Mathematics. N May not be counted with CHEM 1001 or 1101 or 1901 or 1903 or 1905 or 1906. | | | | | 2 |
| Computer Science | | | | | | | |
| SOFT 1001 Software Development 1 | 6 | A HSC Mathematics Extension 1. N May not be counted with SOFT 1901 or COMP (1001 or 1901). | | | | | 1,2 |
| SOFT 1002 Software Development 2 | 6 | Q SOFT (1001 or 1901) or COMP (1001 or 1901). N May not be counted with SOFT 1902 or COMP (1002 or 1902). | | | | | 1,2 |
| SOFT 1901 Software Development 1 (Adv) | 6 | A HSC Mathematics Extension 1. P UAI at least that for acceptance into BSc (Advanced) degree program. Requires departmental permission. N May not be counted with SOFT 1001 or COMP (1001 or 1901). NB: <i>Permission required for enrolment.</i> | | | | | 1,2 |
| SOFT 1902 Software Development 2 (Adv) | 6 | Q Distinction in SOFT (1001 or 1901) or COMP (1001 or 1901). N May not be counted with SOFT 1002 or COMP (1002 or 1902). NB: <i>Permission required for enrolment.</i> | | | | | 1,2 |
| Mathematics | | | | | | | |
| MATH 1001 Differential Calculus | 3 | A HSC Mathematics Extension 1. N May not be counted with MATH 1011 or 1901 or 1906. | | | | | 1, Summer |
| MATH 1002 Linear Algebra | 3 | A HSC Mathematics Extension 1. N May not be counted with MATH 1902 or 1012. | | | | | 1, Summer |
| MATH 1003 Integral Calculus and Modelling | 3 | A HSC Mathematics Extension 2 or MATH 1001. N May not be counted with MATH 1013 or 1903 or 1907. | | | | | 2, Summer |

Table IV: Bachelor of Medical Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|-----------------|---------------|----------------|----------------|-----------|
| MATH 1004 Discrete Mathematics | 3 | A HSC Mathematics Extension 1. N May not be counted with MATH 1904. | | | | | 2, Summer |
| MATH 1005 Statistics | 3 | A HSC Mathematics. N May not be counted with MATH 1905 or 1015 or ECMT 1010 or 1020 or STAT 1021 or 1022. | | | | | 2, Summer |
| MATH 1011 Life Sciences Calculus | 3 | A HSC Mathematics. N May not be counted with MATH 1001 or 1901 or 1906. May not be counted by students enrolled in the BSc/BCom combined award course. | | | | | 1 |
| MATH 1012 Life Sciences Algebra | 3 | A HSC Mathematics. N May not be counted with MATH 1002 or 1902. May not be counted by students enrolled in the BSc/BCom combined award course. | | | | | 2 |
| MATH 1013 Differential and Difference Equations | 3 | A HSC Mathematics. N May not be counted with MATH 1003 or 1903 or 1907. May not be counted by students enrolled in the BSc/BCom combined award course. | | | | | 2 |
| MATH 1015 Life Science Statistics | 3 | A HSC Mathematics. N May not be counted with MATH 1905 or 1005 or STAT 1021 or 1022. May not be counted by students enrolled in the BSc/BCom combined award course. | | | | | 1, Summer |
| MATH 1901 Differential Calculus (Advanced) | 3 | A HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. N May not be counted with MATH 1011 or 1001 or 1906. | | | | | 1 |
| MATH 1902 Linear Algebra (Advanced) | 3 | A HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. N May not be counted with MATH 1002 or 1012. | | | | | 1 |
| MATH 1903 Integral Calculus and Modelling Advanced | 3 | A HSC Mathematics Extension 2 or Credit or better in MATH 1001/1901. N May not be counted with MATH 1003 or 1013 or 1907. | | | | | 2 |
| MATH 1904 Discrete Mathematics (Advanced) | 3 | A HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. N May not be counted with MATH 1004. | | | | | 2 |
| MATH 1905 Statistics (Advanced) | 3 | A HSC Mathematics Extension 2 or result in Band E2 or better of HSC Mathematics Extension 1. N May not be counted with MATH 1005 or 1015 or ECMT 1010 or 1020 or STAT 1021 or 1022. | | | | | 2 |
| MATH 1906 Mathematics (Special Studies Program) A | 3 | p UAI of at least 98.5 and result in Band E4 HSC Mathematics Extension 2; by invitation. N May not be counted with MATH 1001 or 1011 or 1901. NB: Permission required for enrolment. | | | | | 1 |
| MATH 1907 Mathematics (Special Studies Program) B | 3 | p Distinction in MATH 1906; by invitation. N May not be counted with MATH 1003 or 1013 or 1903. NB: Permission required for enrolment. | | | | | 2 |
| Physics | | | | | | | |
| PHYS 1001 Physics 1 (Regular) | 6 | A HSC Physics. C Recommended concurrent units of study: MATH 1001 and 1002 or 1901 and 1902. N May not be counted with PHYS 1002 or 1901. | | | | | 1 |
| PHYS 1002 Physics 1 (Fundamentals) | 6 | A No assumed knowledge of Physics. C Recommended concurrent units of study: MATH (1001 and 1002) or (1901 and 1902). N May not be counted with PHYS 1001 or 1901. | | | | | 1 |
| PHYS 1003 Physics 1 (Technological) | 6 | A HSC Physics or PHYS 1001 or 1002 or 1901 or equivalent. c For Science students: Recommended concurrent units MATH (1003 and 1005) or (1903 and 1905). N May not be counted with PHYS 1004 or 1902. | | | | | 1,2 |
| PHYS 1004 Physics 1 (Environmental & Life Science) | 6 | A HSC Physics or PHYS 1001 or 1002 or 1901 or equivalent. c Recommended concurrent units of study: MATH 1003 and 1005 or 1903 and 1905. N May not be counted with PHYS 1003 or 1902. | | | | | 2 |
| PHYS 1901 Physics IA (Advanced) | 6 | p UAI of at least 95 or HSC Physics result in the 98th percentile or better, or Distinction or better in a University level Physics unit, or by invitation. C Recommended concurrent units of study: MATH (1001 and 1002) or (1901 and 1902). N May not be counted with PHYS 1001 or 1002. NB: Permission required for enrolment. | | | | | 1 |
| PHYS 1902 Physics IB (Advanced) | 6 | p UAI of at least 95 or HSC Physics result in the 98th percentile or better, or Distinction or better in a University level Physics unit, or by invitation. c Recommended concurrent units of study: MATH (1003 and 1005) or (1903 and 1905). N May not be counted with PHYS 1003 or 1004. NB: Permission required for enrolment. | | | | | 2 |
| Psychology | | | | | | | |
| PSYC 1001 Psychology 1001 | 6 | | | | | | 1, Summer |
| PSYC 1002 Psychology 1002 | 6 | | | | | | 2 |
| B. Intermediate units of study | | | | | | | |
| ■ Core units of study | | | | | | | |
| BMED 2501 Cells and Cell Communication | 6 | Q 12 credit points of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology. | | | | | 1 |
| BMED 2502 Genes and Genetic Engineering | 6 | Q 12 credit points of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology. | | | | | 1 |
| BMED 2503 Regulation of the Internal Environment | 8 | Q 12 creditpoints of Junior Mathematics, 12 creditpoints of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology. | | | | | 1 |

Table IV: Bachelor of Medical Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|---|---|---------------|----------------|----------------|----------|
| BMED 2504 Digestion, Absorption and Metabolism | 6 | A BMED 2501, BMED 2502 and BMED 2503. | Q 12 credit points of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology. | | | | 2 |
| BMED 2505 Interaction with External Environment | 6 | A BMED 2501, BMED 2502 and BMED 2503. | Q 12 creditpoints of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 creditpoints of Junior Biology or 12 creditpoints of Junior Computer Science or 12 credit points of Junior Psychology. | | | | 2 |
| BMED 2506 Microbes and Body Defence Systems | 8 | A BMED 2501, BMED 2502 and BMED 2503. | Q 12 credit points of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology. | | | | 2 |
| ■ Elective units of study | | | | | | | |
| Refer also to Table I: BSc | | | | | | | |
| Chemistry | | | | | | | |
| CHEM 2311 Chemistry 2 (Biological Sciences) Theory | 4 | P 12 credit points of Junior Chemistry. | N May not be counted with CHEM 2001 or 2101 or 2301 or 2901 or 2903 or 2502. | | | | 1 |
| CHEM 2312 Chemistry 2 (Biological Sciences) Prac | 4 | p 12 credit points of Junior Chemistry. | C CHEM 2311. | | | | 1,2 |
| N May not be counted with CHEM 2001 or 2101 or 2301 or 2901 or 2903 or 2502. | | | | | | | |
| Physics | | | | | | | |
| PHYS 2105 Physics for Medical Sciences | 4 | P 12 creditpoints of Junior Physics, excluding PHYS 1500 & 1600. | | | | | 2 |
| C. Senior units of study | | | | | | | |
| ■ Core units of study | | | | | | | |
| Anatomy and Histology | | | | | | | |
| ANAT 3001 Microscopy and Histochemistry | 12 | Q ANAT 2001 For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2503,2504,2505. | | | | | 1 |
| <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | | | |
| ANAT 3002 Cells and Development | 12 | A (i) an understanding of the basic structure of the vertebrates; (ii) an understanding of elementary biochemistry and genetics. | Q ANAT 2001 For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2503,2504, 2505. | | | | 2 |
| N May not be counted with ANAT 3003. | | | | | | | |
| <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | | | |
| ANAT 3005 Topographical Anatomy | 12 | Q BMED (2101 and 2102) or 32 credit points of Intermediate BMED units including BMED (2503 and 2504 and 2505). | | | | | 2 |
| N May not be counted with ANAT 3004 or 3008. | | | | | | | |
| Biochemistry | | | | | | | |
| BCHM 3001 Mol Biology and Structural Biochemistry | 12 | Q For enrolment in 2002: MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). | | | | | 1 |
| N May not be counted with BCHM 3901. | | | | | | | |
| <i>NB: From 2003 the entry requirements will be: MBLG (2001 or 2901) and [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students 32 creditpoints of Intermediate BMED units including BMED (2501 and 2502 and 2504).</i> | | | | | | | |
| BCHM 3901 Mol Biology and Structural Biochem (Adv) | 12 | Q Distinction in MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902; or 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504). | | | | | 1 |
| N May not be counted with BCHM 3001. | | | | | | | |
| <i>NB: From 2003 the requirements will be: Distinction in MBLG (2001 or 2901) and in [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students 32 creditpoints of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504).</i> | | | | | | | |
| BCHM 3002 Cellular and Medical Biochemistry | 12 | Q For enrolment in 2002: MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). | | | | | 2 |
| N May not be counted with BCHM 3902/3904. | | | | | | | |
| <i>NB: From 2003 entry requirements will be: MBLG (2001 or 2901) and [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students: 32 creditpoints of Intermediate BMED units including BMED (2501 and 2502 and 2504).</i> | | | | | | | |
| BCHM 3902 Cellular and Medical Biochemistry (Adv) | 12 | Q For enrolment in 2002: Distinction in MBLG 2001 or BCHM 2001/2901 or BCHM 2002/2902; or 32 credit points of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504). | | | | | 2 |
| N May not be counted with BCHM 3002/3904. | | | | | | | |
| <i>NB: From 2003 the entry requirements will be: Distinction in MBLG (2001 or 2901) and in [BCHM (2011 or 2002 or 2902) or MBLG (2002 or 2902)]. For BMedSc students 32 creditpoints of Intermediate BMED units including Distinctions in BMED (2501 and 2502 and 2504).</i> | | | | | | | |
| BCHM 3098 Functional Genomics and Proteomics | 6 | A BCHM 2011. | Q MBLG (2001 or 2901) or at least 32 credit points of intermediate BMED units including BMED (2501 and 2502 and 2504). | | | | 1 |
| Biology | | | | | | | |
| BIOL 3018 Applications of Recombinant DNA Tech | 6 | Q MBLG (2001/2901 and 2002/2902) or 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students: 32 credit points of intermediate BMED units including BMED 2502. | | | | | 1 |
| N May not be counted with BIOL 3918,3103 or 3903. | | | | | | | |

Table IV: Bachelor of Medical Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|---|-----------------|---------------|----------------|----------------|----------|
| BIOL 3918 Applications of Recombinant DNA Tech Adv | 6 | Q Distinction average in MBLG (2001/2901 and 2002/2902) or in 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. N May not be counted with BIOL 3018,3103 or 3903. | | | | | 1 |
| BIOL 3025 Evolutionary Genetics & Animal Behaviour | 6 | Q 16creditpointsfromMBLG2001,MBLG2901,MBLG2002,MBLG2902and intermediate level Biology units. For BMedSc students 32 credit points of Intermediate BMED units including BMED 2502. N May not be counted with BIOL (3925 or 3928). | | | | | 2 |
| BIOL 3925 Evolutionary Gen. & Animal Behaviour Adv | 6 | Q Distinction average in 16 credit points from MBLG 2001, MBLG 2901, MBLG 2002, MBLG 2902 and Intermediate Biology units. For BMedSc students 32 credit points of Intermediate BMED units including distinction in BMED 2502. These requirements may be varied and students with lower averages should consult the unit Executive Officer. N May not be counted with BIOL (3025 or 3928). | | | | | 2 |
| BIOL 3026 Developmental Genetics | 6 | Q MBLG (2001/2901 and 2002/2902) or 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. N May not be counted with BIOL 3926 or 3929. | | | | | 2 |
| BIOL 3926 Developmental Genetics (Advanced) | 6 | Q Distinction average in MBLG (2001/2901 and 2002/2902) or in 16 credit points of Intermediate Biology including BIOL (2005 or 2905). For BMedSc students 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. N May not be counted with BIOL 3026 or 3929. | | | | | 2 |
| BIOL 3027 Bioinformatics and Genomics | 6 | Q MBLG (2001 or 2101 or 2901) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. N May not be counted with BIOL 3927. | | | | | 1 |
| BIOL 3927 Bioinformatics and Genomics (Advanced) | 6 | Q Distinction in MBLG (2001 or 2101 or 2901) or Distinction average in 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2005 or 2905 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. N May not be counted with BIOL 3027. | | | | | 1 |
| BIOL 3928 Evolutionary Genetics Molecular (Adv) | 6 | Q Distinction average in 16 credit points of Intermediate Biology including BIOL 2905 or in MBLG (2001/2901 and 2002/2902). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. N May not be counted with BIOL (3025 or 3925). <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 2 |
| Cell Pathology | | | | | | | |
| CPAT 3001 Cell Pathology A | 12 | P ANAT 2002; or BCHM 2002 or 2902; or BIOL 2005 or 2006 or 2905 or 2906; or both PCOL 2001 and (2002 or 2003); or PHSI2002. For BMedSc: 32 credit points from Intermediate BMED units of study. <i>NB: Permission required for enrolment. Entry requires Departmental permission: only a small number of students can be accommodated in the laboratory facilities. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 1 |
| CPAT 3101 Pathological Basis of Human Disease | 12 | Q ANAT 2001; or BCHM 2001 or 2002 or 2101 or 2102 or 2901 or 2902; or MBLG 2001 or 2101 or 2901; or BIOL 2001 or 2002 or 2005 or 2006 or 2101 or 2102 or 2105 or 2106 or 2901 or 2902 or 2905 or 2906; or HPSC 2001 or 2002; or MICR 2001 or 2003 or 2901; or PCOL 2001; or PHSI 2001. For BMedSc: 32 credit points from Intermediate BMED units of study. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 2 |
| Immunology | | | | | | | |
| BMED 3003 Immunology | 12 | Q 32 credit points of Intermediate BMED units including BMED 2506. N May not be counted with TMMU 3002. | | | | | 2 |
| Infectious Diseases | | | | | | | |
| BMED 3004 Infectious Diseases | 12 | Q 32 credit points of Intermediate BMED units including BMED 2506. | | | | | 2 |
| Microbiology | | | | | | | |
| MICR 3001 General and Medical Microbiology | 12 | P Except for BMedSc: BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). Q Except for BMedSc: MICR 2002 or 2012 (or 2001 and 2004) or 2902. For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2506. N May not be counted with MICR 3901. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 1 |
| MICR 3901 General and Medical Microbiology (Adv) | 12 | P Except for BMedSc: BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). Q Except for BMedSc: At least 12 credit points of Intermediate Microbiology including Distinction in MICR (2001 or 2002 or 2004 or 2901 or 2902) For BMedSc: 32 credit points of Intermediate BMED units including Distinction or better in BMED 2506. N May not be counted with MICR 3001. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 1 |
| MICR 3003 Molecular Biology of Pathogens | 12 | Q 32 credit points of intermediate BMED units including BMED 2506. N May not be counted with MICR 3903. <i>NB: it is strongly recommended that students also enrol in MICR 3001.</i> | | | | | 2 |

Table IV: Bachelor of Medical Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|--|-----------------|---------------|----------------|----------------|----------|
| MICR 3903 Molecular Biology of Pathogens Advanced | 12 | Q 32 credit points of Intermediate BMED units including Distinction or better in BMED 2506. N May not be counted with MICR 3003. <i>NB: it is strongly recommended that students also enrol in MICR 3001.</i> | | | | | 2 |
| Pharmacology | | | | | | | |
| PCOL 3001 Molecular Pharmacology and Toxicology | 12 | p PCOL 2001 and (2002 or 2003) or 32 credit points from Intermediate BMED units of study. N PCOL 3901. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 1 |
| PCOL 3901 Molecular Pharmacology & Toxicology Adv | 12 | Q Distinction average in PCOL 2001 and (2002 or 2003) or in 32 credit points from Intermediate BMED units of study. N May not be counted with PCOL 3001. <i>NB: Permission required for enrolment. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Entry to this unit requires Departmental permission.</i> | | | | | 1 |
| PCOL 3002 Neuro- and Cardiovascular Pharmacology | 12 | P PCOL 2001 and (2002 or 2003) or 32 credit points from Intermediate BMED units of study. N May not be counted with PCOL 3902. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 2 |
| PCOL 3902 Neuro & Cardiovascular Pharmacology Adv | 12 | Q Distinction average in PCOL 2001 and (2002 or 2003) or in 32 credit points from Intermediate BMED units of study. N May not be counted with PCOL 3002. <i>NB: Permission required for enrolment. The completion of MBLG 2001 or 2101 or 2901 is highly recommended. Entry to this unit requires Departmental permission.</i> | | | | | 2 |
| Physiology | | | | | | | |
| PHSI 3001 Neuroscience | 12 | P Except for BMedSc students: (MBLG 2001 or 2101 or 2901 or BCHM 2001 or 2101 or 12901) plus at least 8 credit points of Intermediate Science units of study. Q PHSI (2101 or 2001) or ANAT (2101 or 2001) or ANAT 2003 or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). N May not be counted with PHSI 3901. <i>NB: A minimum of 8 credit points of Intermediate Physiology and/or Anatomy is recommended.</i> | | | | | 1 |
| PHSI 3901 Neuroscience (Advanced) | 12 | P Except for BMedSc students: (MBLG 2001 or 2101 or 2901 or BCHM 2001 or 2101 or 2901) plus at least 8 credit points of Intermediate Science units of study. Q PHSI (2101 or 2001) or ANAT (2101 or 2001) or ANAT 2003 or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). N May not be counted with PHSI 3001. <i>NB: Permission required for enrolment. A minimum of 8 credit points of Intermediate Physiology and/or Anatomy is recommended. Available to selected students who have achieved a mark of at least 65 in the qualifying unit/s of study.</i> | | | | | 1 |
| PHSI 3002 Neuroscience - Cellular and Integrative | 12 | P For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. N May not be counted with PHSI 3902. <i>NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 2 |
| PHSI 3902 Neuroscience- Cellular & Integrative Adv | 12 | P For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. Q Credit or better in PHSI 3001. N May not be counted with PHSI 3002. <i>NB: Permission required for enrolment. Available to selected students who have achieved a mark of at least 65 in the qualifying unit/s of study for PHSI 3002 and approved by course coordinators. The completion of MBLG 2001 or 2101 or 2901 is highly recommended.</i> | | | | | 2 |
| PHSI 3003 Heart and Circulation | 12 | P Except for BMedSc: (MBLG 2001 or 2101 or 2901 or BCHM 2001 or 2101 or 2901) and (BCHM 2002 or 2102 or 2902 or MBLG 2002 or 2102 or 2902) plus at least 8 credit points of Intermediate Science units of study. Q PHSI (2102 or 2002) or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). N May not be counted with PHSI 3903. <i>NB: A minimum of 8 credit points of Intermediate Physiology and BCHM 2002 or 2102 or 2902 are strongly recommended.</i> | | | | | 2 |
| PHSI 3903 Heart and Circulation (Advanced) | 12 | P Except for BMedSc: (MBLG 2001 or 2101 or 2901 or BCHM 2001 or 2101 or 2901) and (BCHM 2002 or 2102 or 2902 or MBLG 2002 or 2102 or 2902) plus at least 8 credit points of Intermediate Science units of study. Q PHSI (2102 or 2002) or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). N May not be counted with PHSI 3003. <i>NB: Permission required for enrolment. A minimum of 8 credit points of Intermediate Physiology and BCHM 2002 or 2102 or 2902 are strongly recommended. Available to selected students who have achieved a mark of at least 65 in the qualifying unit/s of study.</i> | | | | | 2 |
| PHSI 3004 Human Cellular Physiology | 12 | P Except for BMedSc: PHSI (2001 or 2101) and PHSI (2002 or 2102) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901). For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). N May not be counted with PHSI 3904. | | | | | 1 |

Table IV: Bachelor of Medical Science (continued)

| Unit of study | CP | A Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---|----|---------------------|---|---------------|----------------|----------------|----------|
| PHSI Human Cellular Physiology 3904 (Advanced) | 12 | P | Except for BMedSc students: PHSI (2001 or 2101) and PHSI (2002 or 2102) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901). For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). N May not be counted with PHSI 3004. <i>NB: Permission required for enrolment. Available to selected students who have achieved an average of at least 65 in the prerequisite units of study.</i> | | | | T |

■ Elective units of study

Refer also to Table 1: BSc.

| Chemistry | | | | | | | |
|---|----|---|--|--|--|--|---|
| CHEM Chemistry 3 Life Sciences 3903 (Advanced) | 12 | P | For BSc (Molecular Biology and Genetics): CHEM 2903. Q For BMedSc: 32 credit points of Intermediate BMED units and Credit average in CHEM (2311 and 2312). N May not be counted with CHEM 3101,3102,3201,3202,3311,3601,3602,3901 or 3902. | | | | 2 |

| History and Philosophy of Science | | | | | | | |
|---|----|---|---------------------|--|--|--|-----|
| HPSC History of the Biomedical 3102 Sciences | 12 | Q | HPSC 2001 and 2002. | | | | 1,2 |

D. Honours units of study

Where Honours units of study are designated A, B, C and D the units should be taken in that order, whether a student enrolls full time, part time or mid-year.

| Anatomy | | | | | | | |
|--------------------------------|----|--|---|--|--|--|-----|
| ANAT Anatomy Honours A 4011 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| ANAT Anatomy Honours B 4012 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| ANAT Anatomy Honours C 4013 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| ANAT Anatomy Honours D 4014 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |

| Biochemistry | | | | | | | |
|-------------------------------------|----|--|---|--|--|--|-----|
| BCHM Biochemistry Honours A 4011 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| BCHM Biochemistry Honours B 4012 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| BCHM Biochemistry Honours C 4013 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| BCHM Biochemistry Honours D 4014 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |

| Biology (Genetics) | | | | | | | |
|--------------------------------|----|--|---|--|--|--|-----|
| BIOL Biology Honours A 4011 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| BIOL Biology Honours B 4012 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| BIOL Biology Honours C 4013 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| BIOL Biology Honours D 4014 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |

| Cell Pathology | | | | | | | |
|---------------------------------------|----|--|---|--|--|--|-----|
| CPAT Cell Pathology Honours A 4011 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| CPAT Cell Pathology Honours B 4012 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| CPAT Cell Pathology Honours C 4013 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| CPAT Cell Pathology Honours D 4014 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |

Histology and Embryology
Students should enrol in Anatomy Honours.

| Immunology | | | | | | | |
|-----------------------------------|----|--|---|--|--|--|-----|
| BMED Immunology Honours A 4011 | 12 | | <i>NB: Permission required for enrolment. Immunology Honours is available to approved students from any degree program. Intending candidates should contact the Department.</i> | | | | 1,2 |
| BMED Immunology Honours B 4012 | 12 | | <i>NB: Permission required for enrolment. Immunology Honours is available to approved students from any degree program. Intending candidates should contact the Department.</i> | | | | 1,2 |
| BMED Immunology Honours C 4013 | 12 | | <i>NB: Permission required for enrolment. Immunology Honours is available to approved students from any degree program. Intending candidates should contact the Department.</i> | | | | 1,2 |
| BMED Immunology Honours D 4014 | 12 | | <i>NB: Permission required for enrolment. Immunology Honours is available to approved students from any degree program. Intending candidates should contact the Department.</i> | | | | 1,2 |

| Infectious Diseases | | | | | | | |
|--|----|--|---|--|--|--|-----|
| BMED Infectious Diseases Honours A 4021 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| BMED Infectious Diseases Honours B 4022 | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |

Table IV: Bachelor of Medical Science (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---|----|---|-----------------|---------------|----------------|----------------|----------|
| BMED 4023 Infectious Diseases Honours C | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| BMED 4024 Infectious Diseases Honours D | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| Microbiology | | | | | | | |
| MICR 4011 Microbiology Honours A | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| MICR 4012 Microbiology Honours B | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| MICR 4013 Microbiology Honours C | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| MICR 4014 Microbiology Honours D | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| Pharmacology | | | | | | | |
| PCOL 4011 Pharmacology Honours A | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| PCOL 4012 Pharmacology Honours B | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| PCOL 4013 Pharmacology Honours C | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| PCOL 4014 Pharmacology Honours D | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| Physiology | | | | | | | |
| PHSI 4011 Physiology Honours A | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| PHSI 4012 Physiology Honours B | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| PHSI 4013 Physiology Honours C | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |
| PHSI 4014 Physiology Honours D | 12 | | | | | | 1,2 |
| | | <i>NB: Permission required for enrolment.</i> | | | | | |

■ Bachelor of Science (Medical Science) units of study

Bachelor of Medical Science Junior units of study

All qualifying, pre- and corequisite units of study, details of staff, examinations, units of study delivery and descriptions are as described under the appropriate Department or School entry for the BSc, except for the Chemistry units below.

CHEM 1908 Chemistry 1 Life Sciences A (Advanced)

6 credit points. Semester: 1. Classes: Total of 6hrs per week consisting on average of 3 lectures, 1 tutorial/discussion session and 2hrs of practical work. Prerequisite: UAI of at least 93 and HSC Chemistry result in the 80th percentile or better, or Distinction or better in a University level Chemistry unit, or by invitation. Corequisite: Recommended concurrent units of study: 6 credit points of Junior Mathematics. Prohibition: May not be counted with CHEM 1002 or 1102 or 1902 or 1904 or 1907.

Assessment: A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

NB: Permission required for enrolment.

Lectures (39 hr): A strong background in junior chemistry is essential for understanding molecular structures and processes. This unit of study provides the basis for understanding fundamental chemical processes and structures at an advanced level, with particular emphasis on how these apply to the life sciences. Topics to be covered include: atomic structure, chemical bonding and organic chemistry of functional groups with applications in life sciences.

Tutorials/Discussions (13 hr): These will provide aspects of problem solving relevant to the theory.

Practical: Practicals (30hr) These will be designed to develop practical skills based on the theory presented in the lectures

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1909 Chemistry 1 Life Sciences B Mol (Adv)

6 credit points. Semester: 2. Classes: Total of 6hrs per week consisting on average of 2 lectures, 1 tutorial/discussion session and 3hrs of practical work. Prerequisite: CHEM 1907 or 1908 or equivalent.

Corequisite: Recommended concurrent units of study: 6 credit points of

Junior Mathematics. Prohibition: May not be counted with CHEM 1001 or 1101 or 1901 or 1903 or 1905 or 1906. Assessment: A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

Lectures (26 hr): A strong background in junior chemistry is essential for understanding molecular structures and processes. This unit of study provides the basis for understanding fundamental chemical processes and structures at an advanced level, with particular emphasis on how these apply to the life sciences. Topics to be covered include: chemical equilibria, solutions, acids and bases, ions in solution, redox reactions, colloids and surface chemistry, the biological periodic table, chemical kinetics and radiochemistry with applications to life sciences.

Tutorials/Discussions (13 hr): These will provide aspects of problem solving relevant to the unit of study.

Practical: (30 hr) These will be designed to develop practical skills based on the theory presented in the lectures

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

Bachelor of Medical Science Intermediate Core units of study

BMED 2501 Cells and Cell Communication

6 credit points. Hilary Lloyd (Pharmacology). Semester: 1. Classes: Average 6 hrs/wk of lectures, tutorials and practicals. Qualifying: 12 credit points of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology. Assessment: One 2hr and one 1hr theory exam. Practical tests, reports and assignments.

A strong understanding of cellular structures and communication systems is essential for an appreciation of whole body function. This unit of study extends students' preexisting understanding of basic cell structure by focussing on organelle function, cell specialisation and tissue organisation in humans. By way of contrast, there is also discussion of the unique morphology of prokaryotic organisms (bacteria and viruses). Students are then introduced to the ways in which biochemical building blocks are arranged to form macromolecular subcellular structures (eg, phospholipids into cell membranes, and amino acids into

proteins). 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. The various modes of communication between cells are then covered, with extended treatment of receptor-effector signal transduction, intracellular signaling cascades, cell to cell signaling and pharmacological intervention in these processes.

Practical classes not only complement the lecture material but also introduce students to a wide range of technical skills: including biomedical bench skills, tissue processing, bacterial cultivation, manipulation of 3D protein graphics (including drug-receptor interactions), protein purification, and enzyme assay. In addition, the sessions are also designed to give students generic skills such as record keeping, data collection and presentation, protocol planning, spreadsheet design and written communication.

BMED 2502 Genes and Genetic Engineering

6 credit points. Dr Joel Mackay (Biochemistry). **Semester: 1. Classes:** Average 6 hrs/wk of lectures, tutorials and practicals. **Qualifying:** 12 credit points of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology. **Assessment:** One 2hr and one 1 hr theory exam. Practical tests, reports and assignments.

This unit of study is designed to teach students how genetic information is stored, transmitted and expressed. Students are also introduced to DNA technologies such as cloning and gene therapy as well as receiving an overview of cellular development and embryology. Specifically, the unit of study covers the structure of DNA at both the molecular and chromosomal level, with extrapolation to the packaging, replication and transfer of genetic material. The way in which the message encoded in DNA is transcribed and translated into proteins is then outlined, with particular emphasis on eucaryotic systems and on the control of the expression process. The principles of cloning, gene synthesis, protein engineering and other aspects of modern DNA technology are then described, enabling an appreciation of the application of transgenics, gene therapy and the use of DNA technology in drug design. Students then study the linkage and mapping of genes including reference to DNA fingerprinting and the human genome project. 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 program events such as differentiation and cell death. This allows discussion of the development of the human embryo and the consequences and treatment of abnormal tissue growth (cancer).

The technical skills taught in the practical classes include the use of restriction enzymes, the separation of DNA molecules using electrophoresis, the inspection of chromosomes, linkage mapping, gene transfer and the measurement of gene expression. In addition to nurturing the skills involved in the design and execution of experiments, the practical sessions will formally teach students report writing skills and will give students practice at articulating feedback to their peers.

BMED 2503 Regulation of the Internal Environment

8 credit points. Francoise Janod-Groves (Physiology). **Semester: 1. Classes:** Average 8 hrs/wk of lectures, tutorials and practicals. **Qualifying:** 12 credit points of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology. **Assessment:** One 2hr and one 1 hr theory exam, one 1 hr theory of practical exam. Practical tests, reports and assignments.

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, renal, endocrine and nervous systems. Special reference is made throughout the unit of study to the effect of drugs on homeostatic components. For example, as part of the discussion on the structure and function of the heart and blood vessels, students are also taught about the effect of drugs on the cardiac output, blood flow and blood pressure. Examples of how homeostatic mechanisms are perturbed in disease are also emphasised (eg, with reference to cardiovascular pathology). Discussion of the respiratory system likewise embraces the structure of the respiratory organs, description of the mechanism of the transport of gases to and from cells and the pharmacotherapy of respiratory disorders (eg, asthma). Similar treatment of the renal system involves anatomical and

histological investigation of kidney structure and a physiological description of kidney function with reverence to the regulation of pH, P_{O2} and temperature of the extracellular fluid. After this, the action of drugs (including diuretic drugs) on the kidney is discussed. Examples of more long-term regulation is provided by consideration of the hormonal control of pregnancy, and the foetal-new-born transition.

Practical classes are designed to nurture the same generic attributes taught in BMED 2501 and BMED 2502 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 endocrine organs, 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 nerve impulses are transmitted, 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. Similarly, study of the pathology of the homeostatic organs will be complemented using tissue samples and slides.

BMED 2504 Digestion, Absorption and Metabolism

6 credit points. Margot Day (Physiology). **Semester: 2. Classes:** Average 6 hrs/wk of lectures, tutorials and practicals. **Assumed knowledge:** BMED 2501, BMED 2502 and BMED 2503. **Qualifying:** 12 credit points of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology. **Assessment:** One 2hr and one 1 hr theory exam. Practical tests, reports and assignments.

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 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 is then covered, with particular emphasis on the whole body integration and regulation of these metabolic processes. This enables students to appreciate the extent of organ coordination in response to circumstances such as starvation, obesity, exercise and diabetes. It also provides a solid background for the understanding of pharmacological intervention in these conditions. The pharmacokinetic angle is explored further with discussion of the metabolism and absorption of drugs including the detoxification and excretion of xenobiotic compounds. Intestinal microflora, both beneficial and pathogenic are also discussed in this unit of study.

Practical classes give students extensive experience with inspection of the digestive system at both the cellular and gross anatomical level. In addition, students are taught radioisotope handling and biochemical assay design skills in concert with sessions designed to nurture oral presentation skills, hypothesis testing, data analysis, troubleshooting, instruction writing and feedback skills.

BMED 2505 Interaction with External Environment

6 credit points. Robin Arnold (Anatomy/Histology). **Semester: 2. Classes:** Average 6 hrs/wk of lectures, tutorials and practicals. **Assumed knowledge:** BMED 2501, BMED 2502 and BMED 2503. **Qualifying:** 12 credit points of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology. **Assessment:** One 2hr and one 1 hr theory exam. Practical tests, reports and assignments.

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 coordinated in response to external stimuli are covered in more detail. This is complemented by discussion of the effects of drugs on the nervous system, particularly addictive and psychoactive compounds, with special reference to pain and analgesics. The structure and function of skeletal muscle is covered at both a histological and anatomical

level and has been designed to integrate with information regarding the skeleton and movement. After discussion of the molecular mechanism of muscle contraction, students extrapolate to consider the regulation of fuel selection during exercise and the cause of fatigue. This leads onto discussion of performance enhancing drugs, and to an appreciation of how toxins and infections can perturb the normal neuromuscular coordination. Thus pharmacological and pathological considerations, such as the use of poisoned arrows and muscle paralysis, prion and tetanus infection, are studied in concert with relevant physiological and biochemical concepts.

In practical classes, students perform experiments (often on themselves) to illustrate the functioning of the senses and motor control and coordination. 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 computer simulations in synaptic transmission, the detection of opioids and the isolation and identification of tetanus bacteria.

BMED 2506 Microbes and Body Defence Systems

8 credit points. Helen Agus (Microbiology). **Semester: 2. Classes:** Average 8 hrs/wk of lectures, tutorials and practicals. **Assumed knowledge:** BMED 2501, BMED 2502 and BMED 2503. **Qualifying:** 12 credit points of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology. **Assessment:** One 2hr and one 1 hr theory exam, one 1 hr theory of prac. exam. Practical tests, reports and assignments.

For a full understanding of human defence systems, 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 starts with a description of the structure and function of pathogenic microorganisms (including bacteria, fungi, protists, and viruses, etc). The impact of bacteria and viruses on individuals and society is taught with reference to specific infectious diseases (eg, influenza, polio, herpes, etc) and this leads into an introduction to epidemiology. Included in discussion of the way in which these organisms cause and transmit disease is a consideration of how antibiotics and antiviral drugs work and how microbes can become drug resistant. 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. 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.

Practical classes allow students to obtain experience in a range of classical and molecular virological, bacteriological and immunological techniques. In an integrated session, students examine the infection, immunity and pathology of tuberculosis. Also included are tutorial sessions in which hospital microbiologists guide students through clinical case studies. In addition, the practical sessions draw widely on, and nurture, the generic skills taught in preceding units of study.

Textbooks

Alcamo LE. Fundamentals of Microbiology. 6th ed, Jones & Bartlett, 2001

Bachelor of Medical Science Intermediate Elective units of study

The second year of the Bachelor of Medical Science consists of 20 credit points per semester of core units of study, and 4 credit points per semester of electives.

Elective units may be chosen from the following, or from any other unit of study offered in Table 1, or at the University, subject to the normal completion of prerequisites or approval of the relevant teaching department. The general restriction that the content should not overlap with the core units applies, and a list of units specifically excluded as electives follows below.

When selecting elective units students should take care to ensure that they satisfy the degree requirements, as detailed in chapter 5.

CHEM 2311 Chemistry 2 (Biological Sciences) Theory
4 credit points. Dr Robert Baker. Semester: 1. Classes: 4 lec/wk. Prerequisite: 12 credit points of Junior Chemistry. Prohibition: May not be counted with CHEM 2001 or 2101 or 2301 or 2901 or 2903 or 2502. Assessment: 3 hr exam (80%), continuous assessment (20%). 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).

CHEM 2312 Chemistry 2 (Biological Sciences) Prac
4 credit points. Dr Robert Baker. **Semester:** 1,2. **Classes:** 1x4 hour practical/week. **Prerequisite:** 12 credit points of Junior Chemistry. **Corequisite:** CHEM 2311. Prohibition: May not be counted with CHEM 2001 or 2101 or 2301 or 2901 or 2903 or 2502. **Assessment:** Practical reports.

This unit of study aims to assist students in developing the knowledge and skills required to carry out practical work on the chemistry underlying biological systems. The course 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.

PHYS 2105 Physics for Medical Sciences

4 credit points. Semester: 2. Classes: 2 lec, 1 tut & 1 prac/wk. Prerequisite: 12 credit points of Junior Physics, excluding PHYS 1500 & 1600. Assessment: One 2 hr exam, assignments, prac work and report. This unit of study is primarily intended for students in the Bachelor of Medical Science program, but is also available in other degree programs. It covers a number of physics topics relevant to medical science: sound and ultrasound, light and optics, fluid flow, electrical properties of the cells and the nervous system, heat and temperature. The topics are presented in the context of their relevance and applications to medical science. In addition to lectures, on alternate weeks there are two hour workshop tutorials and laboratory sessions involving both practical and simulation.

Intermediate units not available as Medical Science electives

Some units of study may not be taken as electives. These include units offered by the departments of Anatomy & Histology, Biological Sciences, Biochemistry, Immunology, Infectious diseases, Microbiology, Pathology, Pharmacology and Physiology and any other units deemed to be mutually exclusive with the core units. Excluded Intermediate units from Table 1 of the Bachelor of Science are:

Anatomy and Histology

- ANAT 2001 Principles of Histology
- ANAT 2002 Comparative Primate Anatomy
- ANAT 2003 Concepts in Neuroanatomy
- ANAT 2004 Principles of Development

Biochemistry

- BCHM 2011 Biochemistry
- BCHM 2002 Molecules, Metabolism and Cells
- BCHM 2102 Molecules, Metabolism and Cells Theory
- BCHM 2902 Molecules, Metabolism and Cells (Advanced)

Biological Sciences

- BIOL 2006 Cell Biology
- BIOL 2906 Cell Biology (Advanced)
- BIOL 2106 CeU Biology - Theory

Immunology

- IMMU 2001 Introductory Immunology

Microbiology

- MICR 2001 Introductory Microbiology
- MICR 2002 Applied Microbiology
- MICR 2003 Theoretical Microbiology A
- MICR 2004 Theoretical Microbiology B
- MICR 2901 Introductory Microbiology (Advanced)
- MICR 2902 Applied Microbiology (Advanced)

Molecular Biology and Genetics

- MBLG 2001 Molecular Biology & Genetics A
- MBLG 2101 Molecular Biology & Genetics A (Theory)
- MBLG 2901 Molecular Biology & Genetics A (Advanced)
- MBLG 2002 Molecular Biology & Genetics B
- MBLG 2102 Molecular Biology & Genetics B (Theory)
- MBLG 2902 Molecular Biology & Genetics B (Advanced)

Pharmacology

- PCOL 2001 Pharmacology Fundamentals
- PCOL 2002 Intro Pharmacology: Drugs and People
- PCOL 2003 Pharmacology: Drugs and Society

Physiology

- PHSI2001 Introductory Physiology A
- PHSI 2002 Introductory Physiology B
- PHSI 2101 Physiology A
- PHSI 2102 Physiology B

Bachelor of Medical Science Senior Core units of study

Students are required to complete at least 36 credit points of Senior units of study chosen from the core subject areas of Anatomy and Histology, Biology (Genetics), Biochemistry, Cell Pathology, Immunology, Infectious diseases, Microbiology, Pharmacology and Physiology, as listed in Table IV. Descriptions are listed here where the unit is available only in the Bachelor of Medical Science, and under the relevant department headings earlier in this chapter where the units are also available in the Bachelor of Science.

ANAT3005 Topographical Anatomy

12 credit points. Assoc. Prof. Jan Provis. **Semester:** 2. **Classes:** 3 lec & 9 tut or prac/wk. **Qualifying:** BMED (2101 and 2102) or 32 credit points of Intermediate BMED units including BMED (2503 and 2504 and 2505). **Prohibition:** May not be counted with ANAT 3004 or 3008. **Assessment:** One 3hr exam, one prac exam, one 2500w essay.

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

Textbooks

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

BIOL 3928 Evolutionary Genetics Molecular (Adv)

6 credit points. Prof. Shine, Dr Oldroyd. **Semester:** 2. **Classes:** 4 lec & 8 prac/wk. **Qualifying:** Distinction average in 16 credit points of Intermediate Biology including BIOL 2905 or in MBLG (2001/2901 and 2002/2902). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. **Prohibition:** May not be counted with BIOL (3025 or 3925). **Assessment:** One 2hr exam, assignments, seminar and an essay based on discussion sessions.

NB: The completion of MBLG 2001 or 2101 or 2901 is highly recommended.

This unit is the same as BIOL 3925 Evolutionary Genetics and Animal Behaviour (Advanced), except for the addition of topical seminars and discussions in this discipline.

BMED 3003 Immunology

12 credit points. Dr Helen Briscoe. **Semester:** 2. **Classes:** 3 lec, 1 tut & 8 prac/wk. **Qualifying:** 32 credit points of Intermediate BMED units including BMED 2506. **Prohibition:** May not be counted with IMMU 3002. **Assessment:** Exam, essays, prac.

This unit of study will be taught by the Immunology unit of the Department of Medicine, with contributions from the Centenary Institute of Cancer Medicine and Cell Biology and other invited experts in the discipline. The unit will provide a comprehensive understanding of the components of the immune system at the molecular and cellular levels; the mechanisms of pathological immune processes; immune system dysfunction; and immunological techniques used in clinical diagnostic and research laboratories.

BMED 3004 Infectious Diseases

12 credit points. Assoc. Prof. C. Harbour. Semester: 2. Classes: 4 lec & 8 prac/wk. Qualifying: 32 credit points of Intermediate BMED units including BMED 2506. Assessment: Essays, tutorials, seminars, practical assessment and theory exam.

This unit of study is taught by the Department of Infectious Diseases, Faculty of Medicine, which is located on the 6th floor of the Blackburn building (Ph: (02) 9351 2412). A major aim of the unit is to study the interactions between infectious agents and their human hosts in order to understand how infectious disease occurs.

The rationale for this approach is that the elucidation and understanding of the mechanisms by which infectious agents cause disease should lead to the development of more rational control strategies. Knowledge of the causes of the most important infectious diseases is acquired by studying case histories in extended tutorial/demonstration sessions, lectures and self-directed learning. The lecture series also covers other topics including mechanisms of pathogenesis, replication strategies, epidemiology, and infection control procedures. Practical sessions are designed to maintain and improve the technical skills appropriate for the handling of infectious agents that you acquired in the core units. Theme sessions are used to demonstrate and explain the conceptual framework underpinning the most important practical procedures used in ID today.

MICR 3003 Molecular Biology of Pathogens

12 credit points. Dr Ferenci (Coordinator), Prof. Reeves, Dr Carter. **Semester:** 2. **Classes:** 3 lec, 8 prac & 1 other/wk. **Qualifying:** 32 credit points of Intermediate BMED units including BMED 2506. **Prohibition:** May not be counted with MICR 3903. **Assessment:** Two 2hr exams, practical.

NB: it is strongly recommended that students also enrol in MICR 3001

This unit of study is designed to provide an understanding of microbial disease at the molecular level. The following topics will be covered: introductory bacterial genetics; pathogenic processes and the molecular basis of pathogenicity in bacteria; structure and function of micro-organisms and action of antibiotics and chemotherapeutic agents; and pathogenic processes in fungi and viruses.

MICR 3903 Molecular Biology of Pathogens Advanced

12 credit points. Dr Ferenci (Coordinator), Prof. Reeves, Dr Carter. **Semester:** 2. **Classes:** 4 lec & 8 prac/wk. **Qualifying:** 32 credit points of Intermediate BMED units including Distinction or better in BMED 2506. **Prohibition:** May not be counted with MICR 3003. **Assessment:** Two 2hr exams, practical.

NB: it is strongly recommended that students also enrol in MICR 3001

Same details as MICR 3003, with advanced components

Bachelor of Medical Science Intermediate and Senior Elective units of study

In addition to the core Senior requirements, students must complete an additional 12 credit points from any Intermediate or Senior elective units of study. Two options offered to Medical Science students are listed below. Core units that have not already been completed may also be chosen. Students should also keep in mind the list of excluded Intermediate Science units earlier in this section.

CHEM 3903 Chemistry 3 Life Sciences (Advanced)

12 credit points. Semester: 2. Classes: 4 lec & 8 prac/wk & 4 compulsory discussion sessions. Prerequisite: For BSc (Molecular Biology and Genetics): CHEM 2903. Qualifying: For BMedSc: 32 credit points of Intermediate BMED units and Credit average in CHEM (2311 and 2312). Prohibition: May not be counted with CHEM 3101, 3102, 3201, 3202, 3311, 3601, 3602, 3901 or 3902. Assessment: Exams (60%), prac reports (30%), assignment based on discussion sessions (10%).

The aim of this unit of study is to provide students enrolled in the Molecular Biology and Genetics Degree Program with some advanced chemistry required for an understanding of the subject. The unit consists of modules dealing with the biological and environmental chemistry of the transition elements; medicinal and biological chemistry; biophysical chemistry plus one other module to be chosen from a variety of other options that are important for understanding chemical processes or techniques used in molecular biology and genetics. A list of modules and more detailed descriptions are given in the Senior Chemistry Handbook available from the School. A special practical component is designed to illustrate the principles given in the

lectures. In addition, 4 seminars from specialists in molecular biology and genetics will be given to illustrate recent research in the area.

H PSC 3102 History of the Biomedical Sciences

12 credit points. Semester: 1,2. Classes: 4 lec, 4 tut & 4 prac/wk.

Qualifying: HPSC 2001 and 2002. Assessment: Tut assignment, one 3000w essay, project report, take-home exam.

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

Bachelor of Medical Science 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.

■ Bachelor of Science in Media and Communications (BScMediaCommun) degree program

Summary of requirements

The Bachelor of Science in Media and Communications is a four year degree in which students undertake a broad interdisciplinary education which encompasses training in a science area "with training and industry experience in facets of the media (print journalism, radio, television and online media and communications). The science components are based on the units of study offered in the BSc leading to a Science major, while the media components draw on those units offered for the BA(Media & Communications) leading to a major in the area of media, and also including an industry internship with an organisation associated with science media. The degree is awarded with the grades of High Distinction, Distinction and Pass depending on performance. The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5 of this Handbook) 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. The 192 credit points required for the degree must include:

- at least 120 credit points of Intermediate or Senior units of study
- at least one Science major from those included in Table I;
- a major in Media and Communications (normally 12 credit points from Junior units and 32 credit points from Senior units in MECO - listed in Table V);
- eight credit points of Senior units from each of the areas of Government and Media, Law and Media, and Media Relations;
- 16 credit points from the Science Media and Communications Practice units listed in Table V, taken in an approved industry in the third or fourth year of candidature;
- a 6 credit point unit of study in communication and analytical skills or in other academic skills as may be prescribed from time to time (currently ENGL 1005);
- a minimum of 12 credit points from units of study in Mathematics and Statistics.

You should also note the following:

- no more than 12 credit points from units of study in which the grade Pass (Concessional) has been awarded. Pass (Concessional) is awarded for Junior units of study only.
- units of study completed at The University of Sydney Summer School which correspond to units of study in the table of undergraduate units of study may be credited towards the course requirements
- a standard full time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part time
- you may not enrol in more than 32 credit points in any one semester without permission
- in order to enrol in a unit of study, you have to meet any 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 are limited (details can be obtained from Departments)
- a student may not enrol without first obtaining permission from the Dean in additional units of study once the degree requirements of 192 credit points have been satisfied
- 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.

Honours

There will be Honours courses in Media and Communications and in all Science subject areas. Please refer to Honours in the Faculty of Science on page 157.

Transfer between the BScMediaCommun and the BSc

Students who has completed at least 48 credit points may with the permission of the Dean be permitted to transfer from the BSc to the BScMediaCommun if their marks averaged over all attempted units of study is 75 or greater.

If a student has completed the normal requirements for the pass degree of BSc he or she may apply to take this degree provided that candidature for the B ScMediaCommun is abandoned.

Students who at the end of at least four semesters of candidature have completed at least 96 credit points in total, and who intends to satisfy the requirements for entry to a Fourth Year Honours unit of study or joint Honours unit of study for the BSc, may apply to transfer candidature to the BSc.

Universities Admissions Index (UAI)

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

Degree Resolutions

See chapter 5.

Table V: Bachelor of Science in Media and Communications

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|---|-----------------|---------------|----------------|----------------|----------|
| ■ Junior units of study | | | | | | | |
| ENGL 1005 Language and Image | 6 | N ENGL 1050. | | | | | 1,2 |
| MECO 1001 Introduction to Media Studies 1 | 6 | <i>NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.</i> | | | | | |
| MECO 1002 Introduction to Media Studies 2 | 6 | P MECO 1001. c ENGL 1005. | | | | | 2 |
| <i>NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.</i> | | | | | | | |
| ■ Senior units of study | | | | | | | |
| GOVT 2303 Media Politics | 8 | P Two GOVT 1000 level units of study or MECO 2003. | | | | | |
| MECO 2001 Broadcast News (Radio and Online) | 8 | P MECO 1001, MECO 1002 and ENGL 1050. C MECO 2002 if taken in Semester 1 or MECO 2003 in Semester 2. <i>NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.</i> | | | | | |
| M ECO 2002 Writing for Print Media | 8 | P MECO 1001, MECO 1002 and ENGL 1050. C MECO 2001 if taken in Semester 1 or MECO 2003 in Semester 2. <i>NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.</i> | | | | | |
| MECO 2003 Media Relations and Advertising | 8 | c MECO 2001 or MECO 2002. <i>NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.</i> | | | | | |
| MECO 3001 Video Production | 8 | P MECO 1001, MECO 1002, MECO 2001, MECO 2002, MECO 2003, ENGL 1050. C MECO 3002, MECO 3003, GOVT 2303. <i>NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.</i> | | | | | |

Table V: Bachelor of Science in Media and Communications (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|-----------------------------------|----|---|-----------------|---------------|----------------|----------------|----------|
| MECO 3002 Online Media Production | 8 | P MECO 1001, MECO 1002, MECO 2001, MECO 2002, MECO 2003, ENGL 1050, MECO 3001. | | | | | 2 |
| | | C MECO 3003, GOVT 2303. | | | | | |
| | | <i>NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.</i> | | | | | |
| MECO 3003 Media, Law and Ethics | 8 | P MECO 1001, MECO 1002, ENGL 1050 or ENGL 1005, MECO 2001, MECO 2002, MECO 2003, MECO 3001. | | | | | 2 |
| | | C MECO 3002, GOVT 2303. | | | | | |
| | | <i>NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.</i> | | | | | |

Note

Units planned for 2004 include SCMP 3001 and SCMP 3003 Science Media and Communications Practice, each worth 8 credit points. The exact codes and titles subject to confirmation.

■ Bachelor of Science in Media and Communications units of study

ENGL 1005 Language and Image

6 credit points. Dr Williams. Semester: 1,2. Classes: 1 one-hour lecture & 1 two-hour seminar. Prohibition: ENGL 1050. Assessment: 1500 word essay, 1000 assignment, oral presentation and 1 hour exam. In this unit you will study the construction of texts in different media, of language and image, using Michael Ondaatje's novel 'The English Patient', and the film of the novel, as a particular focus. A range of other literary, academic and media texts will be considered. You will learn to analyse some methods of constructing meaning in language and images, taught in small-group workshops. This detailed textual work will assist you to improve your own academic writing. You will also be introduced, in lectures, to more descriptive topics, such as social shifts in relations between language and image and in the cultural practices which were associated with them, such as narrative organisation, categories of text, and social agency and power in the production of text.

Textbooks

A Resource Book will be available from the University Copy Centre. An anthology of Australian short stories will be specified.

MECO 1001 Introduction to Media Studies 1

6 credit points. A/Professor Lumby. Semester: 1. Classes: 3 hours per week. Assessment: Two 1500 word essays and one 1000 word tutorial paper.

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This unit offers an introduction to the history and theory of media and communications studies. Students will gain a foundation in key concepts, methodologies and theorists in the field. They will also explore the interdisciplinary roots of media and communications studies and acquire basic research skills. By the end of the unit students should be familiar with major shifts in the history and theory of media and communications studies and with basic concepts and methodologies in the field.

MECO1002 Introduction to Media Studies 2

6 credit points. A/Professor Lumby. Semester: 2. Classes: 3 hours per week. Prerequisite: MECO1001. Corequisite: ENGL 1005. Assessment: Two 1500 word essays and one 1000 word tutorial paper.

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This unit of study builds on the knowledge and skills acquired in MECO 1001 and focuses on applying these ideas by analysing media texts. Students will also study theories of audience research, media consumption, and the media's role in the public sphere. They will learn to critically evaluate these theories and build on research skills acquired in Introduction to Media Studies 1. By the end of the unit, students should be able to apply basic theoretical concepts in the analysis of media texts and be able to demonstrate a detailed knowledge of two areas covered in the course.

GOVT 2303 Media Politics

8 credit points. Semester: 1. Prerequisite: Two GOVT 1000 level units of study or MECO 2003.

This unit focuses upon news - its production, contents and impacts, the special demands of different news organisations and of different news areas, the interests and strategies of various groups in affecting news content, and policy issues in regulating it. It will also focus upon the structures of Australia's media institutions and how these impinge on the processes of news production.

MECO 2001 Broadcast News (Radio and Online)

8 credit points. Associate Professor Lumby (Media & Comm), Dr Evans (Language Centre). Semester: 1. Classes: Three hours per week.

Prerequisite: MECO 1001, MECO 1002 and ENGL 1050. Corequisite: MECO 2002 if taken in Semester 1 or MECO 2003 in Semester 2.

Assessment: One 2000 word essay, one production diary, radio script and final work.

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This unit of study provides an introduction to the theory and practice of radio and online audio broadcast news by combining theoretical analysis with practical experience in the creation of news bulletins. The course looks at the history and contemporary status of radio and considers such concepts as news values and the role of the Internet in audio broadcasts. The course has a strong practical component in which students will research, script, record and edit a news bulletin. They will also analyse radio and online broadcast texts.

MECO 2002 Writing for Print Media

8 credit points. Associate Professor Lumby. Semester: 2. Classes: 3 hours per week. Prerequisite: MECO 1001, MECO 1002 and ENGL 1050. Corequisite: MECO 2001 if taken in Semester 1 or MECO 2003 in Semester 2. Assessment: Two 500 word news stories, two 1500 word feature articles.

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This unit of study will equip students with practical writing skills required in the mainstream print and online media. It covers the basics of news writing, feature writing, and writing for online publications. Students will be required to research and write articles and to critically analyse material drawn from the contemporary print and online media. They will also study the history of print media forms and learn to critically evaluate articles drawn from the contemporary print and online media in weekly seminars.

MECO 2003 Media Relations and Advertising

8 credit points. A/Professor Lumby. Semester: 2. Classes: 3 hours per week. Corequisite: MECO 2001 or MECO 2002. Assessment: Two 500 and one 1000 word practical assignments, one 1500 word essay.

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This unit of study will examine the media, public relations and advertising industries. It will combine critical analysis of historical and contemporary industry practices with an introduction to practical skills required in these industries. Students will analyse material drawn from the media relations and advertising industries and learn to write basic copy, prepare press releases, information kits and establish media monitoring and liaison systems.

MECO 3001 Video Production

8 credit points. A Dunn. Semester: 1. Prerequisite: MECO 1001, MECO 1002, MECO 2001, MECO 2002, MECO 2003, ENGL 1050.

Corequisite: MECO 3002, MECO 3003, GOVT 2303.

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This unit builds on knowledge and skills acquired in media studies, writing and radio units. It introduces students to the history, theory and practice of video production, both field and studio based. The unit will equip students with practical skills in planning, researching and budgeting a video production, as well as with skills in digital camera operation, video recording and digital video editing using desktop software. The unit emphasises information programming (news, current affairs, corporate video, documentary and 'infotainment'). Students will be expected to produce short video items.

MECO 3002 Online Media Production

8 credit points. A Dunn. **Semester:** 2. **Classes:** 1 hour lecture, 2 hour seminar. **Prerequisite:** MECO 1001, MECO1002, MECO 2001, MECO 2002, MECO 2003, ENGL 1050, MECO 3001. **Corequisite:** MECO 3003, GOVT 2303. **Assessment:** Students will be required to submit a written proposal for an online journal, a 3 page Web site, a production log of 1500 words, and a 1000 word report analysing the key concepts and skills learnt.

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This subject consolidates and develops earlier learning in audio and video journalism, image manipulation and World Wide Web page creation. It covers aspects of the online production process from researching and selecting an idea, to realising that idea online using multiple pathways and storylines. Students are introduced to writing for online products and services, and to project management. Working in production teams, students gain practical skills in writing, producing and editing for the online environment. Further consideration of theoretical approaches to new media provide students with ways of analysing, critiquing and reflecting on their work.

MECO 3003 Media, Law and Ethics

8 credit points. A/Professor Lumby. **Semester:** 2. **Classes:** 2 lectures and 1 tutorial per week. **Prerequisite:** MECO1001, MECO1002, ENGL 1050 or ENGL 1005, MECO 2001, MECO 2002, MECO 2003, MECO 3001. **Corequisite:** MECO 3002, GOVT 2303. **Assessment:** While it is usual to set two 3000 word essays in an 8 credit point subject, it should be noted that the 1500 word article and analysis of a court case will require students to engage in an intensive research exercise prior to writing which will involve observation of a court case. It should also be noted that word length does not necessarily bear the same relationship to research quantum in a journalistic exercise as it does in an academic essay as one of the key journalistic skills is condensing information into a small word limit.

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

MECO 3003 will introduce students to key legal and ethical issues relevant to journalism. Students will be given an introductory survey of the main ethical theories in Western thought to establish a framework within which to examine specific ethical issues that relate to media. They will also be introduced to the structure of Australia's legal system and to those aspects of the law that impinge on the work of media professionals.

■ Bachelor of Psychology (BPsych) degree program

Summary of requirements

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

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

- at least 12 credit points of junior Psychology units of study at an average grade of credit or better
- at least 12 credit points of units of study in the Science Subject Areas of Mathematics and Statistics
- at least 12 credit points are junior units of study from Science Subject Areas other than Psychology and Mathematics and Statistics
- at least 16 credit points of intermediate Psychology units of study at an average grade of Distinction or better
- at least 36 credit points of senior Psychology units of study (including PSYC 3201 and PSYC 3202) at an average grade of Distinction or better across all senior Psychology units of study
- at least 96 credit points from Science Subject Areas
- 48 credit points of Honours Psychology units of study with a grade of Honours (H3 or better)

You should also note the following:

- no more than 18 credit points may be counted from units in which a grade of Pass (Concessional) has been awarded.
- a maximum of 48 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculty of Science
- units of study completed at The University of Sydney Summer School which correspond to units of study in the table of undergraduate units of study may be credited towards the course requirements
- a standard full time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part time
- you may not enrol in more than 32 credit points in any one semester without permission
- you may not enroll in more than 60 credit points of Junior units of study
- before being admitted to enrol in a unit of study, you have to meet any prerequisites and corequisites for that unit of study
- advanced units of study are indicated by a 9 (or 8) as the second digit of the unit of study code. Entry to these units of study are limited (details can be obtained from departments)
- a student may not enrol without first obtaining permission from the Dean in additional units of study once the degree requirements have been satisfied
- 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.
- you may not enrol in Psychology Honours until you have completed at least 144 credit points of units of study and have satisfied all requirements for the degree of BPsych except those related to Honours
- students who fail to meet progression requirements may be permitted to transfer to another degree in 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.

Units of study

Units of study for the BPsych are listed in Table I: Bachelor of Science on page 13.

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 below.

■ Honours in the Faculty of Science

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

Admission

To qualify to enrol in an honours course, students shall

- (1) (a) have qualified for the award of a relevant pass degree from the Faculty of Science, or
 - (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 58 (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.

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 IH (iv) and/or IU (v), or the equivalent at another institution;
- (3) have achieved either a distinction average (75) in the relevant units of study in Table IU (iv) and/or HI (v), or a SCIWAM of at least 70;
- (4) satisfy any additional criteria set by the Head of Department concerned.

Once enrolled in the BIT (Honours) course, 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.

To qualify for the award of the Bachelor of Information Technology (Honours) degree, students shall complete 192 credit points as outlined in Section 4, including at least 40 credit points from Honours level units, of which both INFO 4000 and INFO 4900 must be completed with a result of at least 65. 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 Department 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 Distinction or High Distinction
 - (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.

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 undergraduate units of study, as prescribed by the Head of Department concerned.

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

The Faculty is aware that, because the Honours units of study in some Departments are wholly or predominantly formal course work and in others a research project, and because some subjects are not taught until well into the undergraduate program, the way in which Departments take cognisance of performance in the Honours year in arriving at a recommendation for a grade of Honours must be left to their discretion. However the Faculty has established a set of guidelines for Departments to use in determining their recommendations.

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

95-100

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

90-94

Very high standard of work similar to above but overall performance is borderline for award of a Medal. Lower level of performance in certain categories or areas of study above.

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

80-89

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

75-79

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

70-74

Second class honours, second division - student is proficient in the theory and practice of their discipline but has not developed complete independence of thought, practical mastery or clarity of

presentation. Student shows adequate but limited understanding of the topic and has largely followed the direction of the supervisor.

65-69

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

SCIWAM for all degrees

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

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

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

where W_c is the weighted credit point value - ie, the product of the credit point value and level of weighting of 2 for 2000-2999 units of study and 3 for 3000-3999 units of study; where M_c is the greater of 45 or 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 the Honours units of study table or in the tables associated with the relevant degree.

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.

Honours units of study

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---|----|----------------------|---|---------------|----------------|----------------|----------|
| Where Honours units of study are designated A, B, C and D the units should be taken in that order, whether a student enrolls full time, part time or mid-year. Where there are Honours electives available, all students should enrol in the zero credit point 4999 unit of study in their final semester of enrolment. | | | | | | | |
| Agricultural Chemistry Honours | | | | | | | |
| AGCH 4021 Agricultural Chemistry Honours A | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| AGCH 4022 Agricultural Chemistry Honours B | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| AGCH 4023 Agricultural Chemistry Honours C | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| AGCH 4024 Agricultural Chemistry Honours D | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| Anatomy and Histology Honours | | | | | | | |
| ANAT 4011 Anatomy Honours A | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| ANAT 4012 Anatomy Honours B | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| ANAT 4013 Anatomy Honours C | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |
| ANAT 4014 Anatomy Honours D | 12 | | <i>NB: Permission required for enrolment.</i> | | | | 1,2 |

Honours units of study (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---|----|---|--|---------------|----------------|----------------|----------|
| Biochemistry Honours | | | | | | | |
| BCHM 4011 Biochemistry Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| BCHM 4012 Biochemistry Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| BCHM 4013 Biochemistry Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| BCHM 4014 Biochemistry Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Biology Honours | | | | | | | |
| BIOL 4011 Biology Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| BIOL 4012 Biology Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| BIOL 4013 Biology Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| BIOL 4014 Biology Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Cell Pathology Honours | | | | | | | |
| CPAT 4011 Cell Pathology Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| CPAT 4012 Cell Pathology Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| CPAT 4013 Cell Pathology Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| CPAT 4014 Cell Pathology Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Chemistry Honours | | | | | | | |
| CHEM 4011 Chemistry Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| CHEM 4012 Chemistry Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| CHEM 4013 Chemistry Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| CHEM 4014 Chemistry Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Computer Science Honours | | | | | | | |
| COMP 4301 Algorithms (Advanced Topic) | 4 | P | Credit in COMP 3001. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |
| COMP 4302 Artificial Intelligence | 4 | p | Credit in COMP 3002. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |
| COMP 4304 Graphics (Advanced Topic) | 4 | p | Credit in COMP 3004. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |
| COMP 4305 Networked Systems (Advanced Topic) | 4 | p | Credit in COMP 3007. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |
| COMP 4307 Distributed Systems (Advanced Topic) | 4 | P | Credit in COMP 3007 or Credit in COMP 3009. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |
| COMP 4309 Object-Oriented Systems (Advanced Topic) | 4 | P | Credit in COMP 3008. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |
| COMP 4400 Operating Systems (Advanced Topic) | 4 | P | Credit in COMP 3009. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |
| COMP 4401 Software Engineering (Advanced Topic) | 4 | P | Credit in COMP 3100. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |
| COMP 4402 User Interfaces (Advanced Topic) | 4 | p | Credit in COMP 3102. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |
| COMP 4403 Computation Theory (Advanced Topic) | 4 | p | Credit in COMP 2003 and 8 credit points of Intermediate Mathematics. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |
| COMP 4404 Scientific Visualisation (Advanced Topic) | 4 | p | Credit in one of: COMP 3001 or COMP 3304 or PHYS 3303. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |
| COMP 4601 Advances in Computer Science 1 | 4 | p | Permission of Head of Department. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |
| COMP 4602 Advances in Computer Science 2 | 4 | P | Permission of Head of Department. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | | | | 1,2 |

Honours units of study (continued)

| Unit of study | CP | A: Assumed knowledge P: Prerequisite Q: Qualifying C: Corequisite N: Prohibition | Semester |
|---|----|---|----------|
| COMP 4603 Advances in Computer Science 3 | 4 | P Permission of Head of Department. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | 1,2 |
| COMP 4604 Advances in Computer Science 4 | 4 | P Permission of Head of Department. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | 1,2 |
| INFO 4300 Information Systems (Advanced Topic) | 4 | p Credit in ISYS 3000. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | 1,2 |
| INFO 4306 Database Systems (Advanced Topic) | 4 | p Credit in INFO 3005. <i>NB: Permission required for enrolment. This unit may be available in February or July semester; it may not always be offered.</i> | 1,2 |
| INFO 4901 Research Preparation | 8 | P Permission of Head of Department. <i>NB: Permission required for enrolment.</i> | 1,2 |
| INFO 4902 Research Project | 16 | p Permission of Head of Department. <i>NB: Permission required for enrolment.</i> | 1,2 |
| INFO 4999 Computer Science Honours Result | 0 | p Permission of the Head of Department. <i>NB: Permission required for enrolment.</i> | 1,2 |
| Geography Honours | | | |
| GEOG 4011 Geography Honours A | 12 | <i>NB: Permission required for enrolment.</i> | 1,2 |
| GEOG 4012 Geography Honours B | 12 | <i>NB: Permission required for enrolment.</i> | 1,2 |
| GEOG 4013 Geography Honours C | 12 | <i>NB: Permission required for enrolment.</i> | 1,2 |
| GEOG 4014 Geography Honours D | 12 | <i>NB: Permission required for enrolment.</i> | 1,2 |
| Geology Honours | | | |
| GEOG 4011 Geology Honours A | 12 | <i>NB: Permission required for enrolment.</i> | 1,2 |
| GEOG 4012 Geology Honours B | 12 | <i>NB: Permission required for enrolment.</i> | 1,2 |
| GEOG 4013 Geology Honours C | 12 | <i>NB: Permission required for enrolment.</i> | 1,2 |
| GEOG 4014 Geology Honours D | 12 | <i>NB: Permission required for enrolment.</i> | 1,2 |
| Geophysics Honours | | | |
| GEOG 4011 Geophysics Honours A | 12 | <i>NB: Permission required for enrolment.</i> | 1,2 |
| GEOG 4012 Geophysics Honours B | 12 | <i>NB: Permission required for enrolment.</i> | 1,2 |
| GEOG 4013 Geophysics Honours C | 12 | <i>NB: Permission required for enrolment.</i> | 1,2 |
| GEOG 4014 Geophysics Honours D | 12 | <i>NB: Permission required for enrolment.</i> | 1,2 |
| History and Philosophy of Science Honours | | | |
| HPSC 4101 Philosophy of Science | 6 | p Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate certificate in Science (History and Philosophy of Science). <i>NB: Permission required for enrolment.</i> | 1 |
| HPSC 4102 History of Science | 6 | p Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate certificate in Science (History and Philosophy of Science). <i>NB: Permission required for enrolment.</i> | 1,2 |
| HPSC 4103 Sociology of Science | 6 | P Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science). <i>NB: Permission required for enrolment.</i> | 2 |
| HPSC 4104 Recent Topics in HPS | 6 | P Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate certificate in Science (History and Philosophy of Science). <i>NB: Permission required for enrolment.</i> | 1,2 |
| HPSC 4105 HPS Research Methods | 6 | P Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate certificate in Science (History and Philosophy of Science). <i>NB: Permission required for enrolment.</i> | 1 |
| HPSC 4106 Research Project A | 12 | p Available only to students admitted to HPS Honours and Graduate Diploma in Science (History and Philosophy of Science). C Must be taken in conjunction with HPSC 4107 Research Project B in the following semester. <i>NB: Permission required for enrolment.</i> | 1,2 |
| HPSC 4107 Research Project B | 12 | p Available only to students admitted to HPS Honours and Graduate Diploma in Science (History and Philosophy of Science). C HPSC 4999 (for Honours students only). <i>NB: Permission required for enrolment.</i> | 1,2 |
| HPSC 4999 History & Philosophy of Science Honours | 0 | p Available only to students admitted to HPS Honours. <i>NB: Permission required for enrolment.</i> | 1,2 |

Honours units of study (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|--|----|---|-----------------|---------------|----------------|----------------|----------|
| Immunology Honours | | | | | | | |
| BMED 4011 Immunology Honours A | 12 | <i>NB: Permission required for enrolment. Immunology Honours is available to approved students from any degree program. Intending candidates should contact the Department.</i> | | | | | 1,2 |
| BMED 4012 Immunology Honours B | 12 | <i>NB: Permission required for enrolment. Immunology Honours is available to approved students from any degree program. Intending candidates should contact the Department.</i> | | | | | 1,2 |
| BMED 4013 Immunology Honours C | 12 | <i>NB: Permission required for enrolment. Immunology Honours is available to approved students from any degree program. Intending candidates should contact the Department.</i> | | | | | 1,2 |
| BMED 4014 Immunology Honours D | 12 | <i>NB: Permission required for enrolment. Immunology Honours is available to approved students from any degree program. Intending candidates should contact the Department.</i> | | | | | 1,2 |
| Information Systems Honours | | | | | | | |
| ISYS 4301 Information Systems Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| ISYS 4302 Information Systems Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| ISYS 4303 Information Systems Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| ISYS 4304 Information Systems Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Marine Sciences Honours | | | | | | | |
| MARS 4011 Marine Sciences Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| MARS 4012 Marine Sciences Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| MARS 4013 Marine Sciences Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| MARS 4014 Marine Sciences Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Pure Mathematics Honours | | | | | | | |
| MATH 4301 Pure Mathematics Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| MATH 4302 Pure Mathematics Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| MATH 4303 Pure Mathematics Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| MATH 4304 Pure Mathematics Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Applied Mathematics Honours | | | | | | | |
| MATH 4401 Applied Mathematics Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| MATH 4402 Applied Mathematics Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| MATH 4403 Applied Mathematics Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| MATH 4404 Applied Mathematics Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Microbiology Honours | | | | | | | |
| MICR 4011 Microbiology Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| MICR 4012 Microbiology Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| MICR 4013 Microbiology Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| MICR 4014 Microbiology Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Nutrition Honours - Clinical | | | | | | | |
| NUTR 4001 Clinical Nutritional Science A | 24 | <i>NB: Permission required for enrolment.</i> | | | | | 1 |
| NUTR 4002 Clinical Nutritional Science B | 24 | <i>NB: Permission required for enrolment.</i> | | | | | 2 |
| Nutrition Honours - Research | | | | | | | |
| NUTR 4101 Nutrition Research A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| NUTR 4102 Nutrition Research B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| NUTR 4103 Nutrition Research C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| NUTR 4104 Nutrition Research D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Pharmacology Honours | | | | | | | |
| PCOL 4011 Pharmacology Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| PCOL 4012 Pharmacology Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |

Honours units of study (continued)

| Unit of study | CP | A: Assumed knowledge | P: Prerequisite | Q: Qualifying | C: Corequisite | N: Prohibition | Semester |
|---|----|---|-----------------|---------------|----------------|----------------|----------|
| PCOL 4013 Pharmacology Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| PCOL 4014 Pharmacology Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Physiology Honours | | | | | | | |
| PHSI 4011 Physiology Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| PHSI 4012 Physiology Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| PHSI 4013 Physiology Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| PHSI 4014 Physiology Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Physics Honours | | | | | | | |
| PHYS 4011 Physics Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| PHYS 4012 Physics Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| PHYS 4013 Physics Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| PHYS 4014 Physics Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Psychology Honours | | | | | | | |
| PSYC 4011 Psychology Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| PSYC 4012 Psychology Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| PSYC 4013 Psychology Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| PSYC 4014 Psychology Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Soil Science Honours | | | | | | | |
| SOIL 4021 Soil Science Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| SOIL 4022 Soil Science Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| SOIL 4023 Soil Science Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| SOIL 4024 Soil Science Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| Mathematical Statistics Honours | | | | | | | |
| STAT 4201 Mathematical Statistics Honours A | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| STAT 4202 Mathematical Statistics Honours B | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| STAT 4203 Mathematical Statistics Honours C | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |
| STAT 4204 Mathematical Statistics Honours D | 12 | <i>NB: Permission required for enrolment.</i> | | | | | 1,2 |

4 Talented student program

Overview

The Talented Student Program is a special program of study intended for students 'of exceptional merit' who are enrolled in degrees administered by the Faculty of Science (BSc, BMedSc, BCST, BPsych and their specialist streams or joint degrees). It is also available for the science component of the BLibStud. If other Faculties grant permission, TSP options may be taken for science components that are part of other degree programs.

The aim of the program is to offer students of exceptional merit additional challenging material to enable them to maximise their intellectual growth and potential.

A major benefit of participation in the Talented Student Program is that students receive special supervision by academic staff and often engage in studies with small numbers of fellow students, all of whom have particular interest in the subject. In general, the TSP caters for students whose talent is broad-based across science. There are two main aspects of a student's involvement in the TSP. Students can have great flexibility in their choice of study (beyond that normally allowed by degree rules), and they have a mentor, a member of the academic staff who assists them in choosing from the great range of possibilities.

Studies undertaken in the Talented Student Program are included separately on the student's academic transcript so that all potential employers are aware that the student has completed challenging courses of study.

Further information on the operation of the Talented Student Program may be obtained from the Departmental coordinators listed below or from the Undergraduate Adviser, Faculty of Science.

Selection

Entry to the Talented Student Program is by invitation from the Dean. Invitations to participate in the TSP are made each year for that year. The following guidelines apply generally, although Departments may have additional (and more stringent) requirements for entry to the activities they offer in the program:

- to be considered for the program in their first year, students should normally have a UAI (or equivalent) of 98.8 or higher and a mark of approximately 92 in at least one HSC science subject area and/or a result in band E4 of HSC Mathematics Extension 2; or demonstrate exceptional performance in scientific study (eg. at the level of participation in an International Olympiad)
- to be considered for the program in their second and third years, students should normally have WAMs 85 or over and a high distinction grade in an appropriate Science subject area. Intermediate level entry to TSP is available only to students who have been enrolled full-time in units of study totaling at least 48 credit points.

Students who feel that they satisfy these criteria, but who have not received an invitation to participate in the TSP that year, should contact the Dean.

Range of TSP structures

The relevant Faculty Resolutions (eg, Section 1 (6) of the BSc degree, Section 1(6) of the BLibStud degree) authorise the Dean to give approval for students of exceptional merit to enrol in units of study or in combinations of units of study not normally available within the degree.

In very exceptional cases, particularly for students who have excelled in Olympiad programs, application of these Resolutions may permit accelerated progress toward the completion of the BSc degree.

Faculty policy in relation to the Talented Student Program is described in this chapter.

Students will arrange a suitable pattern of study for the year, in consultation with their mentor (who will also consider the entire degree program). For some students, the TSP activities will be in a single discipline, for others there will be separate TSP activities in several disciplines. Still others will choose

interdisciplinary activities that relate several fields to one another. Some students choose TSP activities that involve additional work beyond the normal amount for a student in the degree; for others, the TSP activities replace prescribed work, giving a normal total credit point load. Many disciplines have an organised activity for a whole group of TSP students studying that field, such as a weekly seminar or group project. In other disciplines, TSP activity involves participation by each TSP student in a research group of staff and postgraduates. Every student is treated individually; however, there are some common patterns that we describe below.

For many TSP students who are interested in several fields, (especially if they aren't really sure about their eventual direction), a suitable arrangement might be for them to join in separate TSP activities of each discipline.

Students might elect to study a broader range of fields than usual, by studying more than the normal load of 24 credit points per semester.

Another pattern is to accelerate a student who (say through Olympiad participation) has already learnt most of the topics in the usual first-year units in a discipline. Such a student can go directly to second year study in that field and in related fields, when they begin their degree. By studying more than the usual workload each semester, they may be able to complete their Honours degree in less than 4 years full-time.

Some students have particular interests that can best be served by specially planned activities combining different disciplines.

Constraints on TSP structure

When a TSP activity replaces normal activity within a unit of study, the student will enrol in that unit, but the transcript will be annotated to reflect the TSP activity. When a TSP activity differs from the normal workload, the student will be enrolled in specially designated TSP units. The maximum number of credit points from TSP activities that can be credited towards the degree is normally 40 credit points designated as TSP units of study that are not listed in the Faculty handbook. This 40-credit point total covers all three years of study, and perhaps several different disciplines, so it is important to plan carefully to leave enough TSP possibilities in later years.

It is also important that the student meets all the usual degree requirements, involving numbers of credit points at various levels and in a range of disciplines. Each TSP activity is assigned a number of credit points, a level (Junior, Intermediate or Senior) and a Discipline area, so it can contribute to meeting the degree requirements.

The TSP process

At the start of each year, the Dean chooses students to be invited to participate in the TSP. A welcome is held in Orientation week, and at that time, each student who is new to the TSP will meet briefly with the Faculty TSP coordinator, who assigns a mentor for the student. The mentor is usually a departmental TSP coordinator, from a department closest to the student's interest(s). The mentor and the student then plan special activities for the year, covering all fields (this may involve discussions with coordinators from other departments). A proposal is put to the Dean, who can approve enrolment in special TSP units of study. During the year the student will meet several times with the mentor, to make sure that everything is going well. Whatever TSP activities have been arranged will be carried out by the student with others (staff and possibly students too). Assessment will be through the mentor and the staff involved in the activities. At the end of the semester the mentor will report results and the Dean will also arrange for special notes to be placed on the student's transcript, recording the TSP activity.

TSP coordinators

Faculty of Science

Coordinator: A/Prof Anthony Masters

TALENTED STUDENT PROGRAM

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 John Mitrofanis

Biochemistry

Coordinator: A/Prof Anthony Weiss

A special program of study will be developed for individual students enrolled in Intermediate or Senior Biochemistry.

Biology

Coordinator: Dr Brace Lyon

Students may undertake additional seminars and/or special project work.

Chemistry

Coordinator: A/Prof Scott Kable

The Chemistry School offers Junior TSP students a challenging program based on the 'Chemistry 1 (Special Studies Program)'. The program comprises the Junior Chemistry (Advanced) lecture series, special tutorials, and special project-based laboratory exercises. Admission to Chemistry 1(SSP) is by invitation only, and is limited to 20 students each year.

TSP students in Intermediate Chemistry take the Intermediate Chemistry (Advanced) units of study. The units of study comprise lectures, tutorials and special project-based laboratory exercises that complement the other Intermediate Chemistry units of study. Admission to Intermediate Chemistry (Advanced) units of study is by invitation only, and is limited to 30 students each year. TSP students are automatically eligible.

The Senior Chemistry TSP program consists of Chemistry 3 A and 3B and two special modules (one per half-semester). In each module, students work as a group to solve a substantial real-life problem in contemporary Chemistry. In addition, the normal Senior Chemistry laboratory subjects are modified to include special TSP experiments. The program is offered under the Senior Chemistry (Advanced) program, but admission is by invitation only and is limited to 15 students each year. TSP students are automatically eligible.

Computer Science

Coordinator: A/Prof Alan Fekete

The Department will make special arrangements for individual students throughout their studies. Interested students should contact the TSP coordinator as soon as possible.

Intermediate Geography

Coordinator: Dr David Chapman

In lieu of some of the normal coursework students may undertake special project work on an environmental problem. Particular emphasis will be given to the enhancement of student capabilities in the areas of problem identification, problem formulation, data gathering, and analysis and reporting.

Geology and Geophysics

Coordinator: Dr Derek Wyman

Students will be offered extra seminars and/or special project work.

Mathematics and Statistics

Coordinators: Dr Gordon Monro, Dr Alex Molev

Students admitted to the program have the following options available to them:

- First Year students in the Faculty Talented Student Program are invited to apply for entry to the Mathematics Special Studies Program. In addition to covering standard material, students in the Special Studies Program will participate in their own seminars on specially chosen advanced topics.
- Students in the Faculty Talented Student Program have access to Mathematics units of study in higher years. For example, a First Year student may take selected second or even third year units.
- Second and third year students have access to special projects, which can be inter-disciplinary, according to the interests of the individual student.

Second and third year students are encouraged to tailor their own programs, in consultation with the coordinators.

Medical Science

Coordinator: A/Prof Ian Spence

Microbiology

Coordinator: Dr T Ferenci

A special program of study will be developed for individual students enrolled in Microbiology.

Pathology

Coordinator: Professor Nick Hunt

Pharmacology

Coordinator: A/Prof Ian Spence

The Department will make special arrangements for individual students throughout their studies.

Physics

Coordinators: Dr Richard Hunstead and Professor David McKenzie

Junior students may take extra seminars and special project work in addition to, or in lieu of, parts of Physics (Advanced) units of study. Intermediate students may take extra seminars and special project work in addition to, or in lieu of, parts of Intermediate Physics units of study. Senior students may take extra seminars and special research project work in addition to, or in lieu of, parts of Senior Physics units of study.

An excursion to visit research facilities outside Sydney is offered in the mid-semester break in the July semester.

Physiology

Coordinator: Dr Margot Day

Students may undertake, in addition to normal coursework, a special research project.

Psychology

Coordinator: Professor Bob Boakes

The program is available in Intermediate and Senior Psychology. Students admitted to the program have the following options available to them:

- additional options in Psychology either in lieu of, or in addition to, other units of study in Science
- a combination of additional Psychology options combined with special studies in another science discipline (eg, Biochemistry, Computer Science, Mathematics and Statistics)
- a special research project in lieu of, or in addition to, normal practical or classwork components
- various combinations of the above options.

Senior Soil Science

Coordinator: Professor Alex McBratney

Students may undertake, in addition to normal coursework, a special research project.

5 Undergraduate degree regulations

This chapter contains the regulations governing undergraduate degrees throughout the University and the regulations governing undergraduate degrees offered by the Faculty of Science. These are arranged in the following order:

University of Sydney (Coursework) Rule 2000

Bachelor of Science - BSc

The Bachelor of Science includes the specially designated streams:

- Bachelor of Science (Advanced) - BSc(Advanced)
- Bachelor of Science (Advanced Mathematics) - BSc(Advanced Mathematics)
- Bachelor of Science (Bioinformatics) - BSc(Bioinformatics)
- Bachelor of Science (Environmental) - BSc(Environmental)
- Bachelor of Science (Marine Science) - BSc(Marine Science)
- Bachelor of Science (Molecular Biology and Genetics) - BSc(Molecular Biology and Genetics)
- Bachelor of Science (Molecular Biotechnology) - BSc (Molecular Biotechnology)
- Bachelor of Science (Nutrition) - BSc(Nutrition)

The Bachelor of Science is offered in the following designated combined degree courses:

- Bachelor of Science/Bachelor of Laws - BSc/LLB
- Bachelor of Science/Bachelor of Arts - BSc/BA
- Bachelor of Arts/Bachelor of Science - BA/BSc
- Bachelor of Science/Bachelor of Commerce - BSc/BCom
- Bachelor of Science/Bachelor of Engineering - BSc/BE
- Bachelor of Engineering/Bachelor of Science - BE/BSc
- Bachelor of Education (Secondary: Science)/Bachelor of Science - BEd (Secondary: Science)/BSc
- Bachelor of Education (Secondary: Mathematics)/Bachelor of Science - BEd (Secondary: Mathematics)/BSc
- Bachelor of Education (Secondary: Science)/Bachelor of Science (Psychology) - BEd (Secondary: Science)/BSc
- Bachelor of Nursing/Bachelor of Science - BN/BSc

Bachelor of Computer Science and Technology - BCST

The Bachelor of Computer Science and Technology includes the specially designated stream:

- Bachelor of Computer Science and Technology (Advanced) - BCST(Advanced)

Bachelor of Information Technology - BIT

Bachelor of Medical Science - BMedSc

The Bachelor of Medical Science is offered in the following designated combined degree course:

- Bachelor of Engineering/ Bachelor of Medical Science - BE/BMedSc

Bachelor of Psychology - BPsych

Bachelor of Science in Media and Communications - BScMediaCommun

The Faculties of Arts and of Science jointly offer the:

Bachelor of Liberal Studies - BLibStud

The Bachelor of Liberal Studies includes the specially designated stream:

- Bachelor of Liberal Studies (International) - BLibStud(International)

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

The regulations governing postgraduate award courses can be found in chapter 7.

■ University of Sydney (Coursework) Rule 2000

Preliminary

1. Commencement and purpose of Rule

(1) This Rule is made by the Senate pursuant to section 37(1) of the University of Sydney Act 1989 for the purposes of the University of Sydney By-law 1999.

(2) This Rule comes into force on 1 January 2001.

(3) This Rule governs all coursework award courses in the University. It is to be read in conjunction with the University of Sydney (Amendment Act) Rule 1999 and the Resolutions of the Senate and the faculty resolutions relating to each award course in that faculty.

Rules relating to coursework award courses

1. Definitions

In this Rule:

award course means a formally approved program of study which can lead to an academic award granted by the University.

coursework means an award course not designated as a research award course. While the program of study in a coursework award course may include a component of original, supervised research, other forms of instruction and learning normally will be dominant. All undergraduate award courses are coursework award courses;

credit means advanced standing based on previous attainment in another award course at the University or at another institution. The advanced standing is expressed as credit points granted towards the award course. Credit may be granted as specific credit or non-specific credit. *Specific credit* means the recognition of previously completed studies as directly equivalent to units of study.

Non-specific credit means a 'block credit' for a specified number of credit points at a particular level. These credit points may be in a particular subject area but are not linked to a specific unit of study;

credit points mean a measure of value indicating the contribution each unit of study provides towards meeting award course completion requirements stated as a total credit point value;

dean means the dean of a faculty or the director or principal of an academic college or the chairperson of a board of studies;

degree means a degree at the level of bachelor or master for the purpose of this Rule;

embedded courses/programs means award courses in the graduate certificate/graduate diploma/master's degree by coursework sequence which allow unit of study credit points to count in more than one of the awards;

faculty means a faculty, college board, a board of studies or the Australian Graduate School of Management Limited as established in each case by its constitution and in these Rules refers to the faculty or faculties responsible for the award course concerned;

major means a defined program of study, generally comprising specified units of study from later stages of the award course;

minor means a defined program of study, generally comprising units of study from later stages of the award course and requiring a smaller number of credit points than a major;

postgraduate award course means an award course leading to the award of a graduate certificate, graduate diploma, degree of master or a doctorate. Normally, a postgraduate award course requires the prior completion of a relevant undergraduate degree or diploma.

research award course means an award course in which students undertake and report systematic, creative work in order to increase the stock of knowledge. The research award courses offered by the University are: higher doctorate, Doctor of Philosophy, doctorates by research and advanced coursework, and certain degrees of master designated as research degrees. The systematic, creative component of a research award course must comprise at least 66% of the overall award course requirements;

stream means a defined program of study within an award course, which requires the completion of a program of study specified by the award course rules for the particular stream, in addition to the core program specified by award course rules for the award course.

student means a person enrolled as a candidate for a course; *testamur* means a certificate of award provided to a graduate, usually at a graduation ceremony;

transcript or *academic transcript* means a printed statement setting out a student's academic record at the University;

unit of study means the smallest stand-alone component of a student's award course that is recordable on a student's transcript. Units of study have an integer credit point value, normally in the range 3-24;

undergraduate award course means an award course leading to the award of an associate diploma, diploma, advanced diploma or degree of bachelor.

2. Authorities and responsibilities

(1) Authorities and responsibilities for the functions set out in this Rule are also defined in the document *Academic Delegations of Authority*. The latter document sets out the mechanisms by which a person who has delegated authority may appoint an agent to perform a particular function.

(2) The procedures for consideration of, and deadlines for submission of, proposals for new and amended award courses will be determined by the Academic Board.

Division 1 - Award course requirements, credit points and assessment

3. Award course requirements

(1) To qualify for the award of a degree, diploma or certificate, a student must:

- (a) complete the award course requirements specified by the Senate for the award of the degree, diploma or certificate concerned;
- (b) complete any other award course requirements specified by the Academic Board on the recommendation of the faculty and published in the faculty resolutions relating to the award course;
- (c) complete any other award course requirements specified by the faculty in accordance with its delegated authority and published in the faculty resolutions relating to the award course; and
- (d) satisfy the requirements of all other relevant by-laws, rules and resolutions of the University.

4. Units of study and credit points

- (1) (a) A unit of study comprises the forms of teaching and learning approved by a faculty. Where the unit of study is being provided specifically for an award course which is the responsibility of another faculty, that faculty must also provide approval.
- (b) Any faculty considering the inclusion of a unit of study in the tables of units available for an award course for which it is responsible may review the forms of teaching and learning of that unit, may consult with the approving faculty about aspects of that unit and may specify additional conditions with respect to inclusion of that unit of study.
- (2) A student completes a unit of study if the student:
 - (a) participates in the learning experiences provided for the unit of study;
 - (b) meets all examination, assessment and attendance requirements for the unit of study; and
 - (c) passes the required assessments for the unit of study.
- (3) Each unit of study is assigned a specified number of credit points by the faculty responsible for the unit of study.
- (4) The total number of credit points required for completion of an award course will be as specified in the Senate resolutions relating to the award course.
- (5) The total number of credit points required for completion of award courses in an approved combined award course will be specified in the Senate or faculty resolutions relating to the award course.
- (6) A student may, under special circumstances, and in accordance with faculty resolutions, be permitted by the relevant dean to undertake a unit or units of study other than those specified in the faculty resolutions relating to the award course and have that unit or those units of study counted towards fulfilling the requirements of the award course in which the student is enrolled.

5. Unit of study assessment

- (1) A student who completes a unit of study will normally be awarded grades of high distinction, distinction, credit or pass, in accordance with policies established by the Academic Board. The grades high distinction, distinction and credit indicate work of a standard higher than that required for a pass.
- (2) A student who completes a unit of study for which only a pass/fail result is available will be recorded as having satisfied requirements.
- (3) In determining the results of a student in any unit of study, the whole of the student's work in the unit of study may be taken into account.
- (4) Examination and assessment in the University are conducted in accordance with the policies and directions of the Academic Board.

6. Attendance

- (1) A faculty has authority to specify the attendance requirements for courses or units of study in that faculty. A faculty must take into account any University policies concerning modes of attendance, equity and disabled access.
- (2) A faculty has authority to specify the circumstances under which a student who does not satisfy attendance requirements may be deemed not to have completed a unit of study or an award course.

Division 2 - Enrolment

7. Enrolment restrictions

- (1) A student who has completed a unit of study towards the requirements of an award course may not re-enrol in that unit of study, except as permitted by faculty resolution or with the written permission of the dean. A student permitted to re-enrol may receive a higher or lower grade, but not additional credit points.
- (2) Except as provided in sub-section (1), a student may not enrol in any unit of study which overlaps substantially in content with a unit that has already been completed or for which credit or exemption has been granted towards the award course requirements.
- (3) A student may not enrol in units of study additional to award course requirements without first obtaining permission from the relevant dean.
- (4) Except as prescribed in faculty resolutions or with the permission of the relevant dean:
 - (a) a student enrolled in an undergraduate course may not enrol in units of study with a total value of more than 32 credit points in any one semester, or 16 credit points in the summer session; and
 - (b) a student enrolled in a postgraduate award course may not enrol in units of study with a total value of more than 24 credit points in any one semester, or 12 credit points in the summer session.

Division 3 - Credit, cross-institutional study and their upper limits

8. Credit for previous studies

- (1) Students may be granted credit on the basis of previous studies.
- (2) Notwithstanding any credit granted on the basis of work completed or prior learning in another award course at The University of Sydney or in another institution, in order to qualify for an award a student must:
 - (a) for undergraduate award courses, complete a minimum of the equivalent of two full-time semesters of the award course at the University; and
 - (b) for postgraduate award courses, complete at least fifty percent of the requirements prescribed for the award course at the University.

These requirements may be varied where the work was completed as part of an embedded program at the University or as part of an award course approved by the University in an approved conjoint venture with another institution.

- (3) The credit granted on the basis of work completed at an institution other than a university normally should not exceed one third of the overall award course requirements.
- (4) A faculty has authority to establish embedded academic sequences in closely related graduate certificate, graduate diploma and master's degree award courses. In such embedded sequences, a student may be granted credit for all

or some of the units of study completed in one award of the sequence towards any other award in the sequence, irrespective of whether or not the award has been conferred.

(5) In an award course offered as part of an approved conjoint venture the provisions for the granting of credit are prescribed in the Resolutions of the Senate and the faculty resolutions relating to that award course.

9. *Cross-institutional study*

(1) The relevant dean may permit a student to complete a unit or units of study at another university or institution and have that unit or those units of study credited to the student's award course.

(2) The relevant dean has authority to determine any conditions applying to cross-institutional study.

Division 4 - Progression

10. *Repeating a unit of study*

(1) A student who repeats a unit of study shall, unless granted exemption by the relevant dean:

- (a) participate in the learning experiences provided for the unit of study; and
- (b) meet all examination, assessment and attendance requirements for the unit of study.

(2) A student who presents for re-assessment in any unit of study is not eligible for any prize or scholarship awarded in connection with that unit of study without the permission of the relevant dean.

11. *Time limits*

A student must complete all the requirements for an award course within ten calendar years or any lesser period if specified by Resolution of the Senate or the faculty.

Division 5 - Discontinuation of enrolment and suspension of candidature

12. *Discontinuation of enrolment*

(1) A student who wishes to discontinue enrolment in an award course or a unit of study must apply to the relevant dean and will be presumed to have discontinued enrolment from the date of that application, unless evidence is produced showing:

- (a) that the discontinuation occurred at an earlier date; and
- (b) that there was good reason why the application could not be made at the earlier time.

(2) A student who discontinues enrolment during the first year of enrolment in an award course may not re-enrol in that award course unless:

- (a) the relevant dean has granted prior permission to re-enrol; or
- (b) the student is reselected for admission to candidature for that course.

(3) No student may discontinue enrolment in an award course or unit of study after the end of classes in that award course or unit of study, unless he or she produces evidence that:

- (a) the discontinuation occurred at an earlier date; and
- (b) there was good reason why the application could not be made at the earlier time.

(4) A discontinuation of enrolment may be recorded as *Withdrawn (W)* or *Discontinued - not to count as failure (DNF)* where that discontinuation occurs within the time-frames specified by the University and published by the faculty, or where the student meets other conditions as specified by the relevant faculty.

13. *Suspension of candidature*

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

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

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

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

Division 6 - Unsatisfactory progress and exclusion

14. *Satisfactory progress*

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

15. *Requirement to show good cause*

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

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

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

16. *Exclusion for failure to show good cause*

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

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

- (a) completion of a unit or units of study within a specified time;
- (b) exclusion from a unit or units of study, provided that the dean must first consult the head of the department responsible for the unit or units of study; and
- (c) specification of the earliest date upon which a student may re-enrol in a unit or units of study.

17. *Applying for re-admission after exclusion*

(1) A student who has been excluded from an award course or from a unit or units of study may apply to the relevant dean for readmission to the award course or re-enrolment in the unit or units of study concerned after at least 4 semesters, and that dean may readmit the student to the award course or permit the student to re-enrol in the unit or units of study concerned.

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

18. *Appeals against exclusion*

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

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

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

(b) The Appeals Committee shall comprise:

- (i) 3 *ex officio* members (the Chancellor, the Deputy Chancellor and the Vice-Chancellor and Principal);
- (ii) the Chair and Deputy Chairs of the Academic Board;
- (iii) 2 student Fellows; and
- (iv) up to 4 other Fellows.

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

- (i) *ex officio* member;
- (ii) Chair or Deputy Chair of the Academic Board;
- (iii) student Fellow; and
- (iv) other Fellows.

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

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

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

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

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

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

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

Division 7 - Exceptional circumstances

19. Variation of award course requirements in exceptional circumstances

The relevant dean may vary any requirement for a particular student enrolled in an award course in that faculty where, in the opinion of the dean, exceptional circumstances exist.

Division 8 - Award of degrees, diplomas and certificates

20. Classes of award

(1) Undergraduate diplomas may be awarded in five grades - pass, pass with merit, pass with distinction, pass with high distinction or honours.

(2) Degrees of bachelor may be awarded in two grades - pass or honours.

(3) Graduate diplomas and graduate certificates may be awarded in one grade only - pass.

(4) Degrees of master by coursework may be awarded three grades - pass, pass with merit or honours.

H. Award of the degree of bachelor with honours

(1) The award of honours is reserved to indicate special proficiency. The basis on which a student may qualify for the award of honours in a particular award course is specified in the faculty resolutions relating to the course.

(2) Each faculty shall publish the grading systems and criteria for the award of honours in that faculty.

(3) Classes which may be used for the award of honours are:

- First Class
- Second Class/Division 1
- Second Class/Division 2
- Third Class.

(4) With respect to award courses which include an additional honours year:

- (a) a student may not graduate with the pass degree while enrolled in the honours year;
- (b) on the recommendation of the head of the department concerned, a dean may permit a student who has been awarded the pass degree at a recognised tertiary institution to enrol in the honours year in that faculty;
- (c) faculties may prescribe the conditions under which a student may enrol part-time in the honours year;
- (d) a student who fails or discontinues the honours year may not re-enrol in it, except with the approval of the dean.

22. University Medal

An honours bachelor's degree student with an outstanding academic record throughout the award course may be eligible for the award of a University medal, in accordance with Academic Board policy and the requirements of the faculty resolutions relating to the award course concerned.

23. Award of the degree of master with honours or merit

The award of honours or pass with merit is reserved to indicate special proficiency or particular pathways to completion. The basis on which a student may qualify for the

award of honours or the award with merit in a particular degree is specified in the faculty resolutions relating to that degree.

24. Transcripts and testamurs

(1) A student who has completed an award course or a unit of study at the University will receive an academic transcript upon application and payment of any charges required.

(2) Testamurs may indicate streams or majors or both as specified in the relevant faculty resolutions.

Division 9 - Transitional provisions

25. Application of this Rule during transition

This Rule applies to all candidates for degrees, diplomas and certificates who commence candidature after 1 January 2001. Candidates who commenced candidature prior to this date may choose to proceed in accordance with the resolutions of the Senate in force at the time they enrolled, except that the faculty may determine specific conditions for any student who has re-enrolled in an award course after a period of suspension.

■ Bachelor of Science

Resolutions of the Senate

Bachelor of Science

1. These Resolutions of the Senate relate to the degree of Bachelor of Science including its streams:

- (a) Bachelor of Science
- (b) Bachelor of Science (Advanced)
- (c) Bachelor of Science (Advanced Mathematics)
- (d) Bachelor of Science (Bioinformatics)
- (e) Bachelor of Science (Environmental)
- (f) Bachelor of Science (Marine Science)
- (g) Bachelor of Science (Molecular Biology and Genetics)
- (h) Bachelor of Science (Molecular Biotechnology)
- (i) Bachelor of Science (Nutrition)

and the Combined degree courses:

- (j) Bachelor of Science [or BSc(Advanced) or BSc(Advanced Mathematics)]/Bachelor of Laws
 - (k) Bachelor of Science [or BSc(Advanced) or BSc(Advanced Mathematics)]/Bachelor of Arts
 - (l) Bachelor of Arts/Bachelor of Science [or BSc(Advanced) or BSc(Advanced Mathematics)]
 - (m) Bachelor of Science [or BSc(Advanced) or BSc(Advanced Mathematics)]/Bachelor of Commerce
 - (n) Bachelor of Science [or BSc(Advanced) or BSc(Advanced Mathematics)]/Bachelor of Engineering
 - (o) Bachelor of Engineering/Bachelor of Science [or BSc(Advanced) or BSc(Advanced Mathematics)]
 - (p) Bachelor of Education (Secondary: Science)/Bachelor of Science [or BSc(Advanced) or BSc(Advanced Mathematics)]
 - (q) Bachelor of Education (Secondary: Mathematics) / Bachelor of Science [or BSc(Advanced) or BSc(Advanced Mathematics)]
 - (r) Bachelor of Education (Secondary: Science)/Bachelor of Science (Psychology)
 - (s) Bachelor of Nursing/Bachelor of Science [or BSc(Advanced) or BSc(Advanced Mathematics)].
- These Resolutions must be read in conjunction with The University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate courses, and the relevant Faculty Resolutions.

Requirements for the Pass degree

2. To qualify for the award of the pass degree students must:
 - (1) complete successfully units of study giving credit for a total of 144 credit points; and
 - (2) satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Requirements for the Honours degree

3. To qualify for the award of the honours degree students must complete the honours requirements published in the faculty resolutions relating to the course.

Requirements for the Combined degrees

4. To qualify for the award of the two degrees in a combined degree course students must complete the requirements published in these and the other relevant faculty resolutions relating to the course.

Resolutions of the Faculty

These resolutions must be read in conjunction with the University of Sydney (Coursework) Rule and the Glossary appended to these Faculty Resolutions.

Section 1*Streams*

- The Bachelor of Science degree comprises the following streams:
 - Bachelor of Science
 - Bachelor of Science (Advanced)
 - Bachelor of Science (Advanced Mathematics)
 - Bachelor of Science (Bioinformatics)
 - Bachelor of Science (Environmental)
 - Bachelor of Science (Marine Science)
 - Bachelor of Science (Molecular Biology and Genetics)
 - Bachelor of Science (Molecular Biotechnology)
 - Bachelor of Science (Nutrition)
- A student for the BSc degree in any stream may apply to the Dean for permission to transfer candidature to any other stream.
- The testamur for the Bachelor of Science shall specify the stream for which it is awarded.

Units of study

- The Faculty of Science offers units of study in the following designated Science subject areas:
 - Agricultural Chemistry
 - Anatomy and Histology
 - Biochemistry
 - Biology
 - Cell Pathology
 - Chemistry
 - Computer Science
 - Environmental Science
 - Geography
 - Geology
 - Geophysics
 - History and Philosophy of Science
 - Immunology
 - Information Systems
 - Marine Science
 - Mathematics
 - Microbiology
 - Molecular Biotechnology
 - Nutritional Science
 - Pharmacology
 - Physics
 - Physiology
 - Psychology
 - Soil Science
 - Statistics
- The units of study, which may be taken for the degree, are set out under Subject areas in *Table of undergraduate units of study I* together with:
 - designation as Junior, Intermediate, Senior or Honours and, where appropriate, as Advanced units of study;
 - credit point values;
 - assumed knowledge, corequisites/prerequisites;
 - the semesters in which they are offered; and
 - the units of study with which they are mutually exclusive.
- 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 of undergraduate units of study I*.
- A student who enrolls, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Science, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

Requirements for the Pass Degree

- To qualify for the award of the degree a student shall complete units of study having a total value of at least 144 credit points, including:
 - at least 96 credit points from Science subject areas;

- at least one major from those included in Table I;
- 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; and
- no more than 18 credit points from units of study in which a grade of Pass (Concessional) has been awarded. Pass (Concessional) is the grade returned for a unit of study when the final mark is in the range 46-49. It may be awarded for Junior units of study only.
- 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. (A major in Psychology requires 16 credit points of Intermediate and 32 credit points of Senior units of study in Psychology). 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 in the *Table of undergraduate units of study* may be credited towards the course requirements.
- The testamur for the degree of Bachelor of Science shall specify the major(s) completed in order to qualify for the award.

Honours courses

- There shall be honours courses in all Science subject areas.
- To qualify to enrol in an honours course, students shall:
 - (a) have qualified for the award of a pass degree; or (b) be a pass graduate of the Faculty of Science; or (c) be a pass graduate holding a Bachelor of Science degree or an equivalent qualification from another institution
 - have completed a minimum of 24 credit points of Senior units of study relating to the intended honours course (or equivalent at another institution);
 - have achieved either:
 - a credit average in the relevant Senior Science units of study; or
 - a SCIWAM of at least 58 (or equivalent at another institution); and
 - satisfy any additional criteria set by the Head of Department concerned.
- 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.
- 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.
- The grade of honours and the honours mark are determined by performance in the honours course.
- 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.
- 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.

Designated streams*BSc (Advanced)*

22. To qualify for the award of the pass degree in the BSc (Advanced) stream, a student shall complete the requirements for the BSc degree in Section 8 with the exception of 8(5) and in addition, except with the permission of the Dean:
- (1) include no more than 48 credit points from Junior units of study;
 - (2) include at least 16 credit points of Intermediate units of study at either the Advanced level or as TSP units;
 - (3) include at least 48 credit points of Senior units of study of which at least 24 are completed at the Advanced level or as TSP units in a single Science subject area; and
 - (4) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.
23. Students who have completed at least 48 credit points may be permitted to transfer to the BSc (Advanced) stream from the BSc or other degree programs if:
- (1) their mark averaged over all attempted units of study is 75 or greater; and
 - (2) they are able to enrol in the required number of Advanced level units or TSP units.
24. The testamur for the degree of Bachelor of Science (Advanced) shall specify the major(s) completed in order to qualify for the award.

BSc (Advanced Mathematics)

25. To qualify for the award of the pass degree in the BSc (Advanced Mathematics) stream, a student shall complete the requirements for the BSc degree in Section 8 except 8(5) and in addition, except with the permission of the Dean:
- (1) include no more than 48 credit points from Junior units of study;
 - (2) include at least 16 credit points of Intermediate units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics;
 - (3) include at least 48 credit points of Senior units of study of which at least 24 are completed at the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics; and
 - (4) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.
26. Students who have completed at least 48 credit points may be permitted to transfer to the BSc (Advanced Mathematics) stream from other degree programs if:
- (1) their mark averaged over all attempted units of study is 75 or greater; and
 - (2) they are able to enrol in the required number of Advanced level units or TSP units.

Other streams

27. In order to qualify for the award of the pass degree in the following streams, a student shall, except with the permission of the Dean, complete the requirements for the BSc degree in Section 8 with the exception of 8(2) and complete the units of study set out in the respective Tables of Undergraduate units of study:
- (a) Bioinformatics Table IA
 - (b) Environmental Table IB
 - (c) Marine Science Table IC
 - (d) Molecular Biology & Genetics Table ID
 - (e) Molecular Biotechnology IE
 - (f) Nutrition Table IF

Combined degrees**Science/Law: Faculty Resolutions**

28. 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).
29. To qualify for the award of the pass degree in the BSc degree a student shall complete 96 credit points from Science units of study set out in *Table of undergraduate units of study I* and 48 credit points from Law units of study set out in *Table of undergraduate units of study II*, including:
- (1) at least 12 credit points from the Science subject areas of Mathematics and Statistics;
 - (2) 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;

- (3) 60 credit points of Intermediate/Senior units of study in Science subject areas; and
 - (4) a major in a Science area.
30. To qualify for the award of the pass degree in an Advanced stream of the BSc degree, a student shall complete the requirements for the BSc degree in Section 29 and in addition, except with the permission of the Dean:
- (1) include at least 16 credit points of Intermediate units of study at either the Advanced level or as TSP units;
 - (2) include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area; and
 - (3) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.
31. Except with the permission of the Dean of Law, a student may not enrol in any of the Intermediate or Senior units of study in Table U until the units of study LAWS 1006 Legal Institutions LAWS 1010 Torts are completed.
32. Students who qualify to undertake honours in the BSc degree may elect to do so either:
- (1) by suspending candidature from the Bachelor of Laws degree (including the combined Science/Law courses) for one year, with the permission of the Faculty of Law; or
 - (2) after completion of the combined course.
33. Students may abandon the combined degree course and elect to complete either a BSc or LLB in accordance with the resolutions governing those degrees.
34. Students will be under the general supervision of the Faculty of Science until the end of the semester in which they complete the requirements for the BSc. After that they will be under the general supervision of the Faculty of Law.
35. The Deans of the Faculties of Law and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in these resolutions.

Science/Commerce: Joint Resolutions

36. 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).
37. To qualify for the award of the pass degrees a student shall complete units of study having a total value of at least 240 credit points including:
- (1) 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 (BSc), not including those listed in 37.(1)(b);
 - (b) 12 credit points in Junior units of study from the subject area of Econometrics or the following combination of Mathematics and Statistics units of study:
 - MATH1005/1905 and either MATH1003/1903 or MATH1004/1904 and STAT2002 and STAT2004;
 - (c) 12 credit points in Junior units of study from each of Accounting and Economics;
 - (d) at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics; and
 - (e) at least 96 credit points from Science subject areas;
 - (2) no more than 100 credit points from Junior units of study;
 - (3) at least 64 credit points of Senior units of study in Economics and Business subject areas; and
 - (4) a major in a Science area, and two majors in Economics and Business subject areas.
38. To qualify for the award of the pass degree in an Advanced stream of the BSc degree, a student shall complete the requirements for the BSc degree in Section 37 and in addition, except with the permission of the Dean:
- (1) include at least 16 credit points of Intermediate units of study at either the Advanced level or as TSP units;
 - (2) include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area; and
 - (3) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.
39. 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.

40. 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.
41. Students will be under the general supervision of the Faculty of Science.
42. The Deans of the Faculties of Economics and Business and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in these resolutions.

Joint Resolutions for BA/BSc and BSc/BA degrees

43. A student may proceed concurrently to the degrees of Bachelor of Arts and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics) within either a BA/BSc or BSc/BA course.
44. To qualify for the award of the pass degree in an Advanced stream of the BSc degree, a student shall complete the requirements for the BSc degree in Section 49 or 50 and in addition, except with the permission of the Dean:
- (1) include at least 16 credit points of Intermediate units of study at either the Advanced level or as TSP units;
 - (2) include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area; and
 - (3) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.
45. 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.
46. 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.
47. Supervision of all students in the combined degrees will be the responsibility of the Faculty of Science and the Faculty of Arts which will alternate in an agreed pattern.
48. The Deans of the Faculties of Arts and Science shall jointly exercise authority in any matter concerning the combined degrees not otherwise dealt with in these resolutions.

BA/BSc combined degrees

49. To qualify for the award of the pass degrees a student shall complete units of study having a total value of at least 240 credit points including:
- (1) at least 96 credit points from Science subject areas;
 - (2) at least 12 credit points from the Science subject areas of Mathematics and Statistics;
 - (3) at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
 - (4) no more than 100 credit points from Junior units of study;
 - (5) a major in a Science area; and
 - (6) at least 72 credit points of Senior units of study in Arts subject areas, including a major from Part A of the *Table of undergraduate units of study* in the Faculty of Arts.

BSc/BA combined degrees

50. To qualify for the award of the pass degrees a student normally shall satisfy the requirements for the BA/BSc combined degrees in Section 49 and complete the requirements for the BSc in the first six semesters of enrolment.

Science/Engineering: Joint Resolutions

BE/BSc combined degrees

51. 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.
52. To qualify for the award of the pass degrees a student shall complete units of study having a total value of at least 240 credit points including:
- (1) 80 from Science subject areas and 160 from prescribed Engineering units of study; and
 - (2) a major in a Science area.
53. To qualify for the award of the pass degree in the Advanced or Advanced Mathematics stream of the BSc a student shall:
- (1) complete at least 56 credit points of Intermediate/Senior Science units of study of which at least 36 shall be completed at the Advanced level or as TSP units;

- (2) 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
 - (3) maintain in Intermediate and Senior Science units of study an average mark of 65 or greater in each year of enrolment.
54. Students who are so qualified may be awarded honours in the BE degree or undertake an honours course in the BSc degree.
55. 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.
56. Students will be under the general supervision of the Faculty of Engineering.
57. The Deans of the Faculties of Engineering and Science shall jointly exercise authority in any matter concerning the combined degrees not otherwise dealt with in these resolutions.

BSc/BE double degrees

58. A student enrolled for a Bachelor of Engineering degree may be permitted to transfer to a BSc degree if:
- (1) Except as provided in subsection (2), all units of study attempted in Engineering have been completed with a grade of Pass or better;
 - (2) at least 96 credit points from units of study in Engineering have been completed, of which no more than 12 credit points are from units of study with the grade of Pass (Concessional);
 - (3) the student is qualified to enrol in a major in a Science area; and
 - (4) for admission to the Advanced streams, the student satisfies the requirements in Section 23 or 26.
59. 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:
- (1) 40 credit points of Intermediate/Senior units of study in Science subject areas; and
 - (2) a major in a Science area.
60. To qualify for the award of the pass degree in the Advanced or Advanced Mathematics stream of the BSc a student shall in addition to the requirements of Sections 58 and 59:
- (1) include at least 80 credit points of Intermediate/Senior Science units of study;
 - (2) include at least 24 credit points of Senior Science units of study at the Advanced level or as TSP units in a single Science subject area; and
 - (3) maintain in Intermediate and Senior Science units of study an average mark of 65 or greater in each year of enrolment.
61. The requirements of Sections 59 or 60 must be completed in one year of full-time study or two years of part-time study.
62. Students who complete at least 40 but less than 48 credit points in the prescribed time limits may in the following year of enrolment in the BE complete the remaining units to satisfy the requirements of the Faculty of Science. Students who complete less than 40 credit points may apply to be readmitted to the degree, subject to sections 92-95.
63. Students who are so qualified may be awarded honours in the BE degree or undertake an honours course in the BSc.
64. The Deans of the Faculties of Engineering and Science shall jointly exercise authority in any matter concerning the double degree program not otherwise dealt with in these resolutions.

Science/Education: Joint Resolutions

65. A student may proceed concurrently to the degrees of Bachelor of Education and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics).
66. To qualify for the award of the pass degree in an Advanced stream of the BSc degree, a student shall complete the requirements for the BSc degree in Section 71 or 72 and in addition, except with the permission of the Dean:
- (1) include at least 16 credit points of Intermediate units of study at either the Advanced level or as TSP units;
 - (2) include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area; and
 - (3) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.
67. 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.

68. 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.
69. Supervision of all students in the combined degrees will be the responsibility of the Faculty of Education.
70. The Deans of the Faculties of Education and Science shall jointly exercise authority in any matter concerning the combined degrees not otherwise dealt with in these resolutions.

BEd(Secondary:Science)/BSc combined degrees

71. To qualify for the award of the pass degrees a student shall complete over ten semesters units of study having a total value of at least 240 credit points including:
- (1) at least 96 credit points from Science subject areas and 132 credit points from prescribed Education units of study;
 - (2) at least 12 credit points from the Science subject areas of Mathematics and Statistics;
 - (3) at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
 - (4) a major in a Science area;
 - (5) a major in Education;
 - (6) at least 32 credit points of units of study in Methods and Practice of Teaching;
 - (7) 32 credit points in Teaching and Learning including successful completion of the practicum; and
 - (8) no more than 100 credit points from Junior units of study.

BEd(Secondary:Mathematics)/BSc combined degrees

72. To qualify for the award of the pass degrees a student shall complete over ten semesters units of study having a total value of at least 240 credit points including:
- (1) at least 96 credit points from Science subject areas and 132 credit points from prescribed Education units of study;
 - (2) at least 12 credit points from the Science subject areas of Mathematics and Statistics;
 - (3) at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
 - (4) a major in the Science area of Mathematics or Statistics;
 - (5) a major in Education;
 - (6) at least 32 credit points of units of study in Methods and Practice of Teaching;
 - (7) 32 credit points in Teaching and Learning including successful completion of the practicum; and
 - (8) no more than 100 credit points from Junior units of study.

BEd(Secondary)/BSc(Psychology) combined degrees

73. To qualify for the award of the pass degrees a student shall complete over ten semesters units of study having a total value of at least 244 credit points including:

Years I to III:

- (1) at least 36 credit points from Junior units of study from Science subject areas of which 12 must be in Mathematics and Statistics, 12 in Psychology and 12 in either Chemistry or Physics;
- (2) at least 32 credit points from Intermediate units of study from Science subject areas of which 16 must be in Psychology and 16 in Mathematics and Statistics, Physics or Chemistry;
- (3) at least 32 credit points from Senior units of study in Psychology; and
- (4) at least 48 credit points from prescribed Education units of study;

Years IV and V:

- (1) honours in Psychology (or equivalent);
- (2) 16 credit points in School Counselling;
- (3) at least 16 credit points from prescribed Education units of study; and
- (4) at least 16 credit points from the Science subject areas of Mathematics and Statistics, Physics or Chemistry.

Science/Nursing: Joint Resolutions

74. A student may proceed concurrently to the degrees of Bachelor Nursing and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics).
75. To qualify for the award of the pass degrees a student shall complete over ten semesters units of study having a total value of at least 240 credit points including:
- (1) at least 96 credit points from Science subject areas;

- (2) at least 12 credit points from the Science subject areas of Mathematics and Statistics;
- (3) at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
- (4) a major in a Science area;
- (5) at least 132 credit points of units of study listed in the Table of Units for the degree of BN; and
- (6) no more than 60 credit points from Junior Science units of study.

76. To qualify for the award of the pass degree in an Advanced stream of the BSc degree, a student shall complete the requirements for the BSc degree in Section 75 and in addition, except with the permission of the Dean:
- (1) include at least 16 credit points of Intermediate units of study at either the Advanced level or as TSP units;
 - (2) include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area; and
 - (3) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.
77. 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.
78. 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.
79. Students will be under the general supervision of the Faculty of Nursing.
80. The Deans of the Faculties of Nursing and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in these resolutions.

Section 2

Enrolment in more/less than minimum load

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

Repeating a unit of study

82. Where a student enrolls in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of Pass or better, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.
83. A student may not enrol in a unit of study which they have completed previously with a grade of Pass or better.
84. A student who has been awarded a Pass (Concessional) in a unit of study may repeat that unit but, if subsequently awarded a grade of Pass or better, no further credit points will be gained unless the unit of study previously had not been credited under Section 8(6).

Cross-institutional enrolment

85. Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study at another institution and have that unit credited to his/her course requirements provided that either
- (1) the unit of study content is material not taught in any corresponding unit of study in the University, or
 - (2) the student is unable for good reason to attend a corresponding unit of study at the University.

Restrictions on enrolment

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

Satisfactory progress

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

Assessment policy

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

89. 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).
90. Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.
91. The award of a Pass (Concessional) in a unit of study entitles the student to be credited with the full number of credit points for that unit of study, provided that the limit on the total credit value specified in Section 8(6) is not exceeded.

Credit Transfer Policy

92. Credit will not be granted for units of study completed more than nine years prior to application, except with the permission of the Dean.
93. 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 of undergraduate units of study I* or as non-specific credit.
94. 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.
95. 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.

Specific glossary for the BSc

Completion of a unit of study means that the assessment requirements have been satisfied and a grade of Pass (Concessional) or better in Junior units of study or Pass or better in other units of study has been achieved.

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

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

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

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

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

Major in the BSc normally requires the completion of 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 16 credit points of Intermediate and 32 credit points from Senior units of study in Psychology).

Major in the Faculty of Arts is normally 32 credit points from Senior units of Study in an Arts subject area.

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

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

Dean means the Dean of Science

Faculty means the Faculty of Science.

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

Degree means the Bachelor of Science.

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

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

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

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

■ Bachelor of Computer Science and Technology

Resolutions of the Senate

Bachelor of Computer Science and Technology

- These Resolutions of the Senate relate to the degree of Bachelor of Computer Science and Technology including its streams:
 - Bachelor of Computer Science and Technology;
 - Bachelor of Computer Science and Technology (Advanced).
 These Resolutions must be read in conjunction with the University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate courses, and the relevant Faculty Resolutions.

Requirements for the Pass degree

- To qualify for the award of the pass degree students must:
 - complete successfully units of study giving credit for a total of 144 credit points; and
 - satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Requirements for the Honours degree

- To qualify for the award of the honours degree students must complete the honours requirements published in the faculty resolutions relating to the course.

Resolutions of the Faculty

These resolutions must be read in conjunction with the University of Sydney (Coursework) Rule, and the Glossary appended to these Faculty Resolutions.

Section 1

Streams

- The Bachelor of Computer Science and Technology degree comprises the following streams:
 - Bachelor of Computer Science and Technology; and
 - Bachelor of Computer Science and Technology (Advanced).
- A student for the BCST degree in any stream may apply to the Dean for permission to transfer candidature to any other stream.
- The testamur for the Bachelor of Computer Science and Technology shall specify the stream for which it is awarded.

Units of study

- 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:
 - designation as Junior, Intermediate, Senior or Honours and, where appropriate, as Advanced units of study;
 - credit point values;
 - assumed knowledge, corequisites/prerequisites;
 - the semesters in which they are offered; and
 - the units of study with which they are mutually exclusive.
- The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in the *Table of undergraduate units of study III*.
- A student who enrolls, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Information Technology, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

Requirements for the Pass degree

- To qualify for the award of the degree a student shall complete units of study having a total value of at least 144 credit points, of which:
 - at least 92 credit points are from Table III associated with the degree of Bachelor of Information Technology, including:
 - at least 20 credit points from HI (i);
 - at least 8 credit points from HI (ii);
 - at least 36 credit points from HI (iv) and/or HI (v); and
 - at least 8 credit points from Table HI (v);
 - at least 16 credit points are from the Science subject areas of Mathematics and/or Statistics;
 - at least 40 credit points are from units which have codes starting other than INFO, COMP, ISYS, MULT, NETS, SOFT;

- (4) no more than 18 credit points are from units of study in which a grade of Pass (Concessional) has been awarded. Pass (Concessional) is the grade returned for a unit of study when the final mark is in the range 46-49. It may be awarded for Junior units of study only; and
- (5) at most 72 credit points are from Junior units
8. A major in an Information Technology subject area requires completion of units of study as specified in Table UJA associated with the degree of Bachelor of Information Technology. The testamur for the degree of Bachelor of Computer Science and Technology shall specify any majors completed.
9. Units of study completed at The University of Sydney Summer School which correspond to units of study in the Tables referred to in Section 4 may be credited towards the course requirements.

Honours courses

10. There shall be honours courses in Computer Science and Information Systems. With permission of the Dean, candidates may be allowed to complete an Honours course available in the Faculties of Science, Arts or Economics, provided that the candidate's plan of study is appropriate for the degree.
11. To qualify to enrol in an honours course, students shall:
- (1) (a) have qualified for the award of a pass degree; or
 - (b) be a pass graduate of the Faculty of Science; or
 - (c) be a pass graduate holding a Bachelor of Science degree or equivalent qualification from another institution;
- (2) have completed a minimum of 24 credit points of units of study from Table UI(iv) and/or III(v) associated with the degree of Bachelor of Information Technology (or equivalent at another institution);
- (3) have achieved either a credit average in the relevant units of study used to satisfy Section 11 (2) above, or a SCIWAM of at least 58; and
- (4) satisfy any additional criteria set by the Head of Department concerned.
12. Students shall complete the requirements for the honours course full-time over two consecutive semesters.
13. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.
14. To qualify for the award of an honours degree, students shall complete while enrolled in an honours course, 48 credit points of honours units of study in the *Table of undergraduate units of study*, as prescribed by the Head of Department concerned.
15. The grade of honours and the honours mark are determined by performance in the honours course.
16. A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.
17. A student may not re-attempt an honours course in a single subject area.
18. A student who is qualified to enrol in two honours courses may either:
- (1) complete the honours courses in the two subject areas separately and in succession; or
 - (2) complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.

Designated streams - BCST (Advanced)

19. To qualify for the award of the pass degree in the BCST(Advanced) stream, a student shall complete the requirements for the BCST degree in Section 7 so that except with the permission of the Dean:
- (1) they have completed at least 16 credit points of Intermediate units of study from Table III (i) and/or III (ii) which are at either the Advanced level or as TSP units;
 - (2) they have completed at least 24 credit points from Table III (iv) and/or III (v) at either the Advanced level or the Honours level or as TSP units;
 - (3) they have completed at least 48 credit points from Senior or Honours units of study; and
 - (4) they have maintained in Intermediate and Senior units of study an average mark of 65 or greater in each year of enrolment.

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

Section 2

Enrolment in more/less than minimum load

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

Repeating a unit of study

22. Where a student enrolls in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of Pass or better, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.
23. A student may not enrol in a unit of study which they have completed previously with a grade of Pass or better.
24. A student who has been awarded a Pass (Concessional) in a unit of study may repeat that unit but, if subsequently awarded a grade of Pass or better, no further credit points will be gained unless the unit of study previously had not been credited under Section 7(4).

Cross-institutional enrolment

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

Restrictions on enrolment

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

Satisfactory progress

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

Assessment policy

28. Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.
29. Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).
30. Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.
31. The award of a Pass (Concessional) in a unit of study entitles the student to be credited with the full number of credit points for that unit of study, provided that the limit on the total credit value specified in Section 7 (4) is not exceeded.

Credit transfer policy

32. Credit will not be granted for units of study completed more than nine years prior to application, except with the permission of the Dean.
33. Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in the *Table of undergraduate units of study* or as non-specific credit.
34. 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.
35. All students, notwithstanding any credit transfer, must complete at least 24 credit points from Table III (iv) and/or in (v) at The University of Sydney.

Candidates enrolled before 2001

36. These Resolutions apply to all candidates for the degree enrolling in the BCST after 1 January 2001.
37. A person who has enrolled as a candidate for the degree of BCST before 1 January 2001 shall complete the requirements for the degree in accordance with the Resolutions in force at the time the candidature commenced, provided that the candidate completes the requirements for the degree by 31 December 2003 or such later date as the Faculty may approve in special cases; and that if a unit of study specified in those Resolutions is no longer offered the Faculty may permit the candidate to substitute a unit of study or units of study deemed by the Faculty to be equivalent.

Specific glossary for the BCST

Completion of a unit of study means that the assessment requirements have been satisfied and a grade of Pass (Concessional) or better in Junior units of study or Pass or better in other units of study has been achieved.

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

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

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

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

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

Major in the Faculty of Science normally requires the completion of 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 16 credit points of Intermediate and 32 credit points from Senior units of study in Psychology).

Major in the Faculty of Arts is normally 32 credit points from Senior units of Study in an Arts subject area.

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

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

Dean means the Dean of Science

Faculty means the Faculty of Science.

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

Degree means the Bachelor of Computer Science and Technology.

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

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

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

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

■ Bachelor of Information Technology**Resolutions of the Senate****Bachelor of Information Technology**

1. These Resolutions of the Senate relate to the degree of Bachelor of Information Technology. These Resolutions must be read in conjunction with The University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate courses, and the relevant Faculty Resolutions.

Requirements for the Pass degree

2. To qualify for the award of the pass degree students must:
 - (1) complete successfully units of study giving credit for a total of 192 credit points; and
 - (2) satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Requirements for the Honours degree

3. To qualify for the award of the honours degree students must complete the honours requirements published in the faculty resolutions relating to the course.

Resolutions of the Faculty

These resolutions must be read in conjunction with The University of Sydney (Coursework) Rule and the Glossary appended to these Faculty Resolutions.

Section 1*Units of study*

1. The units of study, which may be taken for the degree, are set out in the *Table of undergraduate units of study III* and the Tables of units of study associated with the degrees of BSc, BA, BEc, and BE, all of which tables indicate:
 - (1) designation as Junior, Intermediate, Senior or Honours and, where appropriate, as Advanced units of study;
 - (2) credit point values;
 - (3) assumed knowledge, corequisites/prerequisites;
 - (4) the semesters in which they are offered; and
 - (5) the units of study with which they are mutually exclusive.
2. The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table III.
3. A student who enrolls, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Information Technology, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

Requirements for the Bachelor of Information Technology degree

4. To qualify for the award of the degree a student shall complete units of study having a total value of at least 192 credit points, of which:
 - (1) at least 144 credit points are from Table HI, including:
 - (a) at least 20 credit points from III (i) with results of Credit or better;
 - (b) at least 16 credit points from HI (ii) with results of Credit or better;
 - (c) at least 72 credit points from HI (iv) and/or III (v); and
 - (d) either INFO 3600 or INFO 4900;
 - (2) at least 16 credit points are from the Science subject areas of Mathematics and/or Statistics;
 - (3) at least 40 credit points are from units which have codes starting other than INFO, COMP, ISYS, MULT, NETS, SOFT;
 - (4) none are from units of study with grade of PCON;
 - (5) at most 72 credit points are from Junior units; and
 - (6) at least 84 credit points are from Senior and/or Honours units.
5. A major in the Bachelor of Information Technology normally requires the completion of 24 to 28 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 an Advanced equivalent:
 - (1) a major in Principles of Computer Science - all units listed in Table IIIA(i) as core, and at least 12 credit points from units listed as electives;
 - (2) a major in Information Systems - all units listed in Table IIIA(ii) as core, and at least 12 credit points from units listed as electives;
 - (3) a major in Multimedia Technology - all units listed in Table IIIA(iii) as core, and at least 16 credit points from units listed as electives;
 - (4) a major in Networks and Systems - all units listed in Table UIA(iv) as core, and at least 12 credit points from units listed as electives;
 - (5) a major in Software Development - all units listed in Table UIA(v) as core, and at least 8 credit points from units listed as electives;

- (6) a major in Digital Systems - all units listed in Table nLA(vi) as core, and at least 16 credit points from units listed as electives; and
- (7) a major in Computational Science - all units listed in Table nIA(vii) as core and at least 12 credit points from units listed as electives.
6. It is not necessary to complete the requirements of any major in order to qualify for the award of the degree.
7. Units of study completed at The University of Sydney Summer School which correspond to units of study in the Tables referred to in Section 1 may be credited towards the course requirements.
8. The testamur for the degree of Bachelor of Information Technology shall specify the major(s) completed in the degree.

Requirements for the Bachelor of Information Technology (Honours) degree

9. There shall be an honours degree associated with the Bachelor of Information Technology. Entry into the honours degree is only by transfer from the BIT.
10. To qualify to transfer into the Bachelor of Information Technology (Honours) degree, students shall:
- (1) have completed at least 144 credit points from the Bachelor of Information Technology degree;
 - (2) have completed a minimum of 24 credit points from Table HI (iv) and/or in (v), or the equivalent at another institution;
 - (3) have achieved either a distinction average (75) in the relevant units of study in Table HI (iv) and/or HI (v), or a SCIWAM of at least 70; and
 - (4) satisfy any additional criteria set by the Head of Department concerned.
11. Once enrolled in the BIT (Honours) course, students shall complete the requirements for the honours course full-time, over two consecutive semesters.
12. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.
13. To qualify for the award of the Bachelor of Information Technology (Honours) degree, students shall complete 192 credit points as outlined in Section 4, including at least 40 credit points from Honours level units, of which both INFO 4000 and INFO 4900 must be completed with a result of at least 65
14. The degree of Bachelor of Information Technology (Honours) shall recognise the same majors as the BIT. The testamur shall specify the major(s) completed in qualifying for the award. These majors will be noted independently from the grade of honours awarded.
15. The grade of honours and the honours mark are determined by performance in all Honours level units attempted.
16. A student with an honours mark of 90 or greater and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.
17. A student may not re-attempt the Bachelor of Information Technology (Honours) course. However, students who fail to meet the requirements for the award of honours and who have not already satisfied the requirements of the BIT may elect to transfer back to the BIT.
18. A student who is qualified to enrol in two honours courses may either:
- (1) complete the honours courses in the two subject areas separately and in succession; or
 - (2) complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.

Transfer between the BIT and other degrees

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

Bachelor of Information Technology degree and graduate with the BSc, BSc (Adv), BCST or BCST (Adv) degree, as appropriate.

Section 2

Enrolment in more/less than minimum load

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

Repeating a unit of study

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

Cross-institutional enrolment

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

Restrictions on enrolment

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

Satisfactory progress

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

Assessment policy

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

Credit transfer policy

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

Specific glossary for the BIT

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

Junior unit of study is a 1000 or first-year stage unit.

Intermediate unit of study is a 2000 or second-year stage unit.

Senior unit of study is a 3000 or third-year stage unit.

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

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

Dean means the Dean of Science.

Faculty means the Faculty of Science.

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

Degree means the Bachelor of Information Technology.

Requirements means coursework requirements for the award of the degree of Bachelor of Information Technology.

Student means a person enrolled as a candidate for the degree of Bachelor of Information Technology.

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

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

■ Bachelor of Medical Science

Resolutions of the Senate

Bachelor of Medical Science

- These Resolutions of the Senate relate to the Bachelor of Medical Science and the Combined degree course:
 - Bachelor of Engineering/Bachelor of Medical Science
 These Resolutions must be read in conjunction with The University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate courses, and the relevant Faculty Resolutions.

Requirements for the Pass degree

- To qualify for the award of the pass degree students must:
 - complete successfully units of study giving credit for a total of 144 credit points; and
 - satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Requirements for the Honours degree

- To qualify for the award of the honours degree students must complete the honours requirements published in the faculty resolutions relating to the course.

Requirements for the Combined degrees

- To qualify for the award of the two degrees in the combined degree course students must complete the requirements published in these and the other relevant faculty resolutions relating to the course.

Resolutions of the Faculty

These resolutions must be read in conjunction with The University of Sydney (Coursework) Rule and the Glossary appended to these Faculty Resolutions.

Section 1

Units of study

- The units of study, which may be taken for the degree, are set out in the *Table of undergraduate units of study IV* together with:
 - designation as Junior, Intermediate, Senior and Honours and, where appropriate, as an Advanced unit of study;
 - credit point value;
 - assumed knowledge, qualifying units, corequisites and prerequisites;
 - the semester in which it is offered; and
 - the units of study with which it is mutually exclusive.
- A student may enrol, in accordance with Section 4(3), 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.
- The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in the Tables of Undergraduate units of study

Requirements for the Pass degree

- In order to qualify for the award of the degree a student shall complete units of study having a total value of at least 144 credit points, including:
 - at least 48 credit points from Junior units of study, comprising 12 credit points each from Biology, Chemistry, Mathematics and Physics; with the permission of the Faculty 12 credit points of Biology may be replaced with Junior units of study in Computer Science or Psychology;
 - at least 88 credit points from Intermediate and Senior units of study, comprising:
 - 40 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 listed in Table IV; and
 - at least 12 credit points taken from any other Intermediate or Senior units of study; and
 - no more than 20 credit points from units of study other than those specified in Table IV.
- Units of study taken at The University of Sydney Summer School which correspond to units of study specified in Section 4 may, on application to the Faculty, be credited towards the course requirements.

Honours courses

- There shall be an honours course in each of the following subject areas:
 - Anatomy
 - Biochemistry
 - Biology (Genetics)
 - Cell Pathology
 - Histology and Embryology
 - Immunology
 - Infectious Diseases
 - Microbiology
 - Pharmacology
 - Physiology.
- In order to qualify to enrol in an honours course, students shall either:
 - have qualified for the award of the pass degree; or
 - be a pass graduate in Medical Science of the Faculty of Science; or
 - be a pass graduate holding a Bachelor of Medical Science degree or an equivalent qualification from another institution, and either:
 - have completed a minimum of 24 credit points of Senior units of study relating to the intended honours course with at least a credit average; or
 - have a SCIWAM of at least 58; and
 - satisfy any additional criteria set by the Head of Department concerned.
- Students shall complete the requirements for the 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.
- 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.
- The grade of honours and the honours mark are determined by performance in the honours course.
- 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.
- 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 student may not re-attempt an honours course in a single subject area.

Combined degree - Bachelor of Engineering/Bachelor of Medical Science

- A student may proceed concurrently to the degrees of Bachelor of Engineering (in any specialisation except Civil Engineering) and Bachelor of Medical Science.
- To qualify for the award of the pass degree a student shall complete units of study having a total value of at least 240 credit points including:
 - at least 160 credit points from prescribed Engineering units of study (this total to include the 12 credit points from the Interdisciplinary Thesis);
 - 40 credit points of Intermediate core units of study listed in the *Table of undergraduate units of study IV* for the Bachelor of Medical Science;

- (3) at least 24 credit points of Senior units of study from the subject areas listed in Table IV; and
 (4) 12 credit points from the Interdisciplinary Thesis.
17. Students who are so qualified may be awarded honours in the BE degree or undertake an honours course in the BMedSc degree.
18. Students may abandon the combined degree course and elect to complete either a BMedSc or a BE in accordance with the resolutions governing those degrees.
19. Students will be under the general supervision of the Faculty of Engineering.
20. The Deans of the Faculties of Engineering and Science shall jointly exercise authority in any matter concerning the combined degrees not otherwise dealt with in these resolutions.

Section 2

Repeating a unit of study

21. Where a student enrolls in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed satisfactorily, the Head of Department concerned may exempt the student from certain requirements of the unit of study requirements if satisfied that the relevant competence has been demonstrated.
22. A student may not enrol in a unit of study which they have completed previously with a grade of Pass or better.

Cross-institutional enrolment

23. Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study or units of study at another institution and have that unit or units of study credited to his/her course requirements provided that either:
- (1) the unit of study content is material not taught in any corresponding unit of study in the University; or
 - (2) the student is unable for good reason to attend a corresponding unit of study at the University.

Restrictions on enrolment

24. Except with the permission of the Dean, candidates may not enrol in an Intermediate core unit of study:
- (1) until they have completed all the Junior units of study prescribed by the Faculty as qualifying units of study as set out in Table IV; and
 - (2) unless they are also attempting corequisite units of study as set out in Table IV
25. Except with the permission of the Dean, candidates may not enrol in a Senior unit of study:
- (1) until they have gained credit for at least 32 credit points from core Intermediate units of study; and
 - (2) until they have completed the Intermediate units of study prescribed as prerequisites for the Senior unit of study, as set out in Table IV.
26. Enrolment in some Senior units of study may be subject to a quota.
27. In satisfying the requirements of Section 4(3) a student may not enrol in units of study which overlap substantially in content with units of study listed in Table IV.
28. A student may not enrol without first obtaining permission from the Dean in:
- (1) additional units of study once the degree requirements of 144 credit points have been satisfied; or
 - (2) units of study which may not be counted towards the course requirements.

Satisfactory progress

29. If a student fails or discontinues enrolment in one unit of study twice, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Assessment policy

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

Credit transfer policy

33. Credit will not be granted for units of study completed more than ten years prior to application, except with the permission of the Dean.
34. Advanced standing may be granted as specific credit if the unit of study is considered by the Faculty to be directly equivalent to a unit of study in Table IV, or as nonspecific credit.
35. The total credit point value of the advanced standing may not be greater than 96 credit points and may not include more than 48 credit points of units from other degrees which have been conferred, or for which credit is maintained in another degree program.
36. All students, notwithstanding any credit transfer, must enrol in at least 36 credit points of Senior units of study from Table IV.

Candidates enrolled before 2000

37. These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2000.
38. A person who has enrolled as a candidate for the degree of Bachelor of Medical Science before 1 January 2000 may complete the requirements for the degree in accordance with the Resolutions in force at the time the candidature commenced, provided that the candidate completes the requirements for the degree by 31 December 2002 or such later date as the Faculty may approve in special cases; and that if a unit of study specified in those Resolutions is no longer offered the Faculty may permit the candidate to substitute a unit of study or units of study deemed by the Faculty to be equivalent.
39. Where a candidate proceeding pursuant to Section 38 fails to complete the requirements for the degree by 31 December 2002 the candidate shall complete the requirements for the degree under such conditions as may be determined from time to time by the Dean.

Specific glossary for the BMedSc

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

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

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

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

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

Dean means the Dean of Science.

Faculty means to the Faculty of Science.

Pass (Concessional) is not an available grade in the Bachelor of Medical Science

Degree means the Bachelor of Medical Science.

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

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

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

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

■ Bachelor of Psychology

Resolutions of the Senate

Bachelor of Psychology

1. These Resolutions of the Senate relate to the Bachelor of Psychology. These Resolutions must be read in conjunction with The University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate course, and the relevant Faculty Resolutions.

Requirements for the degree

2. To qualify for the award of the degree students must:
 - (1) complete successfully units of study giving credit for a total of 144 credit points;
 - (2) complete successfully an additional 48 credit points from the fourth year (Honours) units of study in the Science subject area of Psychology; and
 - (3) satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Resolutions of the Faculty

These resolutions must be read in conjunction with the University of Sydney (Coursework) Rule and the Glossary appended to these Faculty Resolutions.

Section 1**Units of study**

1. The Faculty of Science offers units of study in the following designated Science subject areas:
 - (a) Agricultural Chemistry
 - (b) Anatomy and Histology
 - (c) Biochemistry
 - (d) Biology
 - (e) Cell Pathology
 - (f) Chemistry
 - (g) Computer Science
 - (h) Environmental Science
 - (i) Geography
 - (j) Geology
 - (k) Geophysics
 - (l) History and Philosophy of Science
 - (m) Immunology
 - (n) Information Systems
 - (o) Marine Science
 - (p) Mathematics
 - (q) Microbiology
 - (r) Molecular Biotechnology
 - (s) Nutritional Science
 - (t) Pharmacology
 - (u) Physics
 - (v) Physiology
 - (w) Psychology
 - (x) Soil Science
 - (y) Statistics
2. The units of study, which may be taken for the degree, are set out under Subject areas in *Table of undergraduate units of study I* together with:
 - (1) designation as Junior, Intermediate, Senior or Honours and, where appropriate, as Advanced units of study;
 - (2) credit point values;
 - (3) assumed knowledge, corequisites/prerequisites;
 - (4) the semesters in which they are offered; and
 - (5) the units of study with which they are mutually exclusive.
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 of undergraduate units of study I*.
4. A student who enrolls, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Psychology, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

Requirements for the degree

5. To qualify for the award of the degree a student shall:
 - (1) complete units of study having a total value of at least 144 credit points where:
 - (a) at least 12 credit points are from Junior units of study in the Science subject area of Psychology, with an average grade of credit or better;
 - (b) at least 16 credit points are from Intermediate units of study in the Science subject area of Psychology, with an average grade of distinction or better;
 - (c) at least 36 credit points are from Senior units of study in the Science subject area of Psychology (including PSYC 3201 and PSYC 3202) and, except with the permission of Faculty, with an average grade of Distinction or better;
 - (d) at least 96 credit points are from Science subject areas;
 - (e) at least 12 credit points are from the Science subject areas of Mathematics and Statistics;

- (f) at least 12 credit points are Junior units of study from Science subject areas other than Psychology and Mathematics and Statistics;
- (g) no more than 60 credit points are from Junior units of study; and
- (h) no more than 18 credit points are from units in which a grade of Pass (Concessional) has been awarded. Pass (Concessional) is the grade returned for a unit of study when the final mark is in the range 46-49. It may be awarded for Junior units of study only;
- (2) complete 48 credit points from fourth year (Honours) units of study in the Science subject area of Psychology with a grade of honours.
6. 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.
7. 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.
8. Students shall complete the requirements for the honours course full-time over two consecutive semesters,
9. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.
10. The grade of honours and the honours mark are determined by performance in the honours course.
11. A student with an honours mark of 90 or greater and a minimum SCIAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.
12. A student may not re-attempt the Psychology honours course.

Section 2**Enrolment in more/less than minimum load**

13. A student may not enrol without first obtaining permission from the Dean in
 - (1) additional units of study once the degree requirements of 144 credit points have been satisfied, or
 - (2) units of study which may not be counted towards the course requirements.

Repeating a unit of study

14. Where a student enrolls in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of *Pass or better*, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.
15. A student may not enrol in a unit of study which they have completed previously with a grade of Pass or better.
16. A student who has been awarded a Pass (Concessional) in a unit of study may repeat that unit but, if subsequently awarded a grade of Pass or better, no further credit points will be gained unless the unit of study previously had not been credited under Section 5(1)(h).

Cross-institutional enrolment

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

Restrictions on enrolment

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

Satisfactory progress

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

Assessment policy

20. Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.
21. 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).
22. Heads of department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.
23. The award of a Pass (Concessional) in a unit of study entitles the student to be credited with the full number of credit points for that unit of study, provided that the limit on the total credit value specified in Section 5(1)(h) is not exceeded.

Credit transfer policy

24. Credit will not be granted for units of study completed more than nine years prior to application, except with the permission of the Dean.
25. 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 of undergraduate units of study I* or as non-specific credit.
26. 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.
27. All students, notwithstanding any credit transfer, must complete at least 36 credit points of Senior Psychology units (as outlined in 5(1)(c)) at The University of Sydney.

Specific glossary for the BPsych

Completion of a unit of study means that the assessment requirements have been satisfied and a grade of Pass (Concessional) or better in Junior units of study or Pass or better in other units of study has been achieved.

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

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

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

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

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

Major in the Faculty of Science normally requires the completion of 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 16 credit points of Intermediate and 32 credit points from Senior units of study in Psychology).

Dean means the Dean of Science.

Faculty means the Faculty of Science.

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

Degree means the Bachelor of Psychology.

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

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

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

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

■ Bachelor of Liberal Studies**Resolutions of the Senate****Bachelor of Liberal Studies**

1. These Resolutions of the Senate relate to the Bachelor of Liberal Studies including its streams:
 - (a) Bachelor of Liberal Studies; and
 - (b) Bachelor of Liberal Studies (International).
 These Resolutions must be read in conjunction with The University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate courses, and the relevant Faculty Resolutions.

Requirements for the Pass degree

2. To qualify for the award of the degree students must:
 - (1) complete successfully units of study giving credit for a total of 192 credit points; and
 - (2) satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Requirements for the Honours degree

3. To qualify for the award of the honours degree students must complete the honours requirements published in the faculty resolutions relating to the course.

Resolutions of the Faculties of Arts and Science

These resolutions must be read in conjunction with the University of Sydney (Coursework) Rule and the glossary appended to these Faculty resolutions.

Section 1**Authority of the Deans**

1. The Deans of Arts and Science shall jointly exercise authority in any matter concerning the Bachelor of Liberal Studies degree not otherwise dealt with in the Resolutions of the Senate or these resolutions.

Streams

2. The Bachelor of Liberal Studies degree comprises the following streams:
 - (a) Bachelor of Liberal Studies; and
 - (b) Bachelor of Liberal Studies (International).
3. A student for the BLibStud degree in any stream may apply to the Deans of Arts and Science for permission to transfer candidature to any other stream.
4. The testamur for the Bachelor of Bachelor of Liberal Studies shall specify the stream for which it is awarded.

Units of study

5. The units of study, which may be taken for the degree, are set out under subject areas in the *Table of undergraduate units of study I* for the Bachelor of Science and the Tables of units of study for the degree of Bachelor of Arts, including:
 - (1) designation as Junior, Intermediate, Senior or Honours and, where appropriate, as Advanced units of study;
 - (2) credit point values;
 - (3) assumed knowledge, corequisites/prerequisites;
 - (4) the semesters in which they are offered; and
 - (5) the units of study with which they are mutually exclusive.
6. The Deans of Arts and Science may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study other than those specified in the *Table of undergraduate units of study I* for the Bachelor of Science.
7. A student who enrolls, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Liberal Studies, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

Requirements for the Pass degree

8. To qualify for the award of the degree a student shall complete units of study having a total value of at least 192 credit points, including:
 - (1) at least 120 Intermediate or Senior credit points;
 - (2) at least one Arts major and one Science major;
 - (3) at least 28 credit points, including 16 Intermediate or Senior credit points, from units of study in one language subject area other than English from Part A of the Tables of units of study for the degree of Bachelor of Arts;

- (4) a 6 credit point unit of study in communication and analytical skills or in other academic skills as may be prescribed from time to time;
- (5) a minimum of 6 credit points from units of study in Mathematics and Statistics; and
- (6) no more than 18 credit points from units in which a grade of Pass (Concessional) has been awarded. Pass (Concessional) is the grade returned for a unit of study when the final mark is in the range 46-49. It may be awarded for Junior units of study only.
9. Unless otherwise defined, a major shall consist of units of study taken in a single subject area from Part A of the Table of units of study for the Bachelor of Arts or from the *Table of undergraduate units of study I* for the Bachelor of Science.
10. A major in an Arts subject area requires 32 credit points from Senior units of study in an Arts subject area listed in Part A of the Table of units of study for the Bachelor of Arts, including any units of study specified in the Table of units of study as compulsory for that major, or of at least 16 senior credit points from a Part A subject area combined with no more than 16 senior credit points from units of study approved by the Dean of the Faculty of Arts for cross-listing with the major, except in the case of Semiotics, Medieval Studies, and European Studies where the entire major may be cross-listed and in such other subject areas as may be approved by the Dean of the Faculty of Arts.
11. A major in a Science area normally requires the completion of 24 credit points of Senior units of study in that area, including any units of study specified in the *Table of undergraduate units of study I* as compulsory for that major. (A major in Psychology requires 16 credit points of Intermediate and 32 credit points of Senior units of study in Psychology). A student may not count a unit of study toward more than one major.
12. Candidates shall nominate their choice of majors no later than the beginning of the fifth semester of candidature, but with the permission of the Deans of Arts and Science as appropriate, may change the majors during the candidature.
13. A maximum of 28 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculties of Arts and Science and in addition to those listed in Part B of the Table of units of study for the Bachelor of Arts.
14. Units of study completed at The University of Sydney Summer School which correspond to units of study in Parts A and B of the Table of units of study for the Bachelor of Arts or from the *Table of undergraduate units of study I* for the Bachelor of Science may be credited towards the course requirements.
15. The testamur for the degree of Bachelor of Liberal Studies shall specify the majors completed in order to qualify for the award.

Award of the degree

16. (1) A weighted average mark (WAM) will be calculated for each candidate as an overall measure of the performance in the degree Bachelor of Liberal Studies. The WAM is calculated by summing the products of the marks achieved and the weighted credit point values of the units of study taken in the degree and then dividing by the sum of the weighted credit point values, with all attempts at units of study being included in the calculation, except where units of study are discontinued with permission; the formula used is as follows:

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

where W_c is the weighted credit point value - ie, the product of the credit point value and level of weighting of 1 for 1000-1999 units of study or 3 for 2000-2999 units of study and 3000-3999 units of study; where M_c is the greater of 45 or the mark out of 100 for the unit of study.

(2) The degree shall be awarded with the following grades, as determined by the Deans of Arts and Science on the basis of the WAM:

- (a) High Distinction
- (b) Distinction
- (c) Pass.

Honours courses

17. There shall be honours courses in all Arts and Science subject areas.
18. To qualify to enrol in an honours course, students shall:

- (1) (a) have completed the requirements for the award of the Bachelor of Liberal Studies with the grade of Distinction or High Distinction; or
 - (b) be a pass graduate holding an equivalent qualification from another institution;
 - (2) have completed a major at credit average in the subject area relating to the intended honours course (or equivalent at another institution);
 - (3) satisfy any additional criteria set by the Head or Chair of Department concerned.
19. Students shall complete the requirements for the honours course full-time over two consecutive semesters.
20. If the Faculties are satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head or Chair of Department concerned so recommends, permission may be granted to undertake honours half-time over three or four consecutive semesters.
21. To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in the Table of units of study for the Bachelor of Arts or in the *Table of undergraduate units of study* for the Bachelor of Science, as prescribed by the Head or Chair of Department concerned.
22. The grade of honours and the honours mark are determined by performance in the honours course.
23. A student with an honours mark of 90 or greater in an honours subject area shall, if deemed to be of sufficient merit by the Deans of Arts and Science, receive a bronze medal.
24. A student may not re-attempt an honours course in a single subject area.
25. A student who is qualified to enrol in two honours courses may either:
 - (1) complete the honours courses in the two subject areas separately and in succession; or
 - (2) complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Deans of Arts and Science.

Designated Streams - Bachelor of Liberal Studies (International)

26. To qualify for the award of the pass degree in the Bachelor of Liberal Studies (International) stream, a student must complete the requirements for the Bachelor of Liberal Studies degree in Section 8 and in addition, except with the permission of the Deans of Arts and Science, include at least the equivalent of 24 credit points from units of study taken over a minimum of one semester while enrolled as an exchange student at an overseas university which has an exchange agreement with The University of Sydney.
27. To qualify to participate in an exchange program a student must have:
 - (1) completed at least the equivalent of two semesters of full-time study (normally a minimum of 48 credit points completed towards the Bachelor of Liberal Studies); and
 - (2) maintained an average mark of 65 or greater over all units of study completed.
28. During the period of their exchange program a student must be enrolled as a full-time student in the Bachelor of Liberal Studies at The University of Sydney and take classes at the overseas university that will qualify for a minimum of 24 credit points per semester towards the Bachelor of Liberal Studies degree.
29. Except as specified in these resolutions, students will comply with the rules of and be under the administration of The University of Sydney's Exchange Program.
30. Students who have completed at least 48 credit points may be permitted to transfer from the Bachelor of Liberal Studies to the Bachelor of Liberal Studies (International) stream if:
 - (1) their marks averaged over all attempted units of study is 65 or greater; and
 - (2) they are able to qualify for participation in the exchange program.
31. Students enrolled in the Bachelor of Liberal Studies (International) stream who do not qualify for, or are unable or unwilling to participate in an exchange program may, with the permission of the Deans of Arts and Science, transfer to the Bachelor of Liberal Studies.

Transfer to candidature for the Bachelor of Arts or the Bachelor of Science

32. Candidates who at the end of at least four semesters of candidature have completed at least 96 credit points in total, and who intend to satisfy the requirements for entry to a Fourth Year Honours unit of study or joint Honours unit of study for the Bachelor's degrees in Arts or Science, may apply to transfer to candidature for one of these degrees.
33. Candidates who at the end of at least six semesters of candidature have completed units of study which correspond to the entry requirements for Fourth Year Honours for the Bachelor's degrees in Arts or Science may apply to transfer to candidature for one of these degrees.
34. Candidates for the degree may, with the permission of the Faculty concerned, transfer to candidature for the pass degrees of Bachelor of Arts or Bachelor of Science no later than the end of the fourth semester of candidature.
35. If a candidate for the degree has completed the normal requirements for the pass degree of Bachelor of Arts, Bachelor of Arts (Asian Studies) or Bachelor of Science, he or she may apply to take one of these degrees provided that candidature for the Bachelor of Liberal Studies is abandoned.
36. The maximum enrolment in a single Arts subject area is 18 junior credit points and 64 senior credit points.

Section 2*Enrolment in more/less than minimum load*

37. A student may not enrol without first obtaining permission from the Deans of Arts and Science in additional units of study once the degree requirements of 192 credit points have been satisfied.

Repeating a unit of study

38. Where a student enrolls in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed *at the grade of Pass or better*, the Head or Chair of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.
39. A student may not enrol in a unit of study which they have completed previously with a grade of Pass or better.
40. 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 because of the provisions of Section 8(6).

Cross-institutional enrolment

41. Provided that permission has been obtained in advance, the Deans of Arts and Science may permit a student to complete a unit of study at another institution and have that unit credited to his/her course requirements provided that either:
- (1) the unit of study content is material not taught in any corresponding unit of study in the University; or
 - (2) the student is unable for good reason to attend a corresponding unit of study at the University.

Restrictions on enrolment

42. Units of study which overlap substantially in content are noted in the Table of units of study for the Bachelor of Arts and in the Tables of Undergraduate units of study for the Bachelor of Science. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.

Satisfactory progress

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

Assessment policy

44. Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculties of Arts or Science may determine.
45. 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).
46. Heads or Chairs of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

Credit transfer policy

47. Credit will not be granted for units of study completed more than nine years prior to application, except with the permission of the Deans of Arts and Science.
48. Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in the Table of units of study for the Bachelor of Arts or from the *Table of undergraduate units of study I* for the Bachelor of Science or as non-specific credit.
49. 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.
50. All students, notwithstanding any credit transfer, must complete a major from each of the Faculties of Arts and Science taken at The University of Sydney.

Specific glossary for the BLibStud

Completion of a unit of study means that the assessment requirements have been satisfied and a grade of Pass (Concessional) or better in Junior units of study or Pass or better in other units of study has been achieved.

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

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

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

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

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

Major in the Faculty of Arts is normally 32 credit points from Senior units of Study in an Arts subject area, including any units of study specified in the Table of Units of Study as compulsory for that major.

Major in the Faculty of Science normally requires the completion of 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 16 credit points of Intermediate and 32 credit points from Senior units of study in Psychology).

Deans means the Dean of Arts and the Dean of Science.

Faculties means the Faculty of Arts and the Faculty of Science.

Arts subject area means a defined field of study in Arts.

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

Degree means the Bachelor of Liberal Studies.

Requirements means coursework requirements for the award of the degree of Bachelor of Liberal Studies.

Student means a person enrolled as a candidate for the degree of Bachelor of Liberal Studies.

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

WAM means the weighted average mark calculated from the results for all Intermediate and Senior units of study weighted by credit point value.

■ Bachelor of Science in Media and Communications**Resolutions of the Senate****Bachelor of Science in Media and Communications**

1. These Resolutions of the Senate relate to the Bachelor of Science in Media and Communications. These Resolutions must be read in conjunction with The University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate courses, and the relevant Faculty Resolutions.

Requirements for the Pass degree

2. To qualify for the award of the degree students must:
 - (1) complete successfully units of study giving credit for a total of 192 credit points; and
 - (2) satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Requirements for the Honours degree

3. To qualify for the award of the honours degree students must complete the honours requirements published in the faculty resolutions relating to the course.

Resolutions of the Faculty of Science

These resolutions must be read in conjunction with The University of Sydney (Coursework) Rule and the Glossary appended to these Faculty Resolutions.

Section 1**Units of study**

1. The units of study, which may be taken for the degree, are set out under subject areas in the *Table of undergraduate units of study* V for the Bachelor of Science in Media and Communications and the Tables of units of study associated with the degrees of BSc, BA, BEc, including:
 - (1) designation as Junior, Intermediate, Senior or Honours and, where appropriate, as Advanced units of study;
 - (2) credit point values;
 - (3) assumed knowledge, corequisites/prerequisites;
 - (4) the semesters in which they are offered; and
 - (5) the units of study with which they are mutually exclusive.
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 other than those specified in the tables of undergraduate units of study.
3. A student who enrolls, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Science in Media and Communications, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

Requirements for the Pass degree

4. To qualify for the award of the degree a student shall complete units of study having a total value of at least 192 credit points, including:
 - (1) at least 120 Intermediate or Senior credit points;
 - (2) at least one Science major;
 - (3) a major in Media and Communications (normally 12 credit points from Junior units and 32 credit points from Senior units in MECO);
 - (4) an internship in Science Media and Communications Practice consisting of 16 credit points taken in an approved industry in the third or fourth year of candidature;
 - (5) 8 credit points of Senior units from each of the areas of Government and Media, Law and Media, and Media Relations;
 - (6) 6 credit points from a unit of study in communication and analytical skills (currently ENGL 1005);
 - (7) at least 12 credit points from units of study in the areas of Mathematics and Statistics; and
 - (8) no more than 12 credit points from units in which the grade of Pass (Concessional) has been awarded. Pass (Concessional) is the grade returned for a unit of study when the final mark is in the range 46-49. It may be awarded for Junior units of study only.
5. A major in a Science area normally requires the completion of 24 credit points of Senior units of study in that area, including any units of study specified in the *Table of undergraduate units of study I* as compulsory for that major. (A major in Psychology requires 16 credit points of Intermediate and 32 credit points of Senior units of study in Psychology). A student may not count a unit of study toward more than one major.
6. A maximum of 28 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculties of Arts and Science.
7. Units of study completed at The University of Sydney Summer School which correspond to units of study in the Tables listed in section 1 may be credited towards the course requirements.
8. The testamur for the degree of Bachelor of Science in Media and Communications shall specify the majors completed in order to qualify for the award.

Award of the degree

9. (1) A weighted average mark (WAM) will be calculated for each candidate as an overall measure of the performance in the degree Bachelor of Science in Media and Communications. The WAM is calculated by summing the products of the marks achieved and the weighted credit point values of the Intermediate and Senior units of study taken in the degree and then dividing by the sum of the weighted credit point values, with all attempts at units of study being included in the calculation, except where units of study are discontinued with permission; the formula used is as follows:

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

where W_c is the weighted credit point value - ie, the product of the credit point value and level of weighting of 2 for 2000-2999 units of study or 3 for 3000-3999 units of study; where M_c is the greater of 45 or the mark out of 100 for the unit of study.

- (2) The degree shall be awarded with the following grades, as determined by the Dean on the basis of the WAM:
 - (a) High Distinction
 - (b) Distinction
 - (c) Pass.

Honours courses

10. There shall be honours courses in the subject of Media and Communications, and in all Science subject areas.
11. To qualify to enrol in an honours course, students shall:
 - (1) (a) have completed the requirements for the award of the Bachelor of Science Media and Communications with the grade of Distinction or High Distinction; or
 - (b) be a pass graduate holding an equivalent qualification from another institution;
 - (2) have completed a major at credit average in the subject area relating to the intended honours course (or equivalent at another institution); and
 - (3) satisfy any additional criteria set by the Head or Chair of Department concerned.
12. Students shall complete the requirements for the honours course full-time over two consecutive semesters.
13. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head or Chair of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.
14. A student who is qualified to enrol in two honours courses may either:
 - (1) complete the honours courses in the two subject areas separately and in succession; or
 - (2) complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.
15. To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in the Table of units of study for the Bachelor of Arts or in the *Table of undergraduate units of study* for the Bachelor of Science, as prescribed by the Head or Chair of Department concerned.
16. The grade of honours and the honours mark are determined by performance in the honours course.
17. 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.

Transfer of candidature to and from other degrees in the Faculty

18. A student may, with the permission of the Dean, transfer into the BSc Media & Communications from the BSc, BMedSc, BPsych, BCST, BIT or BLibStud after two semesters of enrolment, subject to having achieved a Distinction average.
19. A student in the BSc Media & Communications may, with the permission of the Dean, transfer to other degrees in the Faculty subject to meeting prerequisite and progression requirements.
20. If a candidate for the degree has completed the normal requirements for the pass degree of Bachelor of Science he or she may apply to take this degree provided that candidature for the Bachelor of Science in Media and Communications is abandoned.

Other conditions of candidature

21. Unless otherwise specified, the regulations applying for matters not included here shall be those applying for the degree of Bachelor of Science.

Section 2

Enrolment in more/less than minimum load

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

Repeating a unit of study

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

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

25. A student who has been awarded a Pass (Concessional) in a unit of study may repeat that unit but, if subsequently awarded a grade of Pass or better, no further credit points will be gained unless the unit of study previously had not been credited under Section 4(8).

Cross-institutional enrolment

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

- (1) the unit of study content is material not taught in any corresponding unit of study in the University; or
- (2) the student is unable for good reason to attend a corresponding unit of study at the University.

Restrictions on enrolment

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

Satisfactory progress

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

Assessment policy

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

30. 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).

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

32. The award of a Pass (Concessional) in a unit of study entitles the student to be credited with the full number of credit points for that unit of study, provided that the limit on the total credit value specified in Section 4(8) is not exceeded.

Credit Transfer Policy

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

34. 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 of undergraduate units of study I* or as non-specific credit.

35. 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.

36. AU students, notwithstanding any credit transfer, must complete at least 24 credit points of Senior Science units normally comprising a major taken at The University of Sydney.

Specific glossary for the BScMediaCommun

Completion of a unit of study means that the assessment requirements have been satisfied and a grade of Pass (Concessional) or better in Junior units of study or Pass or better in other units of study has been achieved.

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

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

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

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

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

Major in the Faculty of Science normally requires the completion of 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 16 credit points of Intermediate and 32 credit points from Senior units of study in Psychology).

Major in the Faculty of Arts is normally 32 credit points from Senior units of Study in an Arts subject area.

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

Major in Media and Communications is usually 12 credit points from Junior units of study and 32 credit points from Senior MECO units of study.

Dean means the Dean of Science.

Faculty means the Faculty of Science.

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

Degree means the Bachelor of Science in Media and Communications.

Requirements means coursework requirements for the award of the degree of Bachelor of Science in Media and Communications.

Student means a person enrolled as a candidate for the degree of Bachelor of Science in Media and Communications.

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

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

■ Generic glossary for the BSc, BCST, BIT, BMedSc, BPsych, BLibStud & BScMediaCommun

Unit of study is a standalone component of a course and comprises such lectures, tutorial instruction, essays, exercises and practical work as the Faculty may prescribe.

Qualifying unit of study means a unit which must be completed at the grade of Pass or better before a student may enrol in any unit of study for which that unit of study has been prescribed as a qualifying unit unless waived with the permission of the Dean.

Prerequisite means a unit of study which must be completed at the grade of Pass (Concessional) or better before a student may enrol in any unit of study for which that unit of study has been prescribed as a prerequisite unless waived with the permission of the Head/Chair of Department concerned.

Assumed knowledge is curricular material which is assumed to be known by each student when enrolling in a unit of study.

Corequisite means a unit of study in which, unless previously completed, a student must enrol concurrently with any unit of study for which that unit of study has been prescribed as a corequisite unless waived with the permission of the Head of Department concerned.

Credit is granted in the form of credit points towards the requirements of a course on the basis of previous attainment in another course at a recognized tertiary institution.

Credit may be granted as specific credit in recognition of previously completed studies which are directly equivalent to a unit of study at this University or non-specific credit in the form of block credit for a specified number of credit points at a particular level and, where appropriate, in a particular subject area.

Exemption means that a student may be exempted from completing parts of the pre scribed work (lectures, seminars, tutorials and practical work) for a unit of study on the basis of previous study. Exemption may be granted for the whole of a unit of study but no advanced standing will be granted.

Cross-listing is the availability of units of study in one subject area for counting towards requirements in other subject areas.

University means the University of Sydney.

Department means department, school, or teaching unit.

Course means a structured academic program of study leading to the award of a degree.

Stream means a form of specialization in which there is a defined program of study, in terms either of subject areas or depth of study.

Program of study means a recommended or prescribed sequence that forms a course or part of a course, and may consist of compulsory or optional units of study as well as other forms of study.

Combined degrees means concurrent enrolment in two degree courses which compresses the duration of the two degree programs.

Double degrees means completing a second degree while enrolment is suspended from the first degree.

UAC means Universities Admission Centre.

Supervision by a faculty covers all areas of policy and procedure affecting students such as degree rules, enrolment procedures and the Dean to whom reference is to be made at any given time.

6 Postgraduate degree requirements

This chapter sets out the requirements for both research and coursework postgraduate degrees offered in the Faculty of Science. Following is a brief description of the research degrees, notes on the presentation of theses and a description of coursework/research degrees. A comprehensive guide to the requirements and units of study of the coursework degrees is listed.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously in chapter 7, or in The University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/.

■ Research degrees

Research degrees offered by the Faculty are listed in this chapter in the following order:

- Doctor of Science
- Doctor of Philosophy
- Master of Science
- Master of Science (Environmental Science).

The resolutions of the Senate, Academic Board and Faculty relating to these degrees may be found in chapter 7 and the *Calendar*. Additional valuable resources for intending and current research students are the *Postgraduate Research Studies Handbook*, published by The University of Sydney, *The Thesis Guide* and the *Survival Manual* published by SUPRA (Sydney University Postgraduate Representative Association). These publications are available from the Faculty Office. The *Postgraduate Research Studies Handbook* is also on the Web at www.usyd.edu.au/su/ab/committees/committees.html.

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, have been a full-time member of academic staff of The University of Sydney for at least three years, or have had a significant involvement with the teaching or research of the University.

Admission to candidature is subject to a preliminary assessment by the Faculty of the applicant's case. If this is favourable an applicant is required to submit a list of published work, together with a description of the theme of the published work. At least three examiners, of whom at least two are external are appointed to assess the application and make recommendations.

For Faculty resolutions see chapter 7. For the Resolutions of the Senate see *University of Sydney Calendar*.

Doctor of Philosophy (PhD)

The degree of Doctor of Philosophy is a research degree awarded for a thesis considered to be a substantially original contribution to the subject concerned. Some coursework may be required (mainly in the form of seminars) but in no case is it a major component. The Resolutions of the Senate and Academic Board relating to the degree of Doctor of Philosophy are printed in *University of Sydney Calendar*.

Applicants should normally hold a master's degree or a bachelor's degree with first or second class honours from The University of Sydney, or an equivalent qualification from another university or institution.

The degree may be taken on either a full-time or part-time basis.

In the case of full-time candidates, the minimum period of candidature can, with the permission of the Faculty, be two years for candidates holding an MSc degree or equivalent, or is three years in the case of candidates holding a bachelor's degree with

first class or second class honours; the maximum period of candidature is normally four years.

Part-time candidature may be approved for applicants who can demonstrate that they are engaged in an occupation or other activity, which leaves them substantially free to pursue their candidature for the degree. Normally the minimum period of candidature will be determined on the recommendation of the Faculty but in any case will be not less than three years; the maximum period of part-time candidature is normally eight years.

Doctor of Philosophy Resolutions: see *The University of Sydney Calendar*.

Master of Science (MSc)

Graduates of The University of Sydney with first or second class honours and candidates in the final year of an approved honours course in the BSc degree or who have an equivalent qualification from another institution or an equivalent standard of knowledge, may apply for admission to candidature for the MSc degree. Once admitted, candidates proceed full-time or part-time, by supervised research and thesis, or in some cases by coursework and essay.

An application should be lodged with the Faculty. It must be supported by the Head of the Department concerned and approved by the Faculty. If qualifications have been obtained in another university or institution then an application must also be approved by the Academic Board. If an applicant has the prerequisite qualifications, admission to candidature may be approved provided the necessary staff and facilities are available, including adequate accommodation and any special equipment. Some candidates must satisfy a preliminary examination before being admitted to full candidature.

Full-time candidates

Minimum period of candidature: 1 year

Maximum period of candidature: 2 years

Part-time candidates

Minimum period of candidature: 1 year

Maximum period of candidature: 4 years

Master of Science Resolutions: see chapter 7.

Master of Science (Environmental Science)

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. The MSc (Environmental Science) is a research degree requiring a minimum of three semesters of full-time study (or equivalent part-time study). However, candidates are required to show proof of a breadth of knowledge in environmental issues as determined by the Program Committee for 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 Chair of the Program Committee for Environmental Science, 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 Chair.

This degree is designed to extend the student's knowledge base in environmental matters by providing the student with further training and research experience.

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 Chair of the Program Committee for 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.

For unit of study descriptions please refer to the entry under Applied Science (Environmental Science).

Master of Science (Environmental Science) Resolutions: see chapter 7.

Presentation of theses

The following information is presented for the guidance of candidates. It should be regarded as a summary only. Candidates should also consult the University's *Calendar*, the *Postgraduate Research Studies Handbook* and the Faculty of Science for the most current and detailed advice. The *Postgraduate Research Studies Handbook* is available on the web at www.usyd.edu.au/su/ab/committees/committees.html.

Formal requirements

Number of copies to be submitted - MSc, 3; PhD, 4. The four copies of theses submitted for examination for the degree of Doctor of Philosophy may be bound in either a temporary or a permanent form.

Theses submitted in temporary binding should be strong enough to withstand ordinary handling and postage.

The degree shall not be awarded until the candidate has submitted a permanently bound copy of the thesis (containing any corrections or amendments that may be required) and printed on acid-free or permanent paper.

The thesis shall be accompanied by a certificate from the supervisor stating whether in the supervisor's opinion the form of presentation of the thesis is satisfactory.

Theses in permanent form shall normally be on International Standard A4 size paper sewn and bound in boards covered with bookcloth or buckram or other binding fabric. The title of the thesis, the candidate's initials and surname, the title of the degree, the year of submission and the name of The University of Sydney should appear in lettering on the front cover or on the title page. The lettering on the spine, reading from top to bottom, should conform as far as possible to the above except that the name of The University of Sydney may be omitted and the thesis title abbreviated. Supporting material should be bound in the back of the thesis as an appendix or in a separate sheet of covers.

Similar formal requirements exist for the presentation of MSc theses.

Additional information

At the request of the Academic Board, the Science Faculty has resolved that a thesis should not normally exceed 80,000 words. With the permission of the Chair of the Faculty of Science's Post-Graduate Studies Committee, a thesis may have an absolute upper limit of 100,000 words.

Amendments do not have to involve rekeying if a black ink/ biro amendment is clear. Amendments can also be made by way of an appendix to the thesis.

Candidates are advised to consult the SUPRA publication, *Practical Aspects of Producing a Thesis at The University of Sydney* for other guidelines and suggestions in addition to the formal requirements above.

Summary

Within the Faculty of Science, there are no formal requirements/guidelines other than those listed above. There are no requirements for single/double spacing or single/doubled sided presentation, nor point size, figure presentation, format of bibliographic citations, etc. Candidates should however, be aware that, if the degree is awarded, the thesis becomes a public document, the quality of which reflects on the ability of the candidate. Moreover, utilising a format that will make the examiner's tasks easier is obviously sensible.

■ Coursework/research degrees

Doctor of Clinical Psychology / Master of Science

Doctor of Clinical Psychology / Doctor of Philosophy

The Department of Psychology offers two new innovative degrees, a combined Doctor of Clinical Psychology/Master of Science degree and a combined Doctor of Clinical Psychology/Doctor of Philosophy degree which train psychology graduates in the professional specialisation of clinical psychology. Both degrees are anticipated to be recognised by the New South Wales Department of Health and the Department of Community Services as qualifying the holder for progression to the grade of clinical psychologist after a period of 2 years paid employment (at least one of those years immediately after graduation from the course).

It is anticipated that the courses will be accredited by the Australian Psychological Society's College of Clinical Psychologists and by the NSW Psychologists Registration Board in 2002.

Combined Doctor of Clinical Psychology/Master of Science degree (Minimum duration 3 years)

The Doctor of Clinical Psychology involves 3 years of full-time study and includes three components: academic course work, supervised clinical internships and research. All students enrol in the Doctor of Clinical Psychology (DCP) degree and in the second semester of second year enrol in a MSc. degree as well. On completion of all the course requirements at the end of the third year, students graduate with a combined DCP/MSc degree.

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. Rural internships are also available in rural and remote areas including Bathurst, Bourke and Lismore. Students are required to produce a Research Thesis in the form of a journal publication by the second semester of their third year. This is accompanied by a comprehensive literature review.

Combined Doctor of Clinical Psychology/Doctor of Philosophy degree (Minimum duration 4 1/2 years)

The coursework and clinical internship requirements are identical to those of the Doctor of Clinical Psychology. All students will enrol in the DCP degree and in the beginning of second semester of their second year will also enrol in a PhD degree subject to the satisfactory production of a thesis proposal which on completion, will make a contribution to knowledge in a specialist area of study.

Admission requirements

Admission to both degrees is available to graduates who meet the following requirements:

- completed a course relevant to Psychopathology, Abnormal Psychology or Clinical Psychology acceptable to the Department and Faculty;
- hold a BPsych, BA(Hons), BSc(Hons), BEc(SocSci)(Hons) or BLibStudies (Hons) in Psychology from The University of Sydney, or its equivalent;
- satisfied the Department of their personal suitability for the practice of clinical psychology.

When evaluating personal suitability, the Department may take into account previous relevant experience, reports of the referees, previous units of study completed and the outcome of a selection interview.

The major points to note are that a four-year 2.1 Honours degree or equivalent is required which must include an individually conducted research project and thesis.

It is required that all intending candidates obtain provisional registration with the Psychologists Registration Board of NSW immediately after commencing their candidature (or full registration if applicable). The address is Level 2, 28 Foveaux Street, Surry Hills 2010; Phone 02 9219 0211; fax 02 9281 2030.

Applications should be sent to Administrative Assistant, Psychology Clinic (F12), Department of Psychology, University of Sydney NSW 2006. International applicants should apply in writing to the International Office (K07), University of Sydney, NSW 2006, Australia.

Selection process

Applications for both courses are rated according to the following criteria:

- Referee's reports (2/10)
- Experience in the practice of psychology (4/10). Relevant experience includes paid or voluntary work in the areas of research, clinical or community psychology. The experience is rated according to its relevance to the practice of clinical psychology.
- Academic record (4/10). Ratings are based on the class of Honours degree (or equivalent) obtained.

In general, individuals with applications that rank 8/10 or above are invited to interview for the second stage of the selection process, with interviews for lower ranking dependent upon competition for places. The interviews are standardised so that all candidates are asked the same set of questions. The questions are designed to assess the candidates understanding of issues relevant to clinical psychology.

Course structure

Both programs are based on a scientist-practitioner model with a cognitive-behavioural emphasis. They aim 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.

PSYC 6001 Adult Psychological Disorders

9 credit points. Semester: 1.

This unit of study is designed to introduce students to the nature of therapeutic work with common psychological problems of adulthood, through a series of lectures and practical skills based sessions. Skills in micro-counselling and interviewing are combined with theoretical knowledge about different disorders to form strong theory-practice links. Strategies for cognitive-behavioural interviewing within a diagnostic framework (DSM-IV) are reviewed and practiced. Diagnostic assessment, mental status examination and cognitive behavioural case formulation are taught with a view to developing individual treatment plans. Emphasis is placed upon the learning of strong practical skills in the application of evidence-based therapies to the common psychological disorders encountered in adulthood, such as anxiety disorders, mood disorders and eating disorders.

PSYC 6002 Psychological Assessment of Adults

6 credit points. Semester: 1.

This unit of study introduces students to the basic theory and the general practice of psychological testing with adult populations, focusing on neuropsychological and personality assessment. This unit will focus on definitions of the components of cognition including intelligence, perception, memory, attention, executive abilities, language, achievement and personality. Students will be taught how to administer, score and interpret a variety of tests in these areas; and how to report the results in written form.

PSYC 6003 Clinical Internship 1

3 credit points. Semester: 1.

This unit of study is designed to introduce students to the work of clinical psychologists. Students will be allocated to a teaching hospital or community mental health setting to observe Clinical Psychologists in practice. This internship will expose students to a range of clients with different mental health needs. The internship will strengthen theory-practice links, by exposing students to the range of mental health problems faced in clinical settings. It will allow students to develop an understanding of the presentation of a range of mental health problems.

PSYC 6004 Ethics and Professional Practice 1

3 credit points. Semester: 1.

This unit of study will introduce students to the highest standards of ethical and clinical practice and familiarise them with relevant legislation pertaining to contemporary practice in clinical psychology. These wide ranging seminars will be presented by specialists in the field including colleagues on the New South Wales Psychologists Registration Board, Guardianship Tribunal and College of Clinical Psychologists of the Australian Psychological Society.

PSYC 6005 Research 1

3 credit points. Semester: 1.

This unit of study provides an introduction to issues in the research area of clinical psychology. Students will attend a Research Forum where they will participate in discussion of research design, methods and ethical issues relevant to clinical psychology research. Students will be expected to contribute feedback to students in later years that will be presenting their research proposals. Students also will attend the Departmental Colloquium in fulfillment of requirements for this unit of study.

PSYC 6006 Child and Family Psychology

9 credit points. Semester: 2. Prerequisite: PSYC 6001.

This unit of study 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 first evidenced in childhood adolescents, including anxiety disorders, depression, conduct and oppositional defiant disorders, learning disabilities, and attention deficit/hyperactivity disorder. Other categories of conditions that may be a focus of clinical attention during childhood that are not defined as mental disorders will also be examined, including relational problems in the family system, and problems related to abuse and/or neglect. The theoretical and empirical foundations of a range of cognitive and behavioural intervention strategies will be discussed along with a number of major conceptual and practical issues in child clinical psychology. Skills training will include therapeutic strategies from a developmental psychopathology model.

PSYC 6007 Psychological Assessment of Children

6 credit points. Semester: 2. Prerequisite: PSYC 6002.

This unit of study introduces students to the basic theory and the general practice of psychological testing with child populations. Course content focuses upon the appropriate use of psychological tests and clinical interviews. Potential abuse of assessment measures is discussed. Sensitivity to the designed purpose, application to appropriate populations and interpretation based upon research for each different assessment measure is emphasized. Articulating results in written and oral form will also be covered. Content includes the nature, development and broad definitions of intelligence/cognitive functioning, perception, memory, attention, executive abilities, language, achievement and personality; administration of a variety of tests in these areas; scoring and interpreting tests; and reporting the results.

PSYC 6008 Clinical Internship 2

3 credit points. Semester: 2. Prerequisite: PSYC 6003.

This unit of study is designed to introduce students to therapy and psychological assessment skills for working specifically with adults. Students will be allocated in pairs to a supervisor who will oversee their clinical practice closely. This internship will expose students to clients with psychological problems in sub-clinical to mild clinical range. The internship builds student's confidence in working with clients of adult ages. For therapy, 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. For assessment, it will allow students to develop hypothesis, select appropriate tests, conduct and interpret test results and communicate these to clients.

PSYC 6009 Ethics and Professional Practice 2

3 credit points. Semester: 2. Prerequisite: PSYC 6004.

This unit of study will continue the seminars introduced in PSYC 6004 Ethics & Professional Practice 1.

PSYC 6010 Research 2

3 credit points. Semester: 2. Prerequisite: PSYC 6005.

This unit of study builds upon PSYC 6005 Research 1 through participation in the Research Forum where final year students will present results and conclusions from their research. The Research Forum will also feature the presentation of special topics including research design, power considerations, and ethical issues in clinical research. Students will develop a proposal for their research project and gain feedback about that proposal from academic staff of the Clinical Psychology unit. Students will also be guided through the process of submitting an Application for Ethical Approval and be encouraged to submit a Departmental Research Grant to request financial support for materials and/or travel expenses.

PSYC 6013 Clinical Internship 3

3 credit points. Semester: 1. Prerequisite: PSYC 6008.

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 in pairs to a supervisor who will oversee their clinical practice closely. This internship will expose students to clients with psychological problems in sub-clinical to mild clinical range. The internship builds student's confidence in working with young clients of school age. For therapy, it will allow students to develop skills in the identification of clinical problems, the communication of a formulation and treatment plan and the conduct of that plan. For assessment, it will allow students to develop hypothesis, select appropriate tests, conduct and interpret test results and communicate these to young people, their families and schools, as appropriate. 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. The work will involve therapy and assessment therapy. Interns will be able to work more independently at this stage of their training.

PSYC 6014 Ethics and Professional Practice 3

3 credit points. Semester: 1. Prerequisite: PSYC 6009.

This unit of study builds upon previous semesters where second year students will present a clinical case for discussion.

PSYC 6015 Research 3

3 credit points. Semester: 1. Prerequisite: PSYC 6010.

Within this unit of study students will consolidate their research plan, develop research presentation skills and knowledge of statistical approaches to their data. Students will attend the Research Forum and will present the rationale, aims, hypotheses, and plan of their proposed research project to the group. During this time, students will be expected to commence the collection of data. Students will attend the Departmental Colloquium and Postgraduate Seminars in Quantitative Methods in fulfillment of requirements for this unit of study.

PSYC 6016 Specialist Seminars

3 credit points. Semester: 2. Prerequisite: PSYC 6011.

NB: Permission required for enrolment.

This unit of study will cover all the important medico-legal aspects of clinical practice. Students will become familiar with legal terminology, medico-legal report writing, responding to subpoena, undergoing cross examination and relating to the legal profession in general. All legal requirements pertaining to the practice of clinical psychology in New South Wales including when to breach confidentiality in child abuse case, dangerousness to others or when self-harm is threatened will be covered.

PSYC 6017 Neuropsychological Disorders

6 credit points. Semester: 2. Prerequisite: PSYC 6012.

NB: Permission required for enrolment.

This unit of study examines the neuropsychological disorders associated with specific neurological conditions. Students will be introduced to the neuropsychological diagnosis of neurodegenerative disorders, epilepsy, stroke, toxic and metabolic conditions as well as the differential diagnosis of depression and other psychiatric phenomena.

PSYC 6018 Clinical Internship 4

3 credit points. Semester: 2. Prerequisite: PSYC 6013.

This unit of study is designed to introduce students to a range of therapy and assessment experiences in accordance with their clinical and research interests. At least one of their three internships will involve work with children and at least one will involve work with adults. One of the three internships will be specifically tied to the student's research project to allow them to specifically develop skills relevant to research with that particular clinical population. One of the three internships should also be with a client group with general, psychiatric problems. The specific nature of learning outcomes will depend upon the setting for the internship, the client group and the nature of the clinical work. Choices for internships will be made in collaboration with the unit coordinator, who will work with students to develop individually tailored training plans.

PSYC 6019 Ethics and Professional Practice 4

3 credit points. Semester: 2. Prerequisite: PSYC 6014.

This unit of study builds upon previous semesters where second year students will present a clinical case for discussion.

PSYC 6020 Research 4

9 credit points. Semester: 2. Prerequisite: PSYC 6015.

This unit of study will require students to develop literature search, critical analysis of research methods, and writing skills. Students will continue to collect research data. Students will also attend the Research Forum and the Departmental Colloquium in fulfillment of requirements for this unit of study.

PSYC 6022 Clinical Internship 5

No credit points. Semester: 1. Prerequisite: PSYC 6018.

This unit of study, following on from PSYC 6018 Clinical Internship 4, is designed to build on the clinical skills of students in further areas of practice.

PSYC 6023 Ethics and Professional Practice 5

No credit points. Semester: 1. Prerequisite: PSYC 6019.

This unit of study builds upon both the knowledge and clinical skills acquired in previous semesters. Third year students will present complex clinical cases for discussion which pose either diagnostic dilemmas or difficulties in treatment.

PSYC 6024 Research 5

No credit points. Semester: 1. Prerequisite: PSYC 6020.

Students will continue to undertake original investigation of a topic in clinical psychology approved by a sub-committee of the Clinical Psychology unit. Students will continue to work on a thesis that comprises a substantial literature review and journal article. Students will attend the Clinical Psychology Unit's Research Forum (where they will present their final results in the final semester) and the Departmental Colloquium.

PSYC 6025 Clinical Internship 6

No credit points. Semester: 2. Prerequisite: PSYC 6022.

This unit of study, following on from PSYC 6022 Clinical Internships 5, is designed to consolidate the clinical skills of students who will be working with a greater level of independence.

PSYC 6026 Ethics and Professional Practice 6

No credit points/Semester: 2. Prerequisite: PSYC 6023.

This unit of study builds upon both the knowledge and clinical skills acquired in previous semesters. Third year students will present complex clinical cases for discussion which pose either diagnostic dilemmas or difficulties in treatment.

PSYC 6027 Research 6

No credit points. Semester: 2. Prerequisite: PSYC 6024.

Students will complete an original investigation of a topic in clinical psychology approved by a sub-committee of the Clinical Psychology unit. Students will complete a thesis that comprises a substantial literature review and journal article. Students will attend the Clinical Psychology Unit's Research Forum where they will present their final results and the Departmental Colloquium.

Units not available in 2002

The following units of study are planned for the future, but not available in 2002:

PSYC 6011 Adult and Health Psychology. 9 credit points.

Prerequisite: PSYC 6006.

PSYC 6012 Cognitive Neuropsychology. 6 credit points.

Prerequisite: PSYC 6007.

PSYC 6021 Advanced Seminars. 0 credit points.

Prerequisite: PSYC 6016.

■ Coursework degrees

Requirements for coursework degrees offered by the Faculty, and their associated units of study, are listed in this chapter in the following subject area order:

Degrees in Science

Graduate Diploma in Science

Master of Environmental Science and Law

History and Philosophy of Science

Graduate Certificate in Science (History and Philosophy of Science)

Information Technology

Graduate Certificate in Information Technology

Graduate Diploma in Information Technology

Master of Information Technology

Graduate Certificate in Applied Information Technology

Graduate Diploma in Applied Information Technology

Master of Applied Information Technology

Marine Ecology

Graduate Certificate in Quantitative Marine Ecology
 Graduate Diploma in Quantitative Marine Ecology
 Master of Quantitative Marine Ecology

Mathematics

Master of Science (Coursework) *not available to new students from 2002*

Microscopy and Microanalysis

Graduate Certificate in Science (Microscopy and Microanalysis)
 Graduate Diploma in Science (Microscopy and Microanalysis)
 Master of Science (Microscopy and Microanalysis)

Nutrition and Dietetics

Master of Nutrition and Dietetics
 Master of Nutritional Science

Psychology

Graduate Diploma in Psychology
 Graduate Diploma in Science (Psychology)
 Master of Psychology *not available to new students from 2002*

Degrees in Applied Science*Overview*

Graduate Certificate in Applied Science
 Graduate Diploma in Applied Science
 Master of Applied Science

The Graduate Certificate, Graduate Diploma and Master of Applied Science are offered in a range of subject areas, listed below.

Environmental Science

Graduate Certificate in Applied Science (Environmental Science)
 Graduate Diploma in Applied Science (Environmental Science)
 Master of Applied Science (Environmental Science)

Informatics and Communication

Graduate Certificate in Applied Science (Informatics and Communication)
 Graduate Diploma in Applied Science (Informatics and Communication)

Molecular Biotechnology

Graduate Certificate in Applied Science (Molecular Biotechnology)
 Graduate Diploma in Applied Science (Molecular Biotechnology)
 Master of Applied Science (Molecular Biotechnology)

Neuroscience

Graduate Certificate in Applied Science (Neuroscience)
 Graduate Diploma in Applied Science (Neuroscience)
 Master of Applied Science (Neuroscience)

Photonics

Graduate Certificate in Applied Science (Photonics)
 Graduate Diploma in Applied Science (Photonics)
 Master of Applied Science (Photonics)

Psychology of Coaching

Graduate Certificate in Applied Science (Psychology of Coaching)

Surface Coatings

Graduate Certificate in Applied Science (Surface Coatings)
 Graduate Diploma in Applied Science (Surface Coatings)

Wildlife Health and Population Management

Graduate Certificate in Applied Science (Wildlife Health and Population Management)
 Graduate Diploma in Applied Science (Wildlife Health and Population Management)
 Master of Applied Science (Wildlife Health and Population Management)

The resolutions of the Senate relating to these degrees may be found in Chapter 7. Additional valuable resources for intending and current research students are the *Postgraduate Coursework Studies Handbook* published by the University, and the *Survival Manual* published by SUPRA (Sydney University Postgraduate Representative Association). Both publications are available from the Faculty Office. The *Postgraduate Coursework Studies Handbook* is also on the web at www.usyd.edu.au/su/ab/committees/committees.html.

■ Coursework degrees in Science**Graduate Diploma in Science**

Graduates of the University of Sydney who are holders of a Bachelor of Science, Bachelor of Computer Science and Technology, Bachelor of Liberal Studies, Bachelor of Medical Science or Bachelor of Psychology, or graduates from other universities with an equivalent degree, may apply for admission to candidature for the degree Graduate Diploma in Science.

The Graduate Diploma in Science serves as an entry qualification for the degrees of Master of Science or Doctor of Philosophy. It consists of equivalent work to that carried out by candidates enrolled in the fourth year honours courses, and is normally available to candidates who may not be eligible to enrol in those courses. The normal duration of the degree is one year full time or two years part time.

Intending students should consult the table of honours units of study at the end of chapter 3 for the range of disciplines offered. After discussion of your interests with a relevant member of academic staff, an application should be lodged with the Faculty of Science. Entry to the Graduate Diploma is subject to approval by the relevant head of department, the Faculty, and confirmation that requirements for the award of a relevant bachelor's degree have been met.

■ Environmental Science and Law**Master of Environmental Science and Law***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.

Fields of study include:

In Science

- Ecological Principles for Environmental Scientists
- Applied Ecology for Environmental Scientists
- Computer Modelling and Resource Management
- Structure and Management of Research projects
- Introduction to Design and Analysis of Sampling
- Environmental Research Project
- Ecological Science & Environmental Impact assessment
- Australian Wildlife Introduction
- Australian Wildlife: Field Studies

In Law

- Asia Pacific Environmental Law Journal
- Biodiversity Law
- Environmental Law and Policy
- Natural Resources Law
- Energy Law
- Local Government Law
- Pollution Law
- Environmental Planning Law
- Protection of the Antarctic Environment
- Environmental Economics
- International Environmental Law
- Environmental Dispute Resolution
- Environmental Impact Assessment Law
- Asia Pacific Environmental Law
- Water Law
- Comparative Environmental Law
- Heritage Law
- Trade and Environment Law
- Public Policy
- Legal Reasoning & Common Law Systems

Course Outcomes

Upon completion of the Master of Environmental Science and Law graduates will possess a practical and theoretical background in aspects of Environmental Science and Environmental Law. This knowledge includes research and practical skills in these areas. The program is designed to integrate disciplines which are normally considered separately

and which would be difficult to study outside of the Masters in Environmental Science and Law program.

Admission Requirements

Applicants for the Masters program should hold a Bachelors degree appropriate for the field of study, or graduates with subsequent experience which is considered to demonstrate the knowledge and aptitude required to undertake the course.

Course Requirements

To qualify for award of the Master of Environmental Science and Law candidates must complete 48 credit points of units of study approved for the relevant field of study, 24 credit points from the Faculty of Science and 24 credit points from the Faculty of Law. The unit of study LAWS 6044 is compulsory for all students. The unit LAWS 6252 is compulsory for students without a legal qualification.

Units of study

The following units of study are available, and are described in this chapter in the section for Degrees in Applied Science:

ENVI5501, ENVI5705, ENVI5708, ENVI5809, QMEC 5110, QMEC 5120, QMEC 5150, WILD 5001, WILD 5002.

The following Law units of study available in 2002. Please note: all of the Law units of study are available as short courses rather than semester length units.

LAWS 6165 Biodiversity Law

6 credit points. Mr Brian Preston. **Semester:** April. **Assessment:** 10,000w research paper (100%).

Human society is and has been dependent on biodiversity. Biological resources feed and clothe us and provide houses, medicines and spiritual nourishment. However, increased and unsustainable utilisation of wildlife and wildlife products, as well as loss of habitat and other pressures, have led to the extinction of species and a loss of biological diversity. Increasingly, society is looking to law to provide a framework to regulate the sustainable use of the natural environment.

The aim of this unit is to provide a thorough grounding in the moral and legal issues in relation to biological diversity. The unit will examine dominant Western moral and legal attitudes seen to underlie and mould the international and municipal legal responses to the loss of wildlife species and of biological diversity. These traditional attitudes have been challenged both on moral and legal grounds. The alternative arguments are analysed.

The unit is taught as an intensive and includes a field trip.

LAWS 6043 Environmental Impact Assessment Law

6 credit points. Mr Bernard Dunne. **Semester:** June. **Assessment:** one essay (50%), take-home examination (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.

LAWS 6044 Environmental Law and Policy

6 credit points. Dr Gerry Bates. **Semester:** April. **Assessment:** one essay (50%), take-home examination (50%).

The aim of the unit is to introduce students to overarching themes in environmental law and policy as a foundation to their more detailed studies for the degree of Master of Environmental Law or Graduate Diploma in Environmental Law.

This is an overview unit addressing a number of environmental issues at various levels of analysis; such as policy making, implementation of policy and dispute resolution. The unit covers the law and policy relating to environmental planning, environmental impact assessment, pollution and heritage. The concept of ecologically sustainable development and its implications for environmental law and policy is a continuing theme.

The unit is designed to develop multi-dimensional thinking about environmental issues and the strategies needed to address them. The unit provides a broad background of the political and economic issues in so far as they are related to the legal issues involved.

LAWS 6045 Environmental Planning Law

6 credit points. Ms Nicola Franklin. **Semester:** April. **Assessment:** 7,000w essay (70%), problem-based assignment (30%).

This unit examines the legal and institutional structures in New South Wales for land-use regulation and the resolution of land-use conflicts. The focus is on environmental planning, development control and environmental impact assessment under the Environmental Planning and Assessment Act 1979 (NSW) and cognate legislation. The unit provides an opportunity to explore contemporary urban issues, such as urban consolidation and infrastructure funding. Federal interest in the cities is also examined.

While an important aim of the unit is to provide students with an understanding of the New South Wales environmental planning system, the unit also aims to develop the capacity to evaluate environmental policies and programs through exploring theoretical perspectives on the function of environmental planning. The unit will critically evaluate the function and design of environmental planning systems and the legal ambit of planning discretion. Significant influences, such as escalating environmental and social concerns about our cities, will be discussed, together with an evaluation of processes and forums for public involvement in land-use policy and decision making.

A good grounding in this area will be of assistance to students undertaking other units in the degree of Master of Environmental Law or the Graduate Diploma of Environmental Law.

LAWS 6055 Heritage Law

6 credit points. Professor Ben Boer. **Semester:** April. **Assessment:** one essay (50%), one problem-based assignment (50%).

This unit focuses on the conservation of natural and cultural heritage, including intangible heritage and underwater heritage, with a special emphasis on Australian Aboriginal heritage. The World Heritage Convention and its implications for Australia are examined and various case studies are used. National, state and local legislative 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. It includes a Sydney-based field trip component. Small group teaching techniques are used throughout the semester.

LAWS 6061 International Environmental Law

6 credit points. Professor Ben Boer, visiting lecturers. **Semester:** June. **Assessment:** research paper (80%), class participation (20%).

This unit aims to provide students with an overview of the development of international environmental law throughout the twentieth century. Attention will primarily be devoted to the international law and policy responses to global and regional environmental and resource management issues. Basic principles will be discussed prior to taking a sectoral approach in looking at the application of international environmental law in specific issue areas. The unit includes material on implementation of international environmental law in the Asia Pacific region. Relevant Australian laws and initiatives will be referred to from time to time. The focus is on law and policy that has been applied to deal with environmental problems in an international and trans-boundary context.

LAWS 6082 Pollution Law

6 credit points. Dr Gerry Bates, Ms Nicola Franklin. **Semester:** April. **Assessment:** essay (50%), problem-based assignments (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 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 community right to participate.

The legislative and administrative framework that is studied is that of New South Wales, although comparisons are made with other jurisdictions. The federal dimension, including implementation of the Inter-governmental Agreement on the Environment, in particular Schedule 4, is discussed.

LAWS 6191 Water Law

6 credit points. Ms Rosemary Lyster. **Semester:** April.

This unit examines the ecologically sustainable management of water resources incorporating legal, scientific and economic perspectives. The legal analysis incorporates the following:

international principles of water law; Commonwealth and state responsibilities for water management; the Water Management Act 2000 (NSW); the legal and constitutional implications of the reallocation of rights to use water; the implications of allocation and use for Indigenous people; the regulation of water pollution; and the corporatisation and privatisation of water utilities. Case studies from a number of jurisdictions are used to explore these themes. Economic perspectives include the impact of National Competition Policy on water law while the principles of sustainable water management are discussed within a scientific paradigm.

LAWS 6173 Trade and Environment

6 credit points. Visiting Professor Jan McDonald (Coordinated by Ms. Nicola Franklin). **Semester:** June. **Assessment:** 100% Research Paper (10,000 words).

This unit of study examines the sources of tension between the law and policy aspects of the international trade liberalisation regime, environmental protection and ecologically sustainable development. It examines the obligations imposed by the World Trade Organisation (WTO) framework and the scope and operation of environmental exceptions that have been considered in recent trade-environment disputes. It explores these developments from the perspective of parallel initiatives in international law aimed at promoting Ecologically Sustainable Development domestically and globally. The Agreements on Food Safety Standards and Technical Barriers to Trade are also covered to the extent that they impose limitations on nations' ability to specify the manner in which foods and other traded goods are manufactured or processed. Tensions between the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) and the rights and duties created by the Convention on Biodiversity are also discussed.

The unit contrasts the WTO regime with that implemented by regional trade groups such as the European Union, the North American Free Trade Agreement (NAFTA) and the Asia Pacific Economic Cooperation Forum (APEC) and attempts some evaluation of their relative strengths in promoting ESD. It also reflects on the attempts to negotiate an agreement on investment liberalisation and the issues that raises for environmental protection initiatives. By the end of the unit participants should be able to critically assess the prospects for future harmonisation of global free trade regimes and ESD principles in the context of the Australian debate on these issues.

LAWS 6257 Public Policy

6 credit points. Professor Patricia Apps. **Semester:** June. **Classes:** Offered July 22-25, 2002. **Assessment:** research essay (80%), problem-based assignments and class presentation of a case study (20%).

The aim of this unit is to provide an understanding of the role of government in a market economy and of the need for intervention in a wide range of policy areas, defined within the framework of welfare economics. Particular attention is given to the analysis of taxation, social insurance and regulation. Applications include detailed studies of policy issues central to the following:

- The Australian tax-benefit system
- Unemployment, health and retirement income insurance
- Environmental taxes, tradable permits and regulation
- Monopoly regulation and access pricing
- Intergenerational equity and growth

The unit also provides an brief overview of empirical methodologies used in evaluating policy reforms in these areas.

LAWS 6252 Legal Reasoning and the Common Law System

6 credit points. Mr Bernard Dunne. **Semester:** June, April. **Assessment:** Two practical assignments, each worth 30%, one dealing with analysis of a case, the other, analysis of a statute. The remaining 40% will be attached to an assignment, comprised of short-answer questions, covering issues raised by the material on constitutional law, administrative law, contracts and torts.

This is a compulsory unit for all postgraduate students without a legal qualification entering the:

- Masters of Administrative Law and Policy
- Masters of Environmental Law
- Masters of Health Law
- Masters of Asian and Pacific Legal Systems
- Masters of Environmental Science and Law
- Masters of International Business and Law
- Masters of Labour Law and Relations

as well as Graduate Diplomas offered in these programs.

The unit has been designed to equip students with the necessary legal skills and legal knowledge to competently apply

themselves in their chosen area of law. Instruction will cover the legislative process; the judiciary and specialist tribunals; precedent; court hierarchies; legal reasoning; constitutional law; administrative law; contracts; and torts. Some elements of the unit will be tailored in accordance with the requirements of the particular specialist programs.

■ History and Philosophy of Science

Graduate Certificate in Science (History and Philosophy of Science)

Course overview

The Graduate Certificate in Science (HPS) provides an introduction to the historical, philosophical, and sociological analysis of science. Candidates will be introduced to the main accounts of the nature of science and the methodologies underlying those interpretations.

Course outcomes

Upon completion of the Graduate Certificate candidates will understand the nature of the discipline of History and Philosophy of Science and will have acquired either basic research skills in history of science or basic skills in the sociological study of science or the basic skills of philosophical argument or some combination of the above, depending on their choice of options.

Admission requirements

Candidates must have a Bachelors Degree or equivalent.

Course requirements

Candidates must complete 24 credit points from the following units of study, including HPSC 4108 (if they have not completed a major in HPS or equivalent program of study at another institution). Each unit of study is worth 6 credit points.

Units of study

- HPSC 4101 Philosophy of Science
- HPSC 4102 History of Science
- HPSC 4103 Sociology of Science
- HPSC 4104 Recent Topics in HPS
- HPSC 4105 HPS Research Methods
- HPSC 4106 Research Project A
- HPSC 4107 Research Project B
- HPSC 4108 Core Topics in HPS

Other information

The unit of study, HPSC 4108 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.

Graduate Certificate in Science (History and Philosophy of Science) Resolutions: See chapter 7.

HPSC 4101 Philosophy of Science

6 credit points. **Semester:** 1. **Classes:** One 2hr sem/wk. **Prerequisite:** 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). **Assessment:** Five short written assignments, seminar participation mark.

NB: Permission required for enrolment.

This unit covers the main contemporary philosophical accounts of the nature of science. Philosophical analyses are compared with examples of actual practice in both physical and biological science.

HPSC 4102 History of Science

6 credit points. **Semester:** 1,2. **Classes:** One 2hr sem/wk. **Prerequisite:** 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). **Assessment:** Two essays, seminar participation.

NB: Permission required for enrolment.

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

HPSC 4103 Sociology of Science

6 credit points. **Semester:** 2. **Classes:** One 2hr sem/wk. **Prerequisite:** 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). **Assessment:** Essay, fieldwork report, seminar participation mark.

NB: Permission required for enrolment.

This course builds upon earlier courses introducing the sociology of science with an exploration of recent approaches in the social studies of scientific knowledge. Specific topics include the 'strong program' sociologists of knowledge and their critique of

traditional philosophy of science, the counter-arguments of philosophers, anthropological approaches to science such as ethnomethodology and 'actor-network' theory, and sociology of technology. Students evaluate the approaches by conducting their own research on specific cases.

HPSC 4104 Recent Topics in HPS

6 credit points. Semester: 1,2. Classes: One 2hrsem/wk. Prerequisite: 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). **Assessment:** Two essays, seminar participation.

NB: Permission required for enrolment.

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

HPSC 4105 HPS Research Methods

6 credit points. Semester: 1. Classes: One 2hr sem/wk. Prerequisite: 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). **Assessment:** Literature review, archival research project, seminar participation mark.

NB: Permission required for enrolment.

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

HPSC 4106 Research Project A

12 credit points. **Semester:** 1,2. **Classes:** Weekly individual supervision. **Prerequisite:** Available only to students admitted to HPS Honours and Graduate Diploma in Science (History and Philosophy of Science). **Corequisite:** Must be taken in conjunction with HPSC 4107 Research Project B in the following semester. **Assessment:** Conduct of research tasks as specified by the supervisor.

NB: Permission required for enrolment.

Research into a topic in history and philosophy of science under the supervision of one or more members of the HPS staff.

HPSC4107 Research Project B

12 credit points. **Semester:** 1, 2. **Classes:** Weekly individual supervision. **Prerequisite:** Available only to students admitted to HPS Honours and Graduate Diploma in Science (History and Philosophy of Science). **Corequisite:** HPSC 4999 (for Honours students only). **Assessment:** 15000 word thesis.

NB: Permission required for enrolment.

Production of an original thesis of not more than 15,000wds under the supervision of one or more members of the HPS staff.

HPSC 4108 Core topics: History & Philosophy of Sci

6 credit points. **Semester:** 1, 2. **Classes:** 1 sem/wk. **Prerequisite:** 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). **Prohibition:** 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:** Fortnightly literature reviews, seminar presentations, seminar participation mark.

An intensive reading course, supported by discussion seminars, in the main figures and events of the 'Scientific Revolution' of the 16th to 18th centuries, in the leading historiographic interpretations of the scientific revolution and in the use of episodes in the scientific revolution as evidence for the philosophies of science of Karl Popper, Imre Lakatos, Thomas Kuhn and contemporary authors.

■ Information Technology

Graduate Certificate in Information Technology

Graduate Diploma in Information Technology

Master of Information Technology

Students completing the Master of Information Technology under old resolutions should contact the Department of Computer Science for information about unit of study selection.

Course overview

The University of Sydney offers planned, targeted postgraduate programs in IT to meet the huge demand of the applied IT

industry. This articulated program includes the Graduate Certificate in Information Technology, the Graduate Diploma in Information Technology and the Master of Information Technology degree and is designed to provide a core of knowledge in information technology, supplemented by a broad range of options within areas of Computer Networks and the Internet, E-business, Multimedia, Database Management and Administration, Software Engineering, Business Information Systems, etc. The combination of core units and electives provides an excellent retraining opportunity. Students will not only obtain 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 different specialisations 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 areas such as object-oriented systems, computer graphics, artificial intelligence, database systems, multimedia, software engineering, computer networks and the Internet, e-business, and user interfaces.

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 better. The project involves a substantial piece of programming using the knowledge gained during the course and may be related to your employment.

Course outcomes

Upon completion of the Graduate Certificate, graduates will possess a practical and theoretical background in some of the basic aspects of Information Technology. This can be supplemented and extended upon completion of the Graduate Diploma, and extended further to include research and practical skills by completion of the Masters program.

Upon completion of the Master of Information Technology graduates will have a sound knowledge base in several contemporary topics within information technology. They will also have experience in applying this knowledge to the implementation of a useful system.

Admission requirements

Applicants for the Graduate Certificate in Information Technology should hold a Bachelor's degree in any aspect of Information Technology.

Applicants for the Graduate Diploma in Information Technology should either hold a Bachelor's degree in any aspect of Information Technology, or have completed the Graduate Certificate in Information Technology at The University of Sydney with an average result of Credit or better.

Applicants for the Master in Information Technology should hold a Bachelor's degree in any aspect of Information Technology with results of Credit or better or have completed the Graduate Diploma in Information Technology, Graduate Diploma in Telecommunications, Graduate Diploma in Technology Venture Creation, Graduate Diploma in Computer Systems Engineering, Graduate Diploma in Commerce or the Graduate Diploma in Economics at The University of Sydney with an average result of Credit or better.

Course requirements

Graduate Certificate in Information Technology:

- A total of 24 credit points must be completed;
- Credit points can be selected from Foundational 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;
- Candidates who do not achieve an average result of a Credit or better in their course work may not select IT project units of study;
- Candidates who have an average result of a Credit or better in their course work may select a maximum of 18 credit points from IT project units of study

Credit for previous study

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 course, may receive credit for up to 12 credit points towards the requirements for the Graduate Diploma in Information Technology or Master of Information Technology.

Units of study available in 2002

Unless otherwise indicated, all units are worth 6 credit points

Foundational units

| | |
|-----------|---------------------------------------|
| COMP5015 | Relational Database Systems |
| COMP5018 | Object-Oriented Programming in C++ |
| COMP5028 | O-O Analysis and Design |
| COMP5019 | System and Network Administration |
| COMP5112 | User Interface Design and Programming |
| COMP5114 | Digital Media Fundamentals |
| ELEC6403 | Electronic Design |
| ELEC 6404 | Integrated Circuit Design |
| ELEC6504 | Digital Communication Networks |
| ELEC 6505 | Error Control Coding |
| ELEC 6506 | Data Communication Networks |
| ELEC 6605 | Computer Design |
| ELEC 6606 | Real Time Computing |
| ELEC 6704 | Software Project Management |
| INFS6000 | Business Information Systems |

Specialist units

| | |
|-----------|---|
| COMP5322 | Artificial Neural Networks |
| COMP5315 | Internet Programming |
| COMP5327 | Computer and Communication Security |
| COMP5337 | Design of Distributed Object Systems |
| COMP 5347 | E-Commerce Technology |
| COMP5318 | Knowledge Discovery and Data Mining |
| COMP 5328 | Machine Learning Techniques |
| COMP 5319 | Programming Distributed Object Systems |
| COMP 5414 | Visual Information Processing |
| COMP 5415 | Multimedia Authoring and Production |
| COMP 5445 | OO Techniques in Multimedia |
| ELEC 7504 | Cellular Radio Engineering |
| ELEC 7502 | Satellite Communication Systems |
| ELEC 7506 | Optical Networks |
| ELEC 7601 | Advanced Real Time Computing |
| ELEC 7604 | Adaptive Pattern Recognition |
| ELEC 7606 | Multimedia Systems & Applications |
| ELEC 7610 | Computer & Network Security |
| ELEC 7611 | Advanced Computer Engineering |
| ELEC 8521 | Radio Frequency Engineering |
| ELEC 8522 | Antennas & Propagation |
| INFS 6001 | Management Information Systems |
| INFS 6002 | Information Technology & Management |
| INFS 6004 | Change Agent Consulting for IT Industry |
| INFS 6012 | Integrated Enterprise Systems |
| INFS 6013 | IT Risk Management & Assurance |
| INFS 6014 | IT Project Management |
| INFS 6017 | Knowledge Management |
| MTEC 6003 | Management of Technology |
| MKTG6015 | Electronic Marketing |

IT project units

| | |
|-----------|---|
| COMP 5702 | Information Technology Project A (12 credit points) |
| COMP 5703 | Information Technology Project B (12 credit points) |
| COMP 5704 | Information Technology Project C |
| ELEC 8900 | Project full-time (12 credit points) |
| ELEC 8901 | Project part-time A |
| ELEC 8902 | Project part-time B |

Majors available for the Master of Information Technology

Master of Information Technology students can complete one of the nine following majors:

- Computer Networks

- Computer Science
- Database Management Systems
- E-business
- Multimedia Technology
- Software Engineering
- Business Information Systems
- Telecommunications Engineering
- Computer Engineering

In order to graduate in a designated major in the Master of Information Technology, students must complete at least 24 credit points of Core units for the designated major. Core units are listed in the following information.

Under special circumstances approval may be given (up to 24 credit points) for other University of Sydney postgraduate units of study deemed equivalent to units of study listed for this program.

Computer Networks major

| Unit of study | Core |
|---|------|
| Unless otherwise indicated, all units are worth 6 credit points | |

Foundational units

| | | |
|-----------|--|--|
| COMP 5007 | Networked Systems (not available in 2002) | |
| COMP5018 | Object-Oriented Programming in C++ | |
| COMP 5028 | 0-0 Analysis and Design | |
| COMP 5019 | System and Network Administration | |
| COMP 5110 | Software Development Methods (not available in 2002) | |
| COMP 5114 | Digital Media Fundamentals | |
| ELEC 6504 | Digital Communication Networks | |
| ELEC 6505 | Error Control Coding | |
| ELEC 6506 | Data Communication Networks | |

Specialist units

| | | |
|-----------|--|----------|
| INFO 5330 | Designing Networked Enterprises (not available in 2002) | C |
| COMP 5315 | Internet Programming | C |
| COMP 5327 | Computer and Communication Security | c |
| COMP 5337 | Design of Distributed Object Systems | c |
| COMP 5347 | E-Commerce Technology | c |
| COMP 5357 | Computer Supported Cooperative Work | c |
| COMP 5319 | Programming Distributed Object Systems | c |
| COMP 5411 | Software Metrics Using Java (not available in 2002) | c |
| COMP 5425 | Multimedia Storage, Retrieval & Delivery (not available in 2002) | c |
| COMP 5445 | OO Techniques in Multimedia | c |
| ELEC 7501 | Advanced Communication Networks (not available in 2002) | |
| ELEC 7505 | Advanced Digital Transmission (not available in 2002) | |
| ELEC 7610 | Computer and Network Security | |
| ELEC 7611 | Advanced Computer Engineering | |

IT projects

| | | |
|-----------|---|----------|
| COMP 5702 | Information Technology Project A (12 credit points) | c |
| COMP 5703 | Information Technology Project B (12 credit points) | c |
| COMP 5704 | Information Technology Project C | c |
| ELEC 8900 | Project full time (12 credit points) | |
| ELEC 8901 | Project part time - part A (A+B = 12 credit points) | |
| ELEC 8902 | Project part time - part B (A+B = 12 credit points) | |

Computer Science major

| Unit of study | Core |
|---|------|
| Unless otherwise indicated, all units are worth 6 credit points | |

Foundational units

| | | |
|-----------|---|--|
| COMP 5007 | Networked Systems (not available in 2002) | |
| COMP 5018 | Object-Oriented Programming in C++ | |
| COMP 5028 | 0-0 Analysis and Design | |

Computer Science major (continued)

| Unit of study | Core |
|---------------|---|
| COMP 5110 | Software Development Methods (not available in 2002) |
| COMP 5112 | User Interface Design and Programming |
| ELEC 6604 | Engineering Software Requirements (not available in 2002) |
| ELEC 6605 | Computer Design |
| ELEC 6606 | Real Time Computing |

Specialist units

| | | |
|-----------|---|----------|
| COMP 5311 | Computational Geometry (not available in 2002) | C |
| COMP 5312 | Natural Language Processing (not available in 2002) | C |
| COMP 5322 | Artificial Neural Networks | C |
| COMP 5316 | Transaction Management (not available in 2002) | C |
| COMP 5327 | Computer and Communication Security | C |
| COMP 5318 | Knowledge Discovery and Data Mining | c |
| COMP 5328 | Machine Learning Techniques | |
| COMP 5421 | Verification (not available in 2002) | c |
| ELEC 7601 | Advanced Real Time Computing | |

IT projects

| | |
|-----------|---|
| COMP 5702 | Information Technology Project A (12 credit points) |
| COMP 5703 | Information Technology Project B (12 credit points) |
| COMP 5704 | Information Technology Project C |
| ELEC 8900 | Project full time (12 credit points) |
| ELEC 8901 | Project part time - part A (A+B = 12 credit points) |
| ELEC 8902 | Project part time - part B (A+B = 12 credit points) |

Database Management Systems major

| Unit of study | Core |
|---|------|
| Unless otherwise indicated, all units are worth 6 credit points | |

Foundational units

| | | |
|-----------|---|--|
| COMP 5015 | Relational Database Systems | |
| COMP 5007 | Networked Systems (not available in 2002) | |
| COMP 5018 | Object-Oriented Programming in C++ | |
| COMP 5028 | 0-0 Analysis and Design | |
| COMP 5019 | System and Network Administration | |
| COMP 5110 | Software Development Methods (not available in 2002) | |
| COMP 5122 | Multimedia Human Computer Interaction (not available in 2002) | |
| COMP 5114 | Digital Media Fundamentals | |
| INFS 6000 | Business Information Systems | |

Specialist units

| | | |
|-----------|--|----------|
| INFO 5320 | Object-Oriented Systems Modelling (not available in 2002) | C |
| INFO 5330 | Designing Networked Enterprises (not available in 2002) | c |
| COMP 5312 | Natural Language Processing (not available in 2002) | c |
| COMP 5315 | Internet Programming | c |
| COMP 5316 | Transaction Management (not available in 2002) | c |
| COMP 5327 | Computer and Communication Security | c |
| COMP 5337 | Design of Distributed Object Systems | c |
| COMP 5347 | E-Commerce Technology | c |
| COMP 5318 | Knowledge Discovery and Data Mining | c |
| COMP 5328 | Machine Learning Techniques | |
| COMP 5319 | Programming Distributed Object Systems | c |
| COMP 5411 | Software Metrics Using Java (not available in 2002) | c |
| COMP 5425 | Multimedia Storage, Retrieval & Delivery (not available in 2002) | c |
| COMP 5445 | OO Techniques in Multimedia | c |
| INFS 6001 | Management Information Systems | c |

Database Management Systems major (continued)

| Unit of study | Core |
|---|------|
| INFS 6002 Information Technology and Management | C |
| INFS 6004 Change Agent Consulting for IT Industry | |
| INFS 6005 Internet Business Models and Strategies (not available in 2002) | |
| INFS 6011 Object Oriented Programming in Java (not available in 2002) | |
| INFS 6012 Integrated Enterprise Systems | |
| INFS 6013 IT Risk Management and Assurance | |
| INFS 6014 IT Project Management | C |
| INFS 6015 Business Process Analysis and Design (not available in 2002) | |
| INFS 6101 Special Topic in Business Information Systems (not available in 2002) | |

IT projects

| | |
|---|----------|
| COMP 5702 Information Technology Project A (12 credit points) | c |
| COMP5703 Information Technology Project B (12 credit points) | c |
| COMP 5704 Information Technology Project C | c |
| ELEC 8900 Project full time (12 credit points) | |
| ELEC 8901 Project part time -partA(A+B = 12 credit points) | |
| ELEC 8902 Project part time - part B (A+B = 12 credit points) | |

E-Business major

| Unit of study | Core |
|---|------|
| Unless otherwise indicated, all units are worth 6 credit points | |

Foundational units

| | |
|---|--|
| COMP 5015 Relational Database Systems | |
| COMP 5007 Networked Systems (not available in 2002) | |
| COMP5018 Object-Oriented Programming in C++ | |
| COMP 5019 System and Network Administration | |
| COMP 5110 Software Development Methods (not available in 2002) | |
| COMP 5112 User Interface Design and Programming | |
| COMP 5122 Multimedia Human Computer Interaction (not available in 2002) | |
| COMP 5114 Digital Media Fundamentals | |
| ELEC 6506 Data Communication Networks | |
| INFS 6000 Business Information Systems | |

Specialist units

| | |
|--|----------|
| INFO 5320 Object-Oriented Systems Modelling (not available in 2002) | C |
| INFO 5330 Designing Networked Enterprises (not available in 2002) | c |
| COMP 5315 Internet Programming | C |
| COMP 5316 Transaction Management (not available in 2002) | |
| COMP 5327 Computer and Communication Security | c |
| COMP 5337 Design of Distributed Object Systems | |
| COMP 5347 E-Commerce Technology | c |
| COMP 5328 Machine Learning Techniques | |
| COMP 5319 Programming Distributed Object Systems | c |
| COMP 5411 Software Metrics Using Java (not available in 2002) | c |
| COMP 5421 Verification (not available in 2002) | |
| COMP 5425 Multimedia Storage, Retrieval & Delivery (not available in 2002) | |
| COMP 5445 OO Techniques in Multimedia | c |
| ELEC 7610 Computer and Network Security | |
| INFS 6001 Management Information Systems | |
| INFS 6002 Information Technology Strategy and Management | C |
| INFS 6004 Change Agent Consulting for IT Industry | C |
| INFS 6005 Internet Business Models and Strategies (not available in 2002) | |
| INFS 6011 Object Oriented Programming in Java (not available in 2002) | |
| INFS 6012 Integrated Enterprise Systems | |

E-Business major (continued)

| Unit of study | Core |
|---|------|
| INFS 6013 FT Risk Management and Assurance | |
| INFS 6014 IT Project Management | C |
| INFS 6015 Business Process Analysis and Design (not available in 2002) | |
| INFS 6101 Special Topic in Business Information Systems (not available in 2002) | |
| INFS 6102 Special Topic in E-business (not available in 2002) | |
| MKTG6015 Electronic Marketing | C |
| MTEC 6003 Management of Technology | |

ITprojects

| | |
|---|----------|
| COMP 5702 Information Technology Project A (12 credit points) | C |
| COMP 5703 Information Technology Project B (12 credit points) | c |
| COMP 5704 Information Technology Project C | c |
| ELEC 8900 Project full time (12 credit points) | |
| ELEC 8901 Project part time - part A (A+B = 12 credit points) | |
| ELEC 8902 Project part time - part B (A+B = 12 credit points) | |

Multimedia Technology major

| Unit of study | Core |
|---|------|
| Unless otherwise indicated, all units are worth 6 credit points | |

Foundational units

| | |
|---|--|
| COMP 5014 Computer Graphics Fundamentals (not available in 2002) | |
| COMP 5015 Relational Database Systems | |
| COMP 5007 Networked Systems | |
| COMP 5018 Object-Oriented Programming in C++ | |
| COMP 5028 O-O Analysis and Design | |
| COMP 5110 Software Development Methods (not available in 2002) | |
| COMP 5112 User Interface Design and Programming | |
| COMP 5122 Multimedia Human Computer Interaction (not available in 2002) | |
| COMP 5114 Digital Media Fundamentals | |
| ELEC 6304 Image Processing and Computer Vision (not available in 2002) | |
| ELEC 6606 Real Time Computing | |

Specialist units

| | |
|--|----------|
| INFO 5320 Object-Oriented Systems Modelling (not available in 2002) | C |
| INFO 5330 Designing Networked Enterprises (not available in 2002) | C |
| COMP 5315 Internet Programming | C |
| COMP 5327 Computer and Communication Security | C |
| COMP 5337 Design of Distributed Object Systems | C |
| COMP 5347 E-Commerce Technology | C |
| COMP 5357 Computer Supported Cooperative Work (not available in 2002) | |
| COMP 5328 Machine Learning Techniques | |
| COMP 5319 Programming Distributed Object Systems | C |
| COMP 5411 Software Metrics Using Java (not available in 2002) | C |
| COMP 5414 Visual Information Processing | |
| COMP 5424 Information Technology in Biomedicine (not available in 2002) | |
| COMP 5415 Multimedia Authoring and Production | |
| COMP 5425 Multimedia Storage, Retrieval & Delivery (not available in 2002) | c |
| COMP 5435 MultimediaAgents (not available in 2002) | |
| COMP 5445 OO Techniques in Multimedia | c |
| ELEC 7604 Adaptive Pattern Recognition | |
| ELEC 7606 Multimedia Systems and Applications | |
| ELEC 8621 Signal and Video Processing for Multimedia (not available in 2002) | |

Multimedia Technology major (continued)

| Unit of study | Core |
|--|------|
| ELEC 8803 Advanced Topics in Signal Processing (not available in 2002) | |
| ITprojects | |
| COMP5702 Information Technology Project A (12 credit points) | |
| COMP5703 Information Technology Project B (12 credit points) | |
| COMP5704 Information Technology Project C | |
| ELEC 8900 Project full time (12 credit points) | |
| ELEC 8901 Project part time - part A (A+B = 12 credit points) | |
| ELEC 8902 Project part time - part B (A+B = 12 credit points) | |

Software Engineering major

| Unit of study | Core |
|---|------|
| Unless otherwise indicated, all units are worth 6 credit points | |

Foundational units

| | |
|---|--|
| COMP5007 Networked Systems (not available in 2002) | |
| COMP5018 Object-Oriented Programming in C++ | |
| COMP5028 0-0 Analysis and Design | |
| COMP5019 System and Network Administration | |
| COMP 5110 Software Development Methods (not available in 2002) | |
| COMP5112 User Interface Design and Programming | |
| ELEC 6604 Engineering Software Requirements (not available in 2002) | |
| ELEC 6606 Real Time Computing | |

Specialist units

| | |
|---|---|
| INFO 5320 Object-Oriented Systems Modelling (not available in 2002) | C |
| INFO 5330 Designing Networked Enterprises (not available in 2002) | C |
| COMP5315 Internet Programming | c |
| COMP 5327 Computer and Communication Security | c |
| COMP 5337 Design of Distributed Object Systems | c |
| COMP 5347 E-Commerce Technology | c |
| COMP 5357 Computer Supported Cooperative Work (not available in 2002) | |
| COMP 5319 Programming Distributed Object Systems | c |
| COMP 5411 Software Metrics Using Java (not available in 2002) | c |
| COMP 5421 Verification (not available in 2002) | |
| COMP 5435 Multimedia Agents (not available in 2002) | c |
| COMP 5445 OO Techniques in Multimedia | c |
| ELEC 7601 Advanced Real Time Computing | |

ITprojects

| | |
|---|---|
| COMP 5702 Information Technology Project A (12 credit points) | c |
| COMP 5703 Information Technology Project B (12 credit points) | c |
| COMP 5704 Information Technology Project C | c |
| ELEC 8900 Project full time (12 credit points) | |
| ELEC 8901 Project part time - part A (A+B = 12 credit points) | |
| ELEC 8902 Project part time - part B (A+B = 12 credit points) | |

Business Information Systems major

| Unit of study | Core |
|---|------|
| Unless otherwise indicated, all units are worth 6 credit points | |

Foundational units

| | |
|---|--|
| COMP 5015 Relational Database Systems | |
| COMP 5110 Software Development Methods (not available in 2002) | |
| COMP 5112 User Interface Design and Programming | |
| COMP 5122 Multimedia Human Computer Interaction (not available in 2002) | |
| INFS6000 Business Information Systems | |

Business Information Systems major (continued)

| Unit of study | Core |
|---|------|
| Specialist units | |
| INFO 5320 Object-Oriented Systems Modelling (not available in 2002) | |
| INFO 5330 Designing Networked Enterprises (not available in 2002) | |
| COMP 5315 Internet Programming | |
| COMP 5316 Transaction Management (not available in 2002) | |
| COMP 5327 Computer and Communication Security | |
| COMP 5347 E-Commerce Technology | |
| COMP 5357 Computer Supported Cooperative Work (not available in 2002) | |
| COMP 5318 Knowledge Discovery and Data Mining | |
| COMP 5328 Machine Learning Techniques | |
| COMP 5319 Programming Distributed Object Systems | |
| COMP 5411 Software Metrics Using Java (not available in 2002) | |
| COMP 5425 Multimedia Storage, Retrieval & Delivery (not available in 2002) | |
| INFS 6001 Management Information Systems | C |
| INFS 6002 Information Technology Strategy and Management | |
| INFS 6004 Change Agent Consulting for IT Industry | |
| INFS 6005 Internet Business Models and Strategies (not available in 2002) | |
| INFS 6011 Object Oriented Programming in Java (not available in 2002) | C |
| INFS 6012 Integrated Enterprise Systems | C |
| INFS 6013 IT Risk Management and Assurance | C |
| INFS 6014 IT Project Management | |
| INFS 6015 Business Process Analysis and Design (not available in 2002) | |
| INFS 6101 Special Topic in Business Information Systems (not available in 2002) | |
| INFS 6102 Special Topic in E-business (not available in 2002) | |
| MKTG6015 Electronic Marketing | |
| MTEC 6003 Management of Technology | |
| ITprojects | |
| COMP 5702 Information Technology Project A (12 credit points) | |
| COMP 5703 Information Technology Project B (12 credit points) | |
| COMP 5704 Information Technology Project C | |
| ELEC 8900 Project full time (12 credit points) | |
| ELEC 8901 Project part time - part A (A+B = 12 credit points) | |
| ELEC 8902 Project part time - part B (A+B = 12 credit points) | |
| Telecommunications Engineering major | |
| Unit of study | Core |
| Unless otherwise indicated, all units are worth 6 credit points | |
| Foundational units | |
| COMP 5007 Networked Systems (not available in 2002) | |
| COMP 5018 Object-Oriented Programming in C++ | |
| COMP 5019 System and Network Administration | |
| ELEC 6403 Electronic Design | |
| ELEC 6504 Digital Communication Networks | |
| ELEC 6505 Error Control Coding | |
| ELEC 6506 Data Communication Networks | |
| ELEC 6704 Software Project Management | |
| Specialist units | |
| INFO 5330 Designing Networked Enterprises (not available in 2002) | |
| COMP 5315 Internet Programming | |
| COMP 5327 Computer and Communication Security | |
| COMP 5337 Design of Distributed Object Systems | |
| COMP 5319 Programming Distributed Object Systems | |
| COMP 5435 Multimedia Agents (not available in 2002) | |

Telecommunications Engineering major (continued)

| Unit of study | Core |
|---|----------|
| ELEC7501 Advanced Communication Networks (not available in 2002) | C |
| ELEC7502 Satellite Communication Systems | C |
| ELEC 7503 Optical Communication Systems (not available in 2002) | c |
| ELEC7504 Cellular Radio Engineering | c |
| ELEC 7505 Advanced Digital Transmission (not available in 2002) | c |
| ELEC 7506 Optical Networks | c |
| ELEC 8521 Radio Frequency Engineering | c |
| ELEC 8522 Antennas and Propagation | c |
| ELEC 8525 GSM Advanced System Techniques (not available in 2002) | c |
| ELEC 8801 Advanced Topics in Wireless Communication (not available in 2002) | c |
| ELEC 8805 Advanced Topics in Photonics (not available in 2002) | c |

ITprojects

| | |
|---|----------|
| COMP5702 Information Technology Project A (12 credit points) | |
| COMP5703 Information Technology Project B (12 credit points) | |
| COMP5704 Information Technology Project C | |
| ELEC 8900 Project full time (12 credit points). | c |
| ELEC 8901 Project part time - part A (A+B = 12 credit points) | c |
| ELEC 8902 Project part time - part B (A+B = 12 credit points) | c |

Computer Engineering major

| Unit of study | Core |
|---------------|------|
|---------------|------|

Unless otherwise indicated, all units are worth 6 credit points

Foundational units

| | |
|---|--|
| COMP 5014 Computer Graphics Fundamentals (not available in 2002) | |
| COMP5007 Networked Systems (not available in 2002) | |
| COMP 5018 Object-Oriented Programming in C++ | |
| COMP 5028 O-O Analysis and Design | |
| COMP 5110 Software Development Methods (not available in 2002) | |
| COMP 5112 User Interface Design and Programming | |
| COMP 5122 Multimedia Human Computer Interaction (not available in 2002) | |
| COMP 5114 Digital Media Fundamentals | |
| ELEC 6304 Image Processing and Computer Vision (not available in 2002) | |
| ELEC 6404 Integrated Circuit Design | |
| ELEC 6604 Engineering Software Requirements (not available in 2002) | |
| ELEC 6605 Computer Design | |
| ELEC 6606 Real Time Computing | |
| ELEC 6704 Software Project Management | |

Specialist units

| | |
|---|--|
| INFO 5330 Designing Networked Enterprises (not available in 2002) | |
| COMP 5311 Computational Geometry (not available in 2002) | |
| COMP 5322 Artificial Neural Networks | |
| COMP 5315 Internet Programming | |
| COMP 5327 Computer and Communication Security | |
| COMP 5337 Design of Distributed Object Systems | |
| COMP 5347 E-Commerce Technology | |
| COMP 5319 Programming Distributed Object Systems | |
| COMP 5411 Software Metrics Using Java (not available in 2002) | |
| COMP 5414 Visual Information Processing | |
| COMP 5424 Information Technology in Biomedicine (not available in 2002) | |
| COMP 5415 Multimedia Authoring and Production | |

Computer Engineering major (continued)

| Unit of study | Core |
|--|----------|
| COMP 5425 Multimedia Storage, Retrieval & Delivery (not available in 2002) | |
| COMP 5435 Multimedia Agents (not available in 2002) | |
| COMP 5445 OO Techniques in Multimedia | |
| ELEC 7601 Advanced Real Time Computing | C |
| ELEC 7604 Adaptive Pattern Recognition | C |
| ELEC 7606 Multimedia Systems and Applications | c |
| ELEC 7610 Computer and Network Security | c |
| ELEC 7611 Advanced Computer Engineering | c |
| ELEC 8621 Signal and Video Processing for Multimedia (not available in 2002) | c |
| ELEC 8802 Advanced Topics in Integrated Systems (not available in 2002) | c |
| ELEC 8803 Advanced Topics in Signal Processing (not available in 2002) | c |

ITprojects

| | |
|---|----------|
| COMP 5702 Information Technology Project A (12 credit points) | |
| COMP 5703 Information Technology Project B (12 credit points) | |
| COMP 5704 Information Technology Project C | |
| ELEC 8900 Project full time (12 credit points) | c |
| ELEC 8901 Project part time - part A (A+B = 12 credit points) | c |
| ELEC 8902 Project part time - part B (A+B = 12 credit points) | c |

■ Information Technology units of study

Foundational units of study

COMP 5015 Relational Database Systems
6 credit points. Semester: 2. Classes: 2 lec & 1 tut/wk. Assumed knowledge: Knowledge of data structures is essential. Assessment: Assignments, written exam. Foundational.

Database Systems are computer systems which provide storage of and methods of access to data. In this course the emphasis will be on Relational Databases Systems, based on a model of data using simple tables of information, with the columns representing the data fields, and the rows the records. The course will cover fundamental relational database concepts such as normalisation, database design using the entity-relationship model, and formal relational database languages as well as the industry standard relational database language, SQL, both in its interactive mode as well as embedded in application programs. Underlying database structures and the problems of concurrent database access will also be introduced.

Objectives

- Conceptual design II: ER
- (1) Relational data model, (2) Mapping ER to relational model
- (1) Relational algebra, (2) Oracle introduction
- Database Language I: SQL
- Database Language II: PL/SQL
- Relational database design fundamentals I: functional dependencies & normal forms
- Relational database design fundamentals II: design algorithms
- Database system access and storage I: disk, buffer and file management
- Database system access and storage II: indexing techniques
- (1) Query processing, (2) transaction management I
- Transaction management II
- Advanced database systems: distributed and multimedia databases.

COMP 5018 Object-Oriented Programming in C++
6 credit points. Semester: 1,2. Classes: 2 lec & 1 tut/wk. Assumed knowledge: Some programming experience is essential. Assessment: Assignments, written exam. Foundational.

This unit of study is a foundational subject on object-oriented programming and C++. It teaches relevant skills in the C++ programming language and will give a solid grounding in object-oriented programming with an emphasis on C++ design and coding skills.

COMP 5028 0-0 Analysis and Design

6 credit points. Semester: 1,2. Classes: 2 lec & 1 tut/wk. Assumed knowledge: Some programming experience is essential. Assessment: Assignments, written exam.
Foundational

This unit of study covers the major steps involved in the analysis and design of object-oriented systems. 'Use cases' are the backbone. They are used to first scope the system, then to develop the requirements, and lastly to direct the testing process. Various techniques and tools are presented and used. Several models from the Unified Modelling Language (UML) are employed. Robustness diagrams are used to ascertain the correct classes and behaviours. Other topics include: working with users, testings and architectural decisions.

COMP 5019 System and Network Administration

6 credit points. Semester: 1, 2. Classes: 2 lec & 1 tut/wk. Assumed knowledge: It is expected that students should have some UNIX experience as an ordinary user. Assessment: Assignments, written exam.
Foundational

This unit of study is a foundational subject on operation system and network administration. It introduces the principles of operation systems and the structure of networks. It also shows students how to administrate the system and network by using examples under UNIX systems. From the initial installation of the operating system, to the intricacies of virtual Web servers, this unit of study will show how these systems act and how to make them perform at their best.

COMP 5112 User Interface Design and Programming

6 credit points. Semester: 2. Classes: 2 lec, 1 tut/wk. Assessment: Assignments, written exam.
Foundational

The syllabus provides an overview and introduction to the field of user interface. It also introduces students to tools, techniques, and sources of information about human computer interaction and provides a systematic approach to design. The course increases awareness of good and bad design through observation of existing technology, and teaches the basic skills of task analysis, and analytic and empirical evaluation methods.

COMP 5114 Digital Media Fundamentals

6 credit points. Semester: 1. Classes: 2 lec, 1 tut/wk. Assessment: Assignments, written exam.
Foundational.

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.

INFS 6000 Business Information Systems

6 credit points. Semester: 1, 2.

This unit is designed to help you understand i) the information environment of the firm from the perspective of users, evaluators and designers and ii) how business processes impact on the appropriateness of the design of appropriate information systems. This unit employs a conceptual framework to emphasize the professional and legal responsibility of management for the design, operation and control of business information system applications. This responsibility pertains to business events that are narrowly defined as accounting transactions. The unit also recognizes that systems that process non-financial transactions are not subject to the same standards of design, operation and control, but that in order to support the information needs of all users in a modern organization both accounting and non-accounting functions must be integrated. While providing a benefit to the organization a potential consequence of such integration is a loss of control; hence approaches and methodologies to mitigating these control risks are reviewed. The unit also examines various approaches and methodologies used in systems analysis and design, including

structured design, computer aided software engineering and prototyping. Business managers often work closely with systems professions during systems design and must learn to communicate in their language. The unit deals extensively with such documentation techniques as data flow and entity-relationship diagrams, as flow as system, program and document flowcharts for business processes.

Specialist units of study**COMP 5322 Artificial Neural Networks**

6 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Assessment: Assignments, written exam.
Specialist/Elective

This course examines the mathematical fundamentals of neural networks and their applications, explaining how the underlying concepts are drawn from simplified models of the brain. All the most important approaches are covered: perceptrons, linear networks, backpropagation, radial-basis function networks, self-organizing feature maps, competitive learning and recurrent nets. The capabilities, advantages and disadvantages of each model are discussed, as are their applications. Related issues as feature selection, dimensionality reduction, error-rate estimation, combining multiple modes are covered as well. The practical classes illustrate the theory and provide hands-on-experience through the use of simulation tools.

Objectives

Upon completion of the course, students will be:

- able to understand the learning and generalization issues in neural computation;
- familiar with the principles behind the most important neural network algorithm;
- able to judge the suitability of neural networks for solving a particular pattern recognition task and also to implement such algorithms.

COMP 5315 Internet Programming

6 credit points. Semester: 1,2. Classes: 2 lec & 1 tut/wk. Assessment: Assignments, written exam.
Specialist/Elective

The subject of the Internet Programming unit is the delivery of dynamic information via the Internet. Most Internet applications follow a client/server model, and as a result, dynamic data generation can be found at two places: creation of data from dynamic sources in the server, and dynamic presentation of this data to the user. A recent development which enhances the usability and portability of dynamic data presentation is the emergence of international standards for representation of data between the client and the server. The Internet Programming unit will focus on these three areas.

Objectives

At the end of the unit, students are expected to:

- have a thorough understanding of the technologies involved in the Internet, and in the production,
- representation and delivery of dynamic information.
- be able to write simple, but well structured and well documented programs,
- be able to create programs for the management of dynamic data,
- be able to create programs for the dynamic presentation of information to the user.

COMP 5327 Computer and Communication Security

6 credit points. Semester: 1, 2. Classes: 2 lec & 1 tut/wk. Assumed knowledge: Some programming experience is essential. Assessment: Assignments, written exam.
Specialist/Elective

The unit covers computer security which includes cryptography, authentication, access control and auditing. We shall examine secret key, message digest and public key algorithms. Authentication systems are used to prove identity. These systems make use of various protocols based on cryptographic mechanisms. We shall look at some common systems and common flaws in authentication systems. Once the system is convinced of the identity of a user it must decide which actions that user is entitled to carry out. Finally we will look at some of the other mechanisms required for security, such as auditing.

Objectives

- Cryptography and cryptanalysis,
- Authentication and authorization,
- Cryptographic protocols,

- Digital signatures, watermarking, public key infrastructures,
- Access control, including Discretionary Access Control (DAC), Mandatory Access Control (MAC), Role-Based Access Control (RBAC) and Lattice based approaches.
- Trust management, social and legal issues,
- WWW security and security for mobile code,
- Digital cash, payment protocols, digital rights management.

COMP 5337 Design of Distributed Object Systems

6 credit points. Semester: 1. Classes: 2 lec & 1 tut/wk. Assumed knowledge: Some programming experience is essential. Assessment: Assignments, written exam.

Specialist/Elective

This unit of study provides a practical introduction to the underlying technologies and architectures used in real-life distributed object systems. The topics covered include object request brokers (CORBA), directory services, security services, distributed transaction processing, common application architectures, performance implications and reliability and fault tolerance.

COMP 5347 E-commerce Technology

6 credit points. Semester: 1, 2. Classes: 2 lec & 1 tut/wk. Assessment: Assignments, written exam.

Specialist/Elective

This unit of study is designed to provide in-depth technologies relevant to electronic commerce on the Internet. It covers communications and networking, the Internet and mobile eCommerce, architecture of Web systems, data interchange, access and cryptographic security, electronic payments, etc. The unit has heavy programming exercises.

COMP 5318 Knowledge, Discovery and Data Mining

6 credit points. Semester: 2. Classes: 2 lec & 1 tut/wk. Assessment: Assignments, written exam.

Specialist/Elective

Knowledge discovery is the process of extracting useful knowledge from data. Data mining is a discipline within knowledge discovery that seeks to facilitate the exploration and analysis of large quantities of data, by automatic or semiautomatic means. This subject provides a practical and technical introduction to knowledge discovery and data mining.

Objectives

Topics to be covered include problems of data analysis in databases, discovering patterns in the data, and knowledge interpretation, extraction and visualisation. Also covered are analysis, comparison and usage of various types of machine learning techniques and statistical techniques: clustering, classification, prediction, estimation, affinity grouping, description and scientific visualisation.

COMP 5328 Machine Learning Techniques

6 credit points. Semester: 2.

Specialist/Elective

This unit will cover a variety of machine learning approaches with the aim of giving students a clear conceptual understanding of the different approaches. Also this subject will give students some practical experience in the application of machine learning systems to solve practical problems.

Topics would include:

- A computational approach to induction
- Propositional learning
- Heuristics for comparing hypotheses
- Empirical evaluation approaches
- Composite learning approaches
- Case based approaches
- Reinforcement learning
- Unsupervised learning
- Inductive Logic Programming
- Theoretical analysis of learning approaches

COMP 5319 Programming Distributed Object Systems

6 credit points. Semester: 2. Classes: 2 lec & 1 tut/wk. Prerequisite: COMP 5018. Assessment: Assignments, written exam.

Specialist/Elective

This unit provides a practical, technical introduction to the underlying technologies and architectures used in real-life distributed object systems. The topics covered include object request brokers (CORBA), directory services, security services, distributed transaction processing, common application architectures, performance implications and reliability and fault tolerance.

COMP 5414 Visual Information Processing

6 credit points. Semester: 1. Classes: 2 lec, 1 tut/wk. Assessment: Assignments, written exam.

Specialist/Elective

More than 70% of the information humans perceive comes from vision, and there is every indication that computers should follow this trend. The demand for visual information processing has grown tremendously in areas such as communications, consumer electronics, medicine, management, defence, robotics, and geophysics. This unit of study aims at providing fundamental knowledge of visual representation and visual information processing, basic techniques in manipulating images and video, and applications in medical imaging, multimedia and the Internet.

COMP 5415 Multimedia Authoring and Production

6 credit points. Semester: 2. Classes: 2 lec, 1 tut/wk. Assumed knowledge: Some programming experience is essential. Assessment: Assignments, written exam.

Specialist/Elective

This unit provides fundamentals on multimedia authoring and production. It discusses in great length on multimedia animation and authoring. It also 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, distance learning.

COMP 5445 00Techniques in Multimedia

6 credit points. Semester: 2. Classes: 2 lec, 1 tut/wk. Assumed knowledge: Some programming experience is essential. Assessment: Assignments, written exam.

Specialist/Elective

This unit provides in depth knowledge on object-oriented techniques in multimedia development. It introduces the fundamentals of Java Swing and JFC, provides the technical details of Swing components. The unit will bring students to the object-oriented technical details inside Java. It will raise students' understanding of Java technology to a professional level. It will also introduce some advanced Swing/JFC packages and present the applications in the multimedia area.

Objectives

The unit covers fundamentals of Java Swing and JFC professional GUIs, applications and applets using the Java Swing/JFC package, fundamentals of Swing components (JButton, JMenu, JScrollBar, JTable and Jtree, pluggable look & feel), advanced Swing components, the Model-View-Controller architecture, the Swing layout managers BorderLayout, FlowLayout and GridLayout, advanced Swing/JFC package, the Java event model and the Java foundation Classes, multimedia programming using Java (animation process, handle images, programming with video, Image-J).

ELEC 7504 Cellular Radio Engineering

6 credit points. Semester: 1. Classes: (2 lec and a 2hr lab/tut) per week. Prerequisite: Advisory Prerequisites: ELEC 3502 Random Signals and Communications, and ELEC 3503 Introduction to Digital Communications. Assessment: Assignments and a 2hr exam at end of semester.

Antenna basics: analysis of simple antennas, uniform linear antenna arrays, planar array, base-station antennas, mobile antennas. Mobile radio channel: multipath fading, diversity, log-normal fading, mean propagation loss, propagation models. Cellular technologies: cell types, coverage, frequency allocation, link budget, power budget, traffic capacity. TDMA cellular systems - GSM standard: coding and modulation, special characteristics and features, logical and physical channels, frame structure, general packet radio services (GPRS), GSM evolution towards UMTS. CDMA cellular systems - IS-95 standard: physical and logical channels, asynchronous data, short message service, packet data services for CDMA cellular/PCS systems, cdma2000 layering structure.

ELEC 7502 Satellite Communication Systems

6 credit points. Semester: 2. Classes: (2 lec and a 1 hr tut) per week. Prerequisite: Advisory Prerequisites: ELEC 3502 Random Signals and Communications, ELEC 3503 Introduction to Digital Communications and ELEC 4502 Digital Communication Systems. Assessment: Assignments and a 2hr exam at end of semester.

Purpose

The course is designed to provide students with knowledge of satellite communication techniques and applications in fixed and mobile services.

Expected Outcomes

Students will gain detailed knowledge of digital signalling techniques in modern satellite communication systems, with particular emphasis on satellite mobile communications.

Assumed Understanding/Previous Coursework

Knowledge of error probabilities, analog and digital modulation techniques and error performance evaluation, studied in ELEC 3502, ELEC 3503 and ELEC 4502, is assumed.

Syllabus

Introduction to satellite communication, satellite link design, propagation characteristics of fixed and mobile satellite links, channel modelling, access control schemes, system performance analysis, system design, mobile satellite services, global satellite systems, national satellite systems, mobile satellite network design, digital modem design, speech codec design, error control codec design, low earth orbit communication satellite systems.

ELEC 7506 Optical Networks

6 credit points. Semester: 2. Classes: (2 lec and a 1 hr tut) per week. Prerequisite: Advisory Prerequisites: ELEC 3502 Random Signals and Communications, and ELEC 3503 Introduction to Digital Communications. Assessment: Assignments and a 2hr exam at end of semester.

Introduction, photonic network architectures: point to point, star, ring, mesh; system principles: modulation formats, link budgets, optical signal to noise ratio, dispersion, error rates, optical gain and regeneration; wavelength division multiplexed networks; WDM components: optical filters, gratings, multiplexers, demultiplexers, wavelength routers, optical crossconnects, wavelength converters, WDM transmitters and receivers; Wavelength switched/routed networks, ultra high speed TDM, dispersion managed links, soliton systems; broadcast and distribution networks, multiple access, subcarrier multiplexed lightwave video networks, optical local area and metropolitan area networks; protocols for photonic networks: IP, Gbit Ethernet, SDH/SONET, FDDI, ATM, Fibre Channel.

ELEC 7601 Advanced Real-Time Computing

6 credit points. Semester: 2. Classes: (Two lec and a 2hr lab/tut) per week. Prerequisite: Advisory Prerequisite: ELEC 4602 Real Time Computing. Assessment: Lab mark and a 2hr exam at the end of semester.

Modelling of real-time systems, design techniques, analysis and prediction of real-time behaviour, advanced scheduling techniques, simulation, verification and validation, communications, distributed real-time systems, reliability and fault tolerance, hardware architectures, CASE tools for real-time systems. Standards for real-time languages and operating systems.

ELEC 7604 Adaptive Pattern Recognition

6 credit points. Semester: 2. Classes: (Two lec and a 1hr lab/tut) per week. Assessment: Assignments and a 2hr exam at end of semester. Mathematical preliminaries: probability theory, random vectors, decision theories. Statistical approaches: feature extraction, nonlinear mapping, quadratic and linear classifiers, nonparametric estimation and classification. Fuzzy set approach: operations on fuzzy sets, the use of fuzzy sets in pattern recognition. Neural-net implementations: generalised perception, associative memories, self-organised neural nets, integrated neural-net computing environment, linking of symbolic and numeric processing.

ELEC 7606 Multimedia Systems and Applications

6 credit points. Semester: 2. Classes: (Two lec and a 2hr lab/tut) per week. Prerequisite: Advisory Prerequisites: COMP 3100 Software Engineering, ELEC 4303 Digital Signal Processing, and ELEC 4501 Data Communication Systems. Assessment: Lab mark and a 2hr exam at end of semester.

This course covers the design and implementation of interactive networked multimedia processing and communication applications. The course will cover principles of switched networks, local area networks, wide area networks and their interoperability. Standards and protocols will be studied as examples, including the International Telecommunications Union (ITU) H.320 and H.323 series for conferencing, and H.324 for phony. Video and audio coding principles will be covered and associated protocols and standards studied.

ELEC 7611 Advanced Computer Engineering

6 credit points. Semester: 2. Classes: (Two lec and a 2hr lab/tut) per week. Prerequisite: Advisory Prerequisite: ELEC 4601 Computer Design. Assessment: Laboratory and a 2hr exam at the end of semester. This unit of study covers one of the following topics: advanced computer architecture, advanced digital engineering and/or

hardware software co-design. The school will advise prior to enrolment timewhat material will be covered in a particular year.

Advanced Computer Architecture

Quantitative Principles of Computer Design, Performance assessment, Scalable Performance. Memory Organization, Cache and VM, Interleaving Shared and Distributed Memory. Pipelines, Superscalar processors. Parallel processors, Multithreading, Cache Coherency, Allocation and Scheduling, Load Balancing. Interconnection Networks, Network Properties, Shared and Distributed Memory Systems, Message Routing. Dataflow, Object Oriented, Multimedia and Hybrid Architectures.

Advanced Digital Engineering

Advanced HDL skills for FPGA and ASIC design. CAD methodologies for design verification. Prototyping very high speed systems, reconfigurable prototypes. Testing, debugging and design for testability. Design methodologies for low power, high speed, small area or low cost. Assessment and selection of vendor technologies. System design exercise. Management of team designs.

Hardware Software Codesign

Hardware Specification; Software Specification; CAD tools Review of Operating System Principles; Review of Computer Bus and I/O Systems; Interrupts and DMA; I/O Device Abstraction; Device Drivers; Microcode Design; Hardware/software partitioning; Reconfigurable computing.

ELEC 8521 Radio Frequency Engineering

6 credit points. Semester: 1.

The course covers several important subjects in radio frequency engineering, leading to the analysis and design of components and systems commonly encountered in radio systems. The course builds on an undergraduate degree in electrical engineering and covers the following areas: transmission lines and circuit descriptions; passive radio frequency components, including couplers, filters and power dividers; typical radio frequency circuits; radio frequency system characteristics, including noise, linearity, sensitivity, selectivity and distortion; basic radio frequency measurements; amplifier and oscillator design; frequency translating circuits; non-linear and large signal characteristics; introduction to device modelling and circuit simulation. The course is targeted at engineers involved in the design, specification, implementation and support of radio frequency systems such as in mobile communications.

ELEC 8522 Antennas and Propagation

6 credit points. Semester: 2.

The course provides the basic knowledge on antennas used in mobile communications and those topics of radio propagation essential to the task of cellular planning. Most attention is paid to antenna array theory and its application for base station antenna systems. Radio propagation starts from the basics of the theory, elementary description of fading, diffraction, depolarization and shadowing. The course then addresses issues of radio coverage prediction and optimization using models and modern measurement techniques.

INFS 6001 Management Information Systems

6 credit points. Semester: 2.

This unit is concerned with the organisational foundations of information systems and their emerging strategic role. It provides an extensive introduction to real-world systems, focusing on their relationship to organisations, management and business processes. It also provides a solid understanding of the technology underlying information systems and how various information technology work together to create infrastructure for electronic commerce and electronic business. The role of information systems in capturing and distributing organisational knowledge and in enhancing management decision making is also explored. Finally the special management challenges and opportunities created by the pervasiveness and power of information systems are examined.

INFS 6002 Information Technology and Management

6 credit points. Semester: 1.

The main purpose of this unit is to provide a strategic and senior management perspective to the management of information technology considering its increasing strategic importance. This provides an insight into various business models that are employed for managing IT strategy, the IT function, and IT projects. It particularly deals with the purpose, strategies and implementation of outsourcing, and the workings of IT steering committee.

INFS 6004 **Change Agent Consulting for IT Industry**

6 credit points. **Semester:** 1.

This course aims to equip students with an ability to operate as a change agent in the IT industry with an appropriate sensitivity to the needs of the client and their own role in the change process. Its learning objectives are to understand: i) the three tier model of professional competency as consisting of technical competency, business management competency and interpersonal competency; ii) that General Systems Theory and Systems Thinking offers a more effective model of causality than linear models when the complexity of interactions is high and the degree and type of coupling between components is hard to know; iii) Action Science as a process for developing individual and organisational change in the workplace; iv) the consultant's role as a change agent; v) the processes for conducting a consulting contract and practical issues in the management of client selection, relationships and contract management; vi) the principles of subliminal behaviour and a model of a meta-system for describing the interaction between client and consultant; and vii) how to apply all these concepts to the activity of consulting in the IT industry.

INFS 6012 **Integrated Enterprise Systems**

6 credit points. **Semester:** 1. **Assumed knowledge:** INFS 6000; INFS 6010 OR COMP 5015 (RELATIONAL DATABASE SYSTEMS) OR COMP 5215 (FOUNDATIONAL DATABASE SYSTEMS).

This unit provides an overview of integrated enterprise systems with the help of packaged software solutions (via the SAP R/3 enterprise resource planning system). It provides students with practical experience in using the SAP R/3 system and familiarises them with all the modules and their functionality with the aim of exploring the concepts of enterprise resource planning and its ability to integrate functions within business. Students gain a thorough understanding of the information flows in procurement, production planning, production control, inventory control, sales and distribution, financial accounting and cost controlling. Reengineering and configuration of the enterprise systems and the architecture requirements for successful implementation of packaged software solutions is also covered.

INFS 6013 **IT Risk Management and Assurance**

6 credit points. **Semester:** 1. **Assumed knowledge:** INFS 6000.

The main purpose of this subject is to provide concepts, tools and techniques in the evaluation of information systems management and in auditing of information systems. The unit covers a variety of models and approaches that have been put forward for the analysis and review of internal controls in information systems design and implementation. It is intended to equip students with advanced information systems auditing techniques and methodologies and incorporates the use of computer assisted audit tools and techniques. Theoretical and conceptual material covered in lectures is reinforced by practical application in computing laboratories and through extensive case study analysis. Students will be exposed to the audit of information technologies such as EDI, LANs, expert systems, decision support systems, and ValueNets, as well as legal and professional auditing requirements. The International standards organization management systems standards for the design, development, operation, maintenance and auditing of the business information systems (ISO 9000 series) are also examined.

INFS 6014 **IT Project Management**

6 credit points. **Semester:** 2.

This course covers the factors necessary for successful management of system development or enhancement projects. Both technical and behavioural aspects of project management are discussed with a focus on management of development for enterprise-level systems. Major topics include managing the system life cycle, system and database integration issues, network and client-server management, system performance evaluation, managing expectations of team members, cost-effectiveness analysis, and change management.

INFS 6017 **Knowledge Management**

6 credit points. **Semester:** 2. **Assumed knowledge:** INFS 6000 or INFS 6010 or COMP 5015 or COMP 5215.

This unit covers the concepts, tools and techniques necessary for the acquisition, generation, formulation dissemination, sharing, storage, dissemination, application and archival of corporate knowledge. It also addresses knowledge discovery in corporate data warehouses, knowledge validation, knowledge representation and inference techniques. The unit exposes students to both conceptual and software skills required to manage knowledge and to work with knowledge and workflow management systems used in business.

MTEC6003 **Management of Technology**

6 credit points. **Semester:** 2. **Assessment:** Continuous: essays, case studies and/or exam.

The Management of Technology 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 complementary phases in the strategic management of technology. The course also expands into the strategic and macro level issues.

MKTG6015 **Electronic Marketing**

6 credit points. **Semester:** 2, Summer. **Prerequisite:** MKIG 5001.

Assessment: continuous; essays, case studies, projects and/or exams. Electronic Marketing introduces students to emerging interactive technologies, the primary one being the Internet and their impact on and implications for marketing strategy, consumer behaviour, market segmentation and marketing communications. At present, every sub discipline within marketing is fundamentally changed by advances in interactive communication technologies, of which the Internet is definitely one. There is a clear need for marketers to acquire an understanding of how these new technologies can be combined with traditional marketing techniques. Thus, the purpose of this subject is to equip students with a working knowledge of the principles and techniques of electronic marketing with specific focus on Internet marketing and to enable students to plan, design, implement, and evaluate commercial Web sites.

IT project units

COMP 5702 **Information Technology project A**

12 credit points. **Semester:** 1,2. **Classes:** 8 prac/wk. **Assessment:** Report.

Specialist/Elective/Project

COMP 5703 **Information Technology project B**

12 credit points. **Semester:** 1, 2. **Classes:** 8 prac/wk. **Assessment:** Report.

Specialist/Elective/Project

COMP 5704 **Information Technology project C**

6 credit points. **Semester:** 1,2. **Classes:** 4 prac/wk. **Assessment:** Report.

Specialist/Elective/Project

ELEC8900 **Project, Full-Time**

12 credit points. **Semester:** 1, 2.

Syllabus

The carrying out and writing up of an approved significant project equivalent to about four months full-time work in a topic preferably related to their course-work enrolment. It can be part of the candidate's normal employment. As a guide, a project topic is likely to be satisfactory if a successful outcome of the work is such that it would lend itself to publication in a learned journal such as the Journal of the Institution of Engineers, Australia. The project may be carried out full-time over one semester or part-time over two semesters (part A followed by part B).

ELEC 8901 **Project Part-Time Part A**

6 credit points. **Semester:** 1,2.

Syllabus

The carrying out and writing up of an approved significant project equivalent to about four months full-time work in a topic preferably related to their course-work enrolment. It can be part of the candidate's normal employment. As a guide, a project topic is likely to be satisfactory if a successful outcome of the work is such that it would lend itself to publication in a learned

journal such as the Journal of the Institution of Engineers, Australia. The project may be carried out full-time over one semester or part-time over two semesters (part A followed by part B).

ELEC8902 Project Part-Time Part B
6 credit points. Semester: 1, 2.

Syllabus

The carrying out and writing up of an approved significant project equivalent to about four months full-time work in a topic preferably related to their course-work enrolment. It can be part of the candidate's normal employment. As a guide, a project topic is likely to be satisfactory if a successful outcome of the work is such that it would lend itself to publication in a learned journal such as the Journal of the Institution of Engineers, Australia. The project may be carried out full-time over one semester or part-time over two semesters (part A followed by part B).

Graduate Certificate in Applied Information Technology

Graduate Diploma in Applied Information Technology

Master of Applied Information Technology

Course overview

The University of Sydney offers planned, targeted postgraduate programs in IT to meet the huge demand of the applied IT industry. This articulated program includes the Graduate Certificate in Applied Information Technology, the Graduate Diploma in Applied Information Technology and the degree of Master of Applied Information Technology and is designed to provide a core of knowledge in information technology, supplemented by a broad range of options within the areas of Computer Networks and the Internet, Multimedia, Database Management and Administration. The combination of core units and options provides an excellent retraining opportunity. Students will not only obtain depth in their knowledge of the IT industry but will also be able to choose from a selection of options which will allow them to focus on different specialisations in the broad span of the industry.

Course outcomes

The articulated award program in Applied Information Technology is designed for graduates in other fields who wish to enter the IT industry, for graduates with expertise in another field who wish to enhance the effective use of IT within the field of their previous training, or for those already skilled as IT professionals who wish to embrace new technology. On completion, students would be prepared for typical IT positions as analyst/programr, developer, support staff, sales or training staff, etc, or a high level manager who can identify new frontiers and redirect their company's expertise and development.

Upon completion of the Graduate Certificate, graduates will possess a practical and theoretical background in some of the basic aspects of Information Technology. This can be supplemented and extended upon completion of the Graduate Diploma, and extended further to include research and practical skills by completion of the Masters' program. Students completing the full postgraduate program will have a solid grounding in all basic areas of Information Technology, enabling them to follow new innovations in IT, contribute to the development of IT and make use of IT in solving various issues.

Admission requirements

Applicants for the Graduate Certificate in Applied Information Technology should either hold a Bachelor's degree in any discipline, or have worked in the area of Information Technology for more than eight years and can offer evidence of prior learning which is considered to demonstrate the knowledge and aptitude required to undertake the units of study

Similarly, applicants for the Graduate Diploma in Applied Information Technology should hold a Bachelor's degree, or have completed the Graduate Certificate in Applied Information Technology with an average result of Credit or better.

Applicants for the Master of Applied Information Technology should hold a Bachelor's degree, or have completed the Graduate Diploma in Applied Information Technology with an average result of Credit or better.

Course requirements

Conditions for the award of the Graduate Certificate in Applied Information Technology:

- A total of 36 credit points must be completed;
- A maximum of 24 credit points can be selected from Elementary units of study;
- At least 12 credit points should come from Foundational and Specialist units of study, excluding IT project units of study;

Conditions for the award of the Graduate Diploma in Applied Information Technology:

- A total of 48 credit points must be completed;
- A maximum of 24 credit points can be selected from Elementary units of study;
- At least 24 credit points should come from Foundational and Specialist units of study, excluding IT project units of study;

Conditions for the award of the Master of Applied Information Technology:

- A total of 72 credit points must be completed;
- A maximum of 24 credit points can be selected from Elementary units of study;
- 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;
- Students who do not achieve an average result of a Credit or better in their course work may not select IT project units of study;
- A maximum of 18 credit points from IT projects may be selected by students who have average result of a Credit or better in their course work.

Credit for previous study

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 course, may receive credit for up to 24 credit points towards the requirements for the Graduate Diploma in Applied Information Technology or Master of Applied Information Technology.

Units of study available in 2002

Unless otherwise indicated, all units are worth 6 credit points.

Elementary units

INFO 5210 Systems Modelling and Design
COMP 5211 Algorithmics and Informatics
COMP 5213 Computer and Network Organisation
COMP 5214 Software development in Java
COMP 5215 Foundational Database Systems
COMP 5218 OO Programming in Java

Foundational units

COMP 5015 Relational Database Systems
COMP 5018 Object-Oriented Programming in C++
COMP 5028 0-0 Analysis and Design "
COMP 5019 System and Network Administration
COMP 5112 User Interface Design and Programming
COMP 5114 Digital Media Fundamentals

Specialist units

COMP 5322 Artificial Neural Networks
COMP 5315 Internet Programming
COMP 5327 Computer and Communication Security
COMP 5337 Design of Distributed Object Systems
COMP 5347 E-Commerce Technology
COMP 5318 Knowledge Discovery and Data Mining
COMP 5328 Machine Learning Techniques
COMP 5319 Programming Distributed Object Systems
COMP 5414 Visual Information Processing
COMP 5415 Multimedia Authoring and Production
COMP 5445 OO Techniques in Multimedia

Units of study available in 2002 (continued)

IT projects

| | |
|-----------|---|
| COMP 5702 | Information Technology Project A (12 credit points) |
| COMP 5703 | Information Technology Project B (12 credit points) |
| COMP 5704 | Information Technology Project C |

Majors available for the Master of Applied Information Technology

Master of Applied Information Technology students can complete one of the five following majors:

- Computer Networks
- Computer Science
- Database Management Systems
- Multimedia Technology
- Software Engineering

In order to graduate in a designated major in the Master of Applied Information Technology, students must complete at least 24 credit points of Core units for the designated major. Core units are listed in the following information. C=Core.

Under special circumstances approval may be given (up to 24 credit points) for other University of Sydney postgraduate units of study deemed equivalent to units of study listed for this program.

Computer Networks Major

| | |
|--|------|
| Unit of study | Core |
| Unless otherwise indicated, all units are worth 6 credit points. | |

Elementary units

| | |
|-----------|--|
| INFO 5210 | Systems Modelling and Design |
| COMP 5213 | Computer and Network Organisation |
| COMP 5214 | Software development in Java |
| COMP 5217 | Networked Applications (not available in 2002) |
| COMP 5218 | OO Programming in Java |

Foundational units

| | |
|-----------|--|
| COMP 5007 | Networked Systems (not available in 2002) |
| COMP 5018 | Object-Oriented Programming in C++ |
| COMP 5028 | O-O Analysis and Design |
| COMP 5019 | System and Network Administration |
| COMP 5110 | Software Development Methods (not available in 2002) |
| COMP 5114 | Digital Media Fundamentals |

Specialist units

| | | |
|-----------|--|---|
| INFO 5330 | Designing Networked Enterprises (not available in 2002) | C |
| COMP 5315 | Internet Programming | C |
| COMP 5327 | Computer and Communication Security | c |
| COMP 5337 | Design of Distributed Object Systems | c |
| COMP 5347 | E-Commerce Technology | c |
| COMP 5357 | Computer Supported Cooperative Work | c |
| COMP 5319 | Programming Distributed Object Systems | c |
| COMP 5411 | Software Metrics Using Java (not available in 2002) | c |
| COMP 5425 | Multimedia Storage, Retrieval & Delivery (not available in 2002) | c |
| COMP 5445 | OO Techniques in Multimedia | c |

ITprojects

| | | |
|-----------|---|---|
| COMP 5702 | Information Technology Project A (12 credit points) | c |
| COMP 5703 | Information Technology ProjectB (12 credit points) | c |
| COMP 5704 | Information Technology Project C | c |

Computer Science major

| | |
|--|------|
| Unit of study | Core |
| Unless otherwise indicated, all units are worth 6 credit points. | |

Elementaryunits

| | |
|-----------|-----------------------------------|
| INFO 5210 | Systems Modelling and Design |
| COMP 5211 | Algorithmics and Informatics |
| COMP 5213 | Computer and Network Organisation |
| COMP 5214 | Software development in Java |
| COMP 5215 | Foundational Database Systems |

Foundational units

| | |
|-----------|--|
| COMP 5007 | Networked Systems (not available in 2002) |
| COMP 5018 | Object-Oriented Programming in C++ |
| COMP 5028 | O-O Analysis and Design |
| COMP 5110 | Software Development Methods (not available in 2002) |
| COMP 5112 | User Interface Design and Programming |

Specialist units

| | | |
|-----------|---|---|
| COMP 5311 | Computational Geometry (not available in 2002) | C |
| COMP 5312 | Natural Language Processing (not available in 2002) | C |
| COMP 5322 | Artificial Neural Networks | C |
| COMP 5316 | Transaction Management (not available in 2002) | C |
| COMP 5327 | Computer and Communication Security | C |
| COMP 5318 | Knowledge Discovery and Data Mining | C |
| COMP 5328 | Machine Learning Techniques | C |
| COMP 5421 | Verification (not available in 2002) | C |

ITprojects

| | |
|-----------|---|
| COMP 5702 | Information Technology Project A (12 credit points) |
| COMP 5703 | Information Technology Project B (12 credit points) |
| COMP 5704 | Information Technology Project C |

Database Management Systems major

| | |
|--|------|
| Unit of study | Core |
| Unless otherwise indicated, all units are worth 6 credit points. | |

Elementary units

| | |
|-----------|-----------------------------------|
| INFO 5210 | Systems Modelling and Design |
| COMP 5213 | Computer and Network Organisation |
| COMP 5214 | Software development in Java |
| COMP 5215 | Foundational Database Systems |
| COMP 5218 | OO Programming in Java |

Foundational units

| | |
|-----------|---|
| COMP 5015 | Relational Database Systems |
| COMP 5007 | Networked Systems (not available in 2002) |
| COMP 5018 | Object-Oriented Programming in C++ |
| COMP 5028 | O-O Analysis and Design |
| COMP 5019 | System and Network Administration |
| COMP 5110 | Software Development Methods (not available in 2002) |
| COMP 5122 | Multimedia Human Computer Interaction (not available in 2002) |
| COMP 5114 | Digital Media Fundamentals |

Specialist units

| | | |
|-----------|---|---|
| INFO 5320 | Object-Oriented Systems Modelling (not available in 2002) | C |
| INFO 5330 | Designing Networked Enterprises (not available in 2002) | C |
| COMP 5312 | Natural Language Processing (not available in 2002) | c |
| COMP 5315 | Internet Programming | c |
| COMP 5316 | Transaction Management (not available in 2002) | c |
| COMP 5327 | Computer and Communication Security | c |
| COMP 5337 | Design of Distributed Object Systems | c |
| COMP 5347 | E-Commerce Technology | C |

Database Management Systems major (continued)

| Unit of study | IDore |
|---|----------|
| COMP5318 Knowledge Discovery and Data Mining | C |
| COMP5328 Machine Learning Techniques | |
| COMP5319 Programming Distributed Object Systems | C |
| COMP5411 Software Metrics Using Java (not available in 2002) | c |
| COMP5425 Multimedia Storage, Retrieval & Delivery (not available in 2002) | c |
| COMP5445 OO Techniques in Multimedia | c |
| ITprojects | |
| COMP 5702 Information Technology Project A (12 credit points) | c |
| COMP5703 Information Technology Project B (12 credit points) | c |
| COMP 5704 Information Technology Project C | c |

Multimedia Technology major

| Unit of study | Core |
|--|----------|
| Unless otherwise indicated, all units are worth 6 credit points. | |
| Elementary units | |
| INFO 5210 Systems Modelling and Design | |
| COMP 5213 Computer and Network Organisation | |
| COMP 5214 Software development in Java | |
| COMP 5217 Networked Applications (not available in 2002) | |
| COMP 5218 OO Programming in Java | |
| Foundational units | |
| COMP 5014 Computer Graphics Fundamentals (not available in 2002) | |
| COMP 5015 Relational Database Systems | |
| COMP 5007 Networked Systems | |
| COMP 5018 Object-Oriented Programming in C++ | |
| COMP 5028 O-O Analysis and Design | |
| COMP 5110 Software Development Methods (not available in 2002) | |
| COMP 5112 User Interface Design and Programming | |
| COMP 5122 Multimedia Human Computer Interaction (not available in 2002) | |
| COMP 5114 Digital Media Fundamentals | |
| Specialist units | |
| INFO 5320 Object-Oriented Systems Modelling (not available in 2002) | c |
| INFO 5330 Designing Networked Enterprises (not available in 2002) | c |
| COMP 5315 Internet Programming | c |
| COMP 5327 Computer and Communication Security | c |
| COMP 5337 Design of Distributed Object Systems | c |
| COMP 5347 E-Commerce Technology | c |
| COMP 5357 Computer Supported Cooperative Work (not available in 2002) | |
| COMP 5328 Machine Learning Techniques | |
| COMP 5319 Programming Distributed Object Systems | c |
| COMP 5411 Software Metrics Using Java (not available in 2002) | c |
| COMP 5414 Visual Information Processing | |
| COMP 5424 Information Technology in Biomedicine (not available in 2002) | |
| COMP 5415 Multimedia Authoring and Production | |
| COMP 5425 Multimedia Storage, Retrieval & Delivery (not available in 2002) | c |
| COMP 5435 Multimedia Agents (not available in 2002) | |
| COMP 5445 OO Techniques in Multimedia | c |
| ITprojects | |
| COMP 5702 Information Technology Project A (12 credit points) | c |
| COMP 5703 Information Technology Project B (12 credit points) | c |
| COMP 5704 Information Technology Project C | c |

Software Engineering major

| Unit of study | Core |
|---|----------|
| Unless otherwise indicated, all units are worth 6 credit points. | |
| Elementary units | |
| INFO 5210 Systems Modelling and Design | |
| COMP 5211 Algorithmics and Informatics | |
| COMP 5214 Software development in Java | |
| COMP 5218 OO Programming in Java | |
| Foundational units | |
| COMP 5007 Networked Systems (not available in 2002) | |
| COMP 5018 Object-Oriented Programming in C++ | |
| COMP 5028 O-O Analysis and Design | |
| COMP 5019 System and Network Administration | |
| COMP 5110 Software Development Methods (not available in 2002) | |
| COMP 5112 User Interface Design and Programming | |
| Specialist units | |
| INFO 5320 Object-Oriented Systems Modelling (not available in 2002) | C |
| INFO 5330 Designing Networked Enterprises (not available in 2002) | C |
| COMP 5315 Internet Programming | c |
| COMP 5327 Computer and Communication Security | c |
| COMP 5337 Design of Distributed Object Systems | c |
| COMP 5347 E-Commerce Technology | c |
| COMP 5357 Computer Supported Cooperative Work (not available in 2002) | |
| COMP 5319 Programming Distributed Object Systems | c |
| COMP 5411 Software Metrics Using Java (not available in 2002) | c |
| COMP 5421 Verification (not available in 2001) | |
| COMP 5435 Multimedia Agents | c |
| COMP 5445 OO Techniques in Multimedia | c |
| ITprojects | |
| COMP 5702 Information Technology Project A (12 credit points) | c |
| COMP 5703 Information Technology Project B (12 credit points) | c |
| COMP 5704 Information Technology Project C | c |

■ Applied Information Technology units of study

For descriptions of Foundational and Specialist units and IT projects, refer to the Information Technology units of study in the preceding pages.

Elementary units

INFO 5210 Systems Modelling and Design
6 credit points. **Semester: 1,2. Classes: 2 lec & 1 tut/wk. Assessment:** Assignments, written exam.

Elementary

This unit of study provides fundamental knowledge of computer systems and programming design. It introduces process-centric, data-centric and object-oriented approaches to system modelling, and systems thinking including organisational structures, critical awareness of human issues etc.

Objectives

Basic concepts on computer systems, file systems, database systems, languages and programming, user-interface and human computer interaction. The students will gain confidence in designing a simple computer software.

COMP 5211 Algorithmics and Informatics
6 credit points. **Semester: 1,2. Classes: 2 lec & 1 tut/wk. Assessment:** Assignments, written exam.

Elementary

Algorithm is a fundamental technique in computing. This unit of study covers data structure, algorithm and an overview of the main ways of thinking used in IT from simple list manipulation and data format conversion, up to shortest paths and cycle detection in graphs.

Objectives

Basic concepts on data structure, algorithm, dynamic programming and program analysis. The students will gain essential knowledge in computer science.

COMP 5213 Computer and Network Organisation

6 credit points. **Semester:** 1, 2. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assignments, written exam.

Elementary

This unit of study is an overview of hardware and system infrastructure software including compilers, operating systems, device drivers, network protocols, etc. It also includes user-level Unix skills and network usability.

Objectives

This unit of study provides an overview of hardware and system infrastructure software including compilers, operating systems, device drivers, network protocols, etc. It also includes user-level Unix skills and network usability.

COMP 5214 Software Development in Java

6 credit points. **Semester:** 2. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assignments, written exam.

Elementary

This unit of study introduces software development method with main emphasis on the careful adherence to a process. It includes design methodology, quality assurance, group work, version control, and documentation. It will suit students who do not come from programming background and will not go into programming but want to know computer software.

Objectives

This unit of study covers system analysis, design methodology, quality assurance, group collaboration, version control, software delivery and system documentation.

COMP 5215 Foundational Database Systems

6 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assignments, written exam.

Elementary

The syllabus covers the fundamentals of databases and SQL language. It includes data representation, relational design, normalization, data modelling, query methods and database development.

Objectives

- Data models: entity-relationship, relational, object-oriented.
- Relational database management systems: data definition, query languages, development tools.
- Object-oriented database systems: object heritage, encapsulation, XML
- Database application design and implementation.
- Architecture of relational database management systems: storage management, query processing, transaction processing.
- Lab: design and implementation of a database application using PostgreSQL, database Web Server using PHP or Python or Perl.

COMP 5218 Object-Oriented Programming in Java

6 credit points. **Semester:** 1. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assignments, written exam.

Elementary

In this unit of study students will learn JAVA and how it differs from other object-oriented programming languages such as C++. In addition to learning the basic features of JAVA students will learn client-server programming and building graphical interfaces. Programming exercises are included in teaching. It is a strong programming oriented subject.

Objectives

The students are expected to be able to write distributed applications based on the client/server model using Remote Procedure Call (RPC). The practical aspects of the unit of study are centred around a specially designed network laboratory. Experiments aim to provide hands-on experiences on many essential, but difficult aspects of networking.

■ Marine Ecology

Graduate Certificate in Quantitative Marine Ecology

Graduate Diploma in Quantitative Marine Ecology

Master of Quantitative Marine Ecology

Course outcomes

Upon completion of the Graduate Certificate graduates will possess a practical and theoretical background in some aspects of the field of study; this will be extended upon completion of the Graduate Diploma and further extended to include research and practical skills upon completion of the Masters program.

Admission requirements

Applicants for the Graduate Certificate should hold a Bachelor's degree appropriate for the field of study, or experience which is considered to demonstrate the knowledge and aptitude required to undertake the course.

Applicants for the Graduate Diploma should hold a Bachelor's degree appropriate for the field of study, or an equivalent standard of knowledge; or have completed the Graduate Certificate in Quantitative Marine Ecology in the same field of study.

Applicants for the Master in Quantitative Marine Ecology should hold a Bachelor's degree appropriate for the field of study, or an equivalent standard of knowledge; or have completed the Graduate Diploma in Quantitative Marine Ecology in the same field of study.

Course requirements

To qualify for award of the Graduate Certificate in Quantitative Marine Ecology candidates must complete 24 credit points of units of study approved for the relevant field of study.

To qualify for award of the Graduate Diploma in Quantitative Marine Ecology candidates must complete 36 credit points of units of study approved for the field of study. A candidate who has qualified for the award of the Graduate Certificate in Quantitative Marine Ecology may transfer to the Graduate Diploma in Quantitative Marine Ecology and receive credit of 24 credit points from the Graduate Certificate.

To qualify for award of the Master of Quantitative Marine Ecology candidates must complete 48 credit points of units of study approved for the field of study. A candidate who has qualified for the award of the Graduate Diploma in Quantitative Marine Ecology may transfer to the Master of Quantitative Marine Ecology and receive credit of 36 credit points from the Graduate Diploma.

Credit for previous study

An applicant who, within the previous three years, has completed graduate coursework considered by the Faculty to be equivalent to units of study prescribed for the degree, may receive credit of up to (i) 50% of the requirements for the Graduate Diploma in Quantitative Marine Ecology or Master of Quantitative Marine Ecology (ii) 24 credit points towards the requirements for the Graduate Diploma in Quantitative Marine Ecology or 36 credit points for the Master of Quantitative Marine Ecology from the articulated Quantitative Marine Ecology program.

Graduate Certificate in Quantitative Marine Ecology, Graduate Diploma in Quantitative Marine Ecology and Master of Quantitative Marine Ecology Resolutions: See chapter 7.

QMEC 5110 Structure & Management of Research Project

6 credit points. **Semester:** 2.

Developing an understanding of the management of ecological/environmental research projects through phases of recognition, definition, explanation, sampling, analysis, interpretation, conclusions and action requires realization of the nature of scientific aspects of problem-solving. This unit will integrate the logical basis of the problem being investigated with the management of the quantitative data needed to interpret such problems.

QMEC 5120 Design and Analysis of Sampling (Intro)

6 credit points. **Semester:** 2.

This unit introduces ecological variables in spatial hierarchies and how to estimate means and variances, with simple linear relationships between ecological variables. The unit demonstrates decision-making using statistical estimates.

QMEC 5140 Intro Assessment: Living Marine Resources6 credit points. **Semester: 1.**

An overview of the application of modelling methods for marine resource assessment. Candidates will build deterministic and stochastic simulation models of fisheries and modify these to reflect management options and performance criteria. The written report of this modelling exercise will be assessed.

QMEC 5150 Ecological Sci & Enviro Impact Assess6 credit points. **Semester: 1.**

This unit includes lectures, tutorials and assessment that will provide the candidate with a critical understanding of the role of ecological science within environmental impact assessment (EIA). Guidelines for EIA shall be studied along with several environmental impact statements (EIS) for proposals within the marine environment. Candidates will learn to identify if the ecological science presented within these EIS meets appropriate scientific standards and is adequate to meet the guidelines for EIA in NSW.

QMEC 5270 Enviro Impacts & Ecological Restoration12 credit points. **Semester: 2. Prerequisite:** QMEC 5110, QMEC 5120 and QMEC 5150.

This unit is comprised of several topics that are described below:

Design and Analysis of Sampling

This topic builds from the introduction in QMEC 5120 to develop concepts of linear models and combinations of ecological variables. The topic leads to general skills with design of sampling programs to detect specified patterns in temporally variable and spatially patchy habitats.

Legislative and Policy Frameworks

In this topic, the regulatory and policy frameworks for environmental assessments are identified. A particular focus is guide-lines for professional consultants in quantitative aspects of sampling and monitoring.

Analysis of Multivariate Data

This topic emphasises conceptual understanding and applied usage of advanced analytical methods. Implementation and interpretation of methods in applied research with complex experimental designs and structures are emphasized.

Environmental Impact Assessment

Quantitative analyses to test hypotheses about environmental impacts are generally asymmetrical because disturbances are usually in one area, while many reference or locations are available to provide realistic contrasts. Beyond BACI procedures and other modern approaches solve the problems. In this topic, their use is explained and practical examples explored.

Numerically Intensive Statistical Methods

Candidates will be given the necessary computing skills and theoretical knowledge to tackle various problems using numerically intensive methods such as bootstrapping and permutation tests.

Ecological Restoration

This unit will introduce the participants to the scientific background and quantitative nature of ecological restoration, thereby emphasizing it as a scientific discipline. It will discuss the logical framework for restoration, how this leads to appropriate sampling designs and analyses to measure it and the consequences of ignoring such a quantitative approach. Methods of measuring and analysing restoration will be illustrated with practical examples and field studies

QMEC 5280 Conservation and Biodiversity12 credit points. **Semester: 2. Prerequisite:** QMEC 5110, QMEC 5120, QMEC 5140 and QMEC 5150.

This unit is comprised of several topics that are described below:

Design and Analysis of Sampling

This topic builds from the introduction in QMEC 5120 to develop concepts of linear models and combinations of ecological variables. The topic leads to general skills with design of sampling programs to detect specified patterns in temporally variable and spatially patchy habitats.

Legislative and Policy Frameworks

In this topic, the regulatory and policy frameworks for environmental assessments are identified. A particular focus is guide-lines for professional consultants in quantitative aspects of sampling and monitoring.

Analysis of Multivariate Data

This topic emphasises conceptual understanding and applied usage of advanced analytical methods. Implementation and interpretation of methods in applied research with complex experimental designs and structures are emphasized.

Analysis of Marine Biodiversity

This topic will introduce the participants to the quantitative nature of marine biodiversity. Appropriate measurements of biodiversity are discussed and analysed.

Numerically Intensive Statistical Methods

Candidates will be given the necessary computing skills and theoretical knowledge to tackle various problems using numerically intensive methods such as bootstrapping and permutation tests.

Ecological Restoration

This unit will introduce the participants to the scientific background and quantitative nature of ecological restoration, thereby emphasizing it as a scientific discipline. It will discuss the logical framework for restoration, how this leads to appropriate sampling designs and analyses to measure it and the consequences of ignoring such a quantitative approach. Methods of measuring and analysing restoration will be illustrated with practical examples and field studies

QMEC 5290 Assessment of Living Marine Resources12 credit points. **Semester: 2. Prerequisite:** QMEC 5110, QMEC 5120, QMEC 5140 and QMEC 5150.

This unit is comprised of several topics that are described below:

Design and Analysis of Sampling

This topic builds from the introduction in QMEC 5120 to develop concepts of linear models and combinations of ecological variables. The topic leads to general skills with design of sampling programs to detect specified patterns in temporally variable and spatially patchy habitats.

Marine Population Dynamics and Stock Assessment

This topic examines the statistical modelling techniques used to assess fish stocks. Approaches such as age-structured modelling and yield-per-recruit analyses are covered in detail. Strategies for modelling the growth of individual fish and relationships between stock size and recruitment are also studied.

Legislative and Policy Frameworks

In this topic, the regulatory and policy frameworks for environmental assessments are identified. A particular focus is guide-lines for professional consultants in quantitative aspects of sampling and monitoring.

Numerically Intensive Statistical Methods & Monte Carlo Simulation

Candidates will be given the necessary computing skills and theoretical knowledge to tackle various problems using numerically intensive methods such as bootstrapping and Monte Carlo Simulation.

QMEC 5310 Project: Environment Impacts/ Restoration

12 credit points. Semester: 1,2. Prerequisite: QMEC 5270.

The unit will provide candidates with the necessary skills and experience for them to either commence a Ph.D. in marine ecology, environmental management or other related fields. Candidates will initiate a research project of their own design, but will be supervised in all aspects of developing it as a M.Sc. level thesis. This will involve identifying and understanding the logical basis of the questions being asked, the sampling design, methods and analyses to answer them, the collection of data and interpretation of the results with respect to the international literature. The research will be written up as an academic thesis and published in a peer-reviewed journal (if of suitable quality).

QMEC 5320 Project: Conservation and Biodiversity

12 credit points. Semester: 1, 2. Prerequisite: QMEC 5280.

The unit will provide candidates with the necessary skills and experience for them to either commence a Ph.D. in marine ecology, environmental management or other related fields. Candidates will initiate a research project of their own design, but will be supervised in all aspects of developing it as a M.Sc. level thesis. This will involve identifying and understanding the logical basis of the questions being asked, the sampling design, methods and analyses to answer them, the collection of data and interpretation of the results with respect to the international literature. The research will be written up as an academic thesis and published in a peer-reviewed journal (if of suitable quality).

QMEC 5330 Project: Assess Living Marine Resources 12 credit points. Semester: 1, 2. Prerequisite: QMEC 5290.

The unit will provide candidates with the necessary skills and experience for them to either commence a Ph.D. in marine resource assessment or commence employed work in this field. Candidates will complete a research project that requires them to complete a fishery resource assessment of interest to a state or federal management agency. Tasks will include liaison with the appropriate agency staff, quality assessment of data, parameter estimation, variance estimation and appropriate forecasts of management decisions. The assessment will be written up as a academic thesis and published in a peer-reviewed journal (if of suitable quality).

■ Mathematics

Master of Science (coursework)

This award course is not available to new students from 2002.

Course Overview

The Master of Science by coursework provides further advanced study of mathematics beyond the Honours level to introduce candidates to recent developments in mathematics. The course is ideal for those who wish to undertake further study in mathematics but who are unsure about the area they wish to research. The course also enables those who completed their first degree some years ago to update their mathematical skills. The degree can be completed through full-time study in one year or part-time over a maximum of four years.

Course Outcomes

Upon completion of the course graduates will have studied recent advances in a number of different areas of mathematics and mastered advanced mathematical techniques. They will also have developed the skills necessary to undertake research in mathematics. The successful completion of the M.Sc. degree is one pathway into the PhD program.

Admission Requirements

Applicants must have an Honours degree in Mathematics at first or second class standard or equivalent.

Course Requirements

Candidates must complete 48 credit points for the degree including the four postgraduate coursework units of study (MATH 5001, MATH 5002, MATH 5003 and MATH 5004) worth 6 credit points each. The candidates also complete a research project worth a further 24 credit points under the supervision of a member of the School of Mathematics and Statistics. The research project can be completed in one year full-time by enrolling in MATH 5005 and MATH 5006 or over a maximum of four semesters part-time.

Master of Science Resolutions: See chapter 7.

MATH 5001 Mathematics Option 1
6 credit points. **Semester:** 1.

MATH 5002 Mathematics Option 2
6 credit points. **Semester:** 1.

MATH 5003 Mathematics Option 3
6 credit points. **Semester:** 2.

MATH 5004 Mathematics Option 4
6 credit points. **Semester:** 2.

MATH 5005 Research Project A
12 credit points. **Semester:** 1.

MATH 5006 Research Project B
12 credit points. **Semester:** 2.

MATH 5007 Research Project C
6 credit points. **Semester:** 1.

MATH 5008 Research Project D
6 credit points. **Semester:** 1.

MATH 5010 Research Project E
6 credit points. **Semester:** 2.

MATH 5011 Research Project F
6 credit points. **Semester:** 2.

■ Microscopy and Microanalysis

Graduate Certificate in Science (Microscopy and Microanalysis)

Course Overview

The Graduate Certificate in Science (Microscopy and Microanalysis) provides a professional qualification to microscopists for industry, research and education. The course develops and enhances skills in specimen preparation, operation of microscopes and analytical equipment, maintenance of electron microscopes, interpretation of microscopical images and microanalysis. The Graduate Certificate can be completed in 1 semester (full-time) or can be taken part-time.

Course Outcomes

Upon the completion of the Graduate Certificate, graduates will possess practical and theoretical background in a wide variety of microscopy, microanalysis and specimen preparation techniques for the materials or life sciences.

Admission Requirements

Applicants for the Graduate Certificate should have a Bachelor of Science in the physical sciences, life sciences, computer science, geology, palaeontology or a Bachelor of Engineering, or equivalent qualifications or experience. Applications will also be considered from those with a Bachelor of Arts who wish to acquire microscopy and microanalysis skills for such areas as archaeology, history of art and museum studies.

Course Requirements

Candidates must complete 24 credit points from the following core units:

- MCAN 4001 Principles of Microscopy & Microanalysis
- MCAN 4301 Instrumentation-Introduction to Light Microscopy
- MCAN 4302 Instrumentation - Introduction to Transmission EM
- MCAN 4007 Instrumentation - Monitoring & Maintenance EM
- MCAN 4303 Instrumentation - Introduction to Scanning EM
- MCAN 4008 Introductory Specimen Preparation for Optical Microscopy
- MCAN 4101 Biological Specimen Preparation - TEM & SEM
- MCAN 4102 Materials Specimen Preparation - TEM & SEM
- MCAN 4105 Optical X-ray & Electron Spectroscopy
- MCAN 4304 Instrumentation - Introduction to Confocal Microscopy
- MCAN 4108 Independent Project & Report

Graduate Certificate in Science (Microscopy and

Microanalysis) Resolutions: See chapter 7.

Graduate Diploma in Science (Microscopy and Microanalysis)

Course Overview

The Graduate Diploma in Science (Microscopy and Microanalysis) provides a professional qualification to microscopists for industry, research and education. The course develops and enhances skills in specimen preparation, operation of microscopes and analytical equipment, maintenance of electron microscopes, interpretation of microscopical images and microanalysis. The Graduate Diploma can be completed in 2 semesters (full-time) or can be taken part-time.

Course Outcomes

Upon the completion of the Graduate Diploma, graduates will possess practical and theoretical background in a wide variety of microscopy, microanalysis and specimen preparation techniques for the materials or life sciences.

Admission Requirements

Applicants for the Graduate Diploma should have a Bachelor of Science in the physical sciences, life sciences, computer science, geology, palaeontology or a Bachelor of Engineering, or equivalent qualifications or experience. Applications will also be considered from those with a Bachelor of Arts who wish to acquire microscopy and microanalysis skills for such areas as archaeology, history of art and museum studies.

Course Requirements

Candidates must complete 48 credit points from the course modules, including 32 credit points of compulsory modules and 16 credit points of optional modules for the materials or life sciences.

Graduate Diploma in Science (Microscopy and Microanalysis) Resolutions: See chapter 7.

MCAN 4001 Principles of Microscopy & Microanalysis
2 credit points. **Semester:** 1.

Introduces the general principles of microscopy and microanalysis, and reviews the basic physical principles on which they are based, including optics and image formation. (This is a core unit of study.)

MCAN 4007 Instrumentation - Monitoring Microscopes

2 credit points. **Semester:** 2. **Prerequisite:** MCAN 4302 or MCAN 4303. Provides training in monitoring the performance of electron microscopes, and in basic maintenance procedures for transmission and scanning electron microscopes. (This is a core unit of study.)

MCAN 4008 Intro Specimen Preparation for Opt Micro
2 credit points. **Semester:** 1.

Develops knowledge and skills in the fundamentals of specimen preparation for light microscopy. (This is a core unit of study.)

MCAN 4009 Adv Biological Specimen Preparation
2 credit points. **Semester:** 1, 2. **Prerequisite:** MCAN 4008.

Develops knowledge and skills in advanced techniques in specimen preparation for biological and medical applications (eg, histochemistry, fluorescent dyes, autoradiography). (This is an option.)

MCAN 4101 Biological Specimen Prep -Tern & Sem
4 credit points. **Semester:** 1,2. **Prohibition:** May not be counted with MCAN 4102.

Presents theory and practical skills of routine specimen preparation techniques used in the biological sciences including fixing, embedding, sectioning, drying, coating and staining techniques. (This is a core unit of study.)

MCAN 4102 Materials Specimen Prep -Tern & Sem
4 credit points. **Semester:** 1, 2. **Prohibition:** May not be counted with MCAN 4101.

Gives practical training in the preparation of a wide range of materials for electron microscopy, including metals, ■, - semiconductors, powders, ceramics and thin films, using a wide range of preparation techniques including electropolishing, ion milling, dimple grinding, chemical polishing and cleavage. (This is a core unit of study.)

MCAN 4103 Surface Microscopy

2 credit points. **Semester:** 2.

This unit of study is concerned with the nature of surfaces and the imaging techniques that can be used to obtain topographical, spectroscopic and structural information about them. Techniques include various scanning probe microscopies (eg, scanning tunnelling microscopy, atomic force microscopy and near-field scanning optical microscopy), optical interference microscopies for surface studies, and surface profilometry. (This is an option.)

MCAN 4104 Signal and Image Processing

4 credit points. **Semester:** 1, 2.

This unit of study covers the nature and processing of signals, concentrating on two dimensional signals represented by images. Emphasis will be on the correct treatment of real data to provide a basis for reliable research. Participants will develop a sound working knowledge of image processing which is based on an understanding of both the strengths and the limitations that are inherent in image data, and the technology applied to it. This will be set in the context of the nature of the analysis which is to follow processing, either human photo-interpretation or machine vision. Topics include: the nature of images and their general characteristics, an overview of image processing and its context in science, nomenclature, characteristics of the human visual system versus machine vision, spatial filtering, image arithmetic, introduction to segmentation, binary image processing, colour spaces, Fourier methods and filters in the frequency domain, and introductory morphological processing. (This is an option.)

MCAN 4105 Advanced Instrumentation: Spectroscopy
4 credit points. **Semester:** 2.

Teaches the principles of construction, operation and maintenance of instruments involved in a broad range of spectroscopic techniques. Participants will receive training in the use of instruments measuring electron energy loss spectra (EELS), cathodoluminescence spectra and Auger spectroscopy, and in the interpretation of the data. (This is a core unit of study.)

MCAN 4108 Independent Project and Report

4 credit points. **Semester:** 1,2. **Prerequisite:** MCAN 4301 and 4302 and 4303 and 4008 and 4102 or 4101.

Gives students the opportunity to extend the practical work encountered in other modules. Students will choose topics in consultation with members of academic staff and complete project work under supervision. (This is a core unit of study.)

MCAN 4109 Introduction to Diffraction

2 credit points. **Semester:** 1.

Introduces the basics of diffraction theory and its applications to powder diffraction and elementary single crystal diffraction. Participants are trained to collect, process and interpret powder diffraction data using electrons, neutrons and x rays. (This is an option.)

MCAN 4201 Diffraction Techniques (Advanced)

2 credit points. **Semester:** 2. **Assumed knowledge:** Assumes mathematic ability including elementary complex numbers and integration. **Prerequisite:** MCAN 4109.

Provides training in advanced structural analysis using X-ray, electron and neutron techniques. (This is an option.)

MCAN 4202 Microanalysis-ElectronTechniques

4 credit points. **Semester:** 1,2.

Provides a theoretical introduction and practical training in a broad range of microanalytical techniques which rely on the interaction of electrons with materials, including EDS and WDS techniques, the Electron probe. (This is an option.)

MCAN 4203 Microanalysis for Materials-Non Electron
4 credit points. **Semester:** 2.

This unit of study provides an introduction and some training in a range of materials characterisation techniques. Techniques covered include a range of surface science analytical methods, infra-red and Raman spectroscopy and ion beam analysis techniques. On completion of this unit of study, the student will be aware of the wide range of materials characterisation techniques available and understand their strengths and weaknesses. (This is an option.)

MCAN 4204 Microanalysis in the Life Sciences

2 credit points. **Semester:** 2. **Prerequisite:** MCAN 4303,4101 and 4205. Provides an introduction to a broad range of microanalytical techniques which rely on the interaction of electrons with materials including EDS, EELS and cryotechniques. The module concentrates on teaching the skills in techniques commonly required for biological applications. (This is an option.)

MCAN 4205 Adv Techniques in Biological Electron M
4 credit points. **Semester:** 2. **Prerequisite:** MCAN 4302 and 4303 and 4101.

Develops further the knowledge and skills in biological specimen preparation techniques and image interpretation obtained in Biological Specimen Preparation. Training in specialised techniques including cryotechniques and immunolabelling is provided. (This is an option.)

MCAN 4207 Image Capture and Recording

2 credit points. **Semester:** 1,2.....*

This unit of study provides a basic introduction to techniques and instrumentation used for recording images. Topics to be covered in this module include: colour and B/W photographic techniques, video and slow scan image capture, limitations of image recording techniques, electronic storage media, image display, and printing of digital images. (This is an option.)

MCAN 4209 Stereology

2 credit points/Semester: 1, 2. **Prerequisite:** MCAN 4207 and 4308.

Provides a general overview of stereology, including global, specific, manual and computerised measurements, geometric probability, density estimation and sampling. (This is an option.)

MCAN 4301 Instrumentation - Light Microscopy

4 credit points. **Semester:** 1, 2.

Gives students a basic understanding of the workings of the optical microscope and the practical ability to use it effectively. Polarisation, phase-contrast, dark field, DIC and fluorescence are covered at an elementary level. (This is a core unit of study.)

MCAN 4302 Instrumentation -Transmission EM

4 credit points. **Semester:** 1, 2.

Trains participants, with no prior knowledge of electron microscopy, to become operators of the transmission electron microscope. Participants are given a practical understanding of

the operation and construction of the microscope and how to obtain the optimum performance from it in routine operation. (This is a core unit of study.)

MCAN 4303 Instrumentation - Scanning EM

4 credit points. **Semester:** 1, 2.

Trains participants, with no prior knowledge of electron microscopy, to become operators of the scanning electron microscope. Participants are given a practical understanding of the operation and construction of the microscope and how to obtain the optimum performance from it in routine operation. (This is a core unit of study.)

MCAN 4304 Instrumentation - Confocal Microscopy

4 credit points. **Semester:** 1,2.

Introduces the general principles of confocal microscopy and training in the use of the confocal microscope. It covers the theory behind confocal microscopy, the instrumentation and its applications. (This is a core unit of study.)

MCAN 4305 Instrumentation -Transmission EM (Adv)

2 credit points. Semester: 1, 2. Prerequisite: MCAN 4302.

Gives training in advanced imaging and diffraction techniques (including high resolution microscopy), and quantitative analysis in transmission electron microscopy. A basic knowledge of the construction and operation of the microscope (as provided, for example in Instrumentation - Transmission electron microscopy) is assumed. (This is an option.)

MCAN 4306 Instrumentation: Scanning EM (Adv)

2 credit points. Semester: 1, 2. Prerequisite: MCAN 4303.

Gives training in advanced techniques in scanning electron microscopy, including high resolution microscopy. A basic knowledge of the construction and operation of the microscope (as provided, for example in Instrumentation - Scanning electron microscopy) is assumed. (This is an option.)

MCAN 4307 Advanced Instrumentation: Confocal

4 credit points. **Semester:** 1, 2. **Prerequisite:** MCAN 4301 and MCAN 4304.

Provides advanced training in confocal microscopes, and introduction to specialised techniques. (This is an option.)

MCAN 4308 Image Analysis

4 credit points. **Semester:** 1, 2. **Prerequisite:** MCAN 4104 and MCAN 4207.

This unit of study covers techniques which can be applied to images that are directed at extracting quantitative parameters characteristic of the content of the image. Emphasis will be on the application of these techniques to typical problems encountered in microscopy based imaging, but applicability to more general classes of image will also be covered. Participants will develop a sound working knowledge of image analysis which is based on an understanding of both the strengths and the limitations of the techniques of analysis. The context of this unit of study assumes a basic understanding of image processing techniques which may have been applied to images to restore or enhance them prior to analysis. Topics in this module include: a general review of image acquisition, filters and transforms, segmentation methods, calibration of hardware for analysis, extraction of simple features from images, advanced feature extraction from images, limitations of measurement, and an overview of classification techniques used to discriminate measured objects. (This is an option.)

Master of Science (Microscopy and Microanalysis)

Course Overview

The Master of Science (Microscopy and Microanalysis) by coursework is an extension of the Graduate Diploma in Science (Microscopy and Microanalysis) by the addition of two projects and a long essay which consolidate the skills and knowledge gained through the coursework modules. The MSc can be completed in 3 semesters (full-time) or can be taken part-time (minimum candidature 4 semesters).

Course Outcomes

Upon the completion of the MSc, graduates will possess research skills and a practical and theoretical background in a wide variety of microscopy, microanalysis and specimen preparation techniques for the materials or life sciences.

Admission Requirements

Graduates who hold a Bachelor of Science or Engineering, or who have an equivalent degree or standard of knowledge; or completion of the Graduate Diploma in Science (Microscopy and Microanalysis) at credit level.

Course Requirements

Graduation requires 72 credit points, made up of 48 credit points of coursework taken from the Graduate Diploma in Science (Microscopy and Microanalysis), plus two practical projects (8 credit points each) and along essay (8 credit points). The 48 credit points of coursework includes 32 credit points of core modules, and 16 credit points chosen from a range of optional modules for the Materials or Life Sciences.

Master of Science (Microscopy and Microanalysis)

Resolutions: See chapter 7.

Unit of study Descriptions

For coursework modules refer to the module descriptions for the Graduate Diploma in Science (Microscopy and Microanalysis). Projects and essays may be chosen or designed according to the interests and needs of the student.

MCAN 5001 Project 1

8 credit points. **Semester:** 1,2.

A range of short research projects will be offered to suit the interests and skills of the students. These projects will develop and reinforce the knowledge and skills gained in the coursework component. (This is a core unit of study.)

MCAN 5002 Project 2

8 credit points. **Semester:** 1,2.

A range of short research projects to suit the interests and skills of the students will be offered. These projects will develop and reinforce knowledge and skills gained in the coursework component. (This is a core unit of study.)

MCAN 5003 Essay

8 credit points. **Semester:** 1,2.

A wide range of essay topics will be offered. (This is a core unit of study.)

■ Nutrition and Dietetics

Master of Nutrition and Dietetics

Course overview

The MNutrDiet is a course designed to survey all aspects of human nutrition, with special emphasis on the needs of dietitians who will be working in Australia. It provides the basic training for hospital and community dietitians and nutritionists and is one of the recognised professional courses for dietitians in Australia.

The course requires two years of full-time work and study.

The first year consists of coursework, lectures, tutorials and practicals. In the second year, one semester is devoted to clinical training and the other semester is spent on a small research project. The dates for this course do not follow the undergraduate academic year. First year starts at the same time as undergraduate teaching but there is some work during vacations. Second year commences in late January.

Course outcomes

Upon completion of the course, the graduate will have a sound knowledge base in nutrition and dietetics, possess the skills to improve nutritional status of individuals, families and the community at large and to modulate the course of illness with dietetics. The graduate will be skilled in basic research and have a lifelong commitment to the pursuit of excellence in professional conduct.

Admission Requirements

Applicants must have a degree from a recognised institution and have completed two full semesters in Biochemistry and Human Physiology. For example, a student who completed a BSc at Sydney should have studied Biochemistry 2001 (or MBLG 2001) and 2002 and Physiology 2001 and 2002. A student who has completed a BMedSc should have studied Biochemistry 2101 and 2102 and BMED 2101 and 2102. These subjects are required by the Dietitians Association of Australia.

Course requirements

First Year: This is an integrated academic year of teaching, practicals and study. As part of the course, students attend the Ryde College of Technical and Further Education for practicals in commercial cookery, followed by dietetic cookery. This costs an additional \$500. All students take the courses listed below.

Second year: In the February semester of second year (Jan to June) approximately half of the class do a clinical and community dietetics training placement while the other half do a research project. Then in the July semester of second year (July to Nov) students cross over to the alternate course.

During the second year all students are required to attend formal lectures at the University on several days. Lectures on management, advanced clinical nutrition and advanced community nutrition are compulsory.

The units of study are supervised by a Program Committee in Nutrition and Dietetics, chaired by the Dean of the Faculty of Science.

Master of Nutrition and Dietetics Resolutions: See chapter 7.

NTDT5301 **Nutritional Science**

8 credit points. **Semester:** 1.

The study of biochemical interrelationships between nutrients, energy supply and modification of metabolism by disease; the study of the macromitrients - ie, protein, fat, carbohydrate, energy and the micronutrients - ie, vitamins and minerals.

NTDT 5302 **Food Science**

4 credit points. **Semester:** 1.

The study of nutritional content, production and consumption of major foods, and the study of principles of food preservation, processing, safety and microbiology.

NTDT 5303 **Dietary Intake & Nutritional Assessment**

4 credit points. **Semester:** 1.

The study of methodology for assessing dietary intake and nutritional status.

NTDT 5304 **Principles of Dietetic Practice**

2 credit points. **Semester:** 1.

The study of knowledge and skills of professional dietetic conduct.

NTDT 5305 **Food Service Management**

6 credit points. **Semester:** 1.

The study of food service systems for use in institutions.

NTDT 5307 **Clinical Nutrition and Dietetics**

12 credit points. **Semester:** 2.

This unit of study includes paediatrics at the New Children's Hospital, the study of medicine as it relates to nutrition, and the modification of diet and nutrition support of patients with different illnesses.

NTDT 5308 **Community and Public Health Nutrition**

10 credit points. **Semester:** 2.

The study of nutrition assessment, planning, intervention and outcomes in the community, and the study of nutrition in the prevention of disease and the methods involved in promotion of nutritious food for all.

NTDT 5309 **Communication**

2 credit points. **Semester:** 2.

The study of counselling and education methods to communicate nutrition to individuals, groups and nations.

NTDT 5310 **Nutrition Research Project**

24 credit points. **Semester:** 1,2.

During the research semester each student has a research supervisor. Research projects can include small surveys, simple bench work, supervised hospital assignments or library searches, and are carried out in the University or with an external supervisor. Students also attend nutrition seminars.

NTDT 5311 **Nutrition Practice**

12 credit points. **Semester:** 1,2.

NB: This unit of study will commence prior to the start of semester.

This aim of this unit is to provide further knowledge and develop counselling strategies in specialty areas of dietetic practice. It builds on subjects introduced in the first year of the Masters course.

NTDT 5312 **Nutrition & Dietetics Training Placement**

12 credit points. **Semester:** 1,2.

NB: This unit of study will commence prior to the start of semester.

Students are attached to two or more teaching hospitals and their associated community dietetic centres. The majority of time is spent in the wards or outpatient departments. There are up to 20

weeks' of training in dietetic practice in major primary health institutions so this unit starts early.

NTDT 5321 **Nutrition Research Project (Full-Time)**

24 credit points. **Semester:** 1,2.

This unit of study is for full-time students upgrading from the DipNutrDiet to the MNutrDiet, and it involves completing a research project.

NTDT 5322 **Nutrition Research Project A**

12 credit points. **Semester:** 1, 2.

This unit of study is for part-time students upgrading from the DipNutrDiet to the MNutrDiet, and it involves completing a research project.

NTDT 5323 **Nutrition Research Project B**

12 credit points. **Semester:** 1,2.

This unit of study is for part-time students upgrading from the DipNutrDiet to the MNutrDiet, and it involves completing a research project.

Master of Nutritional Science

Course overview

The MNutrSc provides the same survey of all aspects of human nutrition in the first year, as the MNutrDiet but is designed for those persons who wish to pursue a career in nutrition research. The second year is devoted to a research project, with regular seminars. Students have a range of areas to choose from for their research year, for example sports nutrition, lipid biochemistry, infant nutrition or ecological research.

Course outcomes

Upon completion of the course the graduate will have a sound knowledge base in nutritional science and possess the skills to conduct nutrition research projects.

Course requirements

First year: The first year coursework and practicals coincide with those for MNutrDiet with the exception of the units of study NTDT 5306, NTDT 5315, NTDT 5313 and NTDT 5314 listed below.

Second Year: The second year is devoted to a full-time research project, supervised by a member of the academic staff of the Human Nutrition unit, which is written up for assessment in a short thesis.

Master of Nutritional Science Resolutions: see chapter 7.

Unit of study descriptions

First Year: As listed under first year for Master of Nutrition and Dietetics (above).

Admission: Applicants must have a degree from a recognised institution and have completed two full semesters in Biochemistry and Human Physiology. However, the requirement for 2nd year university physiology can be replaced by such alternatives as a third year course in Biochemistry or in Food Science.

Application forms are available from the Faculty of Science. Applications close in early November and should be lodged with the Faculty of Science together with your academic record.

NTDT 5306 **Introduction to Food Service**

3 credit points. **Semester:** 1.

An introduction to food service systems in institutions.

NTDT 5315 **Scientific Methodology in Nutrition**

3 credit points. **Semester:** 1.

A small report on the desired area of research in year 2.

NTDT 5313 **Nutritional Science Research A**

24 credit points. **Semester:** 1.

Students have a range of areas to choose from for their research year - eg, sports nutrition, lipid biochemistry, infant nutrition or ecological research.

NTDT 5314 **Nutritional Science Research B**

24 credit points. **Semester:** 2.

■ Psychology

Graduate Diploma in Psychology

Course outcomes

Upon completion of the course, the graduate will have a Psychology major, accredited by the Australian Psychological Society, equivalent to that available in the Bachelor of Arts,

Bachelor of Science, Bachelor of Economics (Social Science) or Bachelor of Liberal Studies. They will have studied all basic areas of experimental Psychology, statistical methods in Psychology, and an extensive range of optional topics. They will be eligible to apply to continue to a fourth year in Psychology, either in Psychology 4 (Honours) or the Graduate Diploma in Science (Psychology), and from there to a higher degree in Psychology.

Eligibility for admission

1. The Faculty of Science may admit to candidature applicants who hold the award course of Bachelor of Science, Bachelor of Arts, Bachelor of Economics (Social Science), or Bachelor of Liberal Studies from the University of Sydney, or equivalent degree as deemed by the Faculty, who have not previously completed a major in Psychology. When assessing an applicant, both undergraduate record and UAI (or equivalent) may be taken into account.
2. Applicants must have already successfully completed 12 credit points of Junior Psychology (currently PS YC 1001 and 1002) or equivalent.

Method of progression

Students are required to study a minimum of 48 credit points of Intermediate and Senior level Psychology. This shall consist of 16 credit points of Intermediate Psychology (currently PSYC 2111, 2112, 2113 and 2114) and a minimum of 32 credit points of Senior Psychology. To be eligible for study in Psychology beyond the Graduate Diploma at the University of Sydney, students must, except with departmental approval, include PSYC 3201 Statistics and Psychometrics and PSYC 3202 History of Philosophy of Psychology. Students may study additional Senior Psychology if they wish.

Individual unit of study qualifying units will apply, so that normally progression will be over a minimum of four semesters.

Exemptions and Advanced Standing

Students may apply for exemptions if they have already completed studies which the Faculty deems equivalent to those in the program. Such units of study must have been completed within the previous ten years.

The amount of exemptions allowed will not exceed Faculty of Science regulations or will not exceed 24 credit points, whichever is the lower.

Units of study for Graduate Diploma in Psychology

- PSYC 2111 Learning, Neuroscience and Perception
 PSYC 2112 Psychological Statistics
 PSYC 2113 Cognitive Processes and Social Psychology
 PSYC 2114 Personality and Individual Differences
 PSYC 3201 Statistics and Psychometrics
 PSYC 3202 History and Philosophy of Psychology
 PSYC 3203 Abnormal Psychology
 PSYC 3204 Behavioural Neuroscience
 PSYC 3205 Cognitive Psychology
 PSYC 3206 Developmental Psychology
 PSYC 3208 Intelligence
 PSYC 3209 Learning and Motivation
 PSYC 3210 Perceptual Systems
 PSYC 3211 Psychological Assessment and Organisational
 PSYC 3212 Social Psychology
 PSYC 3214 Communication and Counselling
 See chapter 3 for unit of study descriptions.

Graduate Diploma in Psychology Resolutions: See chapter 7.

Graduate Diploma in Science (Psychology)

Award Course overview

The Graduate Diploma in Science (Psychology) is an Honours equivalent (in the terms used by the Australian Psychological Society) fourth year of study in Psychology. It is designed to meet the needs of students wishing to continue with Psychology but who have not completed a four year Honours program. The diploma requires one year of full-time or two years of part-time study.

Course outcomes

Upon completion of this course the graduate will have a sound background in significant issues in general and applied psychology, an understanding of research methodology in both experimental and field studies contexts, be capable of finding and assessing relevant research literature, be eligible to apply for further programs of study in psychology and be prepared to undertake supervised training in certain professional areas of psychology.

Eligibility for admission

The Resolutions of the Senate state, in part, that:

1. (1) The Faculty of Science, on the recommendation of the appropriate Interdepartmental Committee, may admit to candidature the following:
 - (c) Graduate Diploma in Science (Psychology): an applicant who is a holder of a Bachelors degree with an APS accredited major in Psychology within the past 10 years from a recognised tertiary institution and has achieved a minimum of Credit average in senior (third) year units of study which includes a unit in statistics/research methods which meets the requirements of the Department.

Course requirements

The program involves attending lectures and seminars in six units and completing a research project. The compulsory (core) units in addition to the Research Project are Psychological Research Methods, Ethics & Current Issues in Psychology and 2 Special Fields Seminars. The optional units offered are: Health Psychology, Counselling Psychology and Psychology of Addiction. A full-time load will require 3 days of attendance per week. Part-time candidates will complete the Research Project and Psychological Research Methods in their first year.

Graduate Diploma in Science (Psychology) Resolutions: See chapter 7.

Entry to other postgraduate programs

Students who have completed the Graduate Diploma in Science (Psychology) are eligible to apply for fifth and sixth year university programs in Psychology.

Current Departmental rules on progress

A candidate cannot repeat any part of the Graduate Diploma if he or she fails the Research project and at least one other component OR passes the Research Project but fails more than two components. If the candidate fails either the Research Project or one other component, permission may be granted for the candidate to repeat that unit the following year.

PSYC 4711 Psychological Research Methods

5 credit points. **Semester:** 1.

A series of lectures and tutorials on topics which include research ethics, experimental design, statistical analysis and field research methods. Contribution: 10% of total mark.

PSYC 4712 Ethics and Current Issues in Psychology

5 credit points. **Semester:** 2.

A series of lectures covering ethical and professional issues in psychology, as well as more general issues such as the relationship between academic research and applied psychology. Contribution: 10% of total mark.

PSYC 4715 Special Fields Topic (A)

5 credit points. **Semester:** 1.

Students choose one of the following topics, which must be different from that chosen in PSYC 4719 Special Fields Topic B. The 9 available research seminar areas are: Abnormal Psychology, Cognitive Processes, Developmental, Individual Differences, Learning, Neuroscience, Perception, Social Psychology and Theory & Systems, which are offered as part of the Psychology Honours program. Contribution: 10% of total mark.

PSYC 4719 Special Fields Topic (B)

5 credit points. **Semester:** 1.

Students choose one of the following topics, which must be different from that chosen in PSYC 4715 Special Fields Topic A. The 9 available research seminar areas are: Abnormal Psychology, Cognitive Processes, Developmental, Individual Differences, Learning, Neuroscience, Perception, Social Psychology and Theory & Systems, which are offered as part of the Psychology Honours program. Contribution: 10% of total mark.

PSYC 4716 Health Psychology

5 credit points. **Semester:** 2.

This addresses theoretical and empirical issues associated with a number of health and medical conditions. Discussion includes issues such as definition and scope of health psychology, health beliefs, compliance with medical regimens, risk perception and risk taking, and the conceptualisation of stress. Contribution: 10% of total mark.

PSYC 4718 Psychology of Addiction

5 credit points. **Semester:** 2.

This deals with addiction from two perspectives. The first is primarily biological, focusing on biological, pharmacological, genetic, sociopolitical and clinical aspects of addiction to psychoactive drugs. The second is primarily social, focusing on conceptual issues in defining addiction and the extent to which the notion of addiction can be extended validly to include excessive behaviours that do not involve drugs. Contribution: 10% of total mark.

PSYC 4710 **Research Project (A)**

9 credit points. **Semester:** 1.

In this year long component students complete an individual research project under supervision of a member of the academic staff. An 8000 word report is assessed by at least two independent examiners. Contribution: 40% of total mark.

PSYC 4720 **Research Project (B)**

9 credit points. **Semester:** 2.

See description under Research Project A (PSYC 4710) above.

■ Master of Psychology

This award course is not available to new students from 2002. Master of Psychology Resolutions: See chapter 7.

Units of study available for 2002

PSYC 5106 **Research Thesis A**

6 credit points. **Semester:** 1.

PSYC 5109 **Family, Couple and Sex Therapy**

4 credit points. **Semester:** 2.

PSYC 5201 **Option 1**

4 credit points. **Semester:** 1.

Advanced training in areas which may include child or adult therapy or clinical neuropsychology.

PSYC 5202 **Option 2**

4 credit points. **Semester:** 2.

Advanced training in areas which may include child or adult therapy or clinical neuropsychology.

PSYC 5203 **Clinical Placements A**

6 credit points. **Semester:** 1.

PSYC 5204 **Case Discussions A**

6 credit points. **Semester:** 1.

PSYC 5205 **Case Discussions B**

6 credit points. **Semester:** 2.

PSYC 5206 **Clinical Placements B**

6 credit points. **Semester:** 2.

PSYC 5207 **Research Thesis B**

6 credit points. **Semester:** 2.

■ Coursework degrees in Applied Science

Graduate Certificate in Applied Science

Graduate Diploma in Applied Science

Master of Applied Science

Course overview

The Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science are articulated coursework programs available in the following subject areas:

- Environmental Science
- Informatics and Communication
- Molecular Biotechnology
- Neuroscience
- Photonics
- Psychology of Coaching
- Surface Coatings
- Wildlife Health and Population Management

Course outcomes

Upon completion of the Graduate Certificate graduates will possess a practical and theoretical background in some aspects of the field of study; this will be extended upon completion of the

Graduate Diploma and further extended to include research and practical skills upon completion of the Masters program.

Admission requirements

Applicants for the Graduate Certificate should hold a Bachelor's degree appropriate for the field of study, or experience which is considered to demonstrate the knowledge and aptitude required to undertake the course.

Applicants for the Graduate Diploma should hold a Bachelor's degree appropriate for the field of study, or an equivalent standard of knowledge; or have completed the Graduate Certificate in Applied Science in the same field of study.

Applicants for the Master in Applied Science should hold a Bachelor's degree appropriate for the field of study, or an equivalent standard of knowledge; or have completed the Graduate Diploma in Applied Science in the same field of study.

Some subject areas are not yet available as a fully articulated program. See sections for individual subject areas below.

For particular subject areas there may be additional admission requirements. See sections for individual subject areas below.

Course requirements

To qualify for award of the Graduate Certificate in Applied Science candidates must complete 24 credit points of units of study approved for the relevant field of study.

To qualify for award of the Graduate Diploma in Applied Science candidates must complete 36 credit points of units of study approved for the field of study. A candidate who has qualified for the award of the Graduate Certificate in Applied Science may transfer to the Graduate Diploma in Applied Science and receive credit of 24 credit points from the Graduate Certificate.

To qualify for award of the Master of Applied Science candidates must complete 48 credit points of units of study approved for the field of study. A candidate who has qualified for the award of the Graduate Diploma in Applied Science may transfer to the Master of Applied Science and receive credit of 36 credit points from the Graduate Diploma.

All units of study for a particular subject area may not be available every semester. The Faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

Course Resolutions: See chapter 7.

Credit for previous study

An applicant who, within the previous three years, has completed graduate coursework considered by the Dean to be equivalent to units of study prescribed for the degree, may receive credit of up to (i) 50% of the requirements for the Graduate Diploma in Applied Science or Master of Applied Science (ii) 24 credit points towards the requirements for the Graduate Diploma in Applied Science of 36 credit points towards the requirements for the Master of Applied Science from within the articulated program.

■ Environmental Science

Graduate Certificate in Applied Science (Environmental Science)

Graduate Diploma in Applied Science (Environmental Science)

Master of Applied Science (Environmental Science)

Course Overview

The Graduate Certificate in Applied Science (Environmental Science), Graduate Diploma in Applied Science (Environmental Science) and Master of Applied Science (Environmental Science) are articulated coursework programs that allow a large degree of flexibility in the depth at which studies are undertaken and the choice of subjects studied. Some of the major themes addressed include environmental sciences, environmental politics and law, project evaluation and assessment, decision making and conflict resolution.

Course Outcomes

The articulated award program in Environmental Science is designed for both recent graduates wishing to obtain

employment in the environmental field and for graduates already working in an environmental sphere who are interested in gaining either a formal qualification in environmental science or additional information about related areas of environmental science.

Environmental managers and scientists are increasingly finding that they need to have a broad interdisciplinary knowledge base and the ability to be flexible and innovative in their application of such knowledge. Thus the aim of this award program is to provide students with the ability to solve environmental problems that require the integration of knowledge from diverse disciplines. Emphasis is placed on studies which span several disciplines, adaptive problem solving, and the development of new skills and expertise.

Upon completion of the Graduate Certificate, graduates will possess a practical and theoretical background in some of the basic aspects of environmental science. This can be supplemented and extended upon completion of the Graduate Diploma, and extended further to include research and practical skills upon completion of the Masters program. Students completing the full postgraduate program will have a solid grounding in all basic areas of environmental science, enabling them to understand the environmental problems that can arise and the disparate solutions that can be applied to solve such problems, and to comprehend all aspects of environmental assessment.

Admission Requirements

Applicants for the Graduate Certificate in Applied Science (Environmental Science) should either hold a Bachelor's degree in Science or in a field of study appropriate for expansion into Environmental Science, or possess experience which is considered to demonstrate the knowledge and aptitude required to undertake this award course.

Similarly, applicants for the Graduate Diploma in Applied Science (Environmental Science) should hold a Bachelor's degree in a field of study appropriate for expansion into Environmental Science, or possess an equivalent standard of knowledge, or have completed the Graduate Certificate in Applied Science (Environmental Science).

Applicants for the Master in Applied Science should hold a Bachelor's degree in a field of study appropriate for expansion into Environmental Science, or an equivalent standard of knowledge, or have completed the Graduate Diploma in Applied Science (Environmental Science).

Course Requirements

To qualify for award of the Graduate Certificate in Applied Science (Environmental Science) candidates must complete 24 credit points of units of study approved for Environmental Science.

To qualify for award of the Graduate Diploma in Applied Science (Environmental Science) candidates must complete 36 credit points of units of study approved for Environmental Science. A candidate who has qualified for the award of the Graduate Certificate in Applied Science (Environmental Science) may transfer to the Graduate Diploma in Applied Science (Environmental Science) and receive credit for up to 24 credit points from the Graduate Certificate.

To qualify for award of the Master of Applied Science (Environmental Science) candidates must complete 48 credit points of units of study approved for Environmental Science. A candidate who has qualified for the award of the Graduate Diploma in Applied Science (Environmental Science) may transfer to the Master of Applied Science (Environmental Science) and receive credit for up to 36 credit points from the Graduate Diploma.

All units of study may not be available every semester. The Faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

See course Resolutions chapter 7.

ENVI 5501 Environmental Research Project

12 credit points. **Semester:** 1,2.

A valuable opportunity to apply some of the knowledge gained from earlier coursework, ENVI 5501 consists of a research project on a topic having significant environmental emphasis as arranged between the student and an appropriate supervisor. This research experience is highly valued by prospective employers as it shows a willingness and ability to undertake research with and without guidance. This project is not conducted by way of

contact hours per week for a semester, but instead the student will work on the project full-time and in a continuous manner for the semester. This unit of study is available only to students enrolled in the Master of Applied Science (Environmental Science).

ENVI 5705 Ecolog Principles for Environ Scientists

6 credit points. **Semester:** 1.

This unit of study introduces fundamental concepts of modern ecology for environmental scientists so as to provide non-biologically trained persons an understanding of the nomenclature of ecology and the physical parameters represented.

ENVI 5707 Energy - Sources, Uses and Alternatives

6 credit points. **Semester:** 1.

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.

ENVI 5708 Introduction to Environmental Chemistry

6 credit points. **Semester:** 1.

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.

ENVI 5803 Law and the Environment

6 credit points. **Semester:** 1.

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.

ENVI 5805 The Urban Environment and Planning

6 credit points. **Semester:** 1.

The aim of this unit of study is to introduce the concepts and procedures which are relevant to the application of scientific analysis to the formulation of urban and regional development policy and strategies.

ENVI 5808 App Ecology for Environmental Scientists

6 credit points. **Semester:** 2. Prerequisite: ENVI 5705 or equivalent.

This unit of study follows on from ENVI 5705, and covers in more depth the concerns of modern ecology pertaining to both marine and terrestrial creatures. An understanding of the complex issue of biodiversity and impact of the Threatened Species Conservation Act is also provided.

ENVI 5809 Computer Modelling & Resource Management

6 credit points. **Semester:** 1,2.

The concept and use of computer modelling in natural resource management is introduced in this unit of study, which is aimed particularly at non-programmers.

ENVI 5901 Weathering Processes and Applications

6 credit points. **Semester:** 2.

The physical, chemical and biological weathering processes operating in different rocks and weathering environments will be considered especially in relation to solution weathering and its acceleration following environmental acidification and the weathering of building and monumental stone.

ENVI 5902 Fluvial Geomorphology

6 credit points. **Semester:** 1.

This unit of study demonstrates how the concepts of geomorphology, as applied to rivers and fluvial landscapes, can be used to understand and manage environmental problems. Landforms and geomorphological processes are modified by human activities, and the course examines the problems associated with these activities.

GEOG 5001 Geographic Information Systems (Intro)

6 credit points. **Semester:** 1,2.

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 geographic information system. 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.

Environmental Science Optional units

The following optional units are available. For detailed descriptions see the listings under the appropriate headings of postgraduate Degrees in Science and the Applied Science articulated coursework programs. Special attention should be paid to any prerequisite studies that may be required.

- CHEM 5001 Information Retrieval in the Sciences
- WILD 5001 Australian Wildlife: Introduction
- WILD 5002 Australian Wildlife: Field Studies
- WILD 5007 Sustainable Uses and Stewardship of Wildlife
- MCAN 4001 Principles of Microscopy and Microanalysis
- PACS 6903 Peace and Environment: Issues of Conflict and Security
- QMEC 5110 Structure and Management of Research Projects
- QMEC 5120 Design and Analysis of Sampling (Intro)
- QMEC 5150 Ecological Science and Environmental Impact Assessment

■ Informatics and Communication

Graduate Certificate in Applied Science (Informatics and Communication)

Graduate Diploma in Applied Science (Informatics and Communication)

Course Overview

The program is designed to train people to become effective in information retrieval in the sciences, in science communication, in the development of databases, in Internet activities of importance to scientists, and in the legal and technical issues associated with scientific research.

The Certificate will require attainment of 24 credit points and the Diploma will require attainment of 36 credit points made up of combinations of units of study offered. Units of study generally are of 6 credit points value. Each credit point will approximate to 6 contact hours and the principal contact hours will involve lectures and workshops. Projects will be an important part of the course, and contact hours will be allocated according to the complexity of the project.

All units of study may not be available every semester. The Faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

See course Resolutions chapter 7.

CHEM 5001 Information Retrieval in the Sciences

6 credit points. **Semester:** 1, 2.

This unit of study alerts scientists to opportunities concerning information retrieval in the sciences and instructs how to effectively retrieve science information. Lectures first describe the worldwide Web, search engines, scientific publishers including their products, roles, and distribution mechanisms, e-journals, e-patents, and reference linking. Following an overview of these primary sources, the second part of the lecture course discusses database producers, including their roles, products, and policies. Access points to, and search options, in key databases in the physical and life sciences, and in engineering are discussed, and final lectures deal with the special role of patent information.

CHEM 5002 Information Retrieval in Chem Sciences

6 credit points. **Semester:** 1, 2.

This unit of study deals with chemical bibliographic, chemical substance and chemical reaction databases all of which are important not only to the chemical sciences but also to the life sciences, to environmental sciences, to toxicological and health information, to geological sciences, and to material sciences. Lectures include discussion of databases produced by the Chemical Abstracts Service, by the US Department of Health, by the Beilstein Institute, and by other suppliers for example MDL. Issues relating to the indexing of substances, to searching for substances, and then to finding information on substances are discussed.

ICOM 5001 The Internet as a Resource in Science

6 credit points. **Semester:** 1, 2.

This unit of study aims to explore recent developments in the use of the Internet by teachers and students of science. The background educational principles will be investigated, which will apply when teaching is taken out of the classroom and transferred to the Web Features of the Internet which are relevant to education will be examined and how these can be harnessed to the job of teaching and learning science. Real life examples where this kind of teaching is done will be evaluated, with an eye to judging whether those enterprises are successful, and where their future may lie.

ICOM 5002 Science Communication

6 credit points. **Semester:** 1, 2.

This unit of study aims to provide students with an understanding of the operations, pressures, and limitations of mainstream media. Issues confronting science in the media will be discussed. Also covered will be strategies the practising researcher can use when dealing with the media to ensure the message is communicated effectively. Researchers will be competent in working effectively with the media and in communicating their research to the general public.

ICOM 5003 Commercialisation of Science

6 credit points. **Semester:** 1, 2.

A lecture series led by experts operating in related fields, as well as a seminar series built around relevant case studies, students in this course will develop:

- a high level understanding of intellectual property as an input and product of research;
- an understanding of the different types of intellectual property and the mechanisms and procedures designed to provide creators with the capacity to exercise rights over the intellectual property they create;
- the capacity to apply the knowledge in the preceding points in a manner that maintains value in the intellectual property created and maximises the opportunities for utilisation of that intellectual property, particularly in commercial applications;
- an understanding of the effect of employer policies, relevant legislation and contractual obligation on the rights of creators of new intellectual property; and,
- the capacity to assess the intellectual property implications of a research or consultancy opportunity and make judgements about the benefits that the project presents.

INFS6005 Internet for Commerce

6 credit points. **Semester:** N/A in 2002.

This unit of study is for people who want an overview of current developments in commerce on the Internet. It analyses issues concerning networks - infrastructure, the Internet: architecture and protocols, the World Wide Web: protocols, browsers, java, javascript, activeX, security, privacy. Questions of security are developed at length - eg. secure transactions, cryptography, digital signatures, authentication, integrity and privacy, Web server security and firewalls. The course studies electronic payment systems, focusing on digital tokens, electronic cash, smart cards and EDI.

INFS6010 Databases

6 credit points. **Semester:** N/A in 2002.

The organisation of data and means for access to them form the core of all information systems. Database systems are computer systems that provide storage of, and methods of access to, data. They range from small, single user systems to large, distributed, networked systems with thousands of users. Common to all of these are the underlying concepts of data integrity, database design, and tools providing data access.

Issues studied in detail include; normalisation, database design using the entity-relationship model, formal relational database languages, industry standard relational database language, SQL, both in its interactive mode and embedded in application programs, underlying database structures, and the problems of concurrent database access.

GEOG 5001 Geographic Information Systems (Intro)

6 credit points. **Semester:** 1, 2.

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 geographic information system. 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.

■ Molecular Biotechnology

Graduate Certificate in Applied Science (Molecular Biotechnology)

Graduate Diploma in Applied Science (Molecular Biotechnology)

Master of Applied Science (Molecular Biotechnology)

Course overview and outcomes

The Graduate Certificate in Applied Science (Molecular Biotechnology), Graduate Diploma in Applied Science (Molecular Biotechnology) and Master of Applied Science (Molecular Biotechnology) are articulated programs intended for industry employees and those experienced in related fields to obtain relevant knowledge in molecular biotechnology. They include teaching in current and innovative areas and provide specialisations with attractive prospects for retraining and employment and for further education. These programs cover new and leading edge high technologies that provide education in relevant aspects of biology, biochemistry, chemistry, food science and technology, agricultural science, bioinformatics and information bioscience. They aim to provide a basic knowledge and skills base emphasising scientific applications. The courses also extend to a professional graduate education for scientists and technologists already working in these areas. Students will be exposed to a solid grounding in molecular biotechnology including an appreciation of social and ethical implications. This professional development award course is particularly designed for those seeking training in this expanding high technology area.

Admission requirements

Applicants for the Graduate Certificate in Applied Science (Molecular Biotechnology) should hold either a Bachelors degree in Science (or equivalent) or previous experience in a relevant area that is considered to demonstrate the knowledge and aptitude required to undertake this award course.

In addition, applicants for the Graduate Diploma in Applied Science (Molecular Biotechnology) should hold a suitable Bachelors degree (or equivalent) or previous experience in a relevant area that is considered to demonstrate the knowledge and aptitude required to undertake this award course, or have completed the Graduate Certificate in Applied Science (Molecular Biotechnology).

Applicants for a Master of Applied Science (Molecular Biotechnology) should hold a suitable Bachelors degree (or equivalent) and previous experience in a relevant area, or have completed the Graduate Diploma in Applied Science (Molecular Biotechnology) or equivalent.

Course Requirements

Students will be required to complete Molecular Biotechnology MOBT 5101 and MOBT 5102 for the Graduate Certificate. The design of these units will allow flexibility for students who are working and will be geared toward industry needs. The Graduate Diploma requires the same core units of study completed for the Graduate Certificate and an additional 12 credit point unit of study chosen from those offered in other Diploma and Masters programs. The Master of Applied Science extends offerings by the Diploma by adding a project carried out in industry, supplemented by a practical skills class. The Graduate Certificate requires 24 credit points, the Graduate Diploma 36 credit points, and the Master of Applied Science (Molecular Biotechnology) 48 credit points.

To qualify for award of the Graduate Certificate in Applied Science (Molecular Biotechnology) candidates must complete 24 credit points of designated units of study.

To qualify for the award of Graduate Diploma in Applied Science (Molecular Biotechnology) candidates must complete 36 credit points of units of study. This consists of 24 credit points of designated units of study and 12 credit points of optional units of study. A candidate who has qualified for the award of the Graduate Certificate in Applied Science (Molecular Biotechnology) may transfer to the Graduate Diploma in Applied Science (Molecular Biotechnology) and may receive credit for up to 24 credit points from the Graduate Certificate.

To qualify for the award of Master of Applied Science (Molecular Biotechnology) candidates must complete 48 credit points of units of study approved for Molecular Biotechnology. A

candidate who has qualified for the award of Graduate Diploma in Applied Science (Molecular Biotechnology) may transfer to the Master of Applied Science (Molecular Biotechnology) and receive credit for up to 36 credit points from the Graduate Diploma.

See course Resolutions chapter 7.

MOBT 5101 Applied Molecular Biotechnology A 12 credit points. **Semester:** 1.

This unit of study provides a solid foundation for education and training in applied molecular biotechnology. Classes emphasise molecular biology and genetics combined with essential aspects underscoring modern molecular biotechnology.

MOBT 5102 Applied Molecular Biotechnology B 12 credit points. **Semester:** 2.

Applied molecular biotechnology B broadens knowledge of and training in applications of the field. Key areas of molecular biology and genetics are combined with studies embracing major issues in modern molecular biotechnology, and are illustrated by examples and case studies.

MOBT 5103 Applied Molecular Biotechnology C 12 credit points. **Semester:** 2.

This unit of study combines hands-on experience in association with industry partners. This will typically involve part-time placement in an approved partner's facility or an on-campus project conducted in association with an industry affiliate, supplemented by lectures and tutorials. Entry is determined by a quota and availability of facilities and projects.

■ Neuroscience

Graduate Certificate in Applied Science (Neuroscience)

Graduate Diploma in Applied Science (Neuroscience)

Master of Applied Science (Neuroscience)

Course overview

The Graduate Certificate in Applied Science (Neuroscience), Graduate Diploma in Applied Science (Neuroscience) and Master of Applied Science (Neuroscience) are programs that allow flexible combinations of units of study. The programs cover basic concepts in neuroscience together with advanced treatment of most major current research areas in neuroscience, particularly those with medical and other potential applications, and an introduction to related developments in other disciplines.

Course Outcomes

The study of the brains and nervous systems of living creatures represents one of the most exciting and fast moving fields in 21st century science. It is also one that is having a considerable impact on attempts to solve major problems in health, including various neural diseases, current social problems such as addiction, and longer term social trends such as aging. The programs are designed both for graduates already working in a field where development of their expertise in at least some aspects of neuroscience is important and for recent graduates who wish to acquire a solid and broad grounding in this area.

Many professionals, particularly in health-related areas, find that they need to update or broaden their knowledge and understanding of the structure and function of the nervous system. Traditionally such training has been provided within individual departments, such as anatomy, physiology, pharmacology or psychology, and consequently has tended to be narrow in focus. The present programs have from the outset been designed to be inter-disciplinary; most units of study are taught by staff from at least three different departments. This is to meet the aim of providing a broad and comprehensive treatment of neuroscience.

Upon completion of the Graduate Certificate, graduates will have a solid grounding in basic principles of neuroscience and more specialised understanding of four different areas. This is supplemented in the Diploma by inclusion of a fifth area and by acquisition of some project skills by working on either a library- or laboratory-based project. Extension of these project skills is obtained during completion of the Masters by working on a total

of three unrelated projects, of which two would normally be laboratory-based.

Admission Requirements

Applicants for the Graduate Certificate in Applied Science (Neuroscience) should either hold a Bachelor's degree in Science or in a field of study appropriate for expansion into Neuroscience, or possess experience which is considered to demonstrate the knowledge and aptitude required to take this award course.

Applicants for the Graduate Diploma in Applied Science (Neuroscience) should hold a Bachelor's degree in a field of study appropriate for expansion into Neuroscience, or possess an equivalent standard of knowledge, or have completed the Graduate Certificate in Applied Science (Neuroscience).

Applicants for the Master of Applied Science (Neuroscience) should hold a Bachelor's degree in a field of study appropriate for expansion into Neuroscience, or possess an equivalent standard of knowledge, or have completed the Graduate Diploma in Applied Science (Neuroscience).

Course Requirements

To qualify for award of the Graduate Certificate in Applied Science (Neuroscience) candidates must complete 24 credit points of approved units of study.

To qualify for award of the Graduate Diploma in Applied Science (Neuroscience) candidates must complete 36 credit points of approved units of study of which 6 credit points are project based units of study.

To qualify for award of the Master in Applied Science (Neuroscience) candidates must complete 48 credit points of approved units of study, of which 18 credit points are from project based units of study in Neuroscience.

Normally a unit of study is available for only 1 semester each year. Not all units of study are available every semester. The Faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

See course Resolutions chapter 7.

NEUR 5001 Neuroscience Library Project

6 credit points. Semester: 1, 2. Prerequisite: 12 credit points from NEUR (5101, 5102, 5103, 5104, 5105, 5106, 5107, 5108).

This provides the opportunity to develop knowledge gained from units of study on a specialised topic. The topic and nature of supervision will be arranged between the student and an appropriate supervisor, subject to the approval of the Coordinator of the Neuroscience Program. This unit of study is available only to students enrolled in the Graduate Diploma of Applied Science (Neuroscience) or in the Master in Applied Science (Neuroscience). It would normally be available only after a student has completed two units of study in the Neuroscience program or equivalent units of study approved by the Dean.

NEUR 5002 Neuroscience Laboratory Project A

6 credit points. Semester: 1, 2. Prerequisite: 24 credit points from NEUR (5101, 5102, 5103, 5104, 5105, 5106, 5107, 5108).

This provides the opportunity to develop laboratory skills by participation in a research project on a specialised topic. The topic and nature of supervision will be arranged between the student and an appropriate supervisor, subject to the approval of the Coordinator of the Neuroscience Program. This unit of study is available only to students enrolled in the Graduate Diploma of Applied Science (Neuroscience) or in the Master in Applied Science (Neuroscience). It would normally be available only after a student has completed four units of study in the Neuroscience program or equivalent units of study approved by the Dean.

NEUR 5003 Neuroscience Laboratory Project B

6 credit points. Semester: 1, 2. Prerequisite: NEUR 5002.

This is similar to NEUR 5002, but would involve a different supervisor and a topic in a different discipline from those for the project a student undertook for NEUR 5002. A student is normally required to complete NEUR 5002 before enrolling in NEUR 5003.

NEUR 5004 Neuroscience Laboratory Project C

6 credit points. Semester: 1, 2. Prerequisite: NEUR 5002 and 5003.

This is similar to NEUR 5002, but would involve a different supervisor and a topic in a different discipline from those for the projects a student undertook for NEUR 5002 and NEUR 5003. A student is normally required to complete NEUR 5002 and NEUR 5003 before enrolling in NEUR 5004.

NEUR 5101 Neurobiology of Addiction

6 credit points. Semester: 1.

The goal of this course is to develop knowledge of the aspects of neuroscience that underpin current understanding of drug addiction. It examines patterns of use, prevalence, harms and social costs of the major addictive drugs: opioids, psychostimulants, alcohol, nicotine, and cannabis. Major topics include common features of addictive drugs such as the psychology and neuroanatomy of reward and reinforcement, as well as the particular molecular and neurochemical targets of individual drugs and the molecular and cellular mechanisms of tolerance and dependence. Finally, it will examine current treatment of addictive disorders.

NEUR 5102 Neuroscience of Aging

6 credit points. Semester: 1.

The unit of study will examine changes with age in the structure of the brain and the various forms of neuropathology and types of dementia that can occur. Models of Alzheimer's disease are covered, from tissue culture and cell biology to transgenic mice. Topics also include aspects of the neuropsychology of aging, including testing for different types of dementia, and the use of PET and MRI scans to assess aging of the brain.

NEUR5103 Brain Development

6 credit points. Semester: 1.

The topics covered will include: neuronal induction; mechanisms of cell generation and migration; gene expression and environmental factors in the determination of cell fate; the growth cone; general development of early neural pathways; transient neurones; the external environment and neonatal development; cell death in the developing brain; glial cells; early vascular invasion; and the process of regeneration during development and in adulthood.

NEUR 5104 Psychobiology of Learning and Memory

6 credit points. Semester: 1.

The topics covered will include: types of learning and of memory; current models at a psychological level; procedures for testing animal models of human learning and memory; memory disorders (amnesia); clinical and brain scan evidence on neural structures involved in learning and memory; synaptic plasticity and long term potentiation; pharmacological factors; neurological diseases affecting human memory.

NEU R 5105 Movement and Motor Control

6 credit points. Semester: 1.

Major topics include: control of contraction in muscle cells; the neuromuscular junction; organization and recruitment of the motor neuron pool; action potential propagation in myelinated nerves; activation of motor neurons in antagonist muscles; sensory afferents and reflexes; neuronal integration of excitatory and inhibitory synaptic inputs to the motor neuron; development of central pattern generators in the spinal cord; motor neuron diseases; descending projections from the brain; disorders affecting motor projections, including multiple sclerosis and paraplegia; learning to move, the development of gross and skilled movements, and training following damage to the motor system.

NEUR 5106 Pain

6 credit points. Semester: 1.

This unit will look at concepts of pain, including the view that pain is not only sensory event, but also a motivational state. It will evaluate current knowledge of transduction mechanisms and central representations of acute pain. Further topics include: the change from acute pain to chronic pain; mechanisms and central representations of chronic pain; central modulation of acute and chronic pain; and neuropharmacological research on endogenous analgesia.

NEUR 5107 Neurobiology of Psychoses

6 credit points. Semester: 1.

In relation to schizophrenia, this unit of study will examine: classification of symptoms; different types of schizophrenia; brain development and thought processes; the use of imaging techniques such as functional MRI; changes in brain anatomy, neural pathways and neurotransmitters; the dopamine hypothesis and the mechanism of action of anti-psychotics; the role of other neurotransmitter systems; genetics and drug-induced changes in gene expression; and clinical treatment.

In relation to depression the unit of study will examine: the distinction between depression and bipolar disorders; NA and

5HT pathways and their function in the brain; the molecular and cellular mechanisms of anti-depressants, and their use in the clinic; cognitive behavioural therapies. Finally, it will consider social and legal issues associated with both schizophrenia and depression.

NEUB 5108 Visual Neuroscience

6 credit points. **Semester:** 1.

After providing an overview of the visual system and its functions, the specific topics covered by this unit of study will include: the optics, image properties, and contrast properties of visual stimuli; colour vision and defects; the development of the visual system; retinal mechanisms such as transduction, synaptic action and receptive fields; organization of optic pathways, including streams, columns, areas and maps; the neural basis of form perception, from centre/surround to models from information technology; visual perception of motion, from magnocellular to Movshon; binocular vision, including stereopsis, binocular single vision, and interocular suppression; and visual loss, including scotomas, achromatopsia, akinetopsia and acatoradog.

■ Photonics

Graduate Certificate in Applied Science (Photonics)

Graduate Diploma in Applied Science (Photonics)

Master of Applied Science (Photonics)

Course Overview

The Graduate Certificate in Applied Science (Photonics), Graduate Diploma in Applied Science (Photonics), and Master of Applied Science (Photonics) are articulated coursework programs that provide flexibility in the depth at which studies are undertaken. Core units make up three quarters of the Graduate Certificate and Graduate Diploma, with the remaining units to be chosen from a small number of electives. The Graduate Certificate and Graduate Diploma are coursework with the additional requirements for the Masters being project work.

Course Outcomes

This articulated award program in Photonics is designed for both recent graduates wishing to obtain employment in the photonics field and for graduates already working in the field or a related field who are interested in gaining formal qualifications in photonics or extending their knowledge of the subject.

Upon completion of the Graduate Certificate, graduates will possess a practical and theoretical background in the fundamentals of photonics. This can be further supplemented by completion of the Graduate Diploma, and further extended to include research skills by completion of the Masters.

Students completing the full postgraduate program will have a solid grounding in all basics areas of photonics, enabling them to understand this rapidly expanding technology, and to have the knowledge and skills to solve problems relating to the applications of photonics.

Admission Requirements

Applicants for the Graduate Certificate in Applied Science (Photonics) should hold either a bachelor's degree in Science, Engineering or similar technical area, or possess experience which is considered to demonstrate the knowledge and aptitude required to undertake the course.

Applicants for the Graduate Diploma in Applied Science (Photonics) should hold either a bachelor's degree in Science, Engineering or similar technical area, or possess an equivalent standard of knowledge, or have completed the Graduate Certificate in Applied Science (Photonics) or an equivalent course.

Applicants for the Master of Applied Science (Photonics) should hold either a bachelor's degree in Science, Engineering or similar technical area, or possess an equivalent standard of knowledge, or have completed the Graduate Diploma in Applied Science (Photonics) or an equivalent course.

Course Requirements

To qualify for award of Graduate Certificate in Applied Science (Photonics) candidates must complete 24 credit points of approved units of study (see below).

To qualify for award of Graduate Diploma in Applied Science (Photonics) candidates must complete 36 credit points of approved units of study (see below). A candidate who has qualified for the award of Graduate Certificate in Applied Science (Photonics) may transfer to the Graduate Diploma in Applied Science (Photonics) and receive credit for up to 24 credit points of from the Graduate Certificate.

To qualify for award of Master of Applied Science (Photonics) candidates must complete 48 credit points of approved units of study (see below). A candidate who has qualified for the award of Graduate Diploma in Applied Science (Photonics) may transfer to the Master of Applied Science (Photonics) and receive credit for up to 36 credit points of from the Graduate Diploma.

All units of study may not be available every semester. The faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other postgraduate coursework programs in the faculty or elsewhere in the University.

See course Resolutions chapter 7.

PHOT 5001 Fundamentals of Photonics

6 credit points. **Semester:** 1,2.

This is a core unit for the Graduate Certificate, the Graduate Diploma and the Masters program. It covers basic optical principles, and an introduction to photonic systems and photonic system components. This unit also has a significant practical component.

PHOT 5002 Passive Photonics Components

6 credit points. **Semester:** 1.

This is a core unit for the Graduate Certificate, the Graduate Diploma and the Masters program. It covers components of a photonic system including optical fibres, planar waveguides, couplers, multiplexers and demultiplexers, wavelength division multiplexers, filters, gratings, bragg gratings, long period gratings, isolators and circulators, dispersion compensators.

PHOT 5003 Active Photonics Components

6 credit points. **Semester:** 2.

This is a core unit for the Graduate Certificate, the Graduate Diploma and the Masters program. It covers light sources, detectors, modulators, amplifiers, fibre lasers, optical switching and wavelength conversion.

PHOT 5004 Optical Networks

6 credit points. **Semester:** 1,2.

This is an optional elective unit for the Graduate Diploma and the Masters program. It covers network architectures, fundamentals of optical networks, communications systems, networks, current leading-edge systems and network protocols.

PHOT 5005 Advanced Photonics I

6 credit points. **Semester:** 1.

This is an optional elective unit for the Graduate Diploma and the Masters program. It covers optical fibre based sensors, fibre interferometry, confocal and near field optical microscopy, data storage, and medical applications.

PHOT 5006 Advanced Photonics II

6 credit points. **Semester:** 2.

This is an optional elective unit for the Graduate Diploma and the Masters program. It covers nonlinear optics, optical switching, soliton systems, and optical memory.

PHOT 5010 Experimental Photonics I

6 credit points. **Semester:** 1.

This is a core unit for the Graduate Certificate, the Graduate Diploma and the Masters program. It will include a number of laboratory based practical exercises relevant to the core units of the Graduate Certificate.

PHOT 5011 Experimental Photonics II

6 credit points. **Semester:** 2.

This is a core unit for the Graduate Diploma and the Masters program. It will include a number of laboratory based practical exercises relevant to the core units of the Graduate Diploma.

PHOT 5020 Photonics Project A

6 credit points. **Semester:** 1,2.

This is a core unit for the Masters program. It consists of a supervised theoretical or experimental research project on a topic determined by consultation with the supervisor. Projects may be on a topic related to the student's employment.

PHOT 5021 Photonics Project B6 credit points. **Semester:** 1,2.

This is a core unit for the Masters program. It consists of a supervised theoretical or experimental research project on a topic determined by consultation with the supervisor. Projects may be on a topic related to the student's employment.

■ Psychology of Coaching

Graduate Certificate in Applied Science (Psychology of Coaching)

Course Overview

The Graduate Certificate in Applied Science (Psychology of Coaching) is a coursework program which provides students with a sound grounding in the theoretical and methodological aspects of coaching psychology and teaches fundamental applied coaching skills. This is the first university-based course in Australia to offer specialised training in coaching psychology.

An important characteristic of this course is that each unit is taught using contemporary coaching methods. There are three key reasons for adopting this teaching approach:

- it provides students with a model of coaching,
- it develops students' self-regulated learning skills,
- it provides students with a personal experience of self-change within the coaching relationship.

Admission Requirements

Primary consideration will be given to applicants who have completed a 4-year full-time (or equivalent part-time) course in psychology. However, applicants who have a 3 year sequence in psychology and/ or relevant work/ life experience, and can demonstrate the knowledge and aptitude required to undertake the units of study will also be considered.

To qualify for award of the Graduate Certificate in Applied Science (Psychology of Coaching) candidates must complete 24 credit points of units of study approved for Psychology of Coaching.

Course Resolutions chapter 7.

PSYC 4721 Theories & Techniques of Coaching Psych

6 credit points. **Semester:** 1, 2.

This unit outlines the emergence of Coaching Psychology from its roots in sports coaching, management consulting, counselling and organisational psychology, and details the fundamental models and techniques of Coaching Psychology. Theories and techniques will be evaluated by reference to empirical research and conceptual analysis. Primary attention will be paid to the Co-active and Solution-focused models of coaching. 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.

PSYC 4722 Fundamentals of Coaching Practice

6 credit points. **Semester:** 1, 2.

This unit examines key issues in contemporary coaching psychology and lays the foundations for sound contemporary practice. Drawing on established approaches (eg, Egan, 1974) students will receive instruction in communication and coaching skills. Students will also be instructed in client assessment, outcome planning and evaluation and the ethical practice of coaching. The unit details key coaching strategies in relation to common client problems, including time management, work/family balance, career development, and lifestyle management. Practical experience of self-coaching and co-coaching are central aspects of this unit. Students will apply self-coaching strategies to issues in their own lives. In addition, guest lecturers will give seminars on contemporary coaching and consulting practice.

PSYC 4723 Socio-cognitive Issues in Coaching Psych

6 credit points. **Semester:** 2.

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, 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.

PSYC 4724 Coaching Practice: Co-Coaching & Groups

6 credit points. **Semester:** 2. **Prerequisite:** PSYC 4721 and PSYC 4722.

This unit moves on to more advanced coaching practice and issues. Students will consolidate the theory and skills acquired in previous units through a semester-long co-coaching practicum. Using real-life issues in a supportive and confidential environment, students will coach each other in achieving desired goals. This unit gives students experience in being both a coach and a client. To maximise learning and aid recognition of personal strengths and weaknesses, students will keep a coaching journal and self-assessment record. This unit also covers key issues in group coaching; differences between group and individual coaching, design and facilitation of coaching groups and group process.

PSYC 4725 Assessment and Selection

6 credit points. **Semester:** 2.

PSYC 4726 Intro to Organisational & Coaching Psych
6 credit points. **Semester:** 1,2.

■ Surface Coatings

Graduate Certificate in Applied Science (Surface Coatings)

Graduate Diploma in Applied Science (Surface Coatings)

Course Overview

The Graduate Certificate in Science (Surface Coatings) and Graduate Diploma in Applied Science (Surface Coatings) articulated coursework programs provide a professional qualification to workers in the surface coatings industry or those seeking to work in that field. The program is primarily web-based, with two intensive weeks of lecture and practical work each semester.

Course Outcomes

On completion of the Graduate Certificate, the graduate will possess a sound theoretical and practical background in the formulation and testing of a range of surface coatings, and have the skills to design and carry out development work in the surface coatings field.

On completion of the Graduate Diploma, the graduate will have the knowledge and skills to devise novel surface coatings and create significant improvements in the production and application of pre-existing surface coatings.

Admission Requirements

Applicants for the Graduate Certificate in Applied Science (Surface Coatings) should hold either a bachelor's degree in Science, Engineering or similar technical area, or possess experience which is considered to demonstrate the knowledge and aptitude required to undertake the course.

Applicants for the Graduate Diploma in Applied Science (Surface Coatings) should hold either a bachelor's degree in Science, Engineering or similar technical area, or possess an equivalent standard of knowledge, or have completed the Graduate Certificate in Applied Science (Surface Coatings) or an equivalent course.

Course Requirements

To qualify for the award of Graduate Certificate in Applied Science (Surface Coatings) candidates must complete 24 credit points of approved units of study (see below).

To qualify for the award of Graduate Diploma in Applied Science (Surface Coatings) candidates must complete 36 credit points of approved units of study (see below). A candidate who has qualified for the award of Graduate Certificate in Applied Science (Surface Coatings) may transfer to the Graduate Diploma in Applied Science (Surface Coatings) and receive credit for up to 24 credit points from the Graduate Certificate.

All units of study may not be available every semester. The faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other

postgraduate coursework programs in the faculty or elsewhere in the University.

See course Resolutions chapter 7.

SUCO 4001 Polymer Science, Emulsion Polymerisation

6 credit points. **Semester:** 1,2.

The first part of this unit deals with basic polymer science, plus the characterisation, rheology and mechanical properties of polymers. It addresses the nature of polymers, including their molecular weight; mechanisms and processes of polymer synthesis; kinetics of polymerisation and copolymerisation; conformations and morphology of polymers in solutions and melt; polymer phase transitions; thermodynamics of polymer solutions and blends; polymer characterisation; mechanical and rheological properties of polymers. The second part of this unit deals with the mechanisms of emulsion polymerisation and the specific processes and properties of latex coatings synthesised by emulsion polymerisation. It addresses basic emulsion polymerisation mechanism; the three intervals of emulsion polymerisation; common latex components and properties; intelligent design of latexes; film formation. It incorporates both lecture and practical components.

SUCO 4002 Synthetic Resin Technology & Design

6 credit points. **Semester:** 1,2.

The first part of this unit deals with the chemistry of synthetic resins used in adhesive, ink and surface coatings applications. It addresses hard resins, alkyd and water reducible resins; saturated and unsaturated polyesters; formaldehyde resins; solution acrylic resins; urethane resins; epoxy resins; emulsions; silicone and non-convertible resins. The second part of this unit deals with the formulation, synthesis and testing of synthetic resins, through a selection of laboratory experiments on specific resin types. Exercises deal with: (a) formulation, manufacture and evaluation of a number of synthetic resin types; (b) characterisation of synthetic resins and composites using various analytical techniques; and (c) a design study of the formulation of a specific synthetic resin.

SUCO 4003 Interracial Sci & Coatings Tech & Design

6 credit points. **Semester:** 1, 2.

The first part of this unit deals with principles of surface and interfacial science and the modification of surfaces by coatings. It addresses surface tension and the effect of solutes on surface tension; solid-liquid and solid-gas interfaces; principles of coatings manufacture; product types and application; evaluation of coating performance. The second part of this unit aims to teach practical skills in relating to aspects of design, production, and testing of surface coatings. Practical exercises involve work on the formulation of coatings and related products, and their testing by standard methods.

SUCO 4004 Coating Formulation, Manufacture & App

6 credit points. **Semester:** 1,2.

The first part of this unit deals with the theoretical framework necessary to formulate products for the decorative coatings industry. It addresses formulation parameters in paint manufacture; dispersion theory; dispersion equipment and methods; classifications of decorative coatings; properties of solvent based and latex based decorative coatings. The second part of this unit deals with the theoretical framework necessary to formulate products for the non-decorative surface coatings industry. It addresses automotive coatings; anti-fouling marine paints; industrial coatings; powder coatings; coil coatings; packaging coatings; inks. The third part deals with substrates, substrate preparation, and the application of surface coatings to substrates. It addresses inert and reactive substrates (masonry, timber, metal); methods of applying industrial coatings; corrosion and its prevention; paint defects; rheology of surface coating dispersion.

SUCO 4005 Surface Coatings Project A

6 credit points. **Semester:** 1,2.

This unit consists of a supervised theoretical or experimental research project on a topic determined by consultation with the supervisor. Projects may be on a topic related to the student's employment.

SUCO 4006 Surface Coatings Project B

6 credit points. **Semester:** 1,2.

This unit consists of a supervised theoretical or experimental research project on a topic determined by consultation with the

supervisor. Projects may be on a topic related to the student's employment.

■ Wildlife Health and Population Management

Graduate Certificate in Applied Science (Wildlife Health and Population Management)

Graduate Diploma in Applied Science (Wildlife Health and Population Management)

Master of Applied Science (Wildlife Health and Population Management)

Course Overview

The Graduate Certificate in Applied Science (Wildlife Health and Population Management), Graduate Diploma in Applied Science (Wildlife Health and Population Management) and Master of Applied Science (Wildlife Health and Population Management) are articulated award courses that provide a professional qualification to biologists and veterinarians working in private practice, industry, research and education. The award program brings together the disciplines of animal health and wildlife population management, developing and enhancing skills in conservation techniques for native fauna, diagnosis and management of wildlife health, and management of native and pest species populations.

Course Outcomes

The aim of this articulated coursework program is to provide students with a coordinated and interdisciplinary approach to wildlife health and wildlife management, thus developing expertise to recognise and solve a broad range of problems in field populations. Upon completion of the Graduate Certificate, Graduate Diploma or Masters, graduates will have a broad understanding of the topic of wildlife management and practical skills developed from field studies. In addition, the Masters will provide experience in designing, carrying out and completing a research project and thesis.

Admission Requirements

Applicants for the Graduate Certificate in Applied Science (Wildlife Health and Population Management) should hold a first degree in science or veterinary science, or have the knowledge and aptitude obtained from professional or other experience required to undertake the award course.

Applicants for the Graduate Diploma in Applied Science (Wildlife Health and Population Management) similarly should hold a first degree in science or veterinary science, or have the knowledge and aptitude obtained from professional or other experience required to undertake the award course, or have completed the Graduate Certificate in Applied Science (Wildlife Health and Population Management).

Applicants for the Master of Applied Science (Wildlife Health and Population Management) should hold a first degree in science or veterinary science, or have the knowledge and aptitude obtained from professional or other experience required to undertake the award course, or have completed the Graduate Diploma in Applied Science (Wildlife Health and Population Management).

Course Requirements

To qualify for award of the Graduate Certificate in Applied Science (Wildlife Health and Population Management), candidates must complete 24 credit points from the two six credit point core and two optional units shown below.

To qualify for award of the Graduate Diploma in Applied Science (Wildlife Health and Population Management), candidates must complete 36 credit points from the two six credit point core and four optional units shown below.

To qualify for award of the Master of Applied Science (Wildlife Health and Population Management), candidates must complete 48 credit points from all the core and a selection of the optional units shown below.

Not all units of study will be available every semester. The Faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other

postgraduate coursework programs in the Faculty or elsewhere in the University.

See course Resolutions chapter 7.

WILD 5001 Australian Wildlife: Introduction

6 credit points. **Semester:** 1.

NB: Core

This unit of study provides an introduction to the wildlife of Australasia, an overview of the present status of that wildlife, and an understanding of both conservation problems and management solutions. Issues in wildlife management are exemplified using a broad range of vertebrate species occupying different environments. Emphasis is placed on providing students with a coordinated and interdisciplinary approach to wildlife health and management, and on developing expertise in recognising and solving a broad range of problems in field populations. The unit integrates lectures, practical work and supervised study, and offers students the opportunity to work through real-world wildlife conservation problems relevant to their individual backgrounds.

WILD 5002 Australian Wildlife: Field Studies

6 credit points. **Semester:** 1.

NB: Core

This unit of study provides a first-hand introduction to the wildlife of Australasia, a practical overview of the present status of that wildlife, and an understanding of both conservation problems and management solutions. Issues in wildlife management are exemplified using sampling and diagnostic methods on a broad range of vertebrate species occupying different environments. The unit follows on from WILD 5001 and provides practical experience via a three day field trip.

WILD 5009 Research Project

12 credit points. **Semester:** 1, 2.

NB: Core for the Masters program

A valuable opportunity to apply some of the knowledge gained from earlier coursework, WILD 5009 comprises a research project on a topic with significant emphasis on wildlife health and/or population management, as arranged between the student and an appropriate supervisor. This research experience is highly valued by prospective employers as it shows a willingness and ability to undertake guided but independent research. The project is not conducted by way of contact hours per week for a semester. Instead the student is expected to work on the project full-time and in a continuous manner for the semester. This unit of study is available only to students enrolled in the Master of Applied Science (Wildlife Health and Population Management).

WILD 5003 Wildlife Health

6 credit points. **Semester:** 1.

NB: Optional

This unit of study provides an introduction to the health issues confronting wildlife in Australasia, an overview of the health status of that wildlife, and an understanding of both the investigation of health problems and the effective management of these. Issues in wildlife disease management are exemplified using a broad range of vertebrate species occupying different environments. Emphasis is placed on providing students with a coordinated and interdisciplinary approach to wildlife health, and on developing expertise in recognising and solving a broad range of health problems in field populations. The unit integrates lectures, practical work and supervised study, and offers students the opportunity to work through real-world wildlife conservation problems relevant to their individual backgrounds.

WILD 5004 Vertebrate Pest Management

6 credit points. **Semester:** 2.

NB: Optional

Vertebrate pests occur in many parts of the world, and can pose significant problems for management of habitat, agricultural productivity, human and wildlife health. This unit focuses on vertebrates that have been introduced to new environments, and considers in detail the impacts and management of pest vertebrates in Australia. Steps in pest management are reviewed, from problem analysis to acceptable levels of control, using case studies of cane toads, rabbits, house mice and red foxes. Traditional mortality methods of management are reviewed, and emphasis placed on developing methods based on fertility control via immunocontraception.

WILD 5005 In Situ Wildlife Management

6 credit points. **Semester:** 1.

Wildlife populations do not remain static, but change in size and composition over both time and space. The challenge for managers is to recognise when change in target populations exceeds acceptable limits and intervention is necessary. This unit of study develops skills in assessing population status and recognising differences between 'small populations' and 'declining populations'. It introduces methods used in population pattern analysis, demographic analysis, threat and resource assessment, and determination of health, emphasising the value of a coordinated and interdisciplinary approach to problem recognition and resolution.

WILD 5006 Ex Situ Wildlife Management

6 credit points. **Semester:** 2.

Wildlife populations are under a variety of threats, most of which result from human activities. Modern conservation biology seeks practical solutions to these problems, using a wide variety of options. These options may include captive breeding and re-introduction programs, provided that a range of biological, ethical and politico-economic issues are addressed. This unit of study will provide students with the ability to evaluate the likely cost-effectiveness of such programs. It will also develop knowledge of the technologies available to capture and translocate wildlife, and of the planning required to ensure the best possible chance of success. The unit integrates lectures, tutorials, practical work and supervised study, and offers students the opportunity to examine real-world problems in the conservation and management of threatened wildlife populations using case studies relevant to their individual backgrounds.

WILD 5007 Sustainable Wildlife Use and Stewardship

6 credit points. **Semester:** 2.

WILD 5008 Community Relations and Education

6 credit points. **Semester:** 2.

Techniques in wildlife health and population management are sometimes developed and used with little regard for the people for whom the management is designed. This unit provides an understanding of how management is assisted by the inclusion of all stakeholders at different stages of program development and implementation. Issues of community involvement and 'ownership' are illustrated using case studies with indigenous and non-indigenous peoples in the Australasian region.

Wildlife Health and Population Management optional units of study

The following optional units are available. For detailed descriptions see the listings under the appropriate headings of postgraduate Degrees in Applied Science articulated coursework programs. Special attention should be paid to any prerequisite studies that may be required.

- ENV15808 Modern Ecology
- ICOM 5002 Science Communication
- QMEC 5110 Structure and Management of Research Projects.

7 Postgraduate degree regulations

The postgraduate degrees in the Faculty of Science are:

Degrees of Doctor

DSc - Doctor of Science

PhD - Doctor of Philosophy

DCP/PhD - Doctor of Clinical Psychology/Doctor of Philosophy

DCP/MSc - Doctor of Clinical Psychology/Master of Science

Degrees of Master

MSc - Master of Science

MSc(EnvironSc) - Master of Science (Environmental Science)

MSc(Micr&An) - Master of Science (Microscopy and Microanalysis)

MInfTech - Master of Information Technology

MAppIT - Master of Applied Information Technology

MNutrDiet - Master of Nutrition and Dietetics

MNutrSc - Master of Nutritional Science

MPsych - Master of Psychology

MEnviSciLaw - Master of Environmental Science and Law

MQuantMarEcol - Master of Quantitative Marine Ecology

MAppSc - Master of Applied Science

MAppSc(EnvSc) - Master of Applied Science (Environmental Science)

MAppSc(MBT) - Master of Applied Science (Molecular Biotechnology)

MAppSc(NeuroSc) - Master of Applied Science (Neuroscience)

MAppSc(Photonics) - Master of Applied Science (Photonics)

MAppSc(WildHlthPopMan) - Master of Applied Science (Wildlife Health and Population Management)

Diplomas

GradDipSc - Graduate Diploma in Science

GradDipSc(Micr&An) - Graduate Diploma in Science (Microscopy and Microanalysis)

GradDipSc(Psych) - Graduate Diploma in Science (Psychology)

GradDipInfTech - Graduate Diploma in Information Technology

GradDipAppIT - Graduate Diploma in Applied Information Technology

GradDipPsych - Graduate Diploma in Psychology

GradDipQuantMarEcol - Graduate Diploma in Quantitative Marine Ecology

GradDipAppSc - Graduate Diploma in Applied Science

GradDipAppSc(EnvSc) - Graduate Diploma in Applied Science (Environmental Science)

GradDipAppSc(Inf&Comm) - Graduate Diploma in Applied Science (Informatics and Communication)

GradDipAppSc(MBT) - Graduate Diploma in Applied Science (Molecular Biotechnology)

GradDipAppSc(NeuroSc) - Graduate Diploma in Applied Science (Neuroscience)

GradDipAppSc(Photonics) - Graduate Diploma in Applied Science (Photonics)

GradDipAppSc(SurfaceCoatings) - Graduate Diploma in Applied Science (Surface Coatings)

GradDipAppSc(WildHlthPopMan) - Graduate Diploma in Applied Science (Wildlife Health and Population Management)

Certificates

GradCertSc(HPS) - Graduate Certificate in Science (History and Philosophy of Science)

GradCertSc(Micr&An) - Graduate Certificate in Science (Microscopy & Microanalysis)

GradCertInfTech - Graduate Certificate in Information Technology

GradCertAppIT - Graduate Certificate in Applied Information Technology

GradCertQuantMarEcol - Graduate Certificate in Quantitative Marine Ecology

GradCertAppSc - Graduate Certificate in Applied Science

GradCertAppSc(EnvSc) - Graduate Certificate in Applied Science (Environmental Science)

GradCertAppSc(Inf&Comm) - Graduate Certificate in Applied Science (Informatics and Communication)

GradCertAppSc(MBT) - Graduate Certificate in Applied Science (Molecular Biotechnology)

GradCertAppSc(NeuroSc) - Graduate Certificate in Applied Science (Neuroscience)

GradCertAppSc(Photonics) - Graduate Certificate in Applied Science (Photonics)

GradCertAppSc(PsychCoach) - Graduate Certificate in Applied Science (Psychology of Coaching)

GradCertAppSc(SurfaceCoatings) - Graduate Certificate in Applied Science (Surface Coatings)

GradCertAppSc(WildHlthPopMan) - Graduate Certificate in Applied Science (Wildlife Health and Population Management)

Prospective candidates for these awards should consult with the appropriate postgraduate adviser (see chapter 2) or Head of the Department most closely concerned, as early as possible.

■ Degrees of Doctor

Doctor of Science (DSc)

Resolutions of the Senate

The Resolutions of the Senate relating to the degree of Doctor of Science are printed in *The University of Sydney Calendar*, the following Resolutions of the Faculty also apply:

Resolutions of the Faculty

- (i) Published work which a candidate for the degree of Doctor of Science submits for examination must, in addition to satisfying the requirements of the resolutions of the Senate relating to the degree, be in a field with which the Faculty is concerned.
- (ii) A candidate for the degree is required, by way of an introduction, to describe the theme of the published work submitted and, where there is a large number of publications whose dates range over a period of time and which contain some range of subject matter, to state how these are related to one another and to the theme.
- (iii) If a prospective candidate, as a first step tenders the introduction called for in (ii) above, together with a list of the published work which it is proposed to submit for examination, the Faculty will endeavour to make an assessment as to whether the published work is in a field with which the Faculty is concerned and, if so, an assessment also of the prima facie worthiness for examination of the published work.
- (iv) A prospective candidate who tenders the introduction together with the list of published work shall not be debarred from subsequently submitting the published work for examination.

Doctor of Philosophy (PhD)

Resolutions of the Senate

The Resolutions of the Senate and Academic Board relating to the degree of Doctor of Philosophy are printed in *The University of Sydney Calendar*.

Doctor of Clinical Psychology/Doctor of Philosophy (DCP/PhD)

Resolutions of the Senate

Award of the degrees

1. The degrees of Doctor of Clinical Psychology and Doctor of Philosophy shall only be awarded on satisfactory completion of the requirements for both degrees, except as provided by the Resolutions of the Academic Board relating to the degree of Doctor of Philosophy.

Eligibility for admission

2. The Dean of the Faculty of Science may admit to candidature:
 - (1) (a) graduates of The University of Sydney holding the degree of Bachelor of Psychology, Bachelor of Science (Honours), Bachelor of Arts (Honours), Bachelor of Economics (Social Sciences) (Honours), or Bachelor of Liberal Studies (Honours) in psychology with a result of 2:1 or better or any other equivalent award of The University of Sydney; or
 - (b) graduates of other universities who have qualifications equivalent to those specified in subsection (1); and
 - (2) who have satisfied the Department of their personal suitability for the practice of clinical psychology determined by personal interview and by analysis of units of study completed.

Availability

3. (1) Admission to candidature may be limited by a quota. In determining the quota, the University will take into account:
 - (a) availability of resources including space, laboratory and computing facilities; and
 - (b) availability of adequate and appropriate supervision.
 (2) In considering an application for admission to candidature, the Head of Department, the Director of Clinical Training and the Dean shall take account of the quota and shall select, in preference, applicants who are most meritorious in terms of section 2 above.

Method of progression

4. A candidate for the combined award course shall proceed by completing units of study, clinical internships, research and thesis in accordance with Sections 7 and 8.

Time limits

5. (1) A candidate may proceed on either a full-time or a part-time basis.
- (2) A candidate shall complete the requirements for the combined award course in a minimum of nine semesters and a maximum of fifteen semesters, and except with permission of the Dean within nine calendar years of admission to candidature.
- (3) The Director of Clinical Training in consultation with the members of the Clinical Psychology unit shall approve any period of absence.

Requirements for the combined award course

6. Candidates for the combined award course are required to:
 - (1) complete satisfactorily 96 credit points from approved units of study. A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed. In these resolutions, 'to complete a unit of study' or any derivative expression means:
 - (a) to attend all the lectures and the meetings, if any, for seminars or tutorial instruction;
 - (b) to complete satisfactorily the essays, exercises, practical and project work if any; and
 - (c) to pass any other examination of the unit of study that may apply;

- (2) pursue a course of advanced study and research leading to the submission of a thesis in an area of clinical research
 - (3) complete satisfactorily clinical internships in accordance with Sections 7 and 8; and
 - (4) complete satisfactorily two specialist seminars in clinical psychology.
7. The following are the requirements for the combined award course. The structure of the course is arranged to cover areas from five key topics, namely: Therapy Knowledge and Skills, Assessment Knowledge and Skills, Clinical Internships, Ethics and Professional Practice and Research arranged as shown in Table 7.1: DCP/PhD requirements.

Examination

8. The procedures for the examination and award of the Doctor of Philosophy (including the provision for transfer to Master's candidature if the degree is not awarded) shall be prescribed in the Resolutions of the Academic Board and Senate relating to that degree
9. On completion of the requirements for the combined award course, the Faculty, on the recommendation of the Head of Department and the Director of Clinical Training, shall determine the results of the candidature.

Progress

10. (1) The Dean may:
 - (a) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards the completion of the combined award course; and
 - (b) terminate the candidature where the candidate does not show good cause.
- (2) Satisfactory progress is prescribed as:
 - (a) a candidate for the combined award course must complete satisfactorily (at a pass level) all units of study.
 - (b) if a candidate fails to complete satisfactorily a unit of study at the first attempt, they can make a second attempt at completing that unit of study. They may not begin the next unit of study within the same key topic area until the previous unit of study has been satisfactorily completed.
 - (c) any candidate who fails to complete satisfactorily a unit of study at the second attempt will normally be deemed to have failed to complete the course requirements and their candidature will be terminated by the Dean
 - (d) if a candidate fails to complete satisfactorily two units of study within the same key topic area at the first attempt, they will normally be deemed to have failed to complete the course requirements and their candidature will be terminated by the Dean.

Credit

11. A candidate who, before admission to candidature, has spent time in graduate study and, within the previous three years, has completed coursework considered by the Dean to be equivalent to units of study prescribed for the combined award course, may receive credit of up to 48 credit points towards the requirements for the Doctor of Clinical Psychology provided that the completed work was not counted toward the requirements of another degree.

Table 7.1: DCP/PhD requirements

| Year | Sem. | Therapy Knowledge and Skills | Assessment Knowledge and Skills | Clinical Internships | Ethics and Professional Practice | Research |
|------|------|-------------------------------|--------------------------------------|------------------------|------------------------------------|-------------|
| 1 | 1 | Adult Psychological Disorders | Psychological Assessment of Adults | Clinical Internships 1 | Ethics and Professional Practice 1 | Research 1 |
| | 2 | Child and Family Psychology | Psychological Assessment of Children | Clinical Internships 2 | Ethics and Professional Practice 2 | Research 2 |
| 2 | 1 | Adult and Health Psychology | Cognitive Neuropsychology | Clinical Internships 3 | Ethics and Professional Practice 3 | Research 3 |
| | 2 | Specialist Seminars | Neuropsychological Disorders | Clinical Internships 4 | Ethics and Professional Practice 4 | Research 4 |
| 3 | 1 | Advanced Seminars | Nil | Clinical Internships 5 | Ethics and Professional Practice 5 | Research 5 |
| | 2 | Nil | Nil | Clinical Internships 6 | Ethics and Professional Practice 6 | Research 6 |
| 4 | 1 | | | | | Research 7 |
| | 2 | | | | | Research 8 |
| 5 | 1 | | | | | Research 9 |
| | 2 | | | | | Research 10 |

Transfer to Doctor of Philosophy candidature

12. The Director of Clinical Training in consultation with the Head of Department may recommend 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 Dean may determine.

Doctor of Clinical Psychology/Master of Science (DCP/MSc)

Resolutions of the Senate

Award of the degrees

1. The degrees of Doctor of Clinical Psychology and Master of Science shall only be awarded on satisfactory completion of the requirements for both degrees, except as provided by the Resolutions of the Senate relating to the degree of Master of Science.

Eligibility for admission

2. The Dean of the Faculty of Science may admit to candidature:
 (1) (a) graduates of The University of Sydney holding the degree of Bachelor of Psychology, Bachelor of Science (Honours), Bachelor of Arts (Honours), Bachelor of Economics (Social Sciences) (Honours), or Bachelor of Liberal Studies (Honours) in psychology with a result of 2:1 or better or any other equivalent award of The University of Sydney; or
 (b) graduates of other universities who have qualifications equivalent to those specified in subsection (1); and
 (2) who have satisfied the Department of their personal suitability for the practice of clinical psychology determined by personal interview and by analysis of units of study completed.

Availability

3. (1) Admission to candidature may be limited by a quota. In determining the quota, the University will take into account:
 (a) availability of resources including space, laboratory and computing facilities; and
 (b) availability of adequate and appropriate supervision.
 (2) In considering an application for admission to candidature, the Head of Department, the Director of Clinical Training and the Dean shall take account of the quota and shall select, in preference, applicants who are most meritorious in terms of section 2 above.

Method of progression

4. A candidate for the combined award course shall proceed by completing units of study, clinical internships, research and thesis in accordance with Sections 7 and 8.

Time limits

5. (1) A candidate may proceed on either a full-time or a part-time basis.
 (2) A candidate shall complete the requirements for the combined award course in a minimum of six semesters and a maximum of twelve semesters, and except with permission of the Dean within nine calendar years of admission to candidature.
 (3) The Director of Clinical Training in consultation with the members of the Clinical Psychology unit shall approve any period of absence.

Requirements for the combined award course

6. Candidates for the combined award course are required to:
 (1) complete satisfactorily 96 credit points from approved units of study. A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed. In these resolutions, 'to complete a unit of study' or any derivative expression means:
 (a) to attend all the lectures and the meetings, if any, for seminars or tutorial instruction;
 (b) to complete satisfactorily the essays, exercises, practical and project work if any; and
 (c) to pass any other examination of the unit of study that may apply;
 (2) pursue a course of advanced study and research leading to the submission of a thesis in an area of clinical research;
 (3) complete satisfactorily clinical internships in accordance with Sections 7 and 8; and
 (4) complete satisfactorily two specialist seminars in clinical psychology.
 7. The following are the requirements for the combined award course. The structure of the course is arranged to cover areas from five key topics, namely: Therapy Knowledge and Skills, Assessment Knowledge and Skills, Clinical Internships, Ethics and Professional Practice and Research arranged as shown in Table 7.2: DCP/MSc requirements.

Examination

8. The procedures for the examination and award of the Master of Science shall be prescribed in the Resolutions of the Senate relating to that degree.
 9. On completion of the requirements for the combined award course, the Faculty, on the recommendation of the Head of Department and the Director of Clinical Training, shall determine the results of the candidature.

Progress

10. (1) The Dean may:
 (a) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards the completion of the combined award course; and
 (b) terminate the candidature where the candidate does not show good cause.
 (2) Satisfactory progress is prescribed as:
 (a) a candidate for the combined award course must complete satisfactorily (at a pass level) all units of study;
 (b) if a candidate fails to complete satisfactorily a unit of study at the first attempt, they can make a second attempt at completing that unit of study. They may not begin the next unit of study within the same key topic area until the previous unit of study has been satisfactorily completed;
 (c) any candidate who fails to complete satisfactorily a unit of study at the second attempt will normally be deemed to have failed to complete the course requirements and their candidature will be terminated by the Dean; and
 (d) if a candidate fails to complete satisfactorily two units of study within the same key topic area at the first attempt, they will normally be deemed to have failed to complete the course requirements and their candidature will be terminated by the Dean.

Table 7.2: DCP/MSc requirements

| Year | Sem. | Therapy Knowledge and Skills | Assessment Knowledge and Skills | Clinical Internships | Ethics and Professional Practice | Research |
|------|------|-------------------------------|--------------------------------------|------------------------|------------------------------------|------------|
| 1 | 1 | Adult Psychological Disorders | Psychological Assessment of Adults | Clinical Internships 1 | Ethics and Professional Practice 1 | Research 1 |
| | 2 | Child and Family Psychology | Psychological Assessment of Children | Clinical Internships 2 | Ethics and Professional Practice 2 | Research 2 |
| 2 | 1 | Adult and Health Psychology | Cognitive Neuropsychology | Clinical Internships 3 | Ethics and Professional Practice 3 | Research 3 |
| | 2 | Specialist Seminars | Neuropsychological Disorders | Clinical Internships 4 | Ethics and Professional Practice 4 | Research 4 |
| 3 | 1 | Advanced Seminars | Nil | Clinical Internships 5 | Ethics and Professional Practice 5 | Research 5 |
| | 2 | Nil | Nil | Clinical Internships 6 | Ethics and Professional Practice 6 | Research 6 |

Credit

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.

Transfer to Master of Science candidature

12. The Director of Clinical Training in consultation with the Head of Department may recommend that a candidate withdraw from candidature for the combined award course and complete requirements for the degree of Master of Science under such conditions as the Dean may determine.

■ Degrees of Master**Master of Science (MSc)****Resolutions of the Senate**

1. (1) The Faculty of Science may, on the recommendation of the Head of the Department concerned, admit to candidature for the degree of Master of Science an applicant who:
 - (a) is a graduate of The University of Sydney; and
 - (b) has, in the opinion of the Faculty, reached a first or second class Honours standard:
 - (i) in the final year of an Honours unit of study for the degree of Bachelor of Science; or
 - (ii) in a unit of study considered by the Faculty to be equivalent to a unit of study referred to in subsection (i), or has, in some other manner, acquired a standard of knowledge considered by the Faculty to be equivalent to a first or second class Honours standard in a unit of study referred to in subsection (i);

(2) Notwithstanding subsection (1), the Academic Board may admit a person to candidature for the degree in accordance with the provisions of Part 9 of The University of Sydney (Amendment Act) Rule 1999.
- 1 a. Subject to the approval of the Head of the Department, a candidate for the degree shall elect to proceed:
 - (a) either as a full-time or as a part-time candidate;
 - (b) either by research and thesis in accordance with section 6 or by coursework and essay in accordance with section 7; and
 - (c) except in the case of a candidate proceeding in accordance with Part 9 of The University of Sydney (Amendment Act) Rule, either within The University of Sydney or elsewhere.
2. (1) A candidate to be full-time shall not keep the normal semesters but shall pursue candidature continuously throughout the year, except for a period of recreation leave and shall not have any substantial employment during the day.¹

(2) A candidate who does not comply with subsection (1) shall be regarded as a part-time candidate.
3. (1) A candidate shall not present for examination for the degree earlier than one year after commencement of candidature.
 - (2) Except with the permission of the Faculty, a full-time candidate proceeding by research and thesis or any candidate proceeding by coursework and essay shall complete the requirements for the degree not later than two years after the commencement of candidature.
 - (3) Except with the permission of the Faculty, a part-time candidate proceeding by research and thesis shall complete the requirements for the degree not later than four years after the commencement of candidature.
4. Time spent by a candidate in advanced study in The University of Sydney before admission to candidature may be deemed by the Faculty to be time spent after such admission.
5. (1) The Dean of the Faculty, on the recommendation of the Head of the Department concerned, shall appoint a full-time member of the academic staff or research staff of the University to act as supervisor of each candidate.

1. The Faculty has resolved that, for the time being, recreation leave shall be four weeks per year and that substantial employment shall mean more than 6 hours per week or 180 hrs per annum, whichever shall be less.

(2) Where the supervisor is a member of the research staff, the Dean of the Faculty, on the recommendation of the Head of the Department concerned, shall also appoint a member of the full-time academic staff as associate supervisor. Any person so appointed as associate supervisor must be capable of acting as supervisor in the event that the supervisor is no longer able to act.

(3) The Dean of the Faculty, on the recommendation of the Head of the Department concerned, may appoint a full-time member of the academic staff of the University or other appropriately qualified person to act as associate supervisor.

(4) The supervisor shall report annually to the Faculty, through the Head of Department, on the progress towards completion of the requirements for the degree of each candidate under his or her supervision.

(5) The Faculty, on the recommendation of the Head of the Department concerned, may terminate the candidature of any candidate who has not shown evidence of sufficient progress, in the opinion of the Faculty.

6. (1) A candidate proceeding by research and thesis shall:
 - (a) carry out an original investigation on a topic approved by the Head of the Department concerned;
 - (b) write a thesis embodying the results of this investigation and state in the thesis generally in a preface and specifically in notes, the sources from which the information was taken, the extent to which the work of others has been used, and the proportion of the thesis claimed as original;
 - (c) lodge with the Registrar three copies of the thesis, typewritten and bound; and
 - (d) if required by the examiners, sit for an examination in the branch or branches of science to which the thesis relates.

(2) The thesis shall be accompanied by a certificate from the supervisor stating whether in the supervisor's opinion the form of presentation of the thesis is satisfactory.

(3) The Dean of the Faculty of Science on the recommendation of the head of department concerned, shall appoint two, or where the Dean considers it appropriate, more than two examiners of whom at least one shall be external to the University - ie, not being a member of the staff of the University or holding a clinical academic title, and of whom one may be the person appointed to act as supervisor of the candidate.

(4) The examiners shall report to the Faculty which shall determine the result of the examination.

(5) A candidate may not present as the thesis any work which has been presented for a degree or diploma at this or another tertiary institution, but the candidate shall not be precluded from incorporating such work in the thesis, provided that in presenting the thesis the candidate indicates the part of the work which has been so incorporated.

(6) The Registrar shall lodge one copy of the thesis with the Librarian if the degree is awarded.
7. (1) A candidate proceeding by course work and essay shall:
 - (a) attend such course of study and pass such examinations in each unit of study as the Faculty, on the recommendation of the Department concerned, shall by resolution prescribe;
 - (b) write a substantial essay on a topic approved by the Head of the Department concerned and state in the essay, generally in a preface and specifically in notes, the sources from which the information was taken and the extent to which the work of others has been used; and
 - (c) lodge with the Registrar two typewritten copies of the essay.

(2) The Dean of the Faculty, on the recommendation of the Head of the Department concerned, shall appoint two examiners to examine the essay. One may be the person appointed to act as supervisor of the candidate.

(3) The examiners shall report to the Faculty which shall determine the result of the examination.

(4) The candidate may not present as the essay any work which has been presented for an award course at this or another tertiary institution, but the candidate will not be precluded from incorporating such in the essay, provided that in presenting the essay the candidate indicates the part of work which has been so incorporated.

Master of Science (Environmental Science) (MSc(EnvironSc))

Resolutions of the Senate

Eligibility for admission

1. The Dean of the Faculty of Science may admit to candidature:
 - (i) graduates who have completed an Honours degree majoring in a Science discipline that has a significant environmental emphasis, or in Environmental Science, or equivalent; or
 - (ii) graduates who have completed the requirements for a Graduate Diploma majoring in a Science discipline that has a significant environmental emphasis, or in Environmental Science, or equivalent as per section 9; or
 - (iii) graduates who have completed prior postgraduate study in a Science discipline that has a significant environmental emphasis, or in Environmental Science.

Availability

2. (1) Admission to candidature may be limited by a quota. In determining the quota the University will take into account:
 - (i) availability of resources including space, laboratory and computing facilities; and
 - (ii) availability of adequate and appropriate supervision.
 (2) In considering an application for admission to candidature the Program Committee for Environmental Science and the Faculty shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 1 above.

Method of progression

3. (1) A candidate for the degree shall proceed by research and thesis in accordance with section 6.
- (2) A candidate for the degree must complete all other requirements for the degree as dictated by the Chair of the Program Committee for Environmental Science and in accordance with section 6.

Time limits

4. A candidate may proceed on either a full-time or a part-time basis.
5. (1) A full-time candidate shall complete the requirements for the degree not earlier than the end of the third semester and not later than the end of the fourth semester of candidature, except as described in Section 10 or unless otherwise determined by the Faculty. A full-time candidate shall not keep the normal semesters but shall pursue candidature continuously throughout the year, except for periods of leave approved by the candidate's supervisor, and shall not have any substantial employment during the day.
- (2) A part-time candidate shall complete the requirements for the degree not earlier than the end of the third semester and not later than the end of the eighth semester of candidature, except as described in Section 10 or unless otherwise determined by the Faculty.
- (3) Any candidate who does not comply with subsection 1 shall be deemed to be a part-time candidate.

Requirements for the degree

6. (1) A candidate for the degree is required to:
 - (i) carry out an original investigation on a topic approved by the Chair of the Program Committee for Environmental Science; and
 - (ii) write a thesis embodying the results of this investigation, stating in the thesis the sources from which the information was taken, the extent to which the work of others has been used, and the proportion of the thesis claimed as original work.
 (2) Candidates for the degree must prove to the satisfaction of the Program Committee for Environmental Science a breadth of knowledge in environmental issues.
- (3) Candidates for the degree must satisfactorily complete any coursework requirements prescribed by the Chair of the Program Committee for Environmental Science. This can include up to 24 credit points of coursework covering material new to the candidate and selected from units of study approved from time to time by the Faculty. A unit of coursework study shall consist of such lectures, seminars, tutorial instruction, essays, exercises or practical work as may be prescribed. In these resolutions, 'to complete a unit of study' or any derivative expression means:
 - (i) to attend the lectures, and the meetings, if any, for seminars or tutorial instruction;

- (ii) to complete satisfactorily the essays, exercises and practical work if any; and
- (iii) to pass any other examination of the unit of study that may apply.

Examination

7. (1) A candidate shall:
 - (a) attend such course of study and pass such examinations in each unit of study as the Faculty, on the recommendation of the Chair of the Program Committee - Environmental Science, shall by resolution prescribe;
 - (b) carry out an original investigation on a topic approved by Chair of the Program Committee - Environmental Science;
 - (c) write a thesis embodying the results of this investigation and state in the thesis generally in a preface and specifically in notes, the sources from which the information was taken, the extent to which the work of others has been used, and the proportion of the thesis claimed as original;
 - (d) lodge with the Registrar three copies of the thesis, typewritten and bound; and
 - (e) if required by the examiners, sit for an examination in the branch or branches of science to which the thesis relates.
 (2) The thesis shall be accompanied by a certificate from the supervisor stating whether in the supervisor's opinion the form of presentation of the thesis is satisfactory.
- (3) The Dean of the Faculty of Science on the recommendation of the head of department concerned, shall appoint two, or where the Dean considers it appropriate, more than two examiners of whom at least one shall be external to the University - ie, not being a member of the staff of the University or holding a clinical academic title, and of whom one may be the person appointed to act as supervisor of the candidate.
- (4) The examiners shall report to the Faculty which shall determine the result of the examination
- (5) A candidate may not present as the thesis any work which has been presented for a degree or diploma at this or any another tertiary institution, but the candidate shall not be precluded from incorporating such work in the thesis. Provided that in presenting the thesis the candidate indicates the part of the work which has been so incorporated.
- (6) The Registrar shall lodge one copy of the thesis with the Librarian if the degree is awarded.

Progress

8. The Faculty may:
 - (i) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the degree; and
 - (ii) terminate the candidature where the candidate does not show good cause.

Admission from a Graduate Diploma of Science

9. A candidate may seek admission into the MSc(Environmental Science) from any of the Graduate Diploma of Science programs, including those of Applied Science and Environmental Science, as follows:
 - (1) A candidate who has fully completed the requirements for a Graduate Diploma of Science or Applied Science is eligible to apply for admission into the MSc(Environmental Science). Candidates who are considered not to have the required breadth of knowledge in environmental issues may need to complete some further coursework as per section 6.
 - (2) A candidate who has completed 24 credit points of Environmental Science coursework at Credit grade or above towards the requirements for a postgraduate qualification in Science or Applied Science may apply for admission into the MSc (Environmental Science). Candidates who gain admission in this manner may still need to complete some further coursework as per section 6.
10. For a candidate who gains admission into the MSc(Environmental Science) from a Graduate Diploma of Science or Applied Science, the duration of candidature is as follows:
 - (1) Where a full-time candidate has completed the requirements for a Graduate Diploma of Science or Applied Science immediately prior to admission into the MSc(Environmental Science), the minimum duration for completion of the requirements of the MSc(Environmental Science) is two semesters.

(2) Where a part-time candidate has completed the requirements for the Graduate Diploma of Science or Applied Science immediately prior to admission into the MSc(Environmental Science), the minimum duration for completion of the requirements of the MSc(Environmental Science) is three semesters.

In these resolutions, the term 'immediately' means that the Graduate Diploma requirements were completed in the previous semester.

Master of Science (Microscopy and Microanalysis) (MSc(Micr&An))

Resolutions of the Senate

Eligibility for admission

1. An applicant for admission to candidature for the degree shall, except as provided in Part 9 of The University of Sydney (Amendment Act) Rule 1999:
 - (i) have completed a degree in Science, Engineering or equivalent; or
 - (ii) have completed the requirements for the Graduate Diploma of Science (Microscopy and Microanalysis) at credit level.

Availability

2. (1) Admission to candidature may be limited by a quota. In determining the quota, the University will take into account:
 - (i) availability of resources including space, laboratory and computing facilities; and
 - (ii) availability of adequate and appropriate supervision.
 (2) In considering an application for admission to candidature the Faculty shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 1 above.

Method of progression

3. (1) A candidate for the degree shall proceed by completing units of study and a project as prescribed by the Faculty.
 (2) A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises or practical work as may be prescribed. In these resolutions, 'to complete a unit of study' or any derivative expression means:
 - (i) to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
 - (ii) to complete satisfactorily the essays, exercises and practical work if any; and
 - (iii) to pass any other examination of the unit of study that may apply.

Time limits

4. A candidate may proceed on either a full-time or a part-time basis.
5. (1) A full-time candidate shall complete the requirements for the degree not earlier than the end of the third semester and not later than the end of the fifth semester of candidature, unless otherwise determined by the Faculty.
 (2) A part-time candidate shall complete the requirements for the degree not earlier than the end of the fourth semester and not later than the end of the eighth semester of candidature, unless otherwise determined by the Faculty.

Requirements for the degree

6. Candidates for the degree are required to complete satisfactorily:
 - (i) units of coursework granting a minimum of 48 credit points of study selected from units of study satisfying the conditions approved from time to time by the Faculty; and
 - (ii) supervised projects and essays worth 24 credit points.

Examination

7. On completion of the requirements for the degree, the Faculty shall determine the results of the candidature, on the recommendation of the Head of the School of Physics.

Progress

8. The Faculty may:
 - (i) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the degree; and
 - (ii) terminate the candidature where the candidate does not show good cause.

Credit

9. A candidate who, before admission to candidature, has spent time in graduate study and has completed coursework considered by the Faculty to be equivalent to units of study prescribed for the degree, may receive credit of up to 48 credit points towards the requirements for the degree, provided that the completed work was not counted towards the requirements of another degree.

Master of Information Technology (MInfTech)

Resolutions of the Senate

Eligibility for admission.

1. The Dean of the Faculty of Science may admit to candidature:
 - (1) graduates who have completed a Bachelor's degree, with results equivalent to Credit level in a major study of any aspect of Information Technology; or
 - (2) persons who have completed the GradDipIT, GradDipTelecomm, GradDipCompSysEng, GradDipTechVentureCreation, GradDipEc or GradDipCom at The University of Sydney, with an average result of Credit or better.

Availability

2. (1) Admission to the Master of Information Technology may be limited by a quota.
 (2) In determining the quota the University will take into account:
 - (a) availability of resources including space, laboratory and computing facilities; and
 - (b) availability of adequate and appropriate supervision.
 (3) In considering an application for admission to candidature, the Head of the Basser Department of Computer Science and the Dean shall select, in preference, applicants who are most meritorious in terms of section 1 above.

Time limits

3. A candidate may proceed on either a full-time or a part-time basis. In determining the length of candidacy below, the Dean shall include time previously spent as a candidate for the GradCertIT, or GradDipIT, GradDipTelecomm, GradDipCompSysEng, GradDipTechVentureCreation, GradDipEc or GradDipCom course.
 - (1) A full-time candidate shall complete the requirements for the award not earlier than the end of the second semester of candidature, and not later than the end of the fourth semester of candidature, unless otherwise determined by the Dean.
 - (2) A part-time candidate shall complete the requirements of the award not earlier than the end of the fourth semester of candidature, and not later than the end of the eighth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty

Requirements for the courses

1. (1) Candidates for the Graduate Certificate in Information Technology are required to complete satisfactorily units of study granting a minimum of 24 credit points selected from units of study, excluding IT project units of study, approved for the Master of Information Technology.
 (2) Candidates for the Graduate Diploma in Information Technology are required to complete satisfactorily units of study granting a minimum of 36 credit points selected from units of study approved for the Master of Information Technology. Of the 36 credit points, a maximum of 24 credit points can be selected from Foundational units of study; and at least 12 credit points should come from Specialist units of study, excluding IT project units of study.
 (3) Candidates for the Master of Information Technology are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from the units of study approved for the Master of Information Technology, satisfying the conditions approved from time to time by the Faculty. Of the 48 credit points, a maximum of 24 credit points can be selected from Foundational units; and at least 24 credit points should come from Specialist units or IT projects.
2. (1) To qualify for the award of Master of Information Technology students must complete one of the defined majors.
 (2) The defined majors for the Master of Information Technology are Software Engineering, Multimedia Technology, Database Management Systems, E-business,

Business Information Systems, Telecommunications Engineering, Computer Engineering, Computer Science and Computer Networks.

3. The testamur for the Master of Information Technology shall specify the major(s) completed in order to qualify for the award.

Examination

2. On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

Progress

3. The Dean may:

(1) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards the completion of the requirements for the Graduate Certificate in Information Technology, the Graduate Diploma in Information Technology or the Master of Information Technology; and
(2) where the candidate does not show good cause, terminate the candidature.

Credit

4. A candidate who, before admission to candidature, has spent time in graduate study and, within the previous three years, has completed coursework considered by the Faculty to be equivalent to units of study prescribed for the course, may receive credit of up to 12 credit points towards the requirements for the Graduate Diploma in Information Technology or Master of Information Technology.

Master of Applied Information Technology (MAppIT)

Resolutions of the Senate

Eligibility for admission.

1. The Dean of the Faculty of Science may admit to candidature:
 - (1) graduates who have completed a Bachelor's degree in any discipline; or
 - (2) persons who have completed the GradDipAppIT at The University of Sydney, with an average result of Credit or better.

Availability

2. (1) Admission to the Master of Applied Information Technology may be limited by a quota.
(2) In determining the quota, the University will take into account:
 - (a) availability of resources including space, laboratory and computing facilities; and
 - (b) availability of adequate and appropriate supervision.
- (3) In considering an application for admission to candidature, the Head of the Basser Department of Computer Science and the Dean shall select, in preference, applicants who are most meritorious in terms of section 1 above.

Time limits

3. A candidate may proceed on either a full-time or a part-time basis. In determining the length of candidacy below, the Dean shall include time previously spent as a candidate for the GradCertAppUT or the GradDipAppIT course.
 - (1) A full-time candidate shall complete the requirements for the award not earlier than the end of the third semester of candidature, and not later than the end of the sixth semester of candidature, unless otherwise determined by the Dean.
 - (2) A part-time candidate shall complete the requirements of the award not earlier than the end of the sixth semester of candidature, and not later than the end of the tenth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty

Requirements for the courses (GradCertAppUT, GradDipAppIT and MAppIT)

1. (1) Candidates for the Graduate Certificate in Applied Information Technology are required to complete satisfactorily units of study granting a minimum of 36 credit points selected from units of study approved for the Master of Applied Information Technology. Of the 36 credit points, a maximum of 24 credit points can be selected from Elementary units of study; and at least 12 credit points should come from Foundational and Specialist units of study, excluding IT project units of study.

(2) Candidates for the Graduate Diploma in Applied Information Technology are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from units of study approved for the Master of Applied Information Technology. Of the 48 credit points, a maximum of 24 credit points can be selected from Elementary units of study and at least 24 credit points can be selected from Foundational and Specialist units of study excluding IT project units of study.

(3) Candidates for the Master of Applied Information Technology are required to complete satisfactorily units of study granting a minimum of 72 credit points selected from the units of study approved for the Master of Applied Information Technology. Of the 72 credit points, a maximum of 24 credit points can be selected from Elementary units of study; a maximum of 24 credit points can be selected from Foundational units of study; and at least 24 credit points should come from Specialist or IT project units of study.

2. (1) To qualify for the award of Master of Applied Information Technology students must complete one of the defined majors.
(2) The defined majors for the Master of Applied Information Technology are Computer Networks, Computer Science, Database Management Systems, Multimedia Technology, Software Engineering.
3. The testamur for the Master of Applied Information Technology shall specify the major(s) completed in order to qualify for the award.

Examination

2. On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

Progress

3. The Dean may:

(1) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards the completion of the requirements for the Master of Applied Information Technology; and
(2) terminate the candidature where the candidate does not show good cause.

Credit

4. 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 course, may receive credit of up to 24 credit points towards the requirements for the Graduate Diploma in Applied Information Technology or Master of Applied Information Technology.

Master of Nutrition and Dietetics (MNutrDiet)

Resolutions of the Senate

Award of the Degree

1. The degree of Master of Nutrition and Dietetics shall be awarded in two grades, namely Pass and, in the case of an outstanding candidate, Pass with Merit.

Eligibility for Admission

2. (1) The Faculty of Science, on the recommendation of the Nutritional Science Program Committee, may admit to candidature for the degree:
 - (i) graduates of The University of Sydney who have, unless exempted by the Nutritional Science Program Committee, completed acceptable units of study in Biochemistry and Physiology; or
 - (ii) persons who have satisfied the requirements for the award of the Diploma of Nutrition and Dietetics.

Method of Progression and Degree Requirements

3. (1) (a) A candidate for the degree shall proceed full-time and, except with the permission of the Faculty of Science, shall complete the requirements for the degree no later than two years from the date of first enrolment.
(b) Entry to the second year of candidature shall be subject to satisfactory progress in the first year. If progress is not considered satisfactory, a candidate may be asked by the Faculty to show cause why he or she should be permitted to re-enrol.

- (c) A candidate for the degree who has been admitted on the basis of having satisfied the requirements for the award of the Diploma in Nutrition and Dietetics, may elect to proceed as a full-time or part-time candidate and shall complete the requirements for the degree not later than six months from the date of first enrolment, in the case of a full-time candidate and not more than twelve months from the date of enrolment, in the case of a part-time candidate.
- (d) A unit of study shall consist of lectures together with such tutorial instruction, essays, exercises or practical work as may be prescribed.
- (2) A candidate shall complete in the first year of candidature such courses as may be prescribed by the Nutritional Science Program Committee in: Nutritional Biochemistry, Nutritional Science, Foods and Food Science, Nutrition in Individuals, Nutrition in Populations, Principles of Dietetic Practice, Clinical Nutrition, Nutrition Management, Communications.
- (3) In the second year of candidature a candidate will:
- undertake training in the dietetics departments of primary health care settings;
 - complete further units of study as prescribed by the Nutritional Science Program Committee; and
 - undertake a project approved by the Head of the Human Nutrition unit. The result of this project shall be presented for examination in the form of a long essay.
4. A candidate admitted under section 2(1)(ii):
- may be granted credit for up to three semesters towards the degree; and
 - will undertake a project approved by the Head of the Human Nutrition unit. The result of this project shall be presented for examination in the form of a long essay.

Examination

5. On completion of the requirements for the degree, the Faculty shall determine the result of the candidature, on the recommendation of the Nutritional Science Program Committee, acting on a report from the Head of the Human Nutrition unit.

Master of Nutritional Science (M NutrSc)

Resolutions of the Senate

Award of the degree

1. The degree of Master of Nutritional Science shall be awarded in two grades, namely Pass and, in the case of an outstanding candidate, Pass with Merit.

Eligibility for admission

2. (1) The Faculty of Science, on the recommendation of the Nutritional Science Program Committee, may admit to candidature for the degree graduates of The University of Sydney, who have, unless exempted by the Nutritional Science Program Committee, completed acceptable units of study in Biochemistry and Physiology.
- (2) The Academic Board, on the recommendation of the Nutritional Science Program Committee and of the Faculty, may admit to candidature for the degree graduates of other universities who have qualifications equivalent, in the opinion of the Academic Board, to those specified in subsection (1), and on such conditions as the Nutritional Science Program Committee may prescribe.

Method of progression and degree requirements

3. (1) (a) A candidate for the degree shall proceed full-time and, except with the permission of the Faculty of Science, shall complete the requirements for the degree no later than two years from the date of first enrolment.
- (b) Entry to the second year of candidature shall be subject to satisfactory progress in the first year. If progress is not considered satisfactory, a candidate may be asked by the Faculty to show cause why he or she should be permitted to re-enrol.
- (c) A unit of study shall consist of lectures together with such tutorial instruction, essays, exercises or practical work as may be prescribed.
- (2) A candidate shall complete in the first year of candidature such courses as may be prescribed by the Nutritional Science Program Committee in: Nutritional Biochemistry, Nutritional Science, Foods and Food Science, Nutrition in Individuals, Nutrition in Populations, Principles of Dietetic Practice, Clinical Nutrition, Nutrition Management, Communications
- (3) A candidate in the second year of candidature shall proceed by research and thesis. A candidate shall:

- carry out an original investigation on a topic approved by the Head of the Human Nutrition unit;
- 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
- lodge with the Registrar three copies of the thesis, typewritten and bound.

4. (1) The thesis shall be accompanied by a certificate from the supervisor stating whether in his or her opinion the form of the presentation of the thesis is satisfactory.
- (2) A candidate may not present as the thesis any work which has been presented for a degree at this or another tertiary institution, but shall not be precluded from incorporating such work in the thesis, provided that in presenting the thesis indications are given to the part of the work which has been so incorporated.
- (3) The Registrar shall lodge one copy of the thesis with the Librarian if the degree is awarded.

Supervision

5. The Faculty of Science shall appoint, on the recommendation of the Head of the Human Nutrition unit, a full-time member of the teaching staff of the University to act as the supervisor for each candidate.

Examination

6. The Dean of the Faculty, on the recommendation of the Head of the Human Nutrition unit, shall appoint two or, where the Dean considers it appropriate, more than two examiners of whom one may be the person appointed to act as supervisor of the candidate.
7. On completion of the requirements for the degree, the Faculty shall determine the results of the candidature, on the recommendation of the Nutritional Science Program Committee, acting on a report from the Head of the Human Nutrition unit.

Master of Psychology (MPsych)

Note: This degree is no longer available to new students from 2002.

Resolutions of the Senate

Award of the degree

1. The degree of Master of Psychology shall be awarded in two grades, namely Pass and, in the case of an outstanding candidate, Pass with Merit.

Eligibility for admission

2. An applicant for admission to candidature for the degree shall, except as provided in Part 9 of The University of Sydney (Amendment Act) Rule 1999:
- have completed units of study in Abnormal Psychology acceptable to the Faculty; and
 - be a Bachelor of Arts or Bachelor of Science of The University of Sydney; and
 - have obtained fourth year Honours in Psychology; or
 - be a graduate of the University other than as specified in (b) and hold qualifications considered by the Faculty to be equivalent to fourth year Honours in Psychology at The University of Sydney; or
 - have completed the requirements for the degree of Master of Science in Psychology or Master of Arts (Honours) or Master of Philosophy in Psychology of The University of Sydney; and
 - have satisfied the Faculty of their personal suitability for the practice of clinical psychology. When evaluating personal suitability the Faculty may take into account previous relevant experience, reports of the referees and the outcome of selection interviews.

Method of progression

3. (1) A candidate for the degree shall proceed by completing units of study as prescribed by the Faculty.
- (2) A unit of study shall consist of lectures, together with such seminars, tutorial instruction, essays, exercises or practical work as may be prescribed.
- (3) In these resolutions the expression 'to complete a unit of study' means:
- to attend the lectures, and the meetings, if any, for seminars or tutorial instruction;

- (b) to complete satisfactorily the essays, exercises and practical work if any; and
- (c) to pass the examinations of the unit of study.

Time limits

4. A candidate may proceed on either a full-time or a part-time basis.
5. (1) A full-time candidate shall complete the requirements for the degree not later than the end of the second year of candidature, unless otherwise determined by the Faculty.
- (2) A part-time candidate shall complete the requirements for the degree not later than the end of the fourth year of candidature, unless otherwise determined by the Faculty.

Requirements for the degree

6. The following are the requirements for the degree of Master of Psychology:
 - (1) Candidates for the degree are required to complete satisfactorily:
 - (a) a coursework component according to the syllabus approved by the Faculty;
 - (b) a practicum component involving both training in therapeutic and assessment techniques and field placements; and
 - (c) a research project and submit a dissertation on that project.
 - (2) The requirements for the degree shall be completed in two Parts, namely Part I and Part II.
 - (3) A candidate must complete Part I to the satisfaction of the Faculty before proceeding to Part II.
 - (4) Full-time candidates are required, except with permission of the Faculty, to complete the requirements of Part I of the course within one year of first enrolment and to complete Part II of the course within two years of first enrolment.
 - (5) Part-time candidates are required, except with the permission of the Faculty, to complete the requirements of Part I within two years of first enrolment and to complete Part II within four years of first enrolment.

Master of Psychology/Doctor of Philosophy

[See also Master of Psychology/PhD Resolutions below.]

7. A person may proceed concurrently as a candidate for the degrees of Master of Psychology and Doctor of Philosophy. For further details refer to the resolutions of the Senate for the combined award course for the degrees of Master of Psychology and Doctor of Philosophy.

Examination

8. On completion of requirements for the degree, the Faculty shall determine the results of the candidature, on the recommendation of the Head of the Department of Psychology.

Progress

9. The Faculty may:
 - (a) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the degree; and
 - (b) terminate the candidature where the candidate does not show good cause.

Master of Psychology/PhD (MPsych/PhD)

Note: This combined degree is no longer available to new students. It is available only to students accepted into it prior to 1999.

Resolutions of the Senate

The Resolutions of the Senate relating to candidature for the degrees of Master of Psychology and Doctor of Philosophy shall apply to the combined award course for the degrees of Master of Psychology and Doctor of Philosophy except for sections 1, 5, 6 and 7 of the resolutions of the Senate relating to the degrees of Master of Psychology and sections 7 and 8 of the resolutions of the Senate relating to the degrees of Doctor of Philosophy, which are replaced by the following:

Award of the degrees

1. (1) The degrees of Master of Psychology shall be awarded in two grades, namely Pass and, in the case of an outstanding candidate, Pass with Merit;
- (2) The degrees of Master of Psychology shall only be awarded on satisfactory completion of the requirements for the degrees of Doctor of Philosophy, except as provided by section 15 of the resolutions of the Academic Board relating to the degrees of Doctor of Philosophy.

Time limits

2. (1) A full-time candidate shall complete the requirements for both degrees not earlier than the end of the fourth year of candidature and, unless otherwise determined by the Faculty, not later than the end of the sixth year of candidature.
- (2) A part-time candidate shall complete the requirements for both degrees not earlier than the end of the fourth year of candidature and, unless otherwise determined by the Faculty, not later than the end of the seventh year of candidature.
- (3) Notwithstanding sub-sections (1) and (2), a candidate who meets the requirements of sections 7(2) and (3) of the Resolutions of the Senate relating to the degrees of Doctor of Philosophy may be permitted to complete the requirements at an earlier date.

Requirements for the Degrees

3. The following are the requirements for the combined award course for the degrees of Master of Psychology and Doctor of Philosophy:
 - (1) Candidates for the degrees are required
 - (a) to complete satisfactorily a coursework component according to the syllabus approved by the Faculty;
 - (b) to complete satisfactorily a practicum component involving both training in therapeutic and assessment techniques and field placements; and
 - (c) to pursue a course of advanced study and research leading to the submission of a thesis in an area of clinical research as approved by the Head of the Department of Psychology.
 - (2) The requirements for both degrees shall be completed in three parts, namely Part I, Part IIA and Part III.
 - (3) A candidate must complete Part I to the satisfaction of the Faculty before proceeding to Part IIA.
 - (4) Full-time candidates are required, except with permission of the Faculty, to complete the requirements of Part I within one year of first enrolment, to complete Part IIA within two years of first enrolment and to complete Part III within six years of first enrolment.
 - (5) Part-time candidates are required, except with the permission of the Faculty, to complete the requirements of Part I within two years of first enrolment, to complete Part IIA within four years of first enrolment and to complete Part III within seven years of first enrolment.
 - (6) Part III of the requirements for the degrees of Master of Psychology is satisfied under sub-section (1)(c) above.

Transfer to Master of Psychology candidature

4. The Head of the Department of Psychology may recommend that a candidate withdraw from candidature for the combined degrees and complete the requirements for the degrees of Master of Psychology under such conditions as the Faculty may determine.

Examination

5. The procedures for the examination and award of the degrees of Doctor of Philosophy (including the provision for transfer to Master's candidature if the degrees is not awarded) shall be as prescribed in the resolutions of the Senate and of the Academic Board relating to that degrees.
6. On completion of Parts I, HA and HI of the requirements for the degrees, and following the award of the degrees of Doctor of Philosophy, the Faculty shall determine the results of the candidature for the degrees of Master of Psychology, on the recommendation of the Head of the Department of Psychology.

Master of Environmental Science and Law (MEnvSciLaw)**Resolutions of the Senate****Eligibility for admission**

1. The Dean of the Faculty of Science may admit to candidature:
 - (1) graduates of The University of Sydney holding the degree of Bachelor of Science or Bachelor of Laws; or
 - (2) graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection (1).

Availability

2. (1) Admission to candidature may be limited by a quota. In determining the quota, the Dean will take into account:
 - (a) availability of resources including space, laboratory and computing facilities; and

- (b) availability of adequate and appropriate supervision.
 (2) In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 1 above.

Availability of units of study

3. All units of study for a particular subject area may not be available every semester. The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculties of Science and Law, or elsewhere in the University.

Time limits

4. A candidate may proceed on either a full-time, or a part-time basis.
 A candidate for the Master of Environmental Science and Law shall complete the requirements for the award in a minimum of two semesters and a maximum of ten semesters, and except with permission of the Faculty within six calendar years of admission to candidature.

Authority of the Deans

5. The Deans of Science and Law shall jointly exercise authority in any matter concerning the course not otherwise dealt with in these resolutions.

Resolutions of the Faculty

Requirements for the degree

1. Candidates for the Master of Environmental Science and Law are required to complete satisfactorily 48 credit points selected from units of study approved by the Faculties of Science and Law including:
 (1) a core unit of study (LAWS 6044);
 (2) a minimum of 24 credit points selected from units of study offered by each Faculty.

Examination

2. On completion of the requirements for the degree, the Dean shall determine the results of the candidature.

Progress

3. The Dean may:
 (1) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the degree; and
 (2) terminate the candidature where the candidate does not show good cause.

Credit

4. A candidate who, before admission to candidature, has spent time in graduate study and, within the previous three years, has completed coursework considered by the Faculty to be equivalent to units of study prescribed for the degree, may receive credit of up to 12 credit points towards the requirements for the degree of Masters of Environmental Science and Law.

■ Graduate diplomas

Graduate Diploma in Science (GradDipSc)

Resolutions of the Senate

Eligibility for admission

1. (1) The Faculty may, on the recommendation of the head of the department concerned, admit to candidature for the Graduate Diploma in Science an applicant who is a holder of the award course of Bachelor of Science, Bachelor of Computer Science and Technology, Bachelor of Medical Science, Bachelor of Liberal Studies or Bachelor of Psychology from The University of Sydney.
 (2) The Academic Board, in accordance with the provisions of Part 9 of The University of Sydney (Amendment Act) Rule 1999, on the recommendation of the relevant Head of Department and of the Faculty, may admit to candidature for the graduate diploma graduates of other universities or other appropriate institutions who have qualifications equivalent, in the opinion of the Academic Board, to those specified in subsection (i).

Availability

2. (1) Admission to the graduate diploma may be limited by quota.

- (2) In determining the quota the University will take into account:

- (a) availability of resources including space, library, equipment, laboratory and computing facilities; and
 (b) availability of adequate and appropriate supervision.

- (3) In considering an application for admission to candidature the Head of Department and the Faculty shall take account of the quota and will select in preference applicants who are most meritorious in terms of section 1 above.

Method of progression and time limits

3. (1) A candidate shall engage in a program of work equivalent to that required for completion of the relevant fourth year Bachelor of Science, Bachelor of Computer Science and Technology, Bachelor of Psychology or Bachelor of Medical Science 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.

- (2) There shall be units of study in the following subjects:

Agricultural Chemistry
 Anatomy and Histology
 Biochemistry
 Biology
 Cell Pathology
 Chemistry
 Computer Science
 Geography
 Geology
 Geophysics
 History and Philosophy of Science
 Immunology
 Information Systems
 Marine Science
 Mathematics
 Microbiology
 Nutrition
 Pharmacology
 Physics
 Physiology
 Psychology
 Soil Science
 Statistics

Examination

4. The award of the graduate diploma shall be subject to the completion of the program of work and examinations to the satisfaction of the Faculty.

Progress

5. The Faculty may call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the graduate diploma and where, in the opinion of the Faculty, the candidate does not show good cause, terminate the candidature.

Graduate Diploma in Science (Microscopy and Microanalysis) (GradDipSc(Micr&An))

Graduate Diploma in Science (Psychology) (GradDipSc(Psych))

Resolutions of the Senate

Eligibility for admission

1. (1) The Faculty of Science, on the recommendation of the appropriate Interdepartmental Committee, may admit to candidature the following:
 (a) Graduate Diploma in Science (Microscopy and Microanalysis): An applicant who is a holder of the award course of Bachelor of Science or Bachelor of Engineering, or any other award course of The University of Sydney.
 (b) Graduate Diploma in Science (Psychology): An applicant who is a holder of a Bachelors degree with an APS accredited major in Psychology from a recognised tertiary institution within the past ten years and who has achieved a minimum of credit average in Senior (third year) units of study which includes units of study in statistics/research methods which meet the requirements of the Department.

(2)The Academic Board, on the recommendation of the appropriate Interdepartmental Committee and of the Faculty, may admit to candidature for the graduate diploma graduates of other universities or other appropriate institutions who have qualifications equivalent, in the opinion of the Academic Board, to those specified in subsection (1).

Availability

2. (1) Admission to the graduate diploma may be limited by quota.
- (2) In determining the quota the University will take into account:
 - (a) availability of resources including space, library, equipment, laboratory and computing facilities; and
 - (b) availability of adequate and appropriate supervision.
- (3) In considering an application for admission to candidature the Interdepartmental Committee and the Faculty shall take account of the quota and will select in preference applicants who are most meritorious in terms of section 1 above.

Time limits

3. A candidate for the Graduate Diploma in Science (Psychology) shall proceed as a full-time student for a period of two semesters or, with the approval of the Interdepartmental Committee, as a part-time student for four semesters; a candidate for the Graduate Diploma in Science (Microscopy and Microanalysis) shall proceed as a full-time student for a period of two semesters or as a part-time student for up to eight semesters.

Method of progression

4. A candidate shall complete coursework for the graduate diploma as prescribed from time to time by resolution of the Faculty.

Examination

5. A candidate may be tested by written and oral examinations, assignments, exercises and practical work or any combination of these.
6. On completion of the requirements for the graduate diploma the results of the examination of the coursework and participation in the seminar series shall be reported by the Interdepartmental Committee to the Faculty which shall determine the result of the candidature.

Progress

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.

Graduate Diploma in Science (Microscopy and Microanalysis) (GradDipSc(Micr&An))

Resolutions of the Senate

See above.

Resolutions of the Faculty

1. A unit of study shall consist of lectures together with such tutorial instruction, essays, exercises or practical work in the laboratory as may be prescribed. In these resolutions, to 'complete a unit of study' and derivative expressions shall mean:
 - (i) to attend the lectures, laboratories, tutorials and meetings as recommended;
 - (ii) to complete satisfactorily any practical and theoretical assignments; and
 - (iii) to pass the examination on the unit of study.
2. All units of study will be offered in February and July semesters.
3. A candidate shall complete coursework to the value of 48 credit points comprising ten core units of study, worth 32 creditpoints, and optional units of study worth 16 credit points selected from the following table:

| Unit of study | Credit points |
|--|---------------|
| <i>Core units of study</i> | |
| MCAN 4001 Principles of Microscopy and Microanalysis | 2 |
| MCAN 4301 Instrumentation - Introduction to Light Microscopy | 4 |

| Unit of study | Credit points |
|--|---------------|
| MCAN 4302 Instrumentation - Introduction to Transmission Electron Microscopy | 4 |
| MCAN 4007 Instrumentation - Monitoring & Maintenance of Electron Microscopes | 2 |
| MCAN 4303 Instrumentation-Introduction to Scanning Electron Microscopy | 4 |
| MCAN 4008 Introductory Specimen Preparation for Optical Microscopy | 2 |
| MCAN 4102 Specimen Preparation (Materials) - TEM & SEM | 4 |
| MCAN 4101 Specimen Preparation (Biological) - TEM & SEM | 4 |
| MCAN 4105 Optical X-Ray & Electron Spectroscopy | 4 |
| MCAN 4304 Instrumentation - Introduction to Confocal Microscopy | 4 |
| MCAN 4108 Independent Project and Report | 4 |
| <i>Optional units of study</i> | |
| MCAN 4305 Instrumentation - Advanced Transmission Electron Microscopy | 2 |
| MCAN 4306 Instrumentation - Advanced Scanning Electron Microscopy | 2 |
| MCAN 4307 Instrumentation -Advanced Confocal Microscopy | 4 |
| MCAN 4109 Introduction to Diffraction | 2 |
| MCAN 4201 Advanced Diffraction Techniques | 2 |
| MCAN 4103 Surface Microscopy | 2 |
| MCAN 4104 Signal/Image Processing | 4 |
| MCAN 4202 Microanalysis for Materials - Electron | 4 |
| MCAN 4203 Microanalysis for Materials - Non-electron | 4 |
| MCAN 4204 Microanalysis in Life Sciences | 2 |
| MCAN 4205 Advanced Techniques in Biological Electron Microscopy | 4 |
| MCAN 4308 Image Analysis | 4 |
| MCAN 4209 Stereology | 2 |
| MCAN 4207 Image Capture/Recording | 2 |

4. Satisfactory progress shall be as determined by the Faculty.

Graduate Diploma in Science (Psychology) (GradDipSc(Psych))

Resolutions of the Senate

See above.

Resolutions of the Faculty

1. A unit of study shall consist of lectures together with such tutorial instructions, essays, exercises or practical work as may be prescribed. In these resolutions, to 'complete a unit of study' and derivative expressions shall mean:
 - (i) to attend the lectures and the meetings, if any, for tutorial instruction;
 - (ii) to complete satisfactorily the essays, exercises and the practical work, if any; and
 - (iii) to pass the examination on the unit of study.
2. A candidate shall complete coursework to the value of 48 credit points. The structure of the program is:

| Unit of study | Credit points |
|---|---------------|
| <i>Full-time students</i> | |
| <i>Semester 1 Core units - 24 creditpoints</i> | |
| PS YC 4710 Research Project (A) | 9 |
| PSYC 4711 Psychological Research Methods | 5 |
| PSYC4715 Special Fields Topic (A) | 5 |
| PSYC 4719 Special Fields Topic (B) | 5 |
| <i>Semester 2 Core units - 24 credit points</i> | |
| PSYC 4720 Research Project (B) | 9 |
| PSYC 4712 Ethics and Current Issues in Psychology | 5 |
| <i>Optional units of study (select 2 electives)</i> | |
| PSYC 4716 Health Psychology | 5 |

| Unit of study | Credit points |
|---|---------------|
| PSYC4717 Counselling Psychology | 5 |
| PS YC 4718 Psychology of Addiction | 5 |
| Part-time students | |
| <i>Year 1, Semester 1-14 credit points</i> | |
| PSYC 4710 Research Project (A) | 9 |
| PS YC 4711 Psychological Research Methods | 5 |
| <i>Year 1, Semester 2-14 credit points</i> | |
| PSYC 4720 Research Project (B) | 9 |
| Plus one elective | 5 |
| <i>Year 2, Semester 1-10 credit points</i> | |
| PSYC 4715 Special Fields Topic (A) | 5 |
| PSYC 4719 Special Fields Topic (B) | 5 |
| <i>Year 2, Semester 2-10 credit points</i> | |
| PSYC 4712 Ethics and Current Issues in Psychology | 5 |
| Plus one elective | 5 |

3. Satisfactory progress shall be as determined by the Faculty.

Current departmental rules on progress

A candidate cannot repeat any part of the Graduate Diploma if he or she fails the Research project and at least one other component OR passes the Research Project but fails more than two components. If the candidate fails either the Research Project or one other component, permission may be granted for the candidate to repeat that unit the following year.

Graduate Diploma in Information Technology (GradDiplInfTech)

Resolutions of the Senate

Eligibility for admission.

- The Dean of the Faculty of Science may admit to candidature:
 - graduates who have completed a Bachelor's degree in any aspect of Information Technology; or
 - persons who have completed the GradCertIT at The University of Sydney, with an average result of Credit or better.

Availability

- (1) Admission to the Graduate Diploma in Information Technology may be limited by a quota.
 - In determining the quota the University will take into account:
 - availability of resources including space, laboratory and computing facilities; and
 - availability of adequate and appropriate supervision.
 - In considering an application for admission to candidature, the Head of the Basser Department of Computer Science and the Dean shall select in preference applicants who are most meritorious in terms of section 1 above.

Time limits

- A candidate may proceed on either a full-time or a part-time basis. In determining the length of candidacy below, the Dean shall include time previously spent as candidate for the GradCertIT.
 - A full-time candidate shall complete the requirements for the award not earlier than the end of the second semester of candidature, and not later than the end of the third semester of candidature, unless otherwise determined by the Dean.
 - A part-time candidate shall complete the requirements of the award not earlier than the end of the third semester of candidature, and not later than the end of the sixth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty

See entry for the Master of Information Technology.

Graduate Diploma in Applied Information Technology (GradDipApplIT)

Resolutions of the Senate

Eligibility for admission

- The Dean of the Faculty of Science may admit to candidature:

- graduates who have completed a Bachelor's degree in any discipline; or
- persons who have completed the GradCertApplIT at The University of Sydney, with an average result of Credit or better.

Availability

- (1) Admission to the Graduate Diploma in Applied Information Technology may be limited by a quota.
 - In determining the quota, the University will take into account:
 - availability of resources including space, laboratory and computing facilities; and
 - availability of adequate and appropriate supervision.
 - In considering an application for admission to candidature, the Head of the Basser Department of Computer Science and the Dean shall select, in preference, applicants who are most meritorious in terms of section 1 above.

Time limits

- A candidate may proceed on either a full-time or a part-time basis. In determining the length of candidacy below, the Dean shall include time previously spent as a candidate for the GradCertApplIT course.
 - A full-time candidate shall complete the requirements for the award not earlier than the end of the second semester of candidature, and not later than the end of the fourth semester of candidature, unless otherwise determined by the Dean.
 - A part-time candidate shall complete the requirements of the award not earlier than the end of the fourth semester of candidature, and not later than the end of the eighth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty

See entry for the Master of Applied Information Technology.

Graduate Diploma in Psychology (GradDipPsych)

Resolutions of the Senate

Eligibility for admission

- The Faculty of Science may admit to candidature applicants who hold the degree of Bachelor of Science, Bachelor of Arts, Bachelor of Economics (Social Science), or Bachelor of Liberal Studies from The University of Sydney, or an equivalent degree as deemed by the Faculty, who have not previously completed a major in Psychology. When assessing an applicant, both undergraduate record and UAI (or equivalent) may be taken into account.
- Applicants must have already successfully completed 12 credit points of Junior Psychology (currently PSYC 1001 and 1002) or equivalent.
- Conditions of candidature are prescribed by Resolution of the Faculty.

Resolutions of the Faculty

Requirements for the course

- A unit of study shall consist of lectures together with such tutorial instructions, essays, exercises or practical work as may be prescribed. In these resolutions, to 'complete a unit of study' and derivative expressions shall mean:
 - to attend lectures and the meetings, if any, for tutorial instruction;
 - to complete satisfactorily the essays, exercises and the practical work, if any; and
 - to pass the examination on the unit of study.
- A candidate shall complete coursework to the value of 48 credit points comprising 16 cp of Intermediate units of study in Psychology and 32 cp of Senior units of study in Psychology which must, except with Departmental approval, include PSYC 3201 and PSYC 3202. The prerequisites and progression requirements for these units of study as set out in Table I for the BSc must be met.

Time limits

- A candidate for the GradDipPsych shall normally proceed as a part-time student for at least four semesters.

Examination

- A candidate may be tested by written and oral examinations, assignments, exercises and practical work or any combination of these.

- On completion of the requirements for each unit of study comprising the GradDipPsych the results of the examination of the coursework and participation in the seminar series for that unit of study shall be reported by the Department of Psychology to the Faculty which shall determine the result of the candidature.

Progress

- Satisfactory progress shall be as determined by the Faculty.
- The Faculty may call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the GradDipPsych and where, in the opinion of the Faculty, the candidate does not show good cause, terminate the candidature.

Credit

- Students may apply for credit (up to 24 credit points) for unit(s) of study where they have already completed studies which the Faculty deems equivalent to unit(s) in the GradDipPsych. Such units of study must have been completed within the previous ten years.

■ **Graduate certificates**

Graduate Certificate in Science (History and Philosophy of Science)

Resolutions of the Senate

Eligibility for admission

- (1) The Dean of the Faculty of Science, on the recommendation of the appropriate committee may admit to candidature for the Graduate Certificate in Science (History and Philosophy of Science) an applicant who is:
 - the holder of the of the degree of Bachelor of Science or Bachelor of Medical Science or Bachelor of Arts or Bachelor of Liberal Studies, or any other award of The University of Sydney; or
 - a graduate of another university or other appropriate institution who has qualifications equivalent to those specified in subsection (a).

Time limits

- A candidate shall proceed as a full time student for a period of one semester or as a part time student for up to three semesters.

Requirements

- The requirements for the graduate certificate shall be as prescribed by the Resolution of the Faculty.

Resolutions of the Faculty

- A unit of study shall consist of seminars together with such essays, exercises or practical work as may be prescribed. In these resolutions, to 'complete a unit of study' and derivative expressions shall mean:
 - to attend seminars and other meetings as recommended; and
 - to complete satisfactorily any practical and theoretical assignments.
- A candidate shall complete course work to the value of 24 credit points selected from the following table and including HPSC 4108 (if they have not completed a major in History and Philosophy of Science, or equivalent program of study, at another institution).

| Unit of study | Credit points |
|---------------------------------|---------------|
| HPSC 4108 Core Topics in HPS | 6 |
| HPSC 4101 Philosophy of Science | 6 |
| HPSC 4102 History of Science | 6 |
| HPSC 4103 Sociology of Science | 6 |
| HPSC 4104 Recent Topics in HPS | 6 |
| HPSC 4105 HPS Research Methods | 6 |

Graduate Certificate in Science (Microscopy and Microanalysis) (GradCertSc(Micr&An))

Resolutions of the Senate

Eligibility for admission

- (1) The Faculty of Science, on the recommendation of the appropriate Committee, may admit to candidature for the Graduate Certificate in Science (Microscopy and Microanalysis) an applicant who is the holder of the degree of Bachelor of Science or Bachelor of Engineering, or any other award of The University of Sydney.
 - The Academic Board, on the recommendation of the Faculty, may admit to candidature for the graduate certificate graduates of other universities or other appropriate institutions who have qualifications equivalent, in the opinion of the Academic Board, to those specified in subsection (1).

Availability

- (1) Admission to the graduate certificate may be limited by quota.
 - In determining the quota the University will take into account:
 - availability of resources including space, library, equipment, laboratory and computing facilities; and
 - availability of adequate and appropriate supervision.
 - In considering an application for admission to candidature the Faculty shall take account of the quota and will select in preference applicants who are most meritorious in terms of section 1 above.

Time limits

- A candidate shall proceed as a full-time student for a period of one semester or as a part-time student for up to three semesters.

Requirements

- The requirements for the Graduate Certificate shall be as prescribed by Resolution of the Faculty.

Resolutions of the Faculty

- ~~A unit of study shall consist of lectures together with such~~ tutorial instruction, essays, exercises or practical work in the laboratory as may be prescribed. In these resolutions, to 'complete a unit of study' and derivative expressions shall mean:
 - to attend the lectures, laboratories, tutorials and meetings as recommended;
 - to complete satisfactorily any practical and theoretical assignments; and
 - to pass the examination on the unit of study.
 A candidate shall complete coursework to the value of 24 credit points from core units of study, selected from the following table:

| Unit of study | Credit points |
|---|---------------|
| MCAN4001 Principles of Microscopy & Microanalysis | 2 |
| MCAN4301 Instrumentation - Introduction to Light Microscopy | 4 |
| MCAN4302 Instrumentation - Introduction to Transmission EM | 4 |
| MCAN4007 Instrumentation - Monitoring & Maintenance EM | 2 |
| MCAN 4303 Instrumentation - Introduction to Scanning EM | 4 |
| MCAN4008 Introductory Specimen Preparation for Optical Microscopy | 2 |
| MCAN 4101 Biological Specimen Preparation - TEM & SEM | 4 |
| MCAN 4102 Materials Specimen Preparation -TEM & SEM | 4 |
| MCAN 4105 Optical X-ray & Electron Spectroscopy | 4 |
| MCAN 4304 Instrumentation - Introduction to Confocal Microscopy | 4 |
| MCAN 4108 Independent Project & Report | 4 |

Graduate Certificate in Information Technology (GradCertInfTech)

Resolutions of the Senate

Eligibility for admission

- The Dean of the Faculty of Science may admit to candidature:
 - graduates who have completed a Bachelor's degree, with a substantial study of a relevant field of Information Technology; or
 - persons who offer evidence of recognised prior learning which is considered to demonstrate the knowledge and aptitude required to undertake the units of study.

Availability

- Admission to the Graduate Certificate in Information Technology may be limited by a quota.
 - In determining the quota the University will take into account:
 - availability of resources including space, laboratory and computing facilities; and
 - availability of adequate and appropriate supervision.
 - In considering an application for admission to candidature, the head of the Basser Department of Computer Science and the Dean shall select in preference applicants who are most meritorious in terms of section 1 above.

Time limits

- A candidate may proceed on either a full-time or a part-time basis.
 - A full-time candidate shall complete the requirements for the award not earlier than the end of the first semester of candidature, and not later than the end of the second semester of candidature, unless otherwise determined by the Dean.
 - A part-time candidate shall complete the requirements of the award not earlier than the end of the second semester of candidature, and not later than the end of the fifth semester of candidature, unless otherwise determined by the Dean.

Progress

- The Dean may:
 - call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards the completion of the requirements for the Graduate Certificate; and
 - terminate the candidature where the candidate does not show good cause.

Resolutions of the Faculty

See entry for the Master of Information Technology.

Graduate Certificate in Applied Information Technology (GradCertApplIT)

Resolutions of the Senate

Eligibility for admission

- The Dean of the Faculty of Science may admit to candidature:
 - graduates who have completed a Bachelor's degree in any discipline; or
 - persons who have worked in the area of Information Technology for more than eight years and can offer evidence of recognized prior learning which is considered to demonstrate the knowledge and aptitude required to undertake the units of study.

Availability

- Admission to the Graduate Certificate in Applied Information Technology may be limited by a quota.
 - In determining the quota, the University will take into account:
 - availability of resources including space, laboratory and computing facilities; and
 - availability of adequate and appropriate supervision.
 - In considering an application for admission to candidature, the Head of the Basser Department of Computer Science and the Dean shall select, in preference, applicants who are most meritorious in terms of section 1 above.

Time limits

- A candidate may proceed on either a full-time or a part-time basis.

(1) A full-time candidate shall complete the requirements for the award not earlier than the end of the second semester of candidature, and not later than the end of the third semester of candidature, unless otherwise determined by the Dean.

(2) A part-time candidate shall complete the requirements of the award not earlier than the end of the third semester of candidature, and not later than the end of the sixth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty

See entry for the Master of Applied Information Technology.

■ Articulated programs

Quantitative Marine Ecology

Graduate Certificate in Quantitative Marine Ecology (GradCertQuantMarEcol)

Graduate Diploma in Quantitative Marine Ecology (GradDipQuantMarEcol)

Master of Quantitative Marine Ecology (MQuantMarEcol)

Resolutions of the Senate

The Graduate Certificate in Quantitative Marine Ecology, the Graduate Diploma in Quantitative Marine Ecology and the Master of Quantitative Marine Ecology will be offered in fields of study approved from time to time by the Faculty of Science.

Eligibility for admission

- The Dean of the Faculty of Science may admit to candidature for:
 - the Graduate Certificate in Quantitative Marine Ecology
 - an applicant who is the holder of the degree of Bachelor of Science or any other equivalent award of The University of Sydney;
 - graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection (a); or
 - a person who has experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;
 - the Graduate Diploma in Quantitative Marine Ecology a person who has completed requirements for the Graduate Certificate in Quantitative Marine Ecology, or equivalent; and
 - the Master of Quantitative Marine Ecology a person who has completed requirements for the Graduate Diploma in Quantitative Marine Ecology, or equivalent.

Availability

- Admission to candidature may be limited by a quota. In determining the quota, the University will take into account:
 - availability of resources including space, laboratory and computing facilities; and
 - availability of adequate and appropriate supervision.
 - In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 1 above.

Method of progression

- A candidate for the degree, graduate diploma or graduate certificate shall proceed by completing units of study as prescribed by the Faculty.
 - 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:
 - to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
 - to complete satisfactorily the essays, exercises, practical and project work if any; and
 - to pass any other examination of the unit of study that may apply.

Time limits

- A candidate may proceed on either a full-time or a part-time basis.

5. (1) A candidate for the Graduate Certificate in Quantitative Marine Ecology shall complete the requirements for the award in a minimum of one semester and a maximum of four semesters, and except with permission of the Dean within three calendar years of admission to candidature.
- (2) A candidate for the Graduate Diploma in Quantitative Marine Ecology shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters, and except with permission of the Dean within six calendar years of admission to candidature.
- (3) A candidate for the Master of Quantitative Marine Ecology shall normally complete the requirements for the award in a minimum of three semesters and a maximum of twelve semesters, and except with permission of the Dean within nine calendar years of admission to candidature.

Requirements for the degree

6. (1) Candidates for the Graduate Certificate in Quantitative Marine Ecology are required to complete satisfactorily units of study granting a minimum of 24 credit points selected from units of study approved from time to time by the Faculty.
- (2) Candidates for the Graduate Diploma in Quantitative Marine Ecology are required to complete satisfactorily units of study granting a minimum of 36 credit points selected from units of study approved from time to time by the Faculty.
- (3) Candidates for the Master of Quantitative Marine Ecology 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.

Examination

7. On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

Progress

8. The Faculty may:
- (1) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the course; and
- (2) terminate the candidature where the candidate does not show good cause.

Credit

9. 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 course, may receive credit of up to:
- (1) 50 per cent of the requirements of the Graduate Diploma in Quantitative Marine Ecology or Master of Quantitative Marine Ecology; or
- (2) 24 credit points towards the requirements for the Graduate Diploma in Quantitative Marine Ecology or 36 credit points for the Master of Quantitative Marine Ecology from within the articulated Quantitative Marine Ecology program.

■ Applied Science

Graduate Certificate in Applied Science (GradCertAppSci)

Graduate Diploma in Applied Science (GradDipAppSci)

Master of Applied Science (MAppSci)

Resolutions of the Senate

1. The Graduate Certificate in Applied Science, the Graduate Diploma in Applied Science, and the Master of Applied Science will be offered in the following subject areas, and the testamur for the award will specify the subject area:
- Environmental Science
 - Informatics and Communication
 - Molecular Biotechnology
 - Neuroscience
 - Photonics
 - Psychology of Coaching
 - Surface Coatings
 - Wildlife Health and Population Management

Eligibility for admission

2. (1) The Dean of the Faculty of Science may admit to candidature for:
- (i) the Graduate Certificate in Applied Science:
- (a) graduates of The University of Sydney holding the degree of Bachelor of Science or any other equivalent award of The University of Sydney;
 - (b) graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection (a); or
 - (c) persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;
- (ii) the Graduate Diploma in Applied Science:
- (a) graduates of The University of Sydney holding the degree of Bachelor of Science or any other equivalent award of The University of Sydney;
 - (b) graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection (a); or
 - (c) persons who have completed requirements for the Graduate Certificate in Applied Science, or equivalent;
- (iii) the Master of Applied Science:
- (a) graduates of The University of Sydney holding the degree of Bachelor of Science or any other equivalent award of The University of Sydney;
 - (b) graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection (a); or
 - (c) persons who have completed requirements for the Graduate Diploma in Applied Science, or equivalent.
- (2) In relation to particular subject areas the Dean may require applicants to satisfy additional specific requirements relating to that subject area.

Availability

3. (1) Admission to candidature may be limited by a quota. In determining the quota, the University will take into account:
- (i) availability of resources including space, laboratory and computing facilities; and
 - (ii) availability of adequate and appropriate supervision.
- (2) In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 2 above.

Method of progression

4. (1) A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
- (2) A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed. In these resolutions, 'to complete a unit of study' or any derivative expression means:
- (i) to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
 - (ii) to complete satisfactorily the essays, exercises, practical and project work if any; and
 - (iii) to pass any other examination of the unit of study that may apply.

Availability of unit of study

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

Time limits

6. A candidate may proceed on either a full-time or a part-time basis.
7. (1) A candidate for the Graduate Certificate in Applied Science shall complete the requirements for the award in a minimum of one semester and a maximum of four semesters, and except with permission of the Dean within three calendar years of admission to candidature.
- (2) A candidate for the Graduate Diploma in Applied Science shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters, and except with permission of the Dean within six calendar years of admission to candidature.

(3) A candidate for the Master of Applied Science shall proceed complete the requirements for the award in a minimum of two semesters and a maximum of twelve semesters, and except with permission of the Dean within nine calendar years of admission to candidature.

Requirements for the course

8. (1) Candidates for the Graduate Certificate in Applied Science are required to complete satisfactorily units of study granting a minimum of 24 credit points selected from units of study approved from time to time by the Faculty.
- (2) Candidates for the Graduate Diploma in Applied Science are required to complete satisfactorily units of study granting a minimum of 36 credit points selected from units of study approved from time to time by the Faculty.
- (3) Candidates for the Master of Applied Science are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from units of study approved from time to time by the Faculty.

Examination

9. On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

Progress

10. The Faculty may:

- (1) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the course; and
- (2) terminate the candidature where the candidate does not show good cause.

Credit

1 LA 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 course, may receive credit of up to:

- (1) 50 per cent of the requirements of the Graduate Diploma in Applied Science or Master of Applied Science; or
- (2) 24 credit points towards the requirements for the Graduate Diploma in Applied Science or 36 credit points for the Master of Applied Science from within the articulated Applied Science program.

Resolutions of the Faculty

Graduate Certificate in Applied Science (Environmental Science) (GradCertAppIsc(EnvSc))

Graduate Diploma in Applied Science (Environmental Science) (GradDipAppIsc(EnvSc))

Master of Applied Science (Environmental Science) (MApplSc(EnvSc))

Requirements for the degree

1. (1) Candidates for the Graduate Certificate in Applied (Environmental Science) are required to complete satisfactorily two core units of study (ENVI 5705 and ENVI 5708 or ENVI 5808) and 12 credit points from optional units of study.
- (2) Candidates for the Graduate Diploma in Applied (Environmental Science) are required to complete satisfactorily three core units of study (ENVI 5705 and ENVI 5708 and ENVI 5808) and 18 credit points from optional units of study.
- (3) Candidates for the Master of Applied (Environmental Science) are required to complete satisfactorily three core units of study (ENVI 5705 and ENVI 5708 and ENVI 5808) and 30 credit points from optional units of study.

Graduate Certificate in Applied Science (Informatics and Communication) (GradCertAppIsc(Inf&Comm))

Graduate Diploma in Applied Science (Informatics and Communication) (GradDipAppIsc(Inf&Comm))

Requirements for the degree

1. (1) Candidates for the Graduate Certificate in Applied Science (Informatics and Communication) are required to complete satisfactorily four 6 credit point units of study selected from CHEM 5001, CHEM 5002, ICOM 5001, ICOM 5002, ICOM 5003, INFS 6005, INFS 6010 or GEOG 5001.

(2) Candidates for the Graduate Diploma in Applied Science (Informatics and Communication) are required to complete satisfactorily six 6 credit point units of study selected from CHEM 5001, CHEM 5002, ICOM 5001, ICOM 5002, ICOM 5003, INFS 6005, INFS 6010 or GEOG 5001.

Graduate Certificate in Applied Science (Molecular Biotechnology) (GradCertAppIsc(MBT))

Graduate Diploma in Applied Science (Molecular Biotechnology) (GradDipAppIsc(MBT))

Master of Applied Science (Molecular Biotechnology) (MApplSc(MBT))

Requirements for the degree

1. (1) Candidates for the Graduate Certificate in Applied Science (Molecular Biotechnology) are required to complete satisfactorily two core units of study (MOBT 5101 and MOBT 5102).
- (2) Candidates for the Graduate Diploma in Applied Science (Molecular Biotechnology) are required to complete satisfactorily two core units of study (MOBT 5101 and MOBT 5102) and 12 credit points from optional units of study.
- (3) Candidates for the Master of Applied Science (Molecular Biotechnology) are required to complete satisfactorily three core units of study (MOBT 5101, MOBT 5102 and MOBT 5103) and 12 credit points from optional units of study.

Graduate Certificate in Applied Science (Neuroscience) (GradCertAppIsc(NeuroSc))

Graduate Diploma in Applied Science (Neuroscience) (GradDipAppIsc(NeuroSc))

Master of Applied Science (Neuroscience) (MApplSc(NeuroSc))

Requirements for the degree

1. (1) Candidates for the Graduate Certificate in Applied Science (Neuroscience) are required to complete satisfactorily four units of study selected from NEUR 5101, NEUR 5102, NEUR 5103, NEUR 5104, NEUR 5105, NEUR 5106, NEUR 5107 or NEUR 5108.
- (2) Candidates for the Graduate Diploma in Applied Science (Neuroscience) are required to complete satisfactorily five units of study selected from NEUR 5101, NEUR 5102, NEUR 5103, NEUR 5104, NEUR 5105, NEUR 5106, NEUR 5107 or NEUR 5108 and either NEUR 5001 or NEUR 5002.
- (3) Candidates for the Master of Applied Science (Neuroscience) are required to complete satisfactorily five units of study selected from NEUR 5101, NEUR 5102, NEUR 5103, NEUR 5104, NEUR 5105, NEUR 5106, NEUR 5107 or NEUR 5108 and three units of study selected from NEUR 5001, NEUR 5002, NEUR 5003, NEUR 5004.

Graduate Certificate in Applied Science (Photonics) (GradCertAppIsc(Photonics))

Graduate Diploma in Applied Science (Photonics) (GradDipAppIsc(Photonics))

Master of Applied Science (Photonics) (MApplSc(Photonics))

Requirements for the degree

1. (1) Candidates for the Graduate Certificate in Applied Science (Photonics) are required to complete four core 6 credit point units (PHOT 5001, PHOT 5002, PHOT 5003, PHOT 5010).
- (2) Candidates for the Graduate Diploma in Applied Science (Photonics) are required to complete five core 6 credit point units (PHOT 5001, PHOT 5002, PHOT 5003, PHOT 5010, PHOT 5011), and one 6 credit point optional unit chosen from PHOT 5004, PHOT 5005, and PHOT 5006.
- (3) Candidates for the Master of Applied Science (Photonics) are required to complete five core 6 credit point coursework units (PHOT 5001, PHOT 5002, PHOT 5003, PHOT 5010, PHOT 5011), one 6 credit point optional coursework unit chosen from PHOT 5004, PHOT 5005, and PHOT 5006, and 12 credit points of project work (PHOT 5020 and PHOT 5021).

POSTGRADUATE DEGREE REGULATIONS

Graduate Certificate in Applied Science (Psychology of Coaching) (GradCertApplSc(PsychCoach))

Eligibility for admission

An applicant for admission will satisfy the admission requirements for the Graduate Certificate in Applied Science and:

- (i) have completed a 4 year full-time (or equivalent part-time) course in Psychology; or
- (ii) have a 3 year sequence in Psychology and/or relevant work/life experience.

Course length

The minimum time for completion is 2 semesters; the maximum time for completion is 4 semesters.

Graduate Certificate in Applied Science (Surface Coatings) (GradCertApplSc(SurfaceCoatings))

Graduate Diploma in Applied Science (Surface Coatings) (GradDipApplSc(SurfaceCoatings))

Requirements for the degree

1. (1) Candidates for the Graduate Certificate in Applied Science (Surface Coatings) are required to complete SUCO 4001, SUCO 4002, SUCO 4003 & SUCO 4004.
- (2) Candidates for the Graduate Diploma in Applied Science (Surface Coatings) are required to complete SUCO 4001, SUCO 4002, SUCO 4003, SUCO 4004, SUCO 4005 & SUCO 4006.

Graduate Certificate in Applied Science (Wildlife Health and Population Management) (GradCertApplSc(WildHlthPopMan))

Graduate Diploma in Applied Science (Wildlife Health and Population Management) (GradDipApplSc(WildHlthPopMan))

Master of Applied Science (Wildlife Health and Population Management) (MApplSc(WildHlthPopMan))

Requirements for the degree

1. (1) Candidates for the Graduate Certificate in Applied Science (Wildlife Health and Population Management) are required to complete satisfactorily two core units of study (WILD 5001 and WILD 5002) and 12 credit points from optional units of study.
- (2) Candidates for the Graduate Diploma in Applied Science (Wildlife Health and Population Management) are required to complete satisfactorily two core units of study (WILD 5001 and WILD 5002) and 24 credit points from optional units of study.
- (3) Candidates for the Master of Applied Science (Wildlife Health and Population Management) are required to complete satisfactorily three core units of study (WILD 5001, WILD 5002 and WILD 5009) and 24 credit points from optional units of study.

8 Staff

This information is correct as at 1 December 2001.

■ Faculty of Science

Dean

Professor Beryl Hesketh, BA Hons *C'Town* MA *Well* PhD
Massey, FAPsS

Pro-Dean

Associate Professor Christopher B Gillies, MAgrSc *Qld* PhD
Alta

Associate Deans

Associate Professor Deirdre Dragovich, MA *Adel* PhD

Professor Trevor W Hambley, BSc *WAust* PhD *Adel*, FRACI
CChem

Associate Professor Brian W James, BSc PhD

Professor David Feng, ME *SJTU* MS PhD *UCLA*

Professor Philip W Kuchel, BMedSc MB BS *Adel* PhD *ANU*,
FAA

David J Livesey, BSc PhD *WAust*

Associate Professor Charles C Macaskill, BSc PhD *Adel*

Associate Professor Anthony F Masters, BSc *Melb* PhD *ANU*,
FRACI CChem

Associate Professor Mary Peat, BSc *Birm* PhD *Brist*

Associate Professor Ian Spence, BSc PhD *Monash*

Associate Professor Donald E Taylor, MSc *Monash* DPhil *Oxf*

Dean's Office

Executive Officer

Kim P Schwieters, BA *Well* MA

Executive Assistant

Christine Askew

Administrative Assistant

Sutira Teh

Faculty Office

Faculty Manager

Barbara Chmielewski, BA (Comm) *NSWLT*

Assistant Faculty Manager

Martin Hesse, BA *Macq*

Postgraduate Manager

Michele Zaronias

Postgraduate Student Adviser

Di Taylor, BA *Macq*

Undergraduate Manager

KathFarreU, BSc

Undergraduate Student Adviser

Susan Winch, BA(Hons) MInfMgmt(Archives/Records) *UNSW*
GradDipApplSc(Librarianship) *CSturt* LLB

Undergraduate Assistant

vacant

International Student Adviser

Eva Papas, DipEd *UNSWBA*

Faculty Finance Manager

Daniela Viola, RAG *Scuola di Ragioneria (Milan)*

Computer Systems Officer

John STwyman, BSc

Marketing

Marketing Manager

Jasmine Chambers, GDipComm *UTS* BSc

Marketing Assistant

Penny Buchanan, BA

Web Developer

Minh Nguyen, BA/LLB *UTSMA* *UNSW*

■ Agricultural Chemistry and Soil Science

Professor and Dean, Faculty of Agriculture

Les Copeland, BSc PhD, MRACI CChem. Appointed 2001

Professor in Agricultural and Environmental Chemistry (Personal Chair)

Ivan R Kennedy, PhD DSc(Agric) *WAust* FRACI CChem.
Appointed 1996

Professor in Soil Science and Head of Department

Alexander B McBratney, BSc PhD *Aberd*. Appointed 1995

Senior Lecturers

Robert A Caldwell, MSc PhD, MRACI CChem

Stephen R Cattle, BScAgr PhD

Edith M Lees, BSc PhD *Lond*

Balwant Singh, MSc *Haryana Agric Univ HISAR India* PhD
WAust

McCaughy Lecturer in Hydrology and Catchment Management

R Willem Vervoort, Agr Eng *Wageningen* PhD *Georgia*

Senior Research Associates

Inakwu OA Odeh, BSc *Ibadan* PhD *Adel*

John Triantifilis, BScAgr PhD

Research Associates

Nanju Lee, BScAgr PhD

Shuo Wang MScAgr PhD

Brett Whelan BScAgr PhD

Senior Technical Officers

Colin Bailey, BApplSc *NSWIT*

Kevin McLauchlan, BiolTechHCert *STC*

Technical Officer

Damian Field, BSc PhD

Iona Gyorgy, BiolTechCert BSc(Biotech) *UTS*

Administrative Assistant

Narelle Tyler

Emeritus Professor

Neville Collis-George, MSc *Mane* PhD *Camb*, HonDScAgr
FRSChem

Honorary Associates

Harold R Geering, MSc *Cornell*

Rodney J Roughley, PhD *Lond* MScAgr

Norman K Matheson, PhD *Edin* MSc

■ Anatomy and Histology

Challis Professor of Anatomy

Jonathan Stone, BSc(Med) PhD DSc, FAA. Appointed 1987

Chair of Anatomy and Pain Management

Richard J Bandler, BA *Miami (Ohio)* PhD *Carnegie-Mellon* DSc

Personal Chair in Visual Neuroscience

Bogdan Dreher, MS PhD *Warsaw* DSc

Professors

Johnston W McAvoy, BSc SeZ/PhD *Flin*. Appointed 2001

Christopher R Murphy, BSc *Adel* PhD *Flirt* DSc

Associate Professor and Head of Department

William S Webster, BSc PhD *Lond*

Associate Professors

Maria Byrne, BSc *Galway* PhD *VicBC*

Tailoi Chan-Ling, MOptom PhD *UNSW*, FAAO

Cristobal G dos Remedios, PhD DSc

Jan M Provis, BSc PhD *UNSW*

Senior Lecturers

Robin Arnold, MSc

Vladimir J Balcar, BSc *Sheff* PhD *ANU*

Kevin A Keay, BSc *Leeds* PhD *Sheff*

John Mitrofanis, BSc *UNSW* iD

Lynette A Moffat, BSc PhD

Margaret A Swan, BSc PhD

Lecturers

Deborah Bryce, BSc *N'cle(NSW)* MChiroprac *Macq*
 Karen Cullen, BSc PhD
 Denise A Donlon, BA PhD *NE* BSc DipEd
 Frank Lovicu, BSc PhD

Senior Research Fellows

Julian A Barden, PhD *Macq*
 Coral G Chamberlain, MSc PhD
 Thomas Fitzgibbon, BSc *UBC* PhD
 Angela Hales, BSc PhD

Research Fellows

David Cameron BA PhD *ANU*

Neil Nosworthy, BSc PhD

Michael Slater, BSc *Macq* PhD

Associate Lecturers

Fiona Stewart, BSc A@ MB BS

Richard Ward, BMedSci MB BS *Monash*

Professional Officer

Peter R Mills, DipMT AIMLS, AAIMLS

Senior Technical Officers

Darryl R Cameron

Clive H Jeffrey

Roland A Smith

Technical Officers

Peiren Kent

Marcus Robinson

Michael White

Computer Systems Manager

Danny Yee

Administrative Officers

Lena Ting, DipPublAdmin *HK*

Debbi Douglass

Administrative Assistants

Mai Pham, BSc *UTS*

Honorary Associates

Louise Baxter

Peter O Bishop, MB BS DSc MD, FRS FAA

William Burke, BSc PhD *Lond*

Andrew Howe, BDS PhD, FRACDS

Robbert de Iongh, MSc PhD

Arthur V Everitt, BSc PhD

EstelleLazer, BAPhD

Anne Macintosh

Robert R Munro, MD BS, FRACS

John K Pollak, BSc PhD

Cedric D Shorey, MSc PhD *UNSW*, CGIA FCGI

Richard Wright, BA *Camb* MA

■ Biological Sciences

Challis Professor of Biology

Ian Douglas Hume, BSc(Agric) PhD *WAust* DSc *NE*, FAIBiol.

Appointed 1987

Professor of Biology

David Joseph Patterson, PhD *Brist* DSc *Qu*. Appointed 1992

Professor in Evolutionary Biology (Personal Chair)

Richard Shine, BSc AM/PhD *NEDS*. Appointed 1993

Professor of Biology (Genetics)

Ronald Anthony Skurray, AUAPharm PhD DSc *Adel*, MASM

FAIBiol. Appointed 1991

Professor in Experimental Ecology (Personal Chair)

Antony J Underwood, PhD DSc *Brist*, FAA FLS FTBiol FAIBiol

CBiol. Appointed 1992

Reader

Christopher Dickman, BSc *Leeds* PhD *ANU*

Associate Professor and Head of School

Rosalind T Hinde, BSc PhD

Associate Professors

William G Allaway, MA *Camb* PhD *Lane*

Christopher B Gillies, MAgrSc g'd" PhD A/to

Robyn L Overall, BSc *UNSW* Pb *DANU*

Mary Peat, BSc *Birm* PhD *Brist*

Michael B Thompson, BSc PhD *Adel*

Senior Lecturers

Susan Franklin, BSc *Aberystwyth* MSc *S'ton* PhD

Murray J Henwood, BSc *Well* PhD *ANU*

Bruce Lyon, BSc PhD *Monash*

Peter McGee, BAgrSc PhD *Adel* DipHEd *UNSW*-

Jan Marc, BSc PhD *UNSW*

Benjamin Oldroyd, BScAgr PhD

Lecturers

NeviUe BC Firth, BSc PhD *Monash*

Dieter Hochuli, BSc *Monash* PhD *LaT*

Lars Jermiin, Cand Scient *Aarhus* PhD *LatT*

Kathryn Raphael, BA PhD *Macq*

Jennifer Saleeba, BSc PhD *Melb*

Charlotte Taylor, BSc *Dund* PhD *Aberd*

Murray Thomson, BSc *Macq*, MSc *UNSW*, PhD *N'cle*

Glenda Wardle, MSc *Auck* MS PhD *Chic*

Associate Lecturers

Simon Hudson, BSc PhD *LaT*

Alison Lewis, BSc, DipEd

OsuLilje, BSc PhD

Elizabeth May, BSc, DipEd, PhD *UNSW*

Rosanne Quinnell, BSc PhD *ANU*

Frank Seebacher, PhD Qld BSc

ARC Senior Research Fellow

Thomas Madsen, PhD Lund

ARC Postdoctoral Research Fellows

LeilaBlackman, BSc PhD

Gregory P Brown, MSc *Guelph* PhD *Car*

Eric Dorfman, BA *Calif* MSc *San Jose State* PhD

Jane Melville, BSc PhD Tas

Kylie Pitt, BSc PhD

U2000 University of Sydney Postdoctoral Fellow

Stephen Wroe, BSc PhD *UNSW*

Grant Funded Postdoctoral Fellow

Jonathan Webb, BSc PhD

Grant Funded Postdoctoral Staff

An Cindy, BSc *Fudan* MSc *Peking Union* PhD *Glas*

Melissa H Brown, BSc PhD *Adel*

A Stewart Gilchrist, BSc LLB PhD

Stephen Kwong, BTech *Macq* PhD *Sing*

Jing Ting Zhao, MedSc *Shanghai* PhD

School-Funded Postdoctoral Staff

Adrienne Grant, BSc PhD *ANU*

Professional Officer Grade III

Michael Joseph, BSc

Resources Officer

Mark Ahern, BSc

Senior Technical Officers

George Barrett, HNC(ApplBiol) *UK*

Virginia Klomp, BiolTechCert BiolTechHigherCert *STC*

Robert Mackay-Wood, BSc *Cant*

Claudio Muhlrad, BiolTechCert *STC*

Andrew Oulianoff

Basil Panayotakos

Malcolm Ricketts, BSc *Macq* PhotogCert *STC*

Salvatore Ruggeri

Heather Sowden, BiolTechCert *STC*

Multimedia Courseware Developer

Aida Yalcin, BSc MSc Aegean Univ Turkey

Technical Officers

Leslie Edwards, BiolTechCert *STC* AssDipBiolTech *STC* BSc

UTS

Mihaly Ferenczi, BAgrSc *Godallo*

Margaret Gilchrist, BiolCert *STC*

Joanna Hines, BSc GradDipSci(Env Sci)

Helen Kranidiotis, BSc

Hamish MacKenzie, BiolCert *STC*

Ralph Maddox, BiolTechCert *ArmTC*

Christine Newman, BAppSc *UTS*

Technical Officer (half-time)

Mark Dickson, BSc

Laboratory Assistants

Hamlet Giragossyan (half-time)

Computer Systems Officer

Sandra Lloyd, AdvCertUrbHort *Ryde School of Hort*

MA(DesSc)

Administrative Officer

Maureen Claxton, BA R 'dg DipEd *NE*

Finance Officer

Louie Briskoski, AssDip (Accounting) *Granville TAFE*

Administrative Assistants

Roslyn Malin
Richard Potts BSc (part-time)
Suzan Ramsey (part-time)
Semra Yetke

Attendant

Hamlet Giragosyan (half-time)

Emeritus Professors

Donald Thomas Anderson, AO, PhD Lond DSc Lond and Syd,
FRS FLS FAIBiol

Charles Birch, B AgrSc Melb DSc Adel FAA FAAAS

John Alexander Thomson, MSc MAgrSc PhD Melb

Honorary Professor

Anthony WD Larkum, BSc Lond DPhil Oxf, ARCS

Honorary Reader

Alan Meats, BSc Durham PhD N'cle (UK), FRES

Honorary Associate Professor

Patricia J Armati, MSc PhD, MAIBiol

Honorary Associates

Gigi Beretta, BSc Lawrenceville

Daniel Bickel, BSc Mich PhD

Walter E Boles, BSc Emporia State

Ross A Bradstock, BSc PhD

Gerry Cassis, PhD Oregon BSc

Judith Caton, BSc Adel MA ANU DipEd CCAE PhD ANU

Alan Clift, BSc Agr PhD

Harold Cogger, PhD Macq DSc

Stephen Cork, BSc PhD UNSW

Mark Curran, BSc

Vadim Dedov, MB BS Sverdlovsk Med Inst PhD

Gregory Edgecombe, MSc Alberta MPhil PhD Columbia

Tim Entwistle, BSc Melb PhD LaT

Graham J Faichney, BSc(AgrSc) MSc Agr PhD DAgrSc Melb

Daniel Faith, BA Chicago PhD State Uni of New York

Marianne Frommer, BSc PhD

Allen E Greer, BA Stan PhD Harv

George Humphrey, LLB UNSWBA PhD

Patricia A Hutchings, BSc Lond PhD DSc N'clef UK)

Michael J Kingsford, BSc Cant PhD DSc Auck

Jeffrey M Leis, BSc Arizona PhD Hawaii

Francis L Lemckert, MSc

Garry Lynch, BSc Flin PhD Monash

Valerie B Morris, BSc PhD Edin

Peter Myerscough, MA PhD Oxf

Mats Olsson, BSc PhD Goteborg

John Palmer, MSc PhD Sheff

Kerryn Parry-Jones, DipEd STCMAAppSc PhD UNSW BSc

John R Paxton, BA MSc PhD SCalif

John D Pollard, BSc MB BS PhD

Winston Ponder, MSc PhD DSc Auck

Graham Pyke, PhD Chicago BSc

Ray Ritchie, BSc PhD

William Rudman, PhD DSc Auck

Deirdre Sharkey, BSc

John A Sved, BSc PhD Adel

Donelle Trautman, BSc PhD Murdoch

George Wilson, BA Indiana MSc UCSD PhD La Mia

Visiting Scholars

Nihal Agar, MVetSci PhD Agra

Frank Gleason, BSc Trinity College, Hartford PhD UCLA

Wonje Lee, BSc MsD Korea

Peter Pockley, BSc DipEd Melb DPhil Oxf

Ellen Popodi, MSc Wise PhD Marquette

Rudolf Raff, BSc Penn PhD Duke

Sharon Minsuk, BS Stan PhD UCLA Berkeley

Elizabeth Raff, BS Penn State PhD Duke

Andrew Smith AB UCLA Berkeley PhD UCLA Los Angeles

James Stewart, PhD Tulsa

Jeffery Villinski, BA Minnesota MS Houston

De Dee Woodside, BSc Car PhD ANU

■ Chemistry

Professor of Chemistry (Organic Chemistry)

Maxwell J Crossley, BSc PhD Melb, FAA FRACI CChem.

Appointed 1999

Professor in Chemistry (Organic Chemistry)(Personal Chair)

Leslie D Field, PhD DSc, FAA FRACI CChem. Appointed 1994

Professor in Chemistry (Polymer Chemistry)(Personal Chair)

Robert G Gilbert, PhD ANU BSc, FAA FRACI CChem.

Appointed 1992

Professor in Chemistry (Inorganic Chemistry)(Personal Chair) and Head of School

Peter A Lay, BSc Melb PhD ANU, FRACI CChem.

Appointed 1997

Professor of Chemistry (Inorganic Chemistry)

Len Lindoy, PhD DSc UNSW, FAA FRACI CChem FRSC.

Appointed 1996

Professor of Chemistry (Physical Chemistry)

Donald Harold Napper, PhD Camb MSc, FAA FRACI CChem.

Appointed 1985

Professor

Trevor W Hambley, BSc WAust PbD Adel, FRACI CChem

Readers

George Bacskey, BSc Melb PhD Camb

Associate Professors

James K Beattie, BA Prin MA Camb PhD Northwestern,

FAAAS FRACI FRSC CChem

Margaret M Harding, BSc PhD, FRACI CChem

Peter R Harrowell, BSc PhD Chic

Scott H Kable, BSc PhD Griffith DipBus Admin QIT

John C Mackie, PhD DSc, FRACI CChem

Anthony F Masters, BSc Melb PhD ANU, FRACI CChem

Damon D Ridley, BSc PhD, FRACI CChem

Gregory G Warr, BSc PhD Melb, FRACI CChem

Director of First Year Studies

Adrian George, BSc PhD R'dg, MRSC MRACI CChem

Senior Lecturers

Robert W Baker, BSc PhD WAust

Brendan J Kennedy, BEd Melb BSc PhD Monash

Cameron J Kepert, BSc UWA PhD Lond

Anthony R Lacey, MSc PhD, MRACI CChem

Michael S Sherburn, BSc PhD Nott

Lecturers

Ronald J Clarke, BSc PhD Adel

Rachel Codd, BSc PhD James Cook

Ronald R Fenton, BSc PhD Macq MRACI CChem

Craig A Hutton, BSc PhD Adel

Meredith J T Jordan, BSc PhD

Malcolm D McLeod, BSc Monash PhD Camb

ARC Senior Research Fellows

Jeffery R Reimers, BSc PhD ANU, MRACI CChem

David R M Williams, BSc PhD Camb

Senior Research Fellow

Simone C Vonwiller, BSc PhD

Research Fellow

Christopher Fellows, BSc PhD James Cook

Principal Research Fellow

Brian Hawkett, BSc PhD DipEd

ARC Postdoctoral Fellow

David E Hibbs, BSc Wales PhD Cardiff

U2000 Postdoctoral Fellow

Heping Zeng, BSc Peking PhD Chinese Acad Sc

Senior Research Associates

Carolyn Dillon, BSc PhD

Aviva Levina, MSc PhD Riga

Research Associates

Zhengli Cai, MSc PhD Chinese Acad Sci

Hsiu Lin Li, BSc PhD Monash

Gang Wei, MSc Hangzhou PhD N'cle (NSW)

Level A Academics

Hank de Bruyn, BSc PhD

Christopher J Ferguson, BSc PhD Cant

Postdoctoral Fellows

Ante Bilic, MSc Zagreb PhD N'cle (NSW)

Robert J Hughes, BSc PhD Flin

Emi Ikeda, BSc PhD

Bauke Nauta, PhD Nth Carolina

Warwick Shapely, BSc PhD

Professional Officers

Tuan La, BE UNSW (Electronics)

Ian Luck, BSc (NMR and EPR)

Kelvin Picker, BSc PhD, MRACI (GLC and HPLC)

Jaroslav T Popiolkiewicz (Electronics)

Peter Turner, BSc Flind MSc PhD NE

Z John Trafalski (Electronics)
 Chuan-Liang Xie, PhD *III* (NMR and EPR)
Professional Assistant
 S Warren Lazer, BSc PhD
Laboratory Manager
 John Duckworth
Administrative Officer
 Catherine H Woods, BA
Administrative Assistants
 Sophie Patsalides
 Louise Trevillion, BSc
 Lisa Wu, BBus *CSturt*
Emeritus Professors
 Hans C Freeman, MSc PhD, FAA FRACI FRSC CChem
 Noel S Hush, DSc *Mane* MSc, FAA FRACI
 Sever StemheU, PhD DSc DIC *Lond* MSc, FAA FRACI CChem
 Walter C Taylor, PhD DSc *Manes* MSc, FRACI CChem
Professorial Fellow
 Dalway J Swaine, MSc *Melb* PhD *Aberd*, FRACI CChem
 (Inorganic Chemistry)
Honorary Professor
 John T Pinhey, PhD DSc, FRACI CChem
Honorary Associate Professors
 Robert S Armstrong, MSc PhD, MRACI CChem
 Manuel Aroney, AM OBE, PhD DSc, FRACI FRSC CChem,
 CorrMembAcadAthens
 Robert J Hunter, BSc PhD, FAA FRACI CChem
 Julia M James, BSc PhD *Lond*, MRACI CChem
 Raymond K Pierens, MSc PhD, MRSC MRACI CChem
Honorary Senior Lecturer
 Donald V Radford, MSc PhD DipEd *NE*
Honorary Lecturer
 Alan J Williams, MSc PhD, MRACI CChem
Honorary Associates
 Craig Barnes, BSc PhD, MRACI
 Michael M Bishop, BSc PhD *Cant*
 Christopher J Burns, BSc PhD *Melb*
 Barbara Messerle, BSc PhD, MRACI CChem
 Richard W O'Brien, BE *UNSW* PhD *Camb*
 Vickie A Tolhurst, BSc *NE* PhD *Griff*
 Jane Weder, BPharm, PhD
 Matthew P Wilkinson, BSc PhD
 John G Wilson, MSc PhD *Nott*
 Paul Wormell, BSc PhD

■ Geosciences

Professor and Head of School
 John Connell, BA PhD *Lond*. Appointed 2001
*Edgeworth David Professor of Geology and William Hilton
 Howell Lecturer*
 Peter John Davies, BSc *Leic* PhD *Sheff*. Appointed 1991
Professor of Geophysics
 Iain M Mason, BScEng *Cape* TPhD *Edin*. Appointed 1995
Associate Professors
 Deirdre Dragovich, MA *Adel* PhD
 Philip Hirsch, BA *Oxf* MPM *Dundee* PhD *Lond*
 Jock B Keene, BAgEc ME PhD *Calif* BSc
 Andrew D Short, MA *Hawaii* PhD *Louisiana State* BA
Senior Lecturers
 Gavin F Birch, MSc PhD GradDipIndAdmin *Cape T*
 David E M Chapman, MEngSc *UNSW* BA PhD
 Geoffrey L Clarke, BSc PhD *Melb*
 PeterJCowellLBAPhD
 Stephen J Gale, MA *Oxf* PhD *Keele*
 Dietmar Muller, BSc *Kiel* PhD *Calif*
Lecturers
 Roger Buick, BSc PhD *WAust*
 Thomas CT Hubble, MAppSc *UNSW* MSc DipEd
 Michael Glen Hughes, BSc PhD
 Philip McManus, BA GradDip MES PhD
 William Pritchard, BA PhD
 Patrice Rey, BSc PhD
 Derek Wyman, BSc *Out* PhD *Sask*
Research Fellow
 Jonathan Hargreaves, BSc *York* SPhil *Oxf*
 Carmen Gaina, BSc PhD

Brett Marmo, BSc, PhD
Chief Cartographer
 John E Roberts
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
 Donald W Emerson, BE MSc *UNSW* PhD, FAIG FAIMM
 Richard Facer, BSc PhD
 Stephanie Fahey, BA PhD
 James Gardner, PhD
 John P Hudson, MA PhD *ANU*
 Ronald Horvath, MA PhD
 Robert A Jones, BEng *WAust* MEng *Auck* MSc *Lond*
 Jack Massey, MA *Melb* PhD
 Dona Mihut, PhD
 Louis Moresi, PhD
 Gordon Packham, BSc PhD
 Graeme Philip, BSc MSc DSc *Melb* PhD *Cant*
 Peter Roy, BSc PhD *ImpColl*
 Robin F Warner, BA *Birm* PhD *NE*
 Edward Wheelwright, DFC MA *StAnd*
Senior Technical Officers
 Nelson Cano
 Karen Lease, BSc
 Graham Lloyd
 Philip Manning
 David Mitchell
 Tom Savage
Administrative Officers
 Nancy He
 Lisa Simmons

■ Infectious Diseases

Bosch Professor
 Yvonne Edna Cosart, DCP *Lond* BSc(Med) MB BS, FRCPA.
 Appointed 1985
Clinical Professor
 Gwendolyn Lesley Gilbert, MD BS *Melb*, FRACP FRCPA
 FASM (with Medicine). Appointed 1990
Associate Professors
 Colin Harbour, BSc *Wales* PhD *Lond*(Head of Department)
 Raymond Kearney, BSc PhD *Qld*
Clinical Associate Professors
 Richard Alan Vickery Benn, DipBact *Lond* BSc(Med)MB BS,
 FRCPA FRACP FASM (with Medicine)
 Margaret Anne Burgess MD BS, FRACP MACP (with
 Paediatrics and Child Health and Centre for Immunisation
 Research New Children's Hospital)
 Peter John Colignon, MB BS BSc(Med), FRACP RCPA MASM
 (with Canberra Clinical School and Medicine)
Senior Lecturers
 Bernard J Hudson, MB BS, DTPH, FRACP FAFPHM FRCPA
 Carol H Thompson, BA MVSc PhD, MACVSc FASM
 Roger Denis Wilson, MB ChB PGDipMicro *Otago*, FRCPA
 FRCP
Clinical Senior Lecturers
 Ross Bradbury, MB BS, FRACP FRCPA
 Thomas Gottlieb, MB BS, FRACP FRCPA
 Colin MacLeod, MB BS, FRCPA FRACP MASM FAFPHM
 (with Medicine)
 Alison Mary Vickery, MSc, FASMI
Lecturers
 George Kotsiou, MB BS *Adel*, FRCPA FRACP
 Donald Ashley Ross Watson, MB BS *Melb* MPH *Hary*, FRACP
 (with Canberra Clinical School and Medicine)
Senior Research Fellows
 Barbara R Rose, BSc PhD, FAIMLS AAIMLT MASM
 Karen Vickery, BVSc(Hon), MVSc, PhD

■ Information Technologies

Professors

Peter Eades, BA (Hons) PhD *ANU*. Appointed BT Financial Services Chair of Software Technology, 2000
David Everitt, BE PhD *Qld*. Appointed Chair of Internetworking 2001
David Feng, ME *SJTU MS PhD UCLA*. Appointed 2000
Jon D Patrick, DipBehHealthPsych *La Trobe Dipl Surv RMLT BSc Deakin MSc Dub PhD Monash*. Appointed 1998
Albert Zomaya, BEng *Cairo MSc PhD McG*. Appointed Cisco Systems Chair of Internetworking, 2001

Associate Professors

Joseph G Davis, BSc *Calicut PostGradDipMgmt IIMA PhD Pitt*
Alan Fekete, PhD *Harv BSc*
Jesse Jin, PhD *Otago MSc CTU BSc SJTU*
Judy Kay, BSc PhD
Jeffrey H Kingston, BSc (Hons) PhD
Robert J Kummerfeld, BSc PhD

Senior Lecturers

Edmund Balnaves, BA *CCA MBA NTU*
Tony Greening, EdD *CQUMAppSc CSturt MED SCross MEdAdmin UNE GCertEdStud BAppSc (CSturt)*
Michael Houle, PhD *McG BSc* (on leave 2002)
Bjorn Landfeldt, PhD *UNSW Cisco Senior Lecturer in Internet Technologies* (jointly with EIE)

Ian A Parkin, PhD *Adel BSc*
Tatjana Zrimec, PhD *Ljub MSc*

Lecturers

Weidong (Tom) Cai, BSc *HuaQiao PhD*
Vera Chung, PhD *QUT*
Seok Hee Hong, PhD *Ewha MS*
Liaquat Hossain, PhD *W'gong BBA MSc Assumption* (on leave 2002)

Geoffrey Kennedy, PhD *Otago MA Kent MSc Macq BSc NSW*
Irena Koprinska, PhD *Sofia MSc TU-Sofia*
David Nathan, MA *Sussex BA (Hons) La Trobe*
Mahmood Niazi, MSc *Peshawar PhD Mane*
Josiah Poon, PhD

Joe Thurbon, BSc PhD
Kalina Yacef, PhD *Paris*

Associate Lecturers

Stephen Anthony, BSc (Hons)
Simon Poon, MEng *UTS BSc GradCert MathsSci UTS*
Kapila Wimalaratne, BSc (Hons)

Invited External Lecturers

Boualem Benatallah, PhD MS *Grenoble BS Oran*
James Farrow, PhD BSc (Hons)
Asis Kumar Goswami, PhD *IIS ME BE Jadavpur*
Paul Greenfield, MSc BSc Hons
Maolin Huang, PhD *Newcastle MSc UWS BE ECNU*
Karin Kolbe, MSc *UTS BSc*
Xuemin Lin, PhD *Qld BSc Fudan*
Decler Mendez, MSc *UTS BSc Concepcion*
Geoffrey Phipps, PhD *Stan BSc (Hons)*
Fethi Rabhi, PhD *SheffMEng USTHB*
Hugh Springford, BCom *Otago*

Andrea Stern, BA *Macq Pgrad Diploma Science UNSW*
Gregory Saunders, BSc (Hons)
Uma Srinivasan, PhD *UNSWMSc BSc Madras*
Jingling Xue, PhD *Edin MSc BSc Tsinghua*

Postdoctoral Fellows

Falk Schrieber, DiplInf BSE *Passau*
Changsheng Xu, PhD *Tsinghua MSE China UMT*

Research Associates

Sunthorn (Sean) Puangchinda, MCom *UNSW*
David Streader, PhD *QMWMSc Biist BA York*
Koon Pong Wong, PhD *Hong Kong Poly U BE (Hons)*
Computer Systems Officers
Michael Flanagan, PhD BSc (Hons)
David Formosa, BCompSc *UWS*
Roy Giles, BSc *Wales*
Bruce Janson, BSc (Hons)
Ronald Jore, BSc (Hons) *TU Berlin*
Piers R Lauder, BSc *Warw DipCompSc Brad*
Greg Ryan, BSc (Hons)
Keir Vaughan-Taylor, MSc
Chief Technical Officer
Remo Di Giovanni

Senior Technical Officers

Allan Creighton
Arthur Scott

Technical Officers

Robert Calabrese
Witold Janus

Administrative Officers

Shari Lee, MA BA *Sing*
Helene Orr, BA *UNE*
Administrative Assistants
Richard Bailey, LLB *UTS*
Sharon Chambers
Kimberley Davis
Wei Ying Ho
Judith Maddison
Josephine Sponberg

Honorary Appointments

John Baker, PhD *UNSW*
Em Professor John Makepeace Bennett AO, PhD *Camb BE(Civ) BE(Mech&Elec) BSc Old, FTS FACS FBSC FIEAust FTMA*
Rex Di Bona, PhD BE(Hons)
Allan G Bromley, PhD BSc
Zheru Chi, PhD MEng BEng *Zhejiang*
Peter Chubb, PhD *UNSW*
Stefan Eberl, PhD MSc *UNSW*
Norman Foo, PhD *Mich ME Cant*
Michael Fulham, MB BS *UNSW*
Roger Fulton, PhD MSc *UTS*
Vance Gledhill, PhD *Melb BSc, FACS*
Ian Gorton, PhD *Sheff*
Michael Hitchens, PhD *N'cle (NSW)*
Doan B Hoang, PhD *N'cle (NSW) ME BE WAust*
Brian Hutton, PhD *UTS MSc Aberd BSc (Hons)*
Anna Liu, PhD *UNSW*
Chris Maltby, BSc *UNSW*
Gordon McCalla, PhD *BrCol MSc BSc (Hons) Alta*
Steve Meikle, PhD *UNSW*
Eric McCreath, PhD *UNSW BE*
Agathe Merceron, PhD *Paris*
Cecile Paris, PhD *Col*
Jack R Phillips, PhD *Melb BMEchE*
John Rosenberg, PhD *Monash BSc (Hons)*
Antonis Symvonis, PhD *UTexas*
Eric Tsui, PhD *Deakin*
Raymond Wong, PhD *HKST*
David Zhang, PhD *HarbinITPhD UWaterloo*
Hong Jiang Zhang, PhD *Denmark BS Zherigzhou*
Ya-Qin Zhang, ScD *GWashUniv*

■ Mathematics and Statistics

Professor in Mathematical Statistics (Personal Chair) and Head of School

John Robinson, BSc *Qld PhD*. Appointed 1991
Professor in Pure Mathematics (Personal Chair)
Gustav Isaac Lehrer, PhD *Warw BSc, FAA*. Appointed 1990

Professors

John J Cannon, MSc PhD. Appointed 2000
Edward Norman Dancer, BSc AM/PhD *Camb*. Appointed 1993
Eugene Seneta, MSc *Adel PhD ANU, FAA*. Appointed 1979

Readers

Donald I Cartwright, PhD */// BSc*
Jonathan Hillman, BSc *WAust AM Harv PhD ANU*
King-Fai Lai, BSc *Lond MPhil PhD Yale*

Associate Professors

Christopher J Durrant, MA PhD *Camb*
Terence M Gagen, BSc *QldVhD ANU*
William G Gibson, MSc *Cant PhD UNSW*
Robert B Howlett, BA PhD *Adel*
Ronald W James, BSc PhD
Charles C Macaskill, BSc PhD *Adel*
Malcolm P Quine, MSc *Lond PhD ANU*
Donald E Taylor, MSc *Monash DPhil Oxf*
Neville C Weber, MSc PhD

Director of Junior Studies

Sandra C Britton, BSc *UNSWMA*

Senior Lecturers

Peter W Buchen, PhD *Camb BSc*

Koo-Guan Choo, BSc Nan MSc Ott PhD BrCol
 Christopher M Cosgrove, BSc PhD
 David Easdown, BA AM/PhD *Monash*
 Roger W Eyland, PhD *Camb* MSc
 David J Galloway, BA PhD *Camb*
 Hugh C Luckcock, BScA&M PhD *N'clefUK*), ASIA
 Alexander I Molev, Diploma PhD *Moscow*
 Gordon P Monroe, BSc *Monash* PhD *Brist*
 Mary R Myerscough, DPhil *Oxf* MSc
 Nigel R O'Brian, MA *Camb* PhD *Warw*
 William D Palmer, MLitt MA *NE* BSc PhD DipEd
 M Shelton Peiris, DipMath MSc *Peradeniya* PhD *Monash*
 Mary C Phipps, MSc
 James N Ward, BSc PhD
 Karl H Wehrhahn, BSc *Alta* PhD
Lecturers
 Howard J D'Abrera, PhD *Calif* BSc
 Daniel Daners, PhD *Zurich*
 Humphrey M Gastineau-Hills, MSc PhD
 Jenny Henderson, DipEd *Flin* MSc
 David I Ivers, BSc PhD
 David R Kohel, BSc *Texas* A&M PhD *Berkeley*
 Andrew P Mathas, BSc MSc PhD *III*
 Adrian M Nelson, PhD *Lond* BSc
 Laurentiu Paunescu, MSc *Bucharest* PhD
 Marc Raimondo, MSc DipStats PhD *Paris VII*
 Rosemary S Thompson, BSc *ANU* PhD
Associate Lecturer
 Michael Stewart, BSc MA
ARC Senior Research Fellow
 Ruibin Zhang, BSc *Shandong* PhD *Tas*
Postdoctoral Fellows
 Stephen G Lack, BSc PhD *Camb*
 Shusen Yan, MS *South China* UnitTech PhD *Wuhan Inst*
U2000 Postdoctoral Fellow
 Joost van Hamel, PhD *Amsterdam*
Research Fellows
 Claus Fieker, DiplMath *Heinrich-Heine* PhD *Berlin*
 Volker Gebhardt, Dipl *Friedrich-Alexander*, *Erlangen* PhD *Essen*
Senior Research Associates
 Leslie Farnell, MA DPhil *Oxf* DipEd *Canberra*
 Alan K Steel, BA
 William R Unger, BSc PhD
Research Associates
 Geoffrey Bailey, BSc
 Paulette Lieby, BCS PhD *NTerritory*
Research Assistants
 Anne P Cannon, BA MPhil
 Nicole J Sharp, BSc *Macq*
Computer Systems Officers
 Robert B Pearson, BSc BIT *CSturt* ADipA *Mitchell* *CAR*
 James S Richardson, PhD *Warw* MSc
 Paul Szabo, BSc *Havana*
 Michael R Wilson, BSc
Administrative Officer
 Deirdre Lawrie, MA *Dund*
Finance Officer
 Julie Small
Administrative Assistants
 Flora Armaghanian
 Viola Chao
 Janet Doyle
 Jan Love
 Sonia Morr
Emeritus Professors
 Gregory Maxwell Kelly, BA PhD *Camb* BSc, FAA
 Gordon Elliott Wall, BScArfe/PhD *Camb*, FAA
 Peter Robert Wilson, BA MSc *Melb* PhD, FRAS
Visiting Professors
 Richard Cowan, BSc PhD GradDip
 Nicholas I Fisher, PhD *NthCarolina* DSc
Honorary Reader
 Tzee-Char Kuo, BS *Natl* *Taiwan* PhD *Chic*
Honorary Associate Professors
 Edward D Fackerell, MSc PhD
 John M Mack, MA *Camb* BSc PhD
 Robert FC Walters, MSc *Qld* PhD *ANU*

Denis E Winch, MSc PhD, FRAS
Honorary Senior Lecturer
 W Barrie Fraser, BSc ME *Cant* SM PhD *Harv*
Honorary Associates
 Geoffrey R Ball, BA
 Donald W Barnes, DPhil *Oxf* BSc
 David C Edelman, MPhil PhD Col SM MIT
 Brian Gray, PhD BSc *Mane*, FRACIFRSC
 Michael S Johnson, BSc PhD
 Ross H Street, BSc PhD
 Shu-Hao Sun, BSc MSc *Shannxi* Normal PhD *Sichuan*

■ Molecular and Microbial Biosciences

Biochemistry

Professor and Head of School
 Richard I Christopherson, BSc PhD *Melb* (Personal Chair).
 Appointed 1998
McCaughey Professor
 Philip W Kuchel, BMedSc MB BS *Adel* PhD *ANU*, FAA.
 Appointed 1980
Associate Professors
 Arthur D Conigrave, BSc(Med) MB BS MSc PhD, FRACP
 Alan R Jones, PhD *Mane* MSc
 Anthony S Weiss, BSc PhD
 Emma Whitelaw, BSc *ANU* DPhil *Oxf*
Senior Lecturers
 W Bret Church, BSc *UNSW* DipEd *NE* PhD, MRACI
 Charles A Collyer, BSc *Flin* PhD
 Merlin Crossley, BSc *Melb* DPhil *Oxf*
 Gareth S Denyer, BA DPhil *Oxf*
 Kevin M Downard, BSc PhD *Adel*
 Simon B Easterbrook-Smith, BSc *Well* PhD *Adel*
Lecturers
 Jill Johnston, BSc *Qld* DipEd *Catholic* *CE(Syd)*
Associate Lecturers
 Douglas J Chappell, BA BSc PhD DipEd
 Dale P Hancock, BSc PhD
Principal Research Fellow
 J Mitchell Guss, BSc PhD
Senior Research Fellows
 William A Bubbs, DIC *Lond* BSc PhD
 Barry A Fields, BSc PhD
Research Fellows
 Thomas Eykyn, BSc *Oxf* PhD *Lausanne*
 David Gell, BSc PhD *Camb*
 Elizabeth Harry, BSc PhD
 Mohammad A Kamal, MSc *Gotnal* PhD *Islamia*
 Joel Mackay, BSc *Auk* PhD *Camb*
 Jackie Mathews, BSc *UNSW* PhD *Cam*
 Megan Maher, BSc *Qld* BSc PhD *Melb*
 Konstantin Momot, BSc *Novosibirsk* PhD *Arizona*
 Peter J Mulquiney, BSc PhD
 Caroline Rae, BSc PhD
Postdoctoral Staff
 Adrienne Adams, BSc PhD, *Melb*
 Larissa Belov BSc, *Qld* PhD *Macquarie*
 Bogdan E Chapman, BSc PhD *ANU*
 Suyinn Chong, BAppSc PhD *UTS*
 Roberta Donadini, BSc PhD
 Alison Franks, BSc PhD
 Slade Jensen, BMedSci PhD
 David Langley, BSc PhD
 Saad Ramadan, BSc *Am* *UBeirut* MSc *UNSW* PhD
 Allan H Torres, BSc *UPLB* PhD *Alberta*
 Jeremy Turner, BSc PhD
 Alexis Verger, BSc PhD *Paris*
Clinical Associate Professors
 Peter Stewart, MB BS MBA, FRACP FRCPA
 David R Sullivan, MB BS, FRACP FRCPA
Senior Technical Officers
 Robert T Czolij, BSc *Macq* BiolTechCert *STC*
 Joseph Dimauro, MSc
 William G Lowe, BiolTechCert *STC*
 Ross I Taylor, FittMachCert ToolmakingCert *STC*
Technical Officers
 Cesar De La Paz

Debra Phillips, QTACert *NZIMLT*

Laboratory Assistant

Ben Monaghan

Librarian

Sarah L Barrett, DipIM(Lib) *UNSW BA*

Emeritus Professors

Hans C Freeman, MSc PhD, FAA FRACIFRSC CChem

Clifford H Gallagher, PhD *Lond DVSc, FACVSc FRCPath*

Noel S Hush, DSc *Mane MSc, FRS FAA FRACI*

Robert Gerard Wake, MSc PhD, FAA

Adjunct Professor

Keith Williams, BAgSc *Melb PhD ANU*

Adjunct Senior Lecturers

Stephen P Mulligan, MB BS *UNSW PhD, FRACP FRCPA*

Michael AW Thomas, DPhil *Oxf BSc*

Honorary Associates

Renze Bais, BSc PhD *Adel*

Leslie Burnett, BSc *Melb MB BS PhD*

Roderick JD Clifton-Bligh, BSc (Med) MB BS PhD *Camb*

Ivan Darvey, BSc PhD *UNSW*

Christopher J Garvey, MSc

Glenn F King, BSc PhD

Michael A Messer, MSc PhD *Melb*

Hossein Nour-Sorkhabi, BSc *Tabriz, PhD Wales*

Michael Slaytor, MSc PhD

Vivian KLY Whittaker, MB BS *Qld PhD ANU*

Jim Wiley, BA O[^]MB BS MD

Honorary Research Associate

Uwe Himmelreich, MSc(Dipl Chem) PhD Leipzig

Human Nutrition Unit

Boden Professor of Human Nutrition

Ian Douglas Caterson, BSc MB BS PhD, FRACP Appointed 1997

Professor

Janette C Brand Miller, BSc PhD *UNSW, FAIFST. Appointed 2002*

Senior Lecturers

Samir Samman, BSc PhD, RNutr (UK)

Karen Webb, BSc MPH *UCBerkeley PhD*

Lecturers

SoumelaAmanatidis, BSc DipNutrDiet, APD (half-time)

Campbell Thompson, MSc MD DPhil *Oxf, FRACP*

Kellogg Lecturer in the Human Nutrition Unit

Dianne Volker, BHSc PhD *N'cle, APD*

Clinical Lecturer

Maria Kokkinakos BSc DipNutrDiet

Jenny Ravens, BSc CertDiet MHM *NE*

Beth Rohrlach BSc DipNutrDiet, APD

Research Fellows

Tim Gill, BSc(Tas) BSc GradDipDiet PhD (Deakin)

Janet Bryson, BSc *NE MSc*

Postdoctoral Staff

Kim Bell-Anderson, BSc *PhDUNSW*

Bing Wang, MD *Tianjin PhD*

Professional Officer

Ziaul I Ahmad, MAppSc *UTS*

Laboratory Assistant

Ann Charlton BA *UNSW*

Administrative Assistants

Isa Hopwood

Joyce Calvitto

Marianne Alexander (part time)

Emeritus Professor

A Stewart Truswell, AO, MB ChB MD CapeT DSc, FRCP FRACP FFPHM

Honorary Clinical Supervisors

Karen Allsopp, BSc *Aberd MNutrdiet*

Kylie Bennetts, BSc DipNutrDiet

Lyn Brown, DipIM CertDiet *Melb*

Jo Burton, BSc DipNutrDiet

Kathy Chapman, BSc MNutrdiet

Suzie Feme, BSc DipFdTech *UNSW MNutrdiet*

Anne Gordon, BSc GradDipDiet GradDipHEd

Peter Guest, DipEd *UWS DipSportsSc MBA Macq BSc*

DipNutrDiet

Jane Harris, BSc MNutDiet

Margaret Holyday, BSc DipNutrDiet

Michelle Hughes, BSc DipNutrDiet

Keryn Kahl, BSc *Adel DipHNutDiet Flin*

Debbie Lillienthal, BSc *Hec Canada GradDipEdStud*

Maria Loveday, BSc *Deakin CertDiet Vic*

Felicity McLean, BSc *NE GradDipNutrDiet QIT*

MarceUe Middleton, BSc *ANU/UC DipNutrDiet*

Lesley Miller, BSc DipNutrDiet

Dianne Muniz, BSc *UNSW DipNutrDiet Adel*

Margaret Nicholson, BSc DipNutrDiet MED

Rita Nicolaou, BSc DipNutrDiet

Nola Patterson, BSc *Qld DipNutrDiet*

Yvette Payne, BSc *N'cle MNutrdiet*

Joanne Prendergast, B Sc *Acad Pdt Montr MHPEd UNSW*

Elizabeth Robinson, BAppSc *UWS MNutrdiet W'gong*

Beth Rohrlach, BSc DipNutrDiet, APD

Lisa Staker, BSc MNutrdiet

Jane Storman, BSc DipNutrDiet

Peter Talbot, BSc MSc(Med) DipNutrDiet

Dawn Vanderkroft, BSc *UBC CertDiet*

Deanne Waldron, BSc *NE MNutrdiet*

Kathy Walsh, BSc DipNutrDiet

Amanda Whitworth, BSc DipNutrDiet

Sue Wright, BSc DipNutrDiet

Sharon Youde, BSc MNutrdiet

Honorary Community Supervisors

SoumelaAmanatidis, BSc DipNutrDiet MPH, APD

Susan Dumbrell, BSc MNutrdiet

Jenny Hazelton, BSc *ANU DipNutrDiet*

Marie Martin-Smith, BSc MNutrdiet *W'gong*

Honorary Food Service Supervisors

Susan Bourke, BSc DipFoodTech *UNSW DipNutrDiet*

Peter Guest, DipEd *UWS DipSports Sc MBA Macq BSc DipNutrDiet*

Maria Kokkinakos, BSc DipNutrDiet

Fifi Spechler, BSc DipNutrDiet

Honorary Industry Supervisors

Rebecca Bousted, BSc MNutrdiet *W'gong*

Tiffany Davidson, BSc GradDipDiet *Deakin*

Toni Irwin, BSc DipNutrDiet MPH

Liz Rae, BSc MNutrdiet

Microbiology

Professor

Peter Richard Reeves, BSc PhD *Lond, FAA MASM. Appointed 1985*

Reader

Thomas Ferenci, BSc *Lond PhD Leic*

Senior Lecturers

Dee A Carter, BSc *Otago PhD Lond*

Peter B New, BAgSc *Tas PhD Adel*

Lschlfs FS

Helen M Agus, MSc *UNSW, MASM*

Ilze Dalins, MSc

Technical Officers

Vincent Lai, BMedSc

John C Foster, BSc *I/MSW GradDip (Env Stud) Macq*

Katrina A Gilchrist, BiomedAdvTechCert *SIT*

Administrative Assistant

Annie Au

Adjunct Professor

Timothy G Littlejohn, BSc PhD *Melb, CIAR (Associate)*

Adjunct Senior Lecturer

Trevor Duxbury, BSc PhD *Liv, MASM*

Adjunct Lecturer

Bruno A Gaeta, BSc PhD *UNSW*

Honorary Associates

K Yip Cho, BSc *UNSWPhD ANU*

William G Murrell, PhD O;tf DScAgr, FAIFST MASM

School administrative staff

School Laboratory Manager

Terry Brown, MASM

School Administrative Officer

Danielle Wells, BSc *UNSW*

School Finance Officer

Stephen Conaghan

School Computer Systems Manager

Jennifer Wong, BSc

School Administrative Assistant

Bronwyn Ferguson (part-time)

Molecular Biotechnology Program Administrative Assistant

Jan M Harley (part-time)

■ **Pathology***Professor*Nicholas H Hunt, BSc PhD *Aston*. Appointed 1989*Reader*

John R Gibbins, MDS PhD

*Associate Professors*John Hilton, RFD MB ChB *St Andrews*, FRCPANicholas JC King, MB ChB *Cape T PhD ANU**Senior Lecturers*Shishan Bao, MB BS *Shanghai* PhDKerry Crotty, BSc(Med) MB BS *UNSW*, FRCPA MIAC

Brett D Hambly, BSc(Med) MB BS PhD

Roger S Pamphlett, BSc(Med) MD ChB *Cape T*, FRACP
MRCPPath■ **Pharmacology***Professor of Clinical Pharmacology*J Paul Seale, MB BS PhD *Lond*, FRACP. Appointed 1992*Professors*

Judith L Black, MB BS PhD, FRACP. Appointed 1997

MacDonald J Christie, BSc *Flin* PhD. Appointed 2001Graham A R Johnston, AM, MSc PhD *Camb*, CChem, FRACI
FTSE. Appointed 1980*Clinical Professor*Gillian M Shenfield, MA BCh DM *Oxf*, FRCP FRACP.
Appointed 1993*Associate Professors*Robin D Allan, BSc *Qld* PhD *James Cook*

Rosemarie Einstein, BSc PhD

Ewan J Mylecharane, BPharm *VIC* BSc PhD *Melb*Christopher Liddle, MB BS BSc(Med) *UNSWPhD*, FRACPIan Spence, BSc PhD *Monash*Graham A Starmer, MSc *Mane* PhD*Senior Lecturers*Hilary GE Lloyd, BSc *Brist* MSc PhD *Lond*

Robert JVandenberg, BSc PhD

*Clinical Senior Lecturer*Michael Kassiou, BSc *UNSWPhD UNSW**Clinical Lecturer*Laurent P Rivory, B VSc PhD *Qld**Associate Lecturers*

Jonathan Arnold, BSc

Rosario Carlo-Stella, BSc

Research Fellows

Elena Bagley, BMedSc PhD

Billy Chin Hak Chieng, BPharm PhD

Mark A Connor, BSc PhD *Wash*Christopher W Vaughan, BE MBIomedE *UNSWPhD**Department Manager*

Virginia Fascioli

*Adjunct Professor*Susan M Pond, AM, MB BS MD *UNSW*, FRACP FTSE*Conjoint Associate Professor in Physiology and Pharmacology*Paul Pilowsky, BMedSc BMBS PhD *Flin**Honorary Associates*Sandra D Anderson, PhD *Lond* BSc

James Bell, BA MB BS, FRACP

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

Merlin E H Howden, BSc PhD *Caltech*David IB Kerr, BSc PhD *Adel*Desmond J Maddalena, DipTech BAppSc MAppSc *NSWITPhD*

Karen McKay, BSc PhD

Jennifer Ong, BSc PhD *Adel*Diana M Temple, AM, BSc *WAust* MSc PhDSandra N Webb, BPharm *VIC* PhD *Strath*■ **Physics***Professor of Physics (Theoretical Physics) and Head of School*Donald B Melrose, BSc *Tas* DPhil *Oxf*, FAA. Appointed 1979*Professor in Physics (Applied Physics)*Marcela M Bilek, BSc PhD *Camb* MBA *Roch*. Appointed 2001*Professor of Physics (Astrophysics)*

Lawrence Edward Cram, BSc BE PhD. Appointed 1987

*Professor in Physics (Materials Physics)*David R McKenzie, BSc PhD *UNSW**Professor in Physics (Electromagnetic Physics)*Ross C McPhedran, BSc PhD *Tas**Professor in Physics*

Peter A Robinson, BSc PhD. Appointed 2000

*Professor of Physics (Physical Optics)*Colin JR Sheppard, MA PhD *Camb* DSc *Oxf*. Appointed 1989*Readers*Martijn de Sterke, MEng *Delft* PhD *Rochester*

Richard W Hunstead, BSc PhD

Associate Professors

Rodney C Cross, BSc PhD DipEd

Robert G Hewitt, BSc PhD

Brian W James, BSc PhD

Senior Lecturers

Timothy R Bedding, BSc PhD

Neil F Cramer, BSc PhD

Anne Green, BSc *Melb* PhD

John W O'Byrne, BSc PhD

J Gordon Robertson, BSc *Adel* PhDWilliam J Tango, BS *Calif* PhD *Colorado**Lecturers*Ian J Cooper, BSc MPhysics DipEd *UNSW*Joseph Khachan, BSc PhD *UNSW*

Philip B Lukins, BSc PhD

Manjula D Sharma, MSc DAPh *SPac**Senior Research Fellows*David R Mills, BSc PhD *UNSW*Jennifer A Nicholls, BSc *FlinPhD* *Durh*Mark A Walker, BA *Oxf* PhD *Penn*Mark J Wardle, MSc *Auck* PhD *Princ**ARC Senior Research Fellows*

Tver HCairns, BSc PhD

Elaine M Sadler, BSc *Qld* PhD *ANU*Kevin E Varvell, BSc *WAust* DPhil *Oxf*Serguei Vladimirov, MSc PhD *Moscow InstPhys&Eng**ARC Queen Elizabeth II Research Fellows*

Lewis T Ball, BSc PhD

Simon Johnston, BSc *Edin* PhD *Mane*

Michael S Wheatland, BSc PhD

Qi-Chu Zhang, MSc PhD *UNSW**Australian Research Fellow*Peter G Tuthill, BSc *Qld* BSc (Hons) *ANU* PhD *Camb**Research Fellow*Qinghuan Luo, BSc *NIHM MSc Heilongjiang* PhD*ARC Postdoctoral Research Fellows*Alex Samarian, MS *Kiev* PhD *RusAcadSciMoscow*

Andrew J WiUes, BSc PhD

*Harry M Messel Postdoctoral Fellow*Noella D'Cruz, BTech *Indian InstTechBom* MA PhD *Virg**Postdoctoral Fellows*Ara Asatryan, MSc *Yerevan State Uni* PhD *Moscow*Stephen Bosi, BSc PhD *UNSW*

Christopher Dey, BSc PhD

(Peter) Xianping Feng, BSc *Jilin Uni* MSc PhD *SIOFM* PhD*LaTrobe*Grant Gorfine, BSc(Hons) PhD *Melb*Zdenka Kuncic, BSc PhD *AM/*Manfred Lenzen, Diploma PhD *Bonn*Bo L Li, MSc *Nankai* PhD *JCU*Serguei Maiorov, MSc *Moscow InstPhys&Tech* PhD *DS**RusAcadSciMoscow*

Nigel Marks, BSc PhD

Senthilvelan Murugaian, BSc *Madras* MSc MPhil PhD
Bharathidasan Uni

Nicolae Nicorovici, MSc PhD *InstAtPhys Bucharest*

Alon Retter, MSc *Hebrew Uni* PhD *Tel Aviv*

Maitreyee Roy, MSc MPhil *Rani Dorgauati* PhD

Christopher Stewart, BSc *QldPhD York Uni Toronto*

George Warr, BSc *Cant* PhD *ANU*

Jeanette I Weise, BSc PhD *Melb*

Kathryn Wilson, BSc(Hons) PhD *Monash*

Dajun Zhu, BSc PhD *Uni Elect Sci Tech*
Professional Officers

Andrew Bakich, MSc

Duncan Campbell-Wilson, BSc *ANU*

S Reza Hashemi-Nezhad, MSc PhD *Birm*
Julius Sumner Miller Fellow

Karl Kruszelnicki, BSc MBioMedE *UNSW MR BS*
Emeritus Professors

Maxwell Howard Brennan, AO, HonDSc *Flin* BSc PhD, FAA

Richard Edward Collins, PhD *NYBSc*, FTS HE

John Davis, BSc PhD *Mane*

Robert Hanbury-Brown, AC, B ScEng DIC *Lond* DSc *Mane*, FRAS
FRAS FAA HonFNA HonFASc MIEE

Charles BA McCusker, DSc *Mane*, MRIA

Harry Messel, CBE, BSc *Qu* PhD *NUI*

Bernard Y Mills, BSc ME DScEng, FAA FRS
Adjunct Professors

Russell D Cannon, BA MA PhD *Camb*

Michael M Gore, AM, BSc PhD *Leeds*, FIE MAJP

Richard N Manchester, BSc *Cant* PhD *N'cle (NSW)*
Honorary Professors

David J H Cockayne, MSc *Melb* DPhil *Oxf*, FAIP FInstP FRS

Barry S Thornton, AM, MSc PhD *UNSWDSc*, FRAeS FInstP
FBCS FACS FIREE FIE

Honorary Reader

Graham Derrick, BSc *Qld* PhD

Honorary Associate Professors

Veronica James, BA BSc *UQ* PhD *UNSW*, OAM

Ian D S Johnston, BSc *Qld* PhD

Brian McInnes, BSc PhD *Qld*

Lawrence S Peak, BSc PhD

Murray Winn, BSc PhD *Birm*
Honorary Senior Lecturers

Roy Allen, BSc(Hons) PhD *Manes (Jodrell Bank)*

Ian M Bassett, MSc PhD *Melb*

G Fergus Brand, MSc *Otago* PhD

Carol Cogswell, MA MArch *Oregon*

David F Crawford, BSc PhD

Ian S Falconer, MSc NZ PhD *ANU*

Bruce McAdam, MSc JVZ PhD *Camb*

James B T McCaughan, MSc PhD

Ian Sefton, MSc

Robert Shobbrook, BSc *StAnd* PhD *ANU*

Anthony J Turtle, BA PhD *Camb*

Juris Ulrichs, BSc PhD

Honorary Research Associates

Joss Bland-Hawthorn, BSc *Aston Uni (B'ham)* PhD *Sussex Uni*
& *Royal G'wich Observ*

Lindsay C Botten, BSc *Tas* PhD

PalFekete, BSc PhD

Anthony Fischer-Cripps, BAppSc *UTS* PhD

Catherine Foley, DipEd *Macq* PhD *Macq* BSc(Hons)

Peter French, PhD *Deakin* BSc MSc

Julienne I Harnett, DipT *TasCAE* BA *Macq* PhD

Rolf Hewlett, BVSc PhD, MRCVS MRCVSc FBSE

Carole Jackson, MA PhD *Camb*

David L Jauncey, BSc PhD

Maryanne Large, BSc PhD *Dub*

James K Lowry, BA *Uni Richm Virg* MA *Coll William and Mary*
Virg PhD *Cant*

Pamela McNamara, BSc *Wales (Swansea)* MSc *SheffPhD Wales*
(Bangor)

Phillip Martin, BSc *Aston Uni (B'ham)* PhD *ANU*

Graham Morrison, BE *Melb*, PhD *Melb*

Andrew R Parker, BSc *John Moores Liv* PhD *Macq*

Michael Scholz, BSc *Tuebingen* MSc PhD *Hamburg*

Lindsey F Smith, BSc PhD *ANU*

■ Physiology

Professors

John Atherton Young, AO, BSc(Path) MD BS DSc *Qld*, FRACP
FAA. Appointed 1976

Maxwell Richard Bennett, BE MSc PhD *Melb* DSc, FAA.
Appointed 1983

David Grant Allen, BSc MB BS PhD *Lond*. Appointed 1989

Roger AL Dampney, PhD DSc. Appointed 1997

David I Cook, BSc(Med) MB BS MSc (the University of Sydney
Medical Foundation Fellow). Appointed 1997

Brian J Morris, BSc *Adel* PhD *Monash* DSc. Appointed 1999
Reader

Joseph FY Hoh, PhD *ANU* BSc(Med) MB BS DSc
Associate Professors

Rebecca S Mason, MB BS PhD

Christopher O'Neill, BSc PhD *N'cle(NSW)* (Clinical Associate
Professor at Royal North Shore Hospital)

Paul Pilowsky, BMedSc BMBS PhD *Flin* (Principal Research
Fellow at NHMRC)

Simon Carlile, BSc PhD (conjoint appointment in the
Chancellery as Assistant Pro-Vice Chancellor (IT))

Paul R Martin, BSc PhD
Senior Lecturers

William D Phillips, BSc PhD

Lynne J Cottee, BSc PhD (half-time & Research Officer)

Miriam Frommer, PhD *Lond* BSc
Lecturers

Margot Day, BSc PhD - NHMRC

Francoise Janod-Groves, BSc NSWIT MAppSc *UTS*

Ann Goodchild, BSc PhD
Associate Lecturer

Irene Schneider, BSc *UNSW* MSc(Prelim)
Visiting Professor

Martin Johnson
Joint Appointee

Annick Anselin, BA *Macq* MSc PhD (Lecturer)
Visiting Fellow/Scholar

Meloni Muir, BSc *Purdue* PhD *McG*
Postdoctoral Research Fellows

Anuwat Dinudom, MSc PhD - Medical Foundation

Xiaohui Xiao, MD PhD *Beijing Med Uni*

Jouji Merivchi

Andrea Markus

Youkaka Hosoda

Craig Jin

Oliver Behrend

Melani M Muir
Senior Research Officers

Chris Balnave, BSc PhD - NHMRC

Ulrike Grunert, BSc PhD *Frankfurt* - NHMRC

Yue-Kun Ju, MD *Xian* PhD *ANU* - NHMRC

Permsak Komwatana, MS PhD *Charlottesville* - NHMRC

Elizabeth Millar, BSc(Hons)

Anne Nelson, BSc PhD - NHMRC

Philip Poronnik, BSc PhD - ARC

Qi-Jian Sun, BSc *China* PhD *ANU*

Nicola Winston, BSc *Lond* PhD *Cant*
Research Officers

Jouji Horiuchi, PhD

Wenbing Huang

Qun Li, MM *Shanghai* PhD

William Lin

Guo Juh Liu

Christine Lucas, BSc PhD *NHHMRC*

Angeles Sanchez-Perez, BSc PhD *Salamanca*

Eliza Whiteside, BSc PhD
Research Assistants

Anandhi Anandan, BSc *Bharathiyar Uni*

Paul Dickens, BSc(Adv)(Hons)

Suzanne Killinger, BMedSc(Hons)

Ana Lara, BSc *Uni Republic*

Helena Mangs

Ann NoveUo Hogarth, BSc PhD *NUS*

Lauren O'Mullane, BBiomedSc *W'gong*

Anne Turnbull, BMedSc(Hons)

Leonie Wood

*Research Laboratory Staff*Judith O'Neill, RN BA(Health Sci-Nursing) *CSturt* (part-time)*Class Laboratory Staff*John F Cossey, BTC *STC* - Senior Technical Officer (in-charge)Adel Mitry, B VSc *Cairo ACC STC* - Senior Technical Officer*Electronics Workshop Staff*Vincent HW Cheung, HND *H K Polytechnic CEI Part 2 UK* -
Senior Technical Officer*Computing Staff*John WA Dodson, HNC *Lond MIEEIE I Eng* - Computer
Network Manager

Li Jin

Joseph Pridham

Department Manager

Louise Loomes, BA GradDipAcctg

Administrative Officers

Louise Harrison

Lali Jo Jacob

David Lawrey

Neville Dabboussy

*Emeritus Professor*William Burke, BSc PhD *Lond*

Ann E Sefton, BSc(Med) MB BS PhD DSc

Honorary Associate Professors

Barry S Gow, MDS PhD, FRACDS

David F Davey, BSc PhD MCG

Honorary Senior Lecturer

Annick Anselin, BA Macq MSc PhD

Honorary Associates

David Ie Couteur

Peter Maitz

William Wang

Ainsley Marsh

Elaine Mulcahy, PhD

H Psychology

*Head of Department and Professor of vestibular Function
(Personal Chair)*Ian S Curthoys, BA PhD *Monash*. Appointed 1997*McCaughey Professor of Psychology*Robert Alan Boakes, BA *Cant PhD Harv*. Appointed 1989*Professor of Clinical Psychology*Stephen W Touyz, BSc PhD *Cape TBSc Witw*. Appointed 1996
*Professors*Sally Andrews, BA *UNSWYKD UNSW*. Appointed 2002AlexBlaszczynski, BA *UNSW MA UNSW PhD UNSW*.
Appointed 2001Lazar Stankov, MA *Belgrade PhD Denver*. Appointed 2001*Associate Professors*

David Grayson, BA PhD

Cyril R Latimer, BA PhD

Iain McGregor, MA O'fPhD

JoelBMichelLBAPhD

R F Soames Job, BA PhD

*Senior Lecturers*Diana Caine, BA *NE BSc MA Melb PhD*Pamela Clifford, MA *Camb MSc Sussex PhD Lond*

Brian D Crabbe, BA PhD

Alan E Craddock, BA PhD

Deborah Erickson, BA *Houghton Coll NY MA Alf BEd Ark*Pauline Howie, BA PhD *UNSW*Caroline Hunt, BSc MPscyh PhD *UNSW*David J Livesey, BSc PhD *WAust*

Roslyn H Markham, MA PhD

John M Predebon, BA PhD

Richard Roberts, BA PhD

Michael B Walker, BSc *UWA BA Adel DPhil Oxf*Leanne Williams, BSSc BA PhD *NE**Lecturers*

Margaret A Charles, BA PhD

Julie Hatfield, BA PhD

Fiona Hibberd, BA PhD

Louise Sharpe, BA MPsych PhD *Lond*J Clare Wilson, BSc MClInPsych PhD *Otago**Associate Lecturers*

Anthony Grant, BA

Professional Officer

Kate Baggs, BA MPsych

*Administrative Officers*Sandra Cheng, BBus *UTS MCom CPA*Anne Kwan, BA DipEd *CUHK**Administrative Assistants*

Belinda Ingram, BSc

Cindy Li, DipComSec *HKPU*

Rachel Moerman, BA

Keiko Narushima, BSc

Tracy Watts, BA *Well**Head of Computer and Technical Services*

John Holden

Manager of Computer Services

Andrew Cartwright, BSc PhD

*Computer Systems Officers*Ethel Harris, DipEd *Karlstad*Nenad Petkovsky BSc EE *Belgrade**Senior Technical Officers*

Warren Davies

Raj a Vij ayenthiran

*Animal House Manager*Darek Figa, DipAppSc(Animal Technology) *SIT MIAT UK**Animal House Attendants*

Deborah Brookes

Kerry Smith

*Emeritus Professor*Philip Ley, BA *Mane DipPsych Lond PhD Liv**Honorary Professors'*Pierre J Beumont, MB ChB *Pretoria DPM (RCP) Lond MRCP*Edin M Phil *Lond MRCPsych UK MSc Oxf, FRC PsychUK*FRACP FRANZCP FRCP *Edin*Gillian Straker-Bryce, BA MClInPsych PhD *Wits**Honorary Associate Professor*Helen Beh, BA PhD *NE**Honorary Reader*Dale M Atrens, BA *Windsor MA Hollins PhD Rutgers**Honorary Senior Lecturers*

Olga Katchan, BA

Terence McMullen, BA PhD

George Oliphant, BA PhD

Alison M Turtle, MA

Honorary Lecturer

James Dalziel, BA PhD

*Honorary Clinical Senior Lecturers and Lecturers*Susan Ballinger, BA(Hons) *Macq PhD*Christopher Basten, MA MPsych, *UNSW*Nora Breen, BSc MClInPsych *Melb*Alex Gilandas, MSc PhD *Oregon*

Helen McCathie, BA MClInPsych PhD

Michael Perdices, BA *Melb PhD UNSW*Philomena Renner, PhD *W'gong*Suzanne Roche, BA MClInPsych *Macq*Reinhard Ronnebeck, BA *Mich MA PhD Houston*Gregory Savage, BSc PhD *Monash MSc(Clin) Melb*Timothy Sharp, B Sc MPsych *UNSW PhD*

Stephanie Whitmont, BA MPsych PhD

*Honorary Associates*EUzabeth AUworth, BA *ANU MPsych(Appl) UNSW PhD Macq*Robert Armstrong, BA MClInPsych PhD *Macq*Vera Auerbach, BSc *UNSW MA MClInPsych W'gong*

Kathleen Bakker

Gary Banks, BA BPsych MClInPsych *WA PhD UNSW*Paul Beros, BPsych *WA MPsych. Curtin*

Philippa Bowden, MPsych

Ruth Bransdon

Phyllis Butow, MClInPsych AM/ PhD

Nick Cocco, BSc LW5W MClInPsych *W'gong*Han Cohen, BA MClInPsych *WA*Jeroen Decates, BPsych MA *Holl*Quentin Dignam, BA MPsych *Melb*Kenneth Duncan, BA MPsych *UNSW*Danielle Einstein, BSc MPsych *UNSW*Sarah Elders, BSc *Ulster DClInPsych N'cle*

Rosemary Elliott, BA MPsych

Julie Erskine, BA MPsych PhD *UNSW*Megan Forbes, BSc *UNSW MA MPsych*

Tracey Frazer
 Eleanor Gait, BA *N'cle(NSW)* BPsych
 Jonathon Gaston, BSc MCLinPsych *UNSW*
 Leah Giarratano, BA MPsych
 Jemma Gilchrist, BSc DipCips PhD *Otago*
 Stuart Godley, BSc *UNSWPhD Monash*
 Lia Gould, BA MCLinPsych *SA*
 Timothy Hannan, BA MPsych MSc *Macq* MCogSc *UNSW*
 George Haralambous, BA MPsych
 Catherine Hicks, BA MA *Port Elizabeth*
 Sheila Holley, BA *Lond* MSc *CNAA*
 Susan Johnson, B Sc *ANU* MCLinPsych *Macq*
 nana Karpin, BSc *UNSW* MCLinPsych
 Brian Kearney, BA MPsych
 Elizabeth Kenway, BA MCLinPsych *Macq*
 Deborah Knight, BA MPsych
 Elizabeth Kobylinska, PhD *Poland*
 Deborah Koder, BSc *UNSW* MPsych
 Julie Kozyk, BSc *UNSW* MPsych
 Claire Lamphugh, BA *Exe* PhD *S'ton*
 Glen Lamer, BA DipPsych
 Merran Lindsay, BSc MCLinPsych *UNSW*
 Michelle Lovenfosse, BA MA *W'gong*
 Justine Lum, BA MPsych
 Jane McGregor, BA *Macq* MCLinPsych
 Peter Mangioni, BSc MCLinPsych *UNSW*
 Nicola Marriott-Lloyd, BA *Well* MCLinPsych *Melb*
 Agnes McMillan, BA *Macq* DipPsych MHealth
 Susanne Meares, BA *Macq* MA *UNSW*
 Robin Murray, BA MA *George Wash* PhD *Calif*
 Margaret Musico, BSc MPsych
 Gus Norris, BA MPsych
 Robert Pringle, MA *Auck* BSc MCLinPsych *UNSW*
 Kristina Revson, MCLinPsych *Warsaw*
 Paul Rhodes, BSc *Lanes* MCLinPsych *Macq*
 Elizabeth Rieger, BA MCLinPsych
 Rosalind Robertson, BA *UNSW* MA
 Geraldine Robinson, MSc PhD *Bah*
 Tanya Sackville, BSc *UNSW* MPsych
 Claudia Sanniable, BA MPsych *N'cle(NSW)* PhD *UNSW*
 Thomas Schick, BA MPsych
 Dieter Schlosser, BSc *UNSW* MPsych
 Julie Simmons, BA *N'cle(NSW)* MPsych *UNSW*
 Katherine Smith, BSc [*£* MCLinPsych *UNSW*
 Margaret Tadros, BA MPsych
 Renata Wagner, PhD *Vienna* GDHed *UNSW*
 David Watson, BSocSc MAClinPsych *Port Eliz*
 Anthony Weaver, MPsych
 Ann Wignall, BA *Tas* MCLinPsych *UNSW*
 Crista Wocadlo, PhD AM/
 Vito Zepinic, BA MSc PhD *Belgrade*
 Fazeela Zolfaghari, MA MPhil PhD *India*

■ Other units

Australian Key Centre for Microscopy and Microanalysis

Director

Simon P Ringer, BAppSc SA PhD *UNSW*

Deputy Director

Guy C Cox, MA PhD *Oxf*

Business Development Manager

Allan S Jones, BAppSc UTS PhD *UNSW*

Manager

Dennis M Dwarthe, BSc *UNSW* MSc

Centre for Research on Ecological Impacts of Coastal Cities

Director

Antony J Underwood, PhD DSc *Brist*, FAA FLS FIBiol FAIBiol
 CBiol

Deputy Directors

M Gee Chapman, BSc *Natal* MSc PhD

A Dye, BSc PhD *PtEliz* MPhil *Stell*

Senior Research Fellows

Theresa Lasiak, BSc *Liv* PhD *Pt Eliz*

James Scandol, BSc(Hons) PhD *JCU*

Postdoctoral Fellows

Mike Holloway, BSc(Hons) *Monash*, PhD *Melb*

Pieter Honkoop, BSc MSc *UNiimegen* PhD *Groningan*

Celia Olabania, BC PhD *Uni Santiago de Conpostela*

Francesca Rossi, BSc *Pisa* PhD *Modena*

Craig Styran, BSc PhD *Adel* (U 2000 Research Fellow)

Trevor Tolhurst, BSc PhD *StAnd*

Senior Support Staff

Elizabeth Sakker, BSc PhD DipEd NE MEdAdmin *UNSW*

Research Support Staff

David Blockley, BSc(Hons)

Venesa Brusic Padula, BSc(Hons)

Brianna Clynick, BSc(Hons)

Sophie Diller, License *Paris VII* MSc *UNSW* BSc

Simon Gartenstein, BSc(Hons)

Jillian Grayson, MSc GradDipEnvSci

William Green, BAppSc *SCU*

Andres Grigaliunas, BSc *Jorge Tadeo Colombia*

GradDip(IntEnvManag) *Los Andes Colombia*

Penny Harrington, AdvCeitAccounting As socDipWelfare Work
TAFE

Robert Hunt, BSc *JCU* GradDipSc(EnvironSc)

Grant Kaplan, BAppSc *SCU*

Elena Lazzorotto, BAppSc(Hons) BSc(Hons) *Deakin*

Kade Mills, BSc(Hons) BSc(Hons) *Deakin*

Amy Palmer, BSc

Hwee Ying Pulford, BAppSc *RMIT*

Rene Reinfrank, BAppSc *Aust Maritime Coll*

Matthew Sage, BSc GradDipEnvSci

Kate Thome, BA *BNatSc Dub*

Michael Wirth, BSc *W'gong*

Honorary Appointments

Brian L Bayne, BSc PhD *Wales*

L Benedetti-Checci, PhD *Pisa*

K R Clarke, BSc PhD *Plymouth*

J S Gray, B Sc *Lond* PhD *Wales*

Stephen J KenneUy, PhD DSc

M J Keough, BSc PhD *Adel*

G C B Poore, PhD *Cant*

R M Warwick, PhD DSc *Exe*

Coastal Studies Unit

Director

Andrew D Short, MA *Hawaii* PhD *Louisiana State* BA

Members

David E M Chapman, MEngSc *UNSW* BA PhD

Peter J Cowell, BA PhD

History and Philosophy of Science Unit

Director

Rachel A Ankeny, BA *St John's College* MA PhD *Pitt*

Lecturers

Katherine M Neal, BSc *Houston* MA PhD *Tor*

L Claire Hooker, BA PhD

Visiting Professor

Evelleen Richards, BSc *Qld* MA PhD *UNSW*

Alan Chalmers, BSc *Brist* MSc *Mane* PhD *Lond*

Visiting Lecturer

Susan Hardy, BA PhD *UNSW*

Administrative Assistant

Gail Stewart, BA GDipSecStudies

Honorary Associates

Peter Anstey, BA PhD

Alison Bashford, PhD

David Braddon-Mitchell, BA PhD *ANU*

Mark Cortiula, BA PhD *Guelph*

Stephen Gaukroger, BA *Lond* BA PhD *Camb*, FAHA

Jason Grossman, MA *Camb* MPH

Roy MacLeod, AB *Harv* PhD *Camb*, FAS FASSA FRHistS

GabrieUe O'Sullivan, BSc *Dub* PhD *Lond*

Immunology Unit

Unit Head

Warwick J Britton, MB BS BScMed PhD, FRACP FRCP

FRCPADTM&H

Senior Lecturer

Helen Briscoe, BSc PhD *Edin*

Undergraduate Studies Coordinator

Robert H Loblay, MB BS PhD, FRACP

*Research Fellow*Bernardette M Saunders, BSc PhD *Melb**Technical Officer*

Jason Compton, ADiplAppSc TechCertPhotography

*Honorary Associates*Professor Antony Basten, AO, MB BS DPhil *Oxf*, FAA FTSE
FRCPFRACPFRCPAAssociate Professor Gary M Halliday, BSc PhD *Monash*Clinical Senior Lecturer Stephen Adelstein, MB BCh PhD,
FRACPFRCPAClinical Senior Lecturer Roger J Garsia, MB BS PhD, FRACP
FRCPAAlan Baxter, MB BS PhD *Melb*

G Alex Bishop, MScAgr PhD

Barbara D Fazekas de St Groth, BSc(Med) PhD *Melb* MB BSMark D Gorrell, BSc PhD *ANU***Key Centre for Polymer Colloids***Director*

Professor R G Gilbert, FAA

Development Manager

Dr Brian Hawkett

Scientific Projects and Education Officer

Dr Chris Fellows

Laboratory Manager

Mrs Jelica Strauch

Senior Technical Officer

Dr Hank De Bruyn

Senior Administrative and Finance Officer

Mrs Jacqui Harrison

Marine Studies Centre*Director*Andrew D Short, MA *Hawaii* PhD *Louisiana State* BA*Administrative Officer*

Craig Barnes, BSc PhD

Ocean Drilling Program*Director*Jock B Keene, BAgEc ME PhD *Calif* BSc*Research Fellow*Elaine Baker, BSc LaTMAppSc *UTS* PhD*Administrative Assistant*

Bill Reid

Ocean Sciences Institute*Director*Peter J Davies, BSc *Leic* PhD *Sheff**Research Scientists (part-time)*Gavin F Birch, MSc PhD DTA *Cape T*Thomas C T Hubble, MAppSc *UNSW* GradDipEd*Senior Research Fellow*Christopher Jenkins, BSc PhD *Camb*Elaine Baker, BSc LaFMAppSc *UTS* PhD*Research Assistant*Alison Cole, BSc *UNSW*

9 General University information

See also the Glossary for administrative information relating to particular terms.

Accommodation Service

The Accommodation Service assists students to find off-campus accommodation by maintaining an extensive database of suitable accommodation in various areas but primarily close to University or within easy access via public transport.

Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 3312
Fax: (02) 9351 8262
TTY: (02) 9351 3412
Email: accomm@stuserv.usyd.edu.au
Web: www.usyd.edu.au/su/accom

Admissions Office

The Admissions Office is responsible for overseeing the distribution of offers of undergraduate admission and can advise prospective local undergraduate students regarding admission requirements. Postgraduate students should contact the appropriate faculty. If you are an Australian citizen or a permanent resident but have qualifications from a non-Australian institution, phone (02) 9351 4118 for more information. For enquiries regarding Special Admissions (including Mature-Age Entry), phone (02) 9351 3615. Applicants without Australian citizenship or permanent residency should contact the International Office.

Student Centre
Ground Floor, Carlaw Building, F07
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 4117 or (02) 9351 4118
Fax: (02) 9351 4869
Email: admissions@records.usyd.edu.au

Applying for a course

Prospective (intending) students must lodge an application form with the Universities Admissions Centre (UAC) by the last working day of September of the year before enrolment. Note that some faculties, such as Pharmacy, the Sydney Conservatorium of Music and Sydney College of the Arts, have additional application procedures.

Assessment

For matters regarding assessment, refer to the relevant department or school.

Careers information

Provides careers information and advice, and help in finding course-related employment both while you're studying and when you commence your career.

Careers Centre
Ground Floor, Mackie Building, KOI
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 3481
Fax: (02) 9351 5134
Email: info@careers.usyd.edu.au
Web: www.careers.usyd.edu.au

Casual Employment Service

The Casual Employment Service helps students find casual and part-time work during their studies and in University vacations.

Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 8714
Fax: (02) 9351 8717

Email: ces@stuserv.usyd.edu.au
Web: www.usyd.edu.au/su/cas_emp

Centre for Continuing Education

Bridging courses, study skills courses, essay writing courses, accounting extension courses, university preparation courses, access to university courses, non-award short courses.

Mackie Building, KOI
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 2907
Fax: (02) 9351 5022
Email: info@cce.usyd.edu.au
Web: www.usyd.edu.au/cce

Centre for English Teaching

The Centre for English Teaching (CET) offers a range of English language courses including Academic English, General & Business English and IELTS preparation. CET programs help international students to reach the required English language levels for entry to degrees at the University. Students have the opportunity to take the CET university direct entry test at the completion of their language programs.

Level 2, Building F, 88 Mallett St
University of Sydney (M02)
NSW 2006 Australia
Phone: (02) 9351 0706
Fax: (02) 9351 0710
Email: info@cet.usyd.edu.au
Web: www.usyd.edu.au/cet

Child care

Contact the Child Care Coordinator for information about Children's Services for students and staff of the University who are parents.

Child Care Coordinator
Level 7, Education Building, A35
Phone: (02) 9351 5667
Fax: (02) 9351 7055
TTY: (02) 9351 3412
Email: childc@stuserv.usyd.edu.au
Web: www.usyd.edu.au/su/childcare

Co-op Bookshop

Sells textbooks, reference books, general books and software. Special order services available. The Co-op Bookshop is located at:

Sydney University Sports and Aquatic Centre, G09
Cnr Codrington St and Darlington Rd
Phone: (02) 9351 3705 or (02) 9351 2807
Fax: (02) 9660 5256
Email: sydu@mail.coop-bookshop.com.au
Web: www.coop-bookshop.com.au

Counselling Service

The Counselling Service aims to help students fulfil their academic, individual and social goals through professional counselling which is free and confidential. Counselling presents an opportunity to: gain greater self awareness; learn to cope more efficiently with the problem at hand; discuss any work related, social or personal issues that cause concern; explore options with professionally trained staff. In addition, workshops are offered each semester on topics such as stress management, relaxation, exam anxiety, communication skills and others.

Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 2228
Fax: (02) 9351 7055

GENERAL UNIVERSITY INFORMATION

Email: counsell@mail.usyd.edu.au

Web: www.usyd.edu.au/su/counsel

Disability Services

Disability Services is the principal point of contact and advice on assistance available for students with disabilities. The Service works closely with academic and administrative staff to ensure that students receive reasonable accommodations in all areas of their study. Assistance available includes the provision of notetaking, interpreters, and advocacy with academic staff to negotiate assessment and course requirement modifications where appropriate.

Level 7, Education Building, A3 5

The University of Sydney

NSW 2006 Australia

Phone: (02) 9351 4554

Fax: (02) 9351 7055

Email: disserv@stuserv.usyd.edu.au

Web: www.usyd.edu.au/su/disability

Enrolment and pre-enrolment

Students entering first year

Details of the enrolment procedures will be sent with the UAC Offer of Enrolment. Enrolment takes place at a specific time and date, depending on your surname and the Faculty in which you are enrolling, but is usually within the last week of January. You must attend the University in person or else nominate, in writing, somebody to act on your behalf. On the enrolment day, you pay the compulsory fees for joining the Student Union, the Students' Representative Council and sporting bodies and nominate your preferred 'up front' or deferred payment for your Higher Contribution Scheme (HECS) liability. You also choose your first-year units of study, so it's important to consult the Handbook before enrolling.

All other students

A pre-enrolment package is sent to all enrolled students in late September, and contains instructions on the procedure for pre-enrolment.

Examinations

The Examinations and Exclusions Office looks after the majority of exam papers, timetables and exclusions. 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, Carlaw Building, F07

The University of Sydney

NSW 2006 Australia

Phone: (02) 9351 4005 or (02) 9351 4006

Fax: (02) 9351 7330

Email: exams.office@exams.usyd.edu.au

Fees

For information on how to pay, where to pay, and if payments have been received.

Fees Office

Margaret Telfer Building, K07

The University of Sydney

NSW 2006 Australia

Phone: (02) 9351 5222

Fax: (02) 9351 4202

Financial Assistance Office

The University has a number of loan funds and bursaries to assist students who experience financial difficulties. Assistance is not intended to provide the principal means of support but to help in emergencies and to supplement other income.

Level 7, Education Building, A35

The University of Sydney

NSW 2006 Australia

Phone: (02) 9351 2416

Fax: (02) 9351 7055

TTY: (02) 9351 3412

Email: fao@stuserv.usyd.edu.au

Web: www.usyd.edu.au/su/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, to enable a member of the public to obtain access to documents held by the University and to enable a member of the public to ensure that records held by the University concerning his or her personal affairs are not incomplete, incorrect or out of date. By definition, a 'member of the public' includes staff or students of the University.

Application may be made for access to access University documents, however the Act provides some exemptions to particular documents. The Act contains review and appeal mechanisms which are required to be explained to applicants where applicable. The University is required to report to the public on its FOI activities on a regular basis. The two reports provided are the Statement of Affairs and the Summary of Affairs. The Statement of Affairs contains information about the University, its structure and function and the kinds of documents held. The Summary of Affairs identifies each of the University's policy documents and provides a contact list for those wishing to access these documents. Further information, and copies of the current reports may be found at www.usyd.edu.au/arms/foi/.

It is a requirement of the Act that applications be processed and a determination be made generally within 21 days. Determinations are made by the University's Registrar.

Graduations Office

The Graduations Office is responsible for organising graduation ceremonies and informing students of their graduation arrangements.

Student Centre

Ground Floor, Carlaw Building, F07

The University of Sydney

NSW 2006 Australia

Phone: (02) 9351 3199, (02) 9351 4009, Protocol (02) 9351 4612

Fax: (02) 9351 5072

(Grievances) appeals

Many decisions about academic and non-academic matters are made each year and you may consider that a particular decision affecting your candidature for a degree or other activities at the University may not have taken into account all the relevant matters.

In some cases the by-laws or resolutions of the Senate (see University Calendar) specifically provide for a right of appeal against particular decisions; for example, there is provision for appeal against academic decisions, disciplinary decisions and exclusion after failure.

A document outlining the current procedures for appeals against academic decisions is available at the Student Centre, at the SRC, and on the University's web site at www.usyd.edu.au/su/planning/pohey/.

If you wish to seek assistance or advice regarding an appeal, contact:

Students' Representative Council

Level 1, Wentworth Building, G01

The University of Sydney

NSW 2006 Australia

Phone: (02) 9660 5222

HECS

Student Centre

Ground Floor, Carlaw Building, F07

The University of Sydney

NSW 2006 Australia

Phone: (02) 9351 5659, (02) 9351 5062, (02) 9351 2086

Fax: (02) 9351 5081

International Student Centre

The International Student Centre consists of the International Office (IO), the International Student Services Unit (ISSU) and the Study Abroad and Exchange Office. The International Office provides assistance with application, admission and enrolment procedures and administers scholarships for international students. The ISSU provides a wide range of international student support services including arranging arrival accommodation and offering advice and professional counselling. The Study Abroad and Exchange Unit assists both

domestic and international students who wish to enrol for Study Abroad or Exchange programs.

International Student Centre

Services Building, G12
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 4079
Fax: (02) 9351 4013
Email: info@io.usyd.edu.au
Web: www.usyd.edu.au/io

International Student Services Unit

Phone: (02) 9351 4749
Fax: (02) 9351 6818
Email: info@issu.usyd.edu.au
Web: www.usyd.edu.au/issu

*Study Abroad and Exchange Unit
Study Abroad*

Phone: (02) 9351 5841
Fax: (02) 9351 2795
Email: studyabroad@io.usyd.edu.au
Web: www.usyd.edu.au/io/studyabroad

Exchange

Phone: (02) 9351 5843
Fax: (02) 9351 2795
Email: exchange@io.usyd.edu.au
Web: www.usyd.edu.au/io/exchange

Intranet

USYDnet is The University of Sydney's intranet. It provides easy access to staff and student directories, maps, software and useful resources for both staff and students. As well as delivering information, the intranet provides interactive services such as the calendar of events, where staff and students can enter events and publish them University-wide.

MyUni is the personalised section of USYDnet. All staff and students are provided with access to MyUni through a login name and password. This enables them to customise the information they see and also receive delivery of personal information such as exam results and seat numbers. MyUni is a portal from which students and staff can complete tasks that were previously only possible offline. Web enrolment variation is one of the first of many facilities that are helping to move the every day tasks of all members of the university online.

Koori Centre and Yooroang Garang

The Koori Centre provides tutorial assistance: access to computers, Indigenous counsellor, Aboriginal Studies library study rooms, Orientation program at the beginning of the year, and assistance in study and learning skills. Education Unit: courses in Education for ATSI students. Indigenous Studies Unit: aims to increase the awareness of Indigenous Australian issues through courses across the University.

Ground Floor, Old Teachers' College, A22
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 2046 general enquiries,
(02) 9351 7003 Liaison Officer
Fax: (02) 9351 6923
Email: koori@koori.usyd.edu.au
Web: www.koori.usyd.edu.au

Language Centre

Provides self-access course materials in over 140 languages. Beginners and intermediate courses in Modern Spanish, Modern Russian, Modern Welsh, Modern Irish, Modern Portuguese languages and cultures; Diploma Course in Modern Language Teaching.

Level 2, Christopher Brennan Building, A18
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 2371
Fax: (02) 9351 3626
Email: language.enquiries@language.usyd.edu.au
Web: www.arts.usyd.edu.au/Arts/departs/langcent/home.html

Learning Centre

The Learning Centre assists students to develop the generic skills which are necessary for learning and communicating knowledge and ideas at university. The Centre is committed to helping

students to 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 the Centre provides are an Individual Learning Program (ILP), a special program for international students, Faculty-based workshops, publications of learning resources and library facilities.

Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 3853
Fax: (02) 9351 4865
Email: lc@stuserv.usyd.edu.au
Web: www.usyd.edu.au/su/lc

Library

Students are welcome to use any of the 22 libraries in the University. The student card is also the library borrower's card. Further details of the libraries, including services provided, locations and opening hours are available on the Library's homepage www.library.usyd.edu.au as well as in the printed *Library Guide*, available at any library. Consult the Library staff for assistance.

The libraries listed below are located on the Camperdown/Darlington campus unless otherwise specified.

Architecture Library

Wilkinson Building, G04
Phone: (02) 9351 2775
Fax: (02) 9351 4782
Email: architecture@library.usyd.edu.au

Badham Library

Badham Building, A16
Phone: (02) 9351 2728
Fax: (02) 9351 3852
Email: badham@library.usyd.edu.au

Biochemistry Library

Biochemistry Building, G08
Phone: (02) 9351 2231
Fax: (02) 9351 7699
Email: biochemistry@library.usyd.edu.au

Burkitt-Ford Library

Sir Edward Ford Building, A27
Phone: (02) 9351 4364
Fax: (02) 9351 7125
Email: burkittford@library.usyd.edu.au

Camden Library

University Farms, Camden, C15
Phone: (02) 9351 1627
Fax: (02) 4655 6719
Email: camden@hbrary.usyd.edu.au

Chemistry Library

Chemistry Building, F11
Phone: (02) 9351 3009
Fax: (02) 9351 3329
Email: chemistry@library.usyd.edu.au

Curriculum Resources Library

Old Teachers College, A22
Phone: (02) 9351 6254
Fax: (02) 9351 7766
Email: curriculum@library.usyd.edu.au

Dentistry Library

United Dental Hospital, 2 Chalmers St, Surry Hills, C12
Phone: (02) 9351 8331
Fax: 9212 5149
Email: dentistry@library.usyd.edu.au

Engineering Library

PN Russell Building, J02
Phone: (02) 9351 2138
Fax: (02) 9351 7466
Email: engineering@library.usyd.edu.au

Fisher Library

Eastern Ave, F03
Phone: (02) 9351 2993
Fax: (02) 9351 2890
Email: fishinf@library.usyd.edu.au

GENERAL UNIVERSITY INFORMATION

Geosciences Library

Madsen Building, F09

Phone: (02) 9351 6456

Fax: (02) 9351 6459

Email: geosciences@library.usyd.edu.au

Health Sciences Library

East St, Lidcombe, C42

Phone: (02) 9351 9423

Fax: (02) 9351 9421

Email: h.knight@cchs.usyd.edu.au

Law Library

Law School, 173-175 Phillip St, Sydney, C13

Phone: (02) 9351 0216

Fax: (02) 9351 0301

Email: library@law.usyd.edu.au

Mathematics Library

Carslaw Building, F07

Phone: (02) 9351 2974

Fax: (02) 9351 5766

Email: mathematics@library.usyd.edu.au

Medical Library

Bosch Building, D05

Phone: (02) 9351 2413

Fax: (02) 9351 2427

Email: medical@library.usyd.edu.au

Music Library

Seymour Centre, J09

Phone: (02) 9351 3534

Fax: (02) 9351 7343

Email: music@library.usyd.edu.au

Nursing Library

88 Mallett St, Camperdown, M02

Phone: (02) 9351 0541

Fax: (02) 9351 0634

Email: nursing@library.usyd.edu.au

Orange Library

Leeds Parade, Orange

Phone: (02) 6360 5594

Fax: (02) 6360 5637

Email: lib@orange.usyd.edu.au

Physics Library

New Wing, Physics Building, A29

Phone: (02) 9351 2550

Fax: (02) 9351 7767

Email: physics@library.usyd.edu.au

Shaeffer Fine Arts Library

Mills Building, A26

Phone: (02) 9351 2148

Fax: (02) 9351 7624

Email: john.spencer@arthist.usyd.edu.au

Sydney College of the Arts Library

Balmain Rd, Rozelle, N01

Phone: (02) 9351 1036

Fax: (02) 9351 1043

Email: sca.lib@sca.usyd.edu.au

Sydney Conservatorium of Music Library

Macquarie St (opposite Bridge St), Sydney, C41

Phone: (02) 9351 1316

Email: library@conmusic.usyd.edu.au

Mathematics Learning Centre

The Mathematics Learning Centre runs bridging courses in mathematics at the beginning of the academic year (fees apply). It also provides on-going support during the year through individual assistance and small group tutorials.

Level 4, Carslaw Building, F07

The University of Sydney

NSW 2006 Australia

Phone: (02) 9351 4061

Fax: (02) 9351 5797

TTY: (02) 9351 3412

Email: mlc@stuserv.usyd.edu.au

Web: www.usyd.edu.au/su/mlc

Part-time, full-time

Students are normally considered as full-time if they have a HECS weighting of at least 0.375 each semester. Anything under

this amount is considered a part-time study load. Note that some faculties have minimum study load requirements for satisfactory progress.

Privacy

The University is subject to the NSW Privacy and Personal Information Protection Act 1998 (the Act). Central to the Act is Part 2 which contains twelve Information Protection Principles (IPPs) which regulate the collection, management, use and disclosure of personal information.

In response to Section 33 of the Act the University has developed a Privacy Management Plan which includes a new University Privacy Policy incorporating the requirements of the IPPS. Both the Plan and the new University Privacy Policy were endorsed by the Vice-Chancellor on 28 June 2000. The Privacy Management Plan sets out the IPPs and how they apply to functions and activities carried out by the University.

Further information and a copy of the Plan may be found at www.usyd.edu.au/arms/privacy/. Any questions regarding the Freedom of Information Act, the Privacy and Personal Information Protection Act or the Privacy Management Plan should be directed to:

Tim Robinson: (02) 9351 4263 or

Judith Russell: (02) 9351 2684

Email: foi@mail.usyd.edu.au

Student Centre

Ground Floor, Carslaw Building, F07

The University of Sydney

NSW 2006 Australia

Phone: (02) 9351 3023 General Enquiries

(02) 9351 4109 Academic Records

(02) 9351 3023 Discontinuation of Enrolment

(02) 9351 5057 Handbooks

(02) 9351 5060 Prizes

Fax: (02) 9351 5081, (02) 9351 5350 Academic Records

Student identity cards

In 1999 the University incorporated a photograph into the student identity card. This means that all students have to provide a colour, passport-sized, head and shoulders photograph when they attend on campus sites to have their student ID card laminated. University student ID cards also function as transport concession cards for eligible students, thus eliminating the need for a separate concession card. The endorsement for concession travel will take the form of a hologram sticker attached to the front of the student ID card.

Student Services

Student Services exists to help you achieve your educational goals by providing personal, welfare, and academic support services to facilitate your success at University. Many factors can impact on your well being while studying at University and Student Services can assist you in managing and handling these more effectively. Refer to Accommodation Service, Casual Employment Service, Child Care, Disability Service, Financial Assistance Office, Learning Centre, Mathematics Learning Centre. The web site is at www.usyd.edu.au/su/stuserv.

The Sydney Summer School

Most faculties at the University offer units of study from degree programs during January/February. As the University uses all of its HECS quota in first and second semester, these units are full fee-paying and 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 requisite subjects before they commence their degrees. Units start on 2 January and run for up to six weeks (followed by an examination week). Notice of the units available is contained in the various faculty handbooks and is usually circulated to students with their results notices.

Timetabling Unit

The timetabling unit in the Student Centre is responsible for producing students' class and tutorial timetables. Students can obtain their Semester 1 timetables from the Wednesday of Orientation Week via the web.

The Sydney Conservatorium of Music operates in accordance with a local calendar of dates and produces a complete timetable

for all teaching that it delivers. The timetable is available on enrolment at the Conservatorium.

Undergraduate Scholarships

Scholarships Unit, Room 147
Ground Floor, Mackie Building, KOI
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 2717
Fax: (02) 9351 5134
Email: scholarships@careers.usyd.edu.au
Web: www.usyd.edu.au/study/

University Health Service

Provides full general practitioner services and emergency medical care to the University community.

Email: director@unihealth.usyd.edu.au
Web: www.unihealth.usyd.edu.au

University Health Service (Wentworth)

Level 3, Wentworth Building, G01
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 3484
Fax: (02) 9351 4110

University Health Service (Holme)

Science Rd Entry, Holme Building, A09
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 4095
Fax: (02) 9351 4338

■ Student organisations

Students' Representative Council

Level 1, Wentworth Building, G01
The University of Sydney
NSW 2006 Australia
Phone: (02) 9660 5222 Editors, Honi Soit/Legal Aid
(02) 9660 4756 Second-hand Bookshop
(02) 9351 0691 Mallett St
(02) 9230 3777 Pitt St - Conservatorium
Fax: (02) 9660 4260
Email: postmaster@src.usyd.edu.au

Sydney University Sports Union

Services, facilities and clubs for sport, recreation and fitness.

Noel Martin Sports and Aquatic Centre, G09
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 4960
Fax: (02) 9351 4962
Email: sports_union@susu.usyd.edu.au

University of Sydney Union

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
Box 500, Holme Building, A09
The University of Sydney
NSW 2006 Australia
Phone: (02) 9563 6000 Switchboard/Enquiries
Fax: (02) 9563 6239
Email: email@usu.usyd.edu.au
Web: www.usu.usyd.edu.au

Women's Sports Association

Provides for students, predominantly women, to participate in sport and recreation through the provision of facilities, courses and personnel.

The Arena Sports Centre, A30
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 8111
Fax: (02) 9660 0921
Email: secretary@suwsa.usyd.edu.au
Web: www.suwsa.usyd.edu.au

Glossary

This glossary describes terminology in use at The University of Sydney.

Academic Board

The Academic Board is 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 of students. (For further information, see the University Calendar.)

Academic cycle

The academic cycle is the program of teaching sessions offered over a year. Currently the cycle runs from the enrolment period for Semester 1 through to the completion of the processing of results at the end of Semester 2. (See also *Stage*.)

Academic record

The academic record is 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. A student's academic record is not released to a third party without the written authorisation of the student. (See also *Academic transcript*.)

Academic transcript

An academic transcript is 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

An academic year is a normal full-time program taken in a course in a year. Some courses consist of stages, which may readily be equated with academic year. Others use the aggregation of credit points to do this (eg, 48 credit points = an academic year). (See also *Academic cycle*, *Stage*.)

Addresses

All enrolled students need to have a current postal address recorded on FlexSIS to which all official University correspondence is sent. (See also *Business address*, *Permanent home address*, *Semester address*, *Temporary address*.)

Admission

Admission is governed by the University's admission policy and 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 criterion 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

Admission mode is 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. The main admission period takes place before Semester 1, but there may also be an admission period for mid-

year applicants before the beginning of Semester 2 and other admission periods.

Admission reply

A code used by FlexSIS to indicate whether an applicant who has received an offer has accepted the offer or not.

Admission result

A code used by FlexSIS to indicate the result of a direct application to study at the University (eg, offer, unsuccessful, withdrawn).

Admission year

The year the student began the course.

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*.)

Annual Progress Report

The Annual Progress Report is a form issued by faculties 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 nominee). The completed form is attached to the student's official file.

FlexSIS records that the form has been sent out and that it has been satisfactorily completed.

APA

Australian Postgraduate Awards. (See also *Scholarships*, *UPA*.)

Appeals

Students may lodge appeals against academic or disciplinary decisions. FlexSIS will record an academic appeal (eg, against exclusion) while they are under consideration and will record the outcome of the appeal. Disciplinary (that is, non-academic) appeals are not recorded on FlexSIS.

ARTS

Automated Results Transfer System. This system was developed on behalf of ACTAC (Australasian Conference of Tertiary Admissions Centres) to allow the electronic academic record of a student to be accessible, via an admission centre, between tertiary institutions.

Assessment

The process of measuring the performance of students in units of study and courses. The assessment of performance in a unit of study may include examinations, essays, laboratory projects, or assignments. (See also *Board of examiners*, *Result processing*, *Result processing schedule*.)

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 [Advfso](#); *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 mode

A DETYA classification defining the manner in which a student is undertaking a course - ie, internal, external, mixed or offshore.

Attendance pattern/type

Refers to whether the student is studying part-time or full-time. For coursework students this is a function of course load - ie, the

proportion being undertaken by the student of the normal full-time load specified for the course in which the student is enrolled. To be considered full-time, a coursework student must undertake at least 0.75 of the normal full-time load over the academic cycle or at least 0.375 if only enrolling in half of an academic year. It is important to note, however, that, for some purposes, to be considered full-time a student may need to be enrolled in at least 0.375 in each half year. Research students, with the approval of their faculty, nominate whether they wish to study part-time or full-time. The attendance status is then recorded on FlexSIS as part of the application or enrolment process. (See also *Coursework*, *Student load*.)

AusAID

Australian Agency for International Development.

AUSCHECK

AUSCHECK is the software provided by Centrelink to validate data prior to reporting to Centrelink.

AUSTUDY

Replaced by Youth Allowance. (See also *Youth Allowance*.)

Award course

An award course is a formally approved program of study that can lead to an academic award granted by the University. An award course requires the completion of a program of study specified by course rules. (See also *Course rules*.) Award courses are approved by Senate, on the recommendation of the Academic Board. Students normally apply to transfer between Award courses through the UAC. The award course name will appear on testamurs. The University broadly classifies courses as undergraduate, postgraduate coursework or postgraduate research. The award courses offered by the University are:

- Higher doctorates
- Doctor of philosophy (PhD)
- Doctorates by research and advanced coursework
- Master's degree by research
- Master's degree by coursework
- Graduate diploma
- Graduate certificate
- Bachelor's degree
- Advanced diplomas
- Diplomas
- Certificates

(See also *Bachelor's degree*, *Course rules*, *Diploma*, *Doctorate*, *Major*, *Master's degree*, *Minor*, *PhD*, *Stream*.)

Bachelor's degree

The highest undergraduate award offered at the University of Sydney. 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

A barrier is an instruction placed on a student's FlexSIS record that prevents the student from re-enrolling or graduating. (See also *Deadline (fees)*, *Suppression of results*.)

Board of examiners

A Board of examiners was a body appointed by a faculty or board of studies which met to approve the results of all students undertaking courses supervised by that faculty or board of studies. Boards of examiners were dis-established following revision of the University's examination procedures in 2000. (See also *Assessment*, *Result processing*, *Result processing schedule*.)

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

See *Scholarships*.

Business address

FlexSIS can record a student's business address and contact details. (See also *Addresses*, *Permanent home address*, *Semester address*, *Temporary address*.)

Cadigal Program

The Cadigal Program is a University wide access and support scheme for Aboriginal and Torres Strait Islanders.

Campus

The grounds on which the University is situated. There are eleven campuses of the University of Sydney: Burren Street (Institute for International Health, Institute of Transport Studies),

Camperdown and Darlington (formerly known as Main Campus), Camden (Agriculture and Veterinary Science), Conservatorium (Conservatorium of Music), Cumberland (Health Sciences), Mallett Street (Nursing), Orange (Faculty of Rural Management), Rozelle (Sydney College of the Arts), St James (Law) and Surry Hills (Dentistry).

Census date

See HECS census date.

Centre for Continuing Education

The Centre for Continuing Education develops and conducts courses, conferences and study tours for the general public and professional groups. The Centre offers approximately 1,000 courses for approximately 20,000 students each year. Most of these courses are held over one of the four main sessions that are conducted each year, though the Centre is offering an increasing number of ad hoc courses in response to increased competition and changing demands. The Centre operates on a cost recovery/income generation basis. (See also *Continuing professional education*.)

Centrelink

Centrelink is the agency responsible for providing information and assistance on a range of Commonwealth Government programs including Youth Allowance. (See also *Youth Allowance*.)

Ceremony

See *Graduation ceremony*.

Chancellor

The non-executive head of the University. An honorary position, the Chancellor chairs meetings of the University's governing body, the Senate, and presides over graduation ceremonies amongst other duties.

Class list

A listing of all currently enrolled students in a particular unit of study. (See also *Unit of study*.)

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

See *Combined course*.

Commencing student

A student enrolling in an award course at the University of Sydney for the first time. The DETYA glossary provides a more detailed definition.

Comp subs

See *Compulsory subscriptions*.

Compulsory subscription rates

There are two rates for some annual subscriptions: full-time and part-time. (See also *Compulsory subscriptions*.)

Compulsory subscription waiver provision

Certain students over a certain age or with disabilities or medical conditions may be exempted from the subscription to the sports body.

Students with a conscientious objection 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*.)

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. These organisations are different on different campuses. There are different organisations for undergraduate and postgraduate students.

At the Camperdown/Darlington campus (formerly known as Main Campus), compulsory submissions depend on the level of study.

Undergraduate: the University of Sydney Union, Students' Representative Council (SRC) and the University of Sydney Sports Union or the Sydney University Women's Sports Association.

Postgraduate: the University of Sydney Union and the Sydney University Postgraduate Representative Association (SUPRA).

Student organisations at other campuses 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 rates, Compulsory subscription waiver provision, Joining fee, Life membership.*)

Confirmation of Enrolment form

A Confirmation of Enrolment form is issued to students after enrolment showing the course and the units of study they are enrolled in, 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.

For postgraduate research students the form also lists candidature details and supervisor information.

Where students have an appointed advisor, the advisor information is also shown.

Continuing professional education

The continuing professional education process 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 requires/promotes the maintenance of a long term relationship between the student and the University. It is envisaged that the importance of this mode of education will increase in the future. (See also *Centre for Continuing Education.*)

Convocation

Convocation is the body comprising all graduates of the University.

Core unit of study

A unit of study that is compulsory for the course or subject area. (See also *Unit of study.*)

Corequisite

A corequisite is 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.*)

Course

An award course or non-award course undertaken at the University of Sydney. (See also *Award course, Non-award course.*)

Course alias

Each course in FlexSIS is identified by a unique five-digit alpha-numeric code.

Course code

See *Course alias*.

Course leave

Students (undergraduate and postgraduate) 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 and recorded on FlexSIS (leave for periods of less than one semester should be recorded internally by the faculty). 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 reapply formally for admission. The term 'suspension of candidature' was previously used to describe research students on course leave.

Course (research)

A classification of courses in which students undertake supervised research leading to the production of a thesis or other piece of written or creative work over a prescribed period of time. The research component of a research course must comprise 66% or more of the overall course requirements.

Course rules

Course rules govern the allowable enrolment of a student in a course; eg, 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 - eg, a candidate must have completed a minimum of 144 credit points. Course rules may be expressed in terms of types of units of study taken, length of study, and credit points accumulated. (See also *Award course.*)

Course suspension

See *Course leave*.

Course transfer

A course transfer occurs where a student changes from one course in the University to another course in the University without the requirement for an application and selection (eg, from a PhD to a master's program in the same faculty).

Course type

Course type is a DETYA code.

Coursework

Coursework is a classification used to describe those courses that consist of units of study rather than research work. All undergraduate courses are coursework programs. Postgraduate courses can be either research courses or coursework courses. (See also *Course (research).*)

Credit

The recognition of previous studies successfully completed at this or another recognised (by the University of Sydney) university or tertiary institution as contributing to the requirements for the award of the course in which the applicant requesting such recognition has been admitted.

Where the University agrees to recognise successfully completed previous studies, their contribution to the requirements for the award of the course, in which the applicant has been admitted, will be expressed as specific or non-specific credit.

Credit awarded to a credit applicant - whether specific or non-specific - will be recorded with a mark and grade of 50 pass, unless in individual cases the credit is assessed by the faculty as having a mark and grade greater than 50 pass. This equivalent mark and grade will be used for the purposes of calculating a student's weighted average mark and for the purposes of satisfying prerequisite rules where a level of passing grade is specified.

(See also *Precedents, Specific credit, Non-specific credit, Waiver, Weighted average mark (WAM).*)

Creditpoints

Credit points are a measure of value indicating the contribution each unit of study provides towards meeting course completion requirements stated as a total credit point value. Each unit of study will have a credit point value assigned to it, normally in the range 3 to 24. Resolutions of Senate set the number and level of credit points required for graduation.

Cross-institutional enrolment

Cross-institutional enrolment is an enrolment in units of study at one university to count towards an award course at another university. Cross-institutional enrolments incur a HECS liability or tuition fee charge at the institution at which the unit of study is being undertaken. Students pay compulsory subscriptions to one university only (usually their home university - ie, the university which will award their degree). (See also *Non-award course, Enrolment non-award*)

DAC (Data Audit Committee)

DAC is a sub-committee of the VCAC Enrolment Working Party, chaired by the Registrar, with membership including the deans, the Student Centre, FlexSIS and the Planning Support Office. Its role is to oversee the integrity and accuracy of the course and unit of study data as strategic university data. It has a role in advising the Academic Board on suggested policy changes with relation to course and unit of study data.

Deadlines (enrolment variations)

See *Enrolment variations*.

Deadlines (fees)

The University has deadlines for the payment of fees (eg, HECS, compulsory subscriptions, course fees, etc). 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.*)

Dean

The head of a faculty or the principal or director of a college (such as the 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

See *Admission (deferment), Leave.*

Degree

(See also *Award course, Bachelor's degree.*)

Delivery mode

Indicates the mode of delivery of the instruction for a unit of study - eg, normal (ie, by attending classes at a campus of the University), distance (ie, remotely by correspondence or other distance means - eg, Web delivery). The delivery mode must be recorded for each unit as distinct from the attendance mode of the student - ie, an internal student may take one or more units by distance mode and an external student may attend campus for one or more units.

Department

For the purposes of FlexSIS, a department is the academic unit, which is responsible for teaching and examining a unit of study. It may be called a school, a department, a centre or a unit within the University.

DETYA

The Department of Education Training and Youth Affairs is the Commonwealth Government department responsible for higher education. The University is required to provide DETYA with information about its students three times a year. The Government in its funding deliberations uses this information.

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. Graduate diploma courses are only available to students who already hold an undergraduate degree. (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, registered on FlexSIS and considered by the relevant department or faculty body. Decisions are recorded on FlexSIS and FlexSIS produces letters to applicants advising them of the outcome. (See also *Admission, UAC admissions*)

Disability information

Students may inform the University of any temporary or permanent disability, other than a financial disability, which affects their life as a student. Disability information is recorded in FlexSIS but it is only visible to particular authorised users because of its sensitive nature.

Discipline codes

Discipline codes are four-letter codes for each area of study available at the university (eg, CHEM Chemistry, ECON Economics).

Discipline group

A DETYA 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 dissertation is a written exposition of a topic and 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 and flexible learning

Distance and flexible learning affords the opportunity to provide higher education to a much wider market - including students from anywhere in the world- at times, locations and modes that suit them.

Doctor of philosophy (PhD)

See *Award course, Doctorate, PhD.*

Doctorate

The doctorate and the PhD are high-level postgraduate awards available at the University of Sydney. A doctorate course normally involves research and coursework; the candidate submits a thesis that is an original contribution to the field of

study. Entry to a doctorate course often requires completion of a master's degree course. Note that the doctorate course is not available in all departments at the University of Sydney. (See also *Award course, PhD.*)

Earliest date

See *Research candidature.*

EFTSU

The equivalent full-time student unit (EFTSU) is a measure of student load expressed as a proportion of the workload for a standard annual program for a student undertaking a full year of study in a particular award course. A student undertaking the standard annual program of study (normally 48 credit points) generates one EFTSU.

EFTYR

The effective full-time enrolment year (EFTYR) is a calculation of how long, in terms of equivalence to full-time years of enrolment, a student has been enrolled in a course. If a student has always been full-time, the calculation is straightforward (eg, the fifth year of enrolment is EFTYR 5). If the student has had a mixture of part-time and full-time enrolment, this can be equated with an EFTYR. (See also *Stage.*)

Enrolment

A student enrolls in a course by registering with the supervising faculty in the units of study to be taken in the coming year, semester or session. The student pays whatever fees are owing to the University by the deadline for that semester. New students currently pay on the day they enrol which is normally in early February. Students already in a course at the University re-enrol each year or semester; for most students pre-enrolment is required. (See also *Pre-enrolment.*)

Enrolment non-award

Non-award enrolment is an enrolment in a unit or units of study, which does not count towards a formal award of the University. Non-award enrolments are recorded in various categories used for reporting and administrative purposes. (See also *Cross-institutional enrolment, Non-award course.*)

Enrolment status

A student's enrolment status is either 'enrolled' or 'not enrolled'. An enrolment status is linked to an enrolment status reason or category.

Enrolment status reason/ category

Not enrolled status reasons/categories include: withdrawn, totally discontinued, cancelled, on leave (suspended), transferred, lapsed, terminated, qualified and conferred.

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.*)

Enrolment year

See *EFTYR, Stage.*

Examination

See *Examination paper code, Examination period, Supplementary exams.*

Examination paper code

A code that identifies each individual examination paper. Used to help organise examinations.

Examination period

The examination period is the time set each semester for the conduct of formal examinations.

Exchange student

An exchange student is 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

The faculty may ask a student whose academic progress is considered to be unsatisfactory to 'show 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. 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 *Senate appeals*.)

Extended semesters

Distance learning students may be allowed more time to complete a module/program if circumstances are beyond the student's control - eg, drought, flood or illness, affect the student's ability to complete the module/program in the specified time.

External

See *Attendance mode*.

External transcript

An external transcript is 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 (but not any unit of study which has the status of withdrawn). It also includes any scholarships or prizes the student has received. Two copies are provided to each student on graduation (one with marks and grades for each unit of study and one with grades only). External transcripts are also produced at the request of the student. The student can elect either to have marks appear on the transcript or not. (See also *Academic transcript*, *Internal transcript*.)

Faculty

A faculty, consisting mainly of academic staff members and headed by a dean, is a formal part of the University's academic governance structure, responsible for all matters concerning the award courses that it supervises (see the 2001 University Calendar, pp. 140-141). Usually, a faculty office administers the faculty and student or staff inquiries related to its courses. The Calendar sets out the constitution of each of the University's 17 faculties. (See also *Board of studies*, *Supervising faculty*.)

Fail

A mark of less than 50% which is not a concessional pass. (See also *Results*.)

Fee-paying students

Fee-paying students are students who pay tuition fees to the University and are not liable for HECS.

Fee rate

Local fees are charged in bands, a band being a group of subject areas. The bands are recommended by faculties and approved by the DV-C (Planning and Resources).

Fee type

Fee type can be 'international' or 'local'.

Flexible learning

See *Distance* and *Flexible learning*.

Flexible start date

Full fee-paying distance students should not be restricted to the same enrolment time frames as campus-based or HECS students.

FlexSIS

FlexSIS is the computer-based Flexible Student Information System at the University of Sydney. Electronically 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. FlexSIS also holds the complete academic records of many (but not all) past students of the university. For past students whose complete records are not held on FlexSIS, there will be a reference on FlexSIS to card or microfiche records where details are kept.

Full-time student

See *Attendance status*, *EFTSU*.

Grade

A grade is a result outcome for a unit of study normally linked with a mark range. For example, in most faculties, a mark in the range 85-100 attracts the grade 'high distinction' ('HD'). (See also *Mark*.)

Graduand

A Graduand is a student who has completed all the requirements for an award course but has not yet graduated. (See also *Graduation*, *Potential graduand*.)

Graduate

A graduate is 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 register

The graduate register is a list of all graduates of the University. (See also *Graduation*.)

Graduation

Graduation is the formal conferring of awards either at a ceremony or in absentia. (See also *In absentia*, *Potential graduand*.)

Graduation ceremony

A graduation ceremony is a ceremony where the Chancellor confers awards upon graduands. The Registrar publishes annually the schedule of graduation ceremonies.

HECS

See *Higher Education Contribution Scheme (HECS)*.

HECS census date

The date at which a student's enrolment, load and HECS liability are finalised before reporting to DETYA. The following dates apply:

Semester 1: 31 March

Semester 2: 31 August.

HECS code

A code used by DETYA to identify the HECS status of a student (eg, 10 deferred, 11 upfront).

Higher doctorates

See *Award course*.

Higher Education Contribution Scheme (HECS)

All students, except international students, local fee-paying students and holders of certain scholarships are obliged to contribute towards the cost of their education under the Higher Education Contribution Scheme (HECS). HECS liability depends on the load being taken.

Current students, except possibly those who began their studies prior to 1997, have a HECS rate charged for each unit of study in their degree program which depends on the 'discipline group' it is in, and the 'band' to which the Government has assigned it. These are all determined annually by the Government.

Honorary degrees

A degree *honoris causa* (translated from the Latin as 'for the purpose of honouring') is an honorary award, which is conferred on a person whom the University wishes to honour.

A degree *ad eundem gradum* (translated as 'at the same level') is awarded to a member of the academic staff who is not a graduate of the University in recognition of outstanding service to the University. The award of an honorary degree is noted on the person's academic record.

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 1, Class n, Class III) and sometimes there are two divisions within Class n.

HSC

The HSC is the NSW Higher School Certificate, 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.

In absentia

In absentia is Latin for 'in the absence of'. Awards are conferred in absentia when a graduand does 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 Conservatorium of Music and BMus students on the Camperdown campus have an instrumental teacher appointed. (See also *Advisor*, *Associate supervisor*, *Research supervisor*, *Supervision*.)

Internal

See *Attendance mode*.

Internal transcript

An Internal transcript is a record of a student's academic record for the University's own internal use. It includes the student's

name, 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

An International student is required to hold a visa to study in Australia and may be liable for international tuition fees. Any student who is not an Australian or New Zealand citizen or a permanent resident of Australia is an international student. New Zealand citizens are not classified as international students but have a special category under HECS that does not permit them to defer their HECS liability. (See also *Local student, Student type.*)

Joining fee

Students enrolling for the first time pay, in addition, a joining fee for the University of Sydney Union or equivalent student organisation. (See also *Compulsory subscription.*)

Leave

See *Course leave.*

Life membership

Under some circumstances (eg, after five full-time years of enrolments and contributions) students may be granted life membership of various organisations, which means they are exempt from paying yearly fees. (See also *Compulsory subscription.*)

Load

Load for an individual student is the sum of the weights of all the units of study in which the student is enrolled. (See also *EFTSU, HECS.*)

Local student

A local student is either an Australian or New Zealand citizen or Australian permanent resident. New Zealand citizens are required to pay their HECS upfront. (See also *Fee type, HECS, International student.*)

Major

A major is a defined program of study, generally comprising 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 prescribed in order to satisfy course requirements. Majors may be included on testamurs. (See also *Award course, Minor, Stream.*)

Major timetable clash

Used by FlexSIS to denote occasions 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 together.

Mark

An integer (rounded if necessary) between 0 and 100 inclusive, 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, Course (research), Coursework.*)

Minor

A minor is 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. Students select and transfer between minors (and majors) by virtue of their selection of units of study.

One or more minors may be prescribed in order to satisfy course requirements. Minors may be included on testamurs. (See also *Award course, Major, Stream.*)

Minor timetable clash

Used by FlexSIS to denote occasions when a student attempts to enrol in units of study which have some identical times of teaching.

Mixed mode

See *Attendance mode.*

Mode

See *Attendance mode* and *Delivery mode.*

Mutually exclusive units of study

See *Prohibited combinations of units of study.*

MyUni

MyUni is a personalised space for staff and students on the University of Sydney's intranet, called USYDnet. MyUni is used to deliver information and services directly through a central location, while also allowing users to customise certain information. Students are able to access such services as exam seat numbers, results, timetables and FlexSIS pre-enrolment and enrolment variations on MyUni. (See also *UsydNet.*)

Non-award course

Non-award courses are courses undertaken by students who are not seeking an award from the University. These may be students enrolled in an award course at another institution or students not seeking an award from any institution. Non-award courses are assigned a course code in the same way as award courses. A separate course code is assigned for each faculty, level (undergraduate or postgraduate) and method (research or coursework) which offers a non-award course. Various categories of non-award enrolment are recorded on FlexSIS for reporting and administrative purposes. (See also *Course, Cross-institutional enrolment, Enrolment non-award.*)

Non-award enrolment

See *Enrolment non-award.*

Non-specific credit

Non-specific credit is awarded when previous studies are deemed to have satisfied defined components of a course other than named units of study. These components include, but are not limited to:

- entire years in courses that progress through the successful completion of a set of prescribed units of study per year
- a set number of credit points within a particular discipline or level (ie, first, second or third year)
- one or more semesters for research courses.

(See also *Credit, Specific credit.*)

OPRS

Overseas Postgraduate Research Scholarship.

Orientation Week

Orientation or 'O Week', takes place during the week prior to lectures in Semester 1. During O Week, students can join various clubs, societies and organisations, register for courses with departments and take part in activities provided by the University of Sydney Union.

Part-time student

See *Attendance status, EFTSU.*

Permanent home address

The permanent home address is the address for all official University correspondence both inside and outside of semester time (eg, during semester breaks), unless overridden by semester address. (See also *Addresses, Business address, Semester address, Temporary address.*)

PhD

The Doctor of Philosophy (PhD) and other doctorate awards are the highest awards available at the University of Sydney. A PhD course is normally purely research-based; the candidate submits a thesis that is an original contribution to the field of study. Entry to a PhD course often requires completion of a master's degree course. Note that the PhD course is available in most departments in the University of Sydney. (See also *Award course, Doctorate.*)

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.

Potential graduand

Potential graduands are students who have been identified as being eligible to graduate on the satisfactory completion of their current studies. (See also *Graduand, Graduation.*)

Precedents

Where a credit applicant has credit approved in terms of the granting of specific or non-specific credit on the basis of study previously taken, a precedent is established at system level. Any other credit applicant subsequently seeking credit on the basis of the same pattern of previous study will be eligible to have the item of credit to be immediately approved on the basis of the previously approved precedent. (See also *Credit.*)

Pre-enrolment

Pre-enrolment takes place in October for the following year. Students indicate their choice of unit of study enrolment for the following year. After results are approved, registered students are regarded as enrolled in those units of study they chose and for which they are qualified. Their status is 'enrolled' and remains so provided they pay any money owing or comply with other requirements by the due date. Re-enrolling students who do not successfully register 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. Pre-enrolment is also known as provisional re-enrolment. (See also *Enrolment*.)

Prerequisite

A prerequisite is a unit of study that is required to be completed before another unit of study can be attempted. (See also *Assumed knowledge, Corequisite, Waiver*.)

Prizes

Prizes are awarded by the University, a faculty or a department for outstanding academic achievement. Full details can be found in the University Calendar.

Probationary candidature

A probationary candidate is 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.

Progression

See *Course progression*.

Prohibition (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. A unit related in this way to any other unit is linked in tables of units of study via use of the symbol N to identify related prohibited units.

Provisional re-enrolment

See *Pre-enrolment*.

Qualification

A qualification is an academic attainment recognised by the University.

Registrar

The Registrar is responsible to the Vice-Chancellor for the keeping of official records and associated policy and procedures within the University. (See the University Calendar for details.)

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 person will be a full-time member of the academic staff or a person external to the University appointed in recognition of 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*.)

Resolutions of Senate

Regulations determined by the Senate of the University of Sydney that pertain to degree and diploma course requirements and other academic or administrative matters.

Result processing

Refers to the processing of assessment results for units of study. Departments tabulate results for all assessment activities of a unit of study and assign preliminary results for each unit of study. Preliminary results are considered by the relevant board of examiners, which approves final results. Students are notified of results by result notices that list final marks and grades for all units of study. (See also *Assessment, Examination period*.)

Result processing schedule

The result processing schedule will be determined for each academic cycle. It is expected that all departments and faculties will comply with this schedule. (See also *Assessment, Examination period, Result processing*.)

Results

The official statement of the student's performance in each unit of study attempted, as recorded on the academic transcript, usually expressed as a grade:

| | | |
|------|--|--|
| 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 - eg, 'no more than one sixth of the total credit points for a course can be made up from PCON results'. |
| F | Fail | 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 (ie, 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. |
| DF | Discontinued - fail | Recorded on transcript. This applies from the time DNF ceases to be automatically available up to the cessation of classes for the unit of study. |

| | | |
|------|---------------------------------------|---|
| MINC | Incomplete with a mark of at least 50 | This result may be 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 mark and passing grade. Except in special cases approved by the Academic Board, this result will be converted to a normal passing mark and grade either: <ul style="list-style-type: none"> • 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 the indicated mark and 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. |
| 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: <ul style="list-style-type: none"> • 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 (eg, Honours). |

Scholarships

Scholarships are financial or other forms of support made available by sponsors to assist Australian and international students to pursue their studies at the University. When a student's means are a criterion, scholarships are sometimes called bursaries. (See also *Prizes*.)

School

See *Department*.

SCR

System change request.

Semester

A semester is a 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 must be given special permission by the Academic Board.

Semester address

The semester address is the address to which all official University correspondence is sent during semester time, if it is different to the permanent address. Unless overridden by a temporary address all official University correspondence during semester (including Session 4 for students enrolled in Summer School) will be sent to this address. (See also *Addresses*, *Business address*, *Permanent home address*, *Temporary address*)

Senate

The Senate of the University is the governing body of the University. (See the University Calendar.)

Senate appeals

Senate appeals are held for those students who, after being excluded by the 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 - ie, the department, faculty, board of study and, in the case of postgraduates, the Committee for Graduate Studies. (See also *Exclusion*.)

Session

A session is a teaching period that defines the offering of a unit of study. A session cannot be longer than six months. 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.

Session address

See *Semester address*.

Special consideration

Candidates who have medical or other serious problems, which may affect performance in any assessment, may request that they be given special consideration in relation to the determination of their results.

They can obtain an official form from the Student Centre. The Student Centre stamps the form and the medical or other documentation. The student gives a copy of the material to the

Student Centre staff and takes copies to the relevant departments. The student retains the originals. The dates for which special consideration is sought are recorded on FlexSIS and printed on the examination register.

Special permission

See *Waiver*.

Specific credit

Specific credit is awarded when previous studies are entirely equivalent to one or more named units of study offered by the University of Sydney that contribute to the course in which the applicant has been admitted. (See also *Credit*, *Non-specific credit*.)

Sponsorship

Sponsorship is the financial support of a student by a company or government body. Sponsors are frequently invoiced directly.

SRS

SRS is the student record system responsible, prior to FlexSIS, for the processing of student records. The functions of SRS are gradually being incorporated into FlexSIS. (See also *FlexSIS*.)

Stage

For the purposes of administration, a course may be divided into stages to be studied consecutively. The stages may be related to sessions or they may relate to an academic cycle. Part-time students progress through a course more slowly and would often enrol in the same stage more than once.

Status

Status is a variable for students both with relation to course and unit of study. With relation to course, students can have the status of enrolled or not enrolled. 'Not enrolled' reasons can be: totally discontinued, withdrawn, suspended, cancelled, awarded, etc. With relation to unit of study, students can have the status of CURENR or WITHDN, discontinued, etc.

Stream

A stream is a defined program of study within an award course, which requires the completion of a program of study specified by the course rules for the particular stream, in addition to the core program specified by the course rules for the award course.

Students enrolled in award courses that involve streams will have the stream recorded in their enrolment record. Students normally enter streams at the time of admission, although some award courses require students to enrol in streams after the completion of level 1000 units of study. Where permitted to do so by faculty resolution, students may transfer from one stream to another, within an award course, provided they meet criteria approved by the Academic Board on the advice of the faculty concerned. A stream will appear with the award course name on testamurs - eg, Bachelor of Engineering in Civil Engineering (Construction Management). (See also *Award course*, *Major*, *Minor*.)

Student ID card

All students who enrol are issued with an identification card. The card includes the student name, SID, the course code, and a library borrower's bar code. 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 identifier (SID)

A 9-digit number which uniquely identifies a student at the University.

Student load

See *Load*.

Study Abroad Program

A scheme administered by the International Education 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 - eg, 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'.

Summer School

See *Sydney Summer School*.

Supervising faculty

The supervising faculty is the faculty which has the responsibility for managing the academic administration of a particular course - ie, 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 at any given time. Further, in the case where one course is jointly offered by two or more faculties (eg, the Liberal Studies course) a joint committee may make academic decisions about candidature and the student may be assigned a supervising faculty for administration.

The International Office has a supporting role in the administration of the candidatures of international students and alerts the supervising faculty to any special conditions applying to these candidatures (eg, that enrolment must be full-time). (See also *Board of studies*.)

Supervision

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 position. (See also *Advisor*, *Associate supervisor*, *Instrumental supervisor (teacher)*, *Research supervisor*.)

Supplementary examinations

Supplementary exams may be offered by faculties to students who fail to achieve a passing grade or who were absent from assessment due to illness or misadventure.

Suppression of results

Results for a particular student can be suppressed by the University for the following reasons:

- the student has an outstanding debt to the university
- the student is facing disciplinary action.

Suspension

See *Course leave*.

Sydney Summer School

Sydney Summer School is a program of accelerated, intensive study running for approximately 6 weeks during January and February each year. Both undergraduate and postgraduate units are offered. Summer School provides an opportunity for students at Sydney and other universities to catch up on needed units of study, to accelerate completion of a course or to undertake a unit that is outside their award course. All units are full fee-paying and enrolled students are also liable for compulsory subscriptions. Some fee-waiver scholarships are available.

Teaching department

See *Department*.

Temporary address

Students may advise the University of a temporary address. Correspondence will be sent to this address between the dates specified by the student. (See also *Addresses*, *Business address*, *Permanent home address*, *Semester address*.)

Testamur

A testamur is a certificate of award provided to a graduate usually at a graduation ceremony.

Thesis

A thesis is a major work that is the product of an extended period of supervised independent research. 'Earliest date' means the earliest date at which a research student can submit the thesis. 'Latest date' means the latest date at which a research student can submit the thesis.

Timetable

Timetable refers to 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.

UAC

The Universities Admissions Centre (UAC) receives and processes applications for admission to undergraduate courses at recognised universities in NSW and the ACT. Most commencing undergraduate students at the University apply through UAC.

UAC admissions

Most local undergraduates (including local undergraduate fee payers) apply through the Universities Admission Centre (UAC).

The University Admissions Office coordinates the processing of UAC applicants with faculties and departments and decisions are recorded on the UAC system.

Applicants are notified by UAC and an electronic file of applicants who have been made offers of admission to courses at the University is loaded onto FlexSIS. (See also *Admission*, *Direct admissions*.)

UAI (Universities Admission Index)

The Universities Admission Index (UAI) is a number between 0.00 and 100.00 with increments of 0.05. It provides 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.

Undergraduate

A term used to describe a course leading to a diploma or bachelor's degree. An 'undergraduate' is a student enrolled in such a course.

Unit of study

A unit of study is the smallest stand-alone component of a student's course that is recordable on a student's transcript. Units of study have an integer credit point value, normally in the range 3-24. Each approved unit of study is identified by a unique sequence of eight characters, consisting of a four character alphabetical code which usually identifies the department or subject area, and a four character numeric code which identifies the particular unit of study. Units of study can be grouped by subject and level. (See also *Core unit of study*, *Course*, *Major*.)

Unit of study enrolment status

The enrolment status indicates whether the student is still actively attending the unit of study (ie, currently enrolled) or is no longer enrolled (withdrawn or discontinued).

Unit of study group

A grouping of units of study within a course. The units of study which make up the groups are defined within FlexSIS.

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 students qualified for the award of an undergraduate Honours degree or some master's degrees, whose academic performance is judged outstanding.

UPA

University Postgraduate Award.

USYDnet

USYDnet is the University of Sydney's intranet system. In addition to the customised MyUni service, 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. (See also *MyUni*.)

Variation of enrolment

See *Enrolment variation*.

Vice-Chancellor

The chief executive officer of the University, responsible for its leadership and management. The Vice-Chancellor is head of both academic and administrative divisions.

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*.)

Weighted average mark (WAM)

The Weighted Average Mark (WAM) is the average mark in the unit of study completed, weighted according to credit point value and level. The formulae used to calculate the WAMs are course-specific: there are many different WAMs in the University.

Year of first enrolment (YFE)

The year in which a student first enrolls at the University.

Youth Allowance

Youth Allowance is payable to a full-time student or trainee aged 16-24 years of age; and 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. Youth Allowance replaces AUSTUDY.

Index

- A
- Abnormal Psychology PSYC 3203, 98
- Active Photonics Components PHOT 5003, 218
- Adaptive Pattern Recognition ELEC 7604, 201
- Adult Psychological Disorders PSYC 6001, 188
- Adv Biological Specimen Preparation MCAN 4009, 209
- Adv Techniques in Biological Electron M MCAN 4205, 209
- Advanced Computer Engineering ELEC 7611, 201
- Advanced Instrumentation - Confocal MCAN 4307, 210
- Advanced Instrumentation - Spectroscopy MCAN 4105, 209
- Advanced Photonics I PHOT 5005, 218
- Advanced Photonics II PHOT 5006, 218
- Advanced Real-Time Computing ELEC 7601, 201
- Advances in Computer Science 1 COMP 4601, 62
- Advances in Computer Science 2 COMP 4602, 62
- Advances in Computer Science 3 COMP 4603, 62
- Advances in Computer Science 4 COMP 4604, 62
- AGCH 2001 Molecular Processes in Ecosystems, 39
- AGCH 3012 Rural Environmental Chemistry, 104
- AGCH 3017 Food Chemistry and Biochemistry A, 39
- AGCH 3018 Food Chemistry and Biochemistry B, 39
- AGCH 3019 Food Chemistry and Biochemistry C, 39
- AGCH 3020 Chemistry & Biochemistry of Ecosystems A, 39
- AGCH 3021 Chemistry & Biochemistry of Ecosystems B, 39
- AGCH 3022 Chemistry & Biochemistry of Ecosystems C, 39
- AGCH 3024 Chemistry and Biochemistry of Foods, 39, 117
- Algebra I (Advanced) MATH 3902, 81
- Algebra H (Advanced) MATH 3907, 82
- Algorithmic Systems Project COMP 3201, 60
- Algorithmics and Informatics COMP 5211, 205
- Algorithms (Advanced Topic) COMP 4301, 61
- Algorithms (Advanced) COMP 3901, 58
- Algorithms COMP 3001, 58
- Analysis (Advanced) MATH 2907, 78
- Analysis MATH 2007, 77
- Analytical Methods for IS Professionals ISYS 3015, 61
- ANAT 2001 Principles of Histology, 41
- ANAT 2002 Comparative Primate Anatomy, 41
- ANAT 2003 Concepts in Neuroanatomy, 41
- ANAT 2004 Principles of Development, 41
- ANAT 3001 Microscopy and Histochemistry, 42
- ANAT 3002 Cells and Development, 42
- ANAT 3003 Transmission & Scanning Electron Microsc, 42
- ANAT 3004 Cranial and Cervical Anatomy, 42
- ANAT 3005 Topographical Anatomy, 151
- ANAT 3006 Forensic Osteology, 42
- ANAT 3007 Visceral Anatomy, 42
- ANAT 3008 Musculoskeletal Anatomy, 42
- Animal Physiology (Advanced) BIOL 3912, 47
- Animal Physiology BIOL 3012, 47
- Animals A - Theory BIOL 2101, 44
- Animals A (Advanced) BIOL 2901, 44
- Animals A BIOL 2001, 44
- Animals B - Theory BIOL 2102, 45
- Animals B (Advanced) BIOL 2902, 45
- Animals B BIOL 2002, 44
- Antennas and Propagation ELEC 8522, 201
- App Ecology for Environmental Scientists ENVI5808, 214
- Applications of Recombinant DNA Tech Adv BIOL 3918, 48
- Applications of Recombinant DNA Tech BIOL 3018, 48
- Applied Linear Models STAT 3002, 83
- Applied Microbiology (Advanced) MICR 2902, 88
- Applied Microbiology (Nutrition) MICR 2012, 119
- Applied Microbiology MICR 2002, 88
- Applied Molecular Biotechnology A MOBT 5101, 216
- Applied Molecular Biotechnology B MOBT 5102, 216
- Applied Molecular Biotechnology C MOBT 5103, 216
- Applied Stochastic Processes STAT 3005, 83
- Aquaculture NTMP 3004, 110
- Artificial Intelligence (Advanced) COMP 3902, 58
- Artificial Intelligence COMP 3002, 58
- Artificial Intelligence COMP 4302, 61
- Artificial Intelligence Project COMP 3203, 60
- Artificial Neural Networks COMP 5322, 199
- Arts Informatics Systems ISYS 3113, 61
- Asia-Pacific Development GEOG 3201, 66
- Assessment and Selection PSYC 4725, 219
- Assessment of Living Marine Resources QMEC 5290, 207
- Astronomy PHYS 1500, 92
- Astrophysics PHYS 3105, 95
- Australian Wildlife - Field Studies WILD 5002, 221
- Australian Wildlife- Introduction WILD 5001, 221
- B
- BCHM 2002 Molecules, Metabolism and Cells, 86
- BCHM 2011 Biochemistry, 86
- BCHM 2102 Molecules, Metabolism and Cells Theory, 86
- BCHM 2902 Molecules, Metabolism and Cells (Adv), 86
- BCHM 3001 Mol Biology and Structural Biochemistry, 86
- BCHM 3002 Cellular and Medical Biochemistry, 87
- BCHM 3098 Functional Genomics and Proteomics, 87, 117
- BCHM 3901 Mol Biology and Structural Biochem (Adv), 87
- BCHM 3902 Cellular and Medical Biochemistry (Adv), 87
- BCHM 3904 Cellular and Med Biochemistry Mol (Adv), 113
- Behavioural Neuroscience PSYC 3204, 99
- Biochemistry BCHM 2011, 86
- Biodiversity Law LAWS 6165, 191
- Bioinformatics and Genomics (Advanced) BIOL 3927, 50
- Bioinformatics and Genomics BIOL 3027, 50, 117
- Bioinformatics Project COMP 3206, 60
- BIOL 1001 Concepts in Biology, 43
- BIOL 1002 Living Systems, 43
- BIOL 1003 Human Biology, 43
- BIOL 1500 Biology Today, 43
- BIOL 1901 Concepts in Biology (Advanced), 43
- BIOL 1902 Living Systems (Advanced), 43
- BIOL 1903 Human Biology (Advanced), 43
- BIOL 1904 Living Systems Molecular (Advanced), 112
- BIOL 1905 Human Biology Molecular (Advanced), 112
- BIOL 2001 Animals A, 44
- BIOL 2002 Animals B, 44
- BIOL 2003 Plant Anatomy and Physiology, 45
- BIOL 2004 Plant Ecology and Diversity, 45
- BIOL 2006 Cell Biology, 45
- BIOL 2007 Entomology Introductory, 46
- BIOL 2101 Animals A-Theory, 44
- BIOL 2102 Animals B - Theory, 45
- BIOL 2106 Cell Biology - Theory, 46
- BIOL 2901 Animals A (Advanced), 44
- BIOL 2902 Animals B (Advanced), 45
- BIOL 2903 Plant Anatomy and Physiology (Advanced), 45
- BIOL 2904 Plant Ecology and Diversity (Advanced), 45
- BIOL 2906 Cell Biology (Advanced), 46
- BIOL 3011 Ecophysiology, 47
- BIOL 3012 Animal Physiology, 47
- BIOL 3013 Marine Biology, 47
- BIOL 3014 Biology of Terrestrial Vertebrates, 48
- BIOL 3015 Plant Systematics and Biogeography, 48
- BIOL 3017 Fungal Biology, 48
- BIOL 3018 Applications of Recombinant DNA Tech, 48
- BIOL 3021 Plant Development, 48
- BIOL 3022 Plant Physiology, 49
- BIOL 3023 Ecological Methods, 49
- BIOL 3024 Ecology, 49
- BIOL 3025 Evolutionary Genetics & Animal Behaviour, 50
- BIOL 3026 Developmental Genetics, 50
- BIOL 3027 Bioinformatics and Genomics, 50, 117
- BIOL 3911 Ecophysiology (Advanced), 47
- BIOL 3912 Animal Physiology (Advanced), 47
- BIOL 3913 Marine Biology (Advanced), 48
- BIOL 3914 Biology of Terrestrial Vertebrates (Adv), 48
- BIOL 3915 Plant Systematics and Biogeography (Adv), 48
- BIOL 3917 Fungal Biology (Advanced), 48
- BIOL 3918 Applications of Recombinant DNA Tech Adv, 48

INDEX

- BIOL 3923 Ecological Methods (Advanced), 49
 BIOL 3924 Ecology (Advanced), 49
 BIOL 3925 Evolutionary Gen. & Animal Behaviour Adv, 50
 BIOL 3926 Developmental Genetics (Advanced), 50
 BIOL 3927 Bioinformatics and Genomics (Advanced), 50
 BIOL 3928 Evolutionary Genetics Molecular (Adv), 113, 151
 BIOL 3929 Developmental Genetics Molecular (Adv), 113
 BIOL 3931 Plant Development (Advanced), 49
 BIOL 3932 Plant Physiology (Advanced), 49
 Biological Environmental Processes ENVT2001, 104
 Biological Specimen Prep - Tem & Sem MCAN 4101, 209
 Biology of Terrestrial Vertebrates (Adv) BIOL 3914, 48
 Biology of Terrestrial Vertebrates BIOL 3014, 48
 Biology Today BIOL 1500, 43
 Biophysical Environments GEOG 1001, 64
 BMED 2501 Cells and Cell Communication, 148
 BMED 2502 Genes and Genetic Engineering, 149
 BMED 2503 Regulation of the Internal Environment, 149
 BMED 2504 Digestion, Absorption and Metabolism, 149
 BMED 2505 Interaction with External Environment, 149
 BMED 2506 Microbes and Body Defence Systems, 150
 BMED 3003 Immunology, 151
 BMED 3004 Infectious Diseases, 151
 Brain Development NEUR 5103, 217
 Broadcast News (Radio and Online) MECO 2001, 154
 Business Information Systems INFS 6000, 199
C
 Case Discussions A PSYC 5204, 213
 Case Discussions B PSYC 5205, 213
 Catchment Management GEOG 3101, 65
 Categories and Computer Science (Adv) MATH 3905, 82
 Cell Biology - Theory BIOL 2106, 46
 Cell Biology (Advanced) BIOL 2906, 46
 Cell Biology BIOL 2006, 45
 Cell Pathology A CPAT 3001, 51
 Cells and Cell Communication BMED 2501, 148
 Cells and Development ANAT 3002, 42
 Cellular and Med Biochemistry Mol (Adv) BCHM 3904, 113
 Cellular and Medical Biochemistry (Adv) BCHM 3902, 87
 Cellular and Medical Biochemistry BCHM 3002, 87
 Cellular Radio Engineering ELEC 7504, 200
 Change Agent Consulting for IT Industry INFS 6004, 202
 CHEM 1001 Fundamentals of Chemistry IA, 52
 CHEM 1002 Fundamentals of Chemistry IB, 52
 CHEM 1101 Chemistry IA, 52
 CHEM 1102 Chemistry IB, 52
 CHEM 1901 Chemistry IA (Advanced), 52
 CHEM 1902 Chemistry IB (Advanced), 52
 CHEM 1903 Chemistry IA (Special Studies Program), 52
 CHEM 1904 Chemistry IB (Special Studies Program), 53
 CHEM 1905 Chemistry IA Molecular (Advanced), 112
 CHEM 1906 Chemistry IA Mol (Special Studies Prog), 113
 CHEM 1907 Chemistry 1 Life Sciences A Mol (Adv), 113
 CHEM 1908 Chemistry 1 Life Sciences A (Advanced), 148
 CHEM 1909 Chemistry 1 Life Sciences B Mol (Adv), 113, 148
 CHEM 2001 Chemistry 2 (Life Sciences), 53
 CHEM 2101 Chemistry 2 (Environmental), 53
 CHEM 2301 Chemistry 2A, 53
 CHEM 2302 Chemistry 2B, 53
 CHEM 2311 Chemistry 2 (Biological Sciences) Theory, 116, 150
 CHEM 2312 Chemistry 2 (Biological Sciences) Prac, 116, 150
 CHEM 2901 Chemistry 2A (Advanced), 53
 CHEM 2902 Chemistry 2B (Advanced), 53
 CHEM 2903 Chemistry Life Sciences (Advanced), 113
 CHEM 3101 Chemistry 3A, 54
 CHEM 3102 Chemistry 3B, 54
 CHEM 3201 Chemistry 3 A Additional, 54
 CHEM 3202 Chemistry 3B Additional, 54
 CHEM 3311 Drug Design and Characterisation, 117
 CHEM 3601 Chemistry 3A (Environmental), 104
 CHEM 3602 Chemistry 3B (Environmental), 104
 CHEM 3901 Chemistry 3A (Advanced), 54
 CHEM 3902 Chemistry 3B (Advanced), 54
 CHEM 3903 Chemistry 3 Life Sciences (Advanced), 114, 151
 CHEM 5001 Information Retrieval in the Sciences, 215
 CHEM 5002 Information Retrieval in Chem Sciences, 215
 Chemistry & Biochemistry of Ecosystems A AGCH 3020, 39
 Chemistry & Biochemistry of Ecosystems B AGCH 3021, 39
 Chemistry & Biochemistry of Ecosystems C AGCH 3022, 39
 Chemistry 1 Life Sciences A (Advanced) CHEM 1908, 148
 Chemistry 1 Life Sciences A Mol (Adv) CHEM 1907, 113
 Chemistry 1 Life Sciences B Mol (Adv) CHEM 1909, 113, 148
 Chemistry IA (Advanced) CHEM 1901, 52
 Chemistry IA (Special Studies Program) CHEM 1903, 52
 Chemistry IA CHEM 1101, 52
 Chemistry IA Mol (Special Studies Prog) CHEM 1906, 113
 Chemistry IA Molecular (Advanced) CHEM 1905, 112
 Chemistry IB (Advanced) CHEM 1902, 52
 Chemistry IB (Special Studies Program) CHEM 1904, 53
 Chemistry IB CHEM 1102, 52
 Chemistry 2 (Biological Sciences) Prac CHEM 2312, 116, 150
 Chemistry 2 (Biological Sciences) Theory CHEM 2311, 116, 150
 Chemistry 2 (Environmental) CHEM 2101, 53
 Chemistry 2 (Life Sciences) CHEM 2001, 53
 Chemistry 2A (Advanced) CHEM 2901, 53
 Chemistry 2A CHEM 2301, 53
 Chemistry 2B (Advanced) CHEM 2902, 53
 Chemistry 2B CHEM 2302, 53
 Chemistry 3 Life Sciences (Advanced) CHEM 3903, 114, 151
 Chemistry 3A (Advanced) CHEM 3901, 54
 Chemistry 3A (Environmental) CHEM 3601, 104
 Chemistry 3 A Additional CHEM 3201, 54
 Chemistry 3 A CHEM 3101, 54
 Chemistry 3B (Advanced) CHEM 3902, 54
 Chemistry 3B (Environmental) CHEM 3602, 104
 Chemistry 3B Additional CHEM 3202, 54
 Chemistry 3B CHEM 3102, 54
 Chemistry and Biochemistry of Foods AGCH 3024, 39, 117
 Chemistry Life Sciences (Advanced) CHEM 2903, 113
 Child and Family Psychology PSYC 6006, 188
 Clinical Internship 1 PSYC 6003, 188
 Clinical Internship 2 PSYC 6008, 188
 Clinical Internship 3 PSYC 6013, 188
 Clinical Internship 4 PSYC 6018, 189
 Clinical Internship 5 PSYC 6022, 189
 Clinical Internship 6 PSYC 6025, 189
 Clinical Nutrition and Dietetics NTDT 5307, 211
 Clinical Placements A PSYC 5203, 213
 Clinical Placements B PSYC 5206, 213
 Coaching Practice - Co-Coaching & Groups PSYC 4724, 219
 Coastal Environments and Dynamics GEOG 3001, 65
 Coastal Management and GIS GEOG 3102, 65
 Coastal Management NTMP 3005, 110
 Coastal Oceanography NTMP 3006, 110
 Coating Formulation, Manufacture & App SUCO 4004, 220
 Coding Theory MATH 3007, 80
 Cognitive Processes & Social Psychology PSYC 2113, 98
 Cognitive Psychology PSYC 3205, 99
 Combinatorics (Advanced) MATH 3912, 82
 Commercialisation of Science ICOM 5003, 215
 Communication and Counselling PSYC 3214, 99
 Communication NTDT 5309, 211
 Community and Public Health Nutrition NTDT 5308, 211
 Community Relations and Education WILD 5008, 221
 COMP 2003 Languages and Logic, 57
 COMP 2111 Introduction to Algorithms 1, 57
 COMP 2811 Introduction to Algorithms 1 (Adv), 57-
 COMP 2903 Languages and Logic (Advanced), 57
 COMP 3001 Algorithms, 58
 COMP 3002 Artificial Intelligence, 58
 COMP 3004 Computer Graphics, 58
 COMP 3006 Declarative Programming Languages, 59
 COMP 3007 Networked Systems, 59
 COMP 3008 Object-Oriented Systems, 59
 COMP 3009 Operating Systems, 59
 COMP 3100 Software Engineering, 59
 COMP 3102 User Interfaces, 59
 COMP 3201 Algorithmic Systems Project, 60
 COMP 3202 Computer Systems Project, 60
 COMP 3203 Artificial Intelligence Project, 60
 COMP 3204 Software Engineering Project, 60
 COMP 3205 Product Development Project, 60
 COMP 3206 Bioinformatics Project, 60
 COMP 3800 Software Engineering (Advanced), 59
 COMP 3802 User Interfaces (Advanced), 60
 COMP 3809 Software Project (Advanced), 60
 COMP 3901 Algorithms (Advanced), 58
 COMP 3902 Artificial Intelligence (Advanced), 58
 COMP 3904 Computer Graphics (Advanced), 58
 COMP 3906 Declarative Programming Languages (Adv), 59

- COMP 3907 Networked Systems (Advanced), 59
 COMP 3908 Object-Oriented Systems (Advanced), 59
 COMP 3909 Operating Systems (Advanced), 59
 COMP 4301 Algorithms (Advanced Topic), 61
 COMP 4302 Artificial Intelligence, 61
 COMP 4304 Graphics (Advanced Topic), 61
 COMP 4305 Networked Systems (Advanced Topic), 61
 COMP 4307 Distributed Systems (Advanced Topic), 61
 COMP 4309 Object-Oriented Systems (Advanced Topic), 62
 COMP 4400 Operating Systems (Advanced Topic), 62
 COMP 4401 Software Engineering (Advanced Topic), 62
 COMP 4402 User Interfaces (Advanced Topic), 62
 COMP 4403 Computation Theory (Advanced Topic), 62
 COMP 4404 Scientific Visualisation (Advanced Topic), 62
 COMP 4601 Advances in Computer Science 1, 62
 COMP 4602 Advances in Computer Science 2, 62
 COMP 4603 Advances in Computer Science 3, 62
 COMP 4604 Advances in Computer Science 4, 62
 COMP 5015 Relational Database Systems, 198
 COMP 5018 Object-Oriented Programming in C++, 198
 COMP 5019 System and Network Administration, 199
 COMP 5028 O-O Analysis and Design, 199
 COMP 5112 User Interface Design and Programming, 199
 COMP 5114 Digital Media Fundamentals, 199
 COMP 5211 Algorithms and Informatics, 205
 COMP 5213 Computer and Network Organisation, 206
 COMP 5214 Software Development in Java, 206
 COMP 5215 Foundational Database Systems, 206
 COMP 5218 Object-Oriented Programming in Java, 206
 COMP 5315 Internet Programming, 199
 COMP 5318 Knowledge, Discovery and Data Mining, 200
 COMP 5319 Programming Distributed Object Systems, 200
 COMP 5322 Artificial Neural Networks, 199
 COMP 5327 Computer and Communication Security, 199
 COMP 5328 Machine Learning Techniques, 200
 COMP 5337 Design of Distributed Object Systems, 200
 COMP 5347 E-commerce Technology, 200
 COMP 5414 Visual Information Processing, 200
 COMP 5415 Multimedia Authoring and Production, 200
 COMP 5445 OO Techniques in Multimedia, 200
 COMP 5702 Information Technology project A, 202
 COMP 5703 Information Technology project B, 202
 COMP 5704 Information Technology project C, 202
 Comparative Primate Anatomy ANAT 2002, 41
 Complex Variable (Advanced) MATH 3904, 82
 Computation Theory (Advanced Topic) COMP 4403, 62
 Computational Science in C (Adv) COSC 1902, 55
 Computational Science in C COSC 1002, 55
 Computational Science in Matlab (Adv) COSC 1901, 55
 Computational Science in Matlab COSC 1001, 55
 Computer and Communication Security COMP 5327, 199
 Computer and Network Organisation COMP 5213, 206
 Computer Graphics (Advanced) COMP 3904, 58
 Computer Graphics COMP 3004, 58
 Computer Modelling & Resource Management ENVI 5809, 214
 Computer Science Honours Result INFO 4999, 63
 Computer System Organisation (Adv) NETS 2908, 57
 Computer System Organisation NETS 2008, 57
 Computer Systems Project COMP 3202, 60
 Concepts in Biology (Advanced) BIOL 1901, 43
 Concepts in Biology BIOL 1001, 43
 Concepts in Neuroanatomy ANAT 2003, 41
 Concurrent Programming (Adv) SOFT 2901, 58
 Concurrent Programming SOFT 2001, 58
 Condensed Matter Physics & Photonics Adv PHYS 3904, 94
 Condensed Matter Physics and Photonics PHYS 3004, 93
 Conservation and Biodiversity QMEC 5280, 207
 Contemporary Issues in HPS HPSC 3100, 69
 Contracts LAWS 1002, 122
 coordinators, Bachelor degree program, 3
 Coral Reef Ecosystems NTMP 3001, 110
 Core topics - History & Philosophy of Sci HPSC 4108, 193
 COSC 1001 Computational Science in Matlab, 55
 COSC 1002 Computational Science in C, 55
 COSC 1901 Computational Science in Matlab (Adv), 55
 COSC 1902 Computational Science in C (Adv), 55
 COSC 3601 Parallel Computing, 55
 CPAT3001 Cell Pathology A, 51
 CPAT 3101 Pathological Basis of Human Disease, 51
 Cranial and Cervical Anatomy ANAT 3004, 42
 Criminal Law LAWS 1003, 122
 Crustal Growth and Recycling GEOL 3101, 67
 Cultural and Economic Geography GEOG 2201, 64
 D
 Data Analysis STAT 2002, 79
 Database Systems (Advanced Topic) INFO 4306, 63
 Databases INFS 6010, 215
 Declarative Programming Languages (Adv) COMP 3906, 59
 Declarative Programming Languages COMP 3006, 59
 Design and Analysis of Sampling (Intro) QMEC 5120, 206
 Design of Distributed Object Systems COMP 5337, 200
 Design of Experiments STAT 3004, 83
 Developmental Genetics (Advanced) BIOL 3926, 50
 Developmental Genetics BIOL 3026, 50
 Developmental Genetics Molecular (Adv) BIOL 3929, 113
 Developmental Psychology PS YC 3206, 99
 Dietary Intake & Nutritional Assessment NTDT 5303, 211
 Differential and Difference Equations MATH 1013, 74
 Differential Calculus (Advanced) MATH 1901, 75
 Differential Calculus MATH 1001, 75
 Differential Geometry (Advanced) MATH 3903, 81
 Diffraction Techniques (Advanced) MCAN 4201, 209
 Digestion, Absorption and Metabolism BMED 2504, 149
 Digital Media Fundamentals COMP 5114, 199
 Discrete Mathematics (Advanced) MATH 1904, 76
 Discrete Mathematics MATH 1004, 75
 Distributed Information Systems INFO 2007, 57
 Distributed Systems (Advanced Topic) COMP 4307, 61
 Distribution Theory and Inference STAT 3001, 83
 Drug Design and Characterisation CHEM 3311, 117
 E
 Earth and its Environment GEOL 1001, 66
 Earth Processes and Resources GEOL 1002, 66
 Earth's Evolution and Energy GEOL 3102, 68
 Ecolog Principles for Environ Scientists ENVI 5705, 214
 Ecological Methods (Advanced) BIOL 3923, 49
 Ecological Methods BIOL 3023, 49
 Ecological Sci & Enviro Impact Assess QMEC 5150, 207
 Ecology (Advanced) BIOL 3924, 49
 Ecology BIOL 3024, 49
 E-commerce Technology COMP 5347, 200
 Ecophysiology (Advanced) BIOL 3911, 47
 Ecophysiology BIOL 3011, 47
 ELEC 7502 Satellite Communication Systems, 200
 ELEC 7504 Cellular Radio Engineering, 200
 ELEC 7506 Optical Networks, 201
 ELEC 7601 Advanced Real-Time Computing, 201
 ELEC 7604 Adaptive Pattern Recognition, 201
 ELEC 7606 Multimedia Systems and Applications, 201
 ELEC 7611 Advanced Computer Engineering, 201
 ELEC 8521 Radio Frequency Engineering, 201
 ELEC 8522 Antennas and Propagation, 201
 ELEC 8900 Project, Full-Time, 202
 ELEC 8901 Project Part-Time Part A, 202
 ELEC 8902 Project Part-Time Part B, 203
 Electronic Marketing MKTG 6015, 202
 Elementary Cryptography and Protocols MATH 3024, 81
 Energy - Sources, Uses and Alternatives ENVI 5707, 214
 Energy and the Environment PHYS 3600, 104
 ENGL 1005 Language and Image, 128, 154
 Entomology Introductory BIOL 2007, 46
 ENVI 1001 Global Geology, 104
 ENVI 1002 Geomorphic Environments and Change, 104
 ENVI 2001 Biological Environmental Processes, 104
 ENVI 2002 Physical Environmental Processes, 104
 ENVI 3001 Environmental Law and Planning, 104
 ENVI 3002 Environmental Assessment, 104
 ENVI 5501 Environmental Research Project, 214
 ENVI 5705 Ecolog Principles for Environ Scientists, 214
 ENVI 5707 Energy - Sources, Uses and Alternatives, 214
 ENVI 5708 Introduction to Environmental Chemistry, 214
 ENVI 5803 Law and the Environment, 214
 ENVI 5805 The Urban Environment and Planning, 214
 ENVI 5808 App Ecology for Environmental Scientists, 214
 ENVI 5809 Computer Modelling & Resource Management, 214
 ENVI 5901 Weathering Processes and Applications, 214
 ENVI 5902 Fluvial Geomorphology, 214
 Enviro Impacts & Ecological Restoration QMEC 5270, 207 269
 Environmental Assessment ENVI 3002, 104
 Environmental Change and Human Response GEOG 2101, 64
 Environmental Geology - Resources GEOL 2005, 67
 Environmental Geology and Climate Change GEOL 2004, 67

INDEX

- Environmental Geomorphology GEOG 3002, 65
 Environmental Impact Assessment Law LAWS 6043, 191
 Environmental Law and Planning ENVI 3001, 104
 Environmental Law and Policy LAWS 6044, 191
 Environmental Planning Law LAWS 6045, 191
 Environmental Research Project ENVI 5501, 214
 Environmental Soil Science A SOIL 3001, 40
 Environmental Soil Science B SOIL 3002, 41
 Essay MCAN 5003, 210
 Estimation Theory (Advanced) STAT 2903, 79
 Estimation Theory STAT 2003, 79
 Ethics and Current Issues in Psychology PSYC 4712, 212
 Ethics and Professional Practice 1 PSYC 6004, 188
 Ethics and Professional Practice 2 PSYC 6009, 188
 Ethics and Professional Practice 3 PSYC 6014, 189
 Ethics and Professional Practice 4 PSYC 6019, 189
 Ethics and Professional Practice 5 PSYC 6023, 189
 Ethics and Professional Practice 6 PSYC 6026, 189
 Evolutionary Gen. & Animal Behaviour Adv BIOL 3925, 50
 Evolutionary Genetics & Animal Behaviour BIOL 3025, 50
 Evolutionary Genetics Molecular (Adv) BIOL 3928, 113, 151
 Ex Situ Wildlife Management WILD 5006, 221
 Experimental Photonics I PHOT 5010, 218
 Experimental Photonics II PHOT 5011, 218
 Experimental Physics A (Advanced) PHYS 3908, 94
 Experimental Physics A PHYS 3008, 93
 Experimental Physics B (Advanced) PHYS 3909, 94
 Experimental Physics B PHYS 3009, 93
 Experimental Physics C (Advanced) PHYS 3801, 94
 Experimental Physics C PHYS 3101, 93
 Experimental Physics D (Advanced) PHYS 3802, 94
 Experimental Physics D PHYS 3102, 94
 F
 Family, Couple and Sex Therapy PSYC 5109, 213
 Federal Constitutional Law LAWS 3000, 122
 Financial Mathematics 1 (Advanced) MATH 2933, 79
 Financial Mathematics 1 MATH 2033, 78
 Financial Mathematics 2 (Advanced) MATH 3933, 83
 Financial Mathematics 2 MATH 3015, 81
 Fisheries Biology and Management NTMP 3003, 110
 Fluid Dynamics (Advanced) MATH 3914, 82
 Fluvial and Coastal Geography GEOG 2002, 64
 Fluvial and Groundwater Geomorphology GEOG 2303, 65
 Fluvial Geomorphology ENVI 5902, 214
 Fluvial Geomorphology GEOG 2302, 65
 Food Chemistry and Biochemistry A AGCH 3017, 39
 Food Chemistry and Biochemistry B AGCH 3018, 39
 Food Chemistry and Biochemistry C AGCH 3019, 39
 Food Science NTDT 5302, 211
 Food Service Management NTDT 5305, 211
 Forensic Osteology ANAT 3006, 42
 Fossils and Time GEOL 2003, 67
 Foundational Database Systems COMP 5215, 206
 Foundations of Information Technology IS YS 1003, 56
 Fourier Series & Differential Equations MATH 2005, 77
 Functional Genomics and Proteomics BCHM 3098, 87, 117
 Fundamental and AppUed Microbiology Adv MICR 2909, 113
 Fundamentals of Chemistry IA CHEM 1001, 52
 Fundamentals of Chemistry IB CHEM 1002, 52
 Fundamentals of Coaching Practice PSYC 4722, 219
 Fundamentals of Photonics PHOT 5001, 218
 Fungal Biology (Advanced) BIOL 3917, 48
 Fungal Biology BIOL 3017, 48
 G
 General and Medical Microbiology (Adv) MICR 3901, 89
 General and Medical Microbiology MICR 3001, 88
 Genes and Genetic Engineering BMED 2502, 149
 GEOG 1001 Biophysical Environments, 64
 GEOG 1002 Human Environments, 64
 GEOG 2001 Processes in Geomorphology, 64
 GEOG 2002 Fluvial and Coastal Geography, 64
 GEOG 2101 Environmental Change and Human Response, 64
 GEOG 2102 Resource and Environmental Management, 64
 GEOG 2201 Cultural and Economic Geography, 64
 GEOG 2202 Urban and Political Geography, 65
 GEOG 2302 Fluvial Geomorphology, 65
 GEOG 2303 Fluvial and Groundwater Geomorphology, 65
 GEOG 3001 Coastal Environments and Dynamics, 65
 GEOG 3002 Environmental Geomorphology, 65
 GEOG 3101 Catchment Management, 65
 GEOG 3102 Coastal Management and GIS, 65
 GEOG 3201 Asia-Pacific Development, 66
 GEOG 3202 Sustainable Cities & Regional Change, 66
 GEOG 3302 Mining, Rural Change and Globalisation, 66
 GEOG 5001 Geographic Information Systems (Intro), 214, 215
 Geographic Information Systems (Intro) GEOG 5001, 214, 215
 GEOL 1001 Earth and its Environment, 66
 GEOL 1002 Earth Processes and Resources, 66
 GEOL 2001 Geological Hazards and Solutions, 66
 GEOL 2002 Resource Exploration and Management, 67
 GEOL 2003 Fossils and Time, 67
 GEOL 2004 Environmental Geology and Climate Change, 67
 GEOL 2005 Environmental Geology-Resources, 67
 GEOL 3101 Crustal Growth and Recycling, 67
 GEOL 3102 Earth's Evolution and Energy, 68
 GEOL 3103 Ore Deposit Geology & Structural Mapping, 68
 GEOL 3104 Sedimentary Processes, 68
 Geological Hazards and Solutions GEOL 2001, 66
 Geometry MATH 3006, 80
 Geomorphic Environments and Change ENVI 1002, 104
 GEOP 3201 Modelling Earth Processes, 68
 GEOP 3202 Geophysical Exploration, 68
 Geophysical Exploration GEOP 3202, 68
 Global Geology ENVI 1001, 104
 GOVT 2303 Media Politics, 154
 Graph Theory MATH 2009, 78
 Graphics (Advanced Topic) COMP 4304, 61
 Group Representation Theory (Advanced) MATH 3906, 82
 H
 Hamiltonian Dynamics (Advanced) MATH 3917, 82
 Health Psychology PSYC 4716, 212
 Heart and Circulation (Advanced) PHSI3903, 97
 Heart and Circulation PHSI 3003, 96
 Heritage Law LAWS 6055, 191
 History & Philosophy of Science Honours HPSC 4999, 70
 History and Philosophy of Psychology PSYC 3202, 98
 History of Biological/Medical Sciences HPSC 3002, 69
 History of Mathematical Ideas MATH 3004, 80
 History of Physical Sciences and Maths HPSC 3001, 69
 History of Science HPSC 4102, 70, 192
 History of the Biomedical Sciences HPSC 3102, 152
 History/Philosophy of Medicine HPSC 3005, 69
 HPS Research Methods HPSC 4105, 70, 193
 HPSC 2001 What Is This Thing Called Science?, 69
 HPSC 2002 The Birth of Modern Science, 69
 HPSC 3001 History of Physical Sciences and Maths, 69
 HPSC 3002 History of Biological/Medical Sciences, 69
 HPSC 3003 Social Relations of Science, 69
 HPSC 3005 History/Philosophy of Medicine, 69
 HPSC 3007 Science and Ethics, 69
 HPSC 3100 Contemporary Issues in HPS, 69
 HPSC 3102 History of the Biomedical Sciences, 152
 HPSC 3103 Philosophy of the Biological Sciences, 69
 HPSC 3105 Philosophy of Physics, 70
 HPSC 3106 Philosophy of Mathematics, 70
 HPSC 4101 Philosophy of Science, 70, 192
 HPSC 4102 History of Science, 70, 192
 HPSC 4103 Sociology of Science, 70, 192
 HPSC 4104 Recent Topics in HPS, 70, 193
 HPSC 4105 HPS Research Methods, 70, 193
 HPSC 4106 Research Project A, 70, 193
 HPSC 4107 Research Project B, 70, 193
 HPSC 4108 Core topics - History & Philosophy of Sci, 193
 HPSC 4999 History & Philosophy of Science Honours, 70
 Human Biology (Advanced) BIOL 1903, 43
 Human Biology BIOL 1003, 43
 Human Biology Molecular (Advanced) BIOL 1905, 112
 Human Cellular Physiology (Advanced) PHSI 3904, 97
 Human Cellular Physiology PHSI 3004, 97
 Human Environments GEOG 1002, 64
 Hypothesis Testing STAT 2004, 79
 I
 ICOM 5001 The Internet as a Resource in Science, 215
 ICOM 5002 Science Communication, 215
 ICOM 5003 Commercialisation of Science, 215
 Image Analysis MCAN 4308, 210
 Image Capture and Recording MCAN 4207, 209
 IMMU 2001 Introductory Immunology, 70
 IMMU 3002 Immunology, 71
 Immunology BMED 3003, 151
 Immunology IMMU 3002, 71
 In Situ Wildlife Management WILD 5005, 221

- Independent Project and Report MCAN 4108, 209
 Infectious Diseases BMED 3004, 151
 INFO 2000 System Analysis and Design, 57
 INFO 2005 Personal Database Tools, 57
 INFO 2007 Distributed Information Systems, 57
 INFO 3005 Organisational Database Systems, 60
 INFO 3905 Organisational Database Systems (Adv), 60
 INFO 4300 Information Systems (Advanced Topic), 62
 INFO 4306 Database Systems (Advanced Topic), 63
 INFO 4901 Research Preparation, 63
 INFO 4902 Research Project, 63
 INFO 4999 Computer Science Honours Result, 63
 INFO 5210 Systems Modelling and Design, 205
 Information Retrieval in Chem Sciences CHEM 5002, 215
 Information Retrieval in the Sciences CHEM 5001, 215
 Information Systems (Advanced Topic) INFO 4300, 62
 Information Systems in Organisations ISYS 2006, 57
 Information Systems Management ISYS 3000, 60
 Information Systems Project ISYS 3207, 61
 Information Technology and Management INFS 6002, 201
 Information Technology project A COMP 5702, 202
 Information Technology project B COMP 5703, 202
 Information Technology project C COMP 5704, 202
 Information Theory MATH 3010, 81
 INFS 6000 Business Information Systems, 199
 INFS 6001 Management Information Systems, 201
 INFS 6002 Information Technology and Management, 201
 INFS 6004 Change Agent Consulting for IT Industry, 202
 INFS 6005 Internet for Commerce, 215
 INFS 6010 Databases, 215
 INFS 6012 Integrated Enterprise Systems, 202
 INFS 6013 IT Risk Management and Assurance, 202
 INFS 6014 IT Project Management, 202
 INFS 6017 Knowledge Management, 202
 Instrumentation - Confocal Microscopy MCAN 4304, 210
 Instrumentation - Light Microscopy MCAN 4301, 209
 Instrumentation - Monitoring Microscopes MCAN 4007, 209
 Instrumentation - Scanning EM (Adv) MCAN 4306, 210
 Instrumentation - Scanning EM MCAN 4303, 210
 Instrumentation - Transmission EM (Adv) MCAN 4305, 210
 Instrumentation - Transmission EM MCAN 4302, 209
 Integral Calculus and Modelling Advanced MATH 1903, 76
 Integral Calculus and Modelling MATH 1003, 75
 Integrated Enterprise Systems INFS 6012, 202
 Intelligence PSYC 3208, 99
 Interaction with External Environment BMED 2505, 149
 Interfacial Sci & Coatings Tech & Design SUCO 4003, 220
 International Environmental Law LAWS 6061, 191
 Internet for Commerce INFS 6005, 215
 Internet Programming COMP 5315, 199
 Intro Assessment - Living Marine Resources QMEC 5140, 207
 Intro Pharmacology - Drugs and People PCOL 2002, 90
 Intro Specimen Preparation for Opt Micro MCAN 4008, 209
 Intro to Mathematical Computing (Adv) MATH 2903, 78
 Intro to Organisational & Coaching Psych PSYC 4726, 219
 Introduction to Algorithms 1 (Adv) COMP 2811, 57
 Introduction to Algorithms 1 COMP 2111, 57
 Introduction to Diffraction MCAN 4109, 209
 Introduction to English Linguistics LNGS 1005, 128
 Introduction to Environmental Chemistry ENVI5708, 214
 Introduction to Food Service NTDT 5306, 211
 Introduction to Mathematical Computing MATH 2003, 77
 Introduction to Media Studies 1 MECO 1001, 154
 Introduction to Media Studies 2 MECO 1002, 154
 Introduction to Modern Algebra (Adv) MATH 2918, 78
 Introduction to Modern Algebra MATH 2008, 77
 Introduction to Probability (Advanced) STAT 2901, 79
 Introductory Food Science (Advanced) NUTR 2901, 119
 Introductory Immunology IMMU 2001, 70
 Introductory Marine Science A MARS 2001, 71, 107
 Introductory Marine Science B MARS 2002, 71, 107
 Introductory Microbiology (Advanced) MICR 2901, 88
 Introductory Microbiology (Nutrition) MICR 2011, 119
 Introductory Microbiology MICR 2001, 88
 Introductory Nutritional Science (Adv) NUTR 2902, 119
 Introductory Physiology A PHSI2001, 95
 Introductory Physiology B PHSI 2002, 95
 ISYS 1003 Foundations of Information Technology, 56
 ISYS 2006 Information Systems in Organisations, 57
 ISYS 3000 Information Systems Management, 60
 ISYS 3012 Project Management and Practice, 61
 ISYS 3015 Analytical Methods for IS Professionals, 61
 ISYS 3113 Arts Informatics Systems, 61
 ISYS 3207 Information Systems Project, 61
 IT Project Management INFS 6014, 202
 IT Risk Management and Assurance INFS 6013, 202
K
 Knowledge Management INFS 6017, 202
 Knowledge, Discovery and Data Mining COMP 5318, 200
L
 Lagrangian Dynamics (Advanced) MATH 2904, 78
 Lagrangian Dynamics MATH 2004, 77
 Language and Image ENGL 1005, 128, 154
 Languages and Logic (Advanced) COMP 2903, 57
 Languages and Logic COMP 2003, 57
 Law and the Environment ENVI 5803, 214
 Law, Lawyers and Justice LAWS 3002, 123
 LAWS 1002 Contracts, 122
 LAWS 1003 Criminal Law, 122
 LAWS 1006 Legal Institutions, 122
 LAWS 1008 Legal Research, 122
 LAWS 1009 Legal Writing, 122
 LAWS 1010 Torts, 122
 LAWS 3000 Federal Constitutional Law, 122
 LAWS 3002 Law, Lawyers and Justice, 123
 LAWS 6043 Environmental Impact Assessment Law, 191
 LAWS 6044 Environmental Law and Policy, 191
 LAWS 6045 Environmental Planning Law, 191
 LAWS 6055 Heritage Law, 191
 LAWS 6061 International Environmental Law, 191
 LAWS 6082 Pollution Law, 191
 LAWS 6165 Biodiversity Law, 191
 LAWS 6173 Trade and Environment, 192
 LAWS 6191 Water Law, 191
 LAWS 6252 Legal Reasoning and the Common Law System, 192
 LAWS 6257 Public Policy, 192
 Learning and Motivation PSYC 3209, 99
 Learning, Neuroscience and Perception PSYC 2111, 98
 Lebesgue Int and Fourier Analysis (Adv) MATH 3909, 82
 Legal Institutions LAWS 1006, 122
 Legal Reasoning and the Common Law System LAWS 6252, 192
 Legal Research LAWS 1008, 122
 Legal Writing LAWS 1009, 122
 Life Science Statistics MATH 1015, 74
 Life Sciences Algebra MATH 1012, 74
 Life Sciences Calculus MATH 1011, 74
 Linear Algebra (Advanced) MATH 1902, 76
 Linear Algebra (Advanced) MATH 2902, 78
 Linear Algebra MATH 1002, 75
 Linear Models (Advanced) STAT 3902, 83
 Living Systems (Advanced) BIOL 1902, 43
 Living Systems BIOL 1002, 43
 Living Systems Molecular (Advanced) BIOL 1904, 112
 LNGS 1005 Introduction to English Linguistics, 128
 Logic MATH 3005, 80
M
 Machine Learning Techniques COMP 5328, 200
 Management Information Systems INFS 6001, 201
 Management of Technology MTEC 6003, 202
 Marine Biology (Advanced) BIOL 3913, 48
 Marine Biology BIOL 3013, 47
 Marine Biotechnology NTMP 3002, 110
 Marine Science A MARS 3001, 71
 Marine Science B MARS 3002, 71
 Marine Science C MARS 3101, 107
 Marine Science D MARS 3102, 108
 Marine Science Field School MARS 2003, 107
 Marine Techniques MARS 2004, 107
 Markov Processes (Advanced) STAT 3905, 84
 MARS 2001 Introductory Marine Science A, 71, 107
 MARS 2002 Introductory Marine Science B, 71, 107
 MARS 2003 Marine Science Field School, 107
 MARS 2004 Marine Techniques, 107
 MARS 3001 Marine Science A, 71
 MARS 3002 Marine Science B, 71
 MARS 3101 Marine Science C, 107
 MARS 3102 Marine Science D, 108
 Materials Specimen Prep - Tern & Sem MCAN 4102, 209
 MATH 1001 Differential Calculus, 75
 MATH 1002 Linear Algebra, 75
 MATH 1003 Integral Calculus and Modelling, 75

INDEX

- MATH 1004 Discrete Mathematics, 75
 MATH 1005 Statistics, 75
 MATH 1011 Life Sciences Calculus, 74
 MATH 1012 Life Sciences Algebra, 74
 MATH 1013 Differential and Difference Equations, 74
 MATH 1015 Life Science Statistics, 74
 MATH 1901 Differential Calculus (Advanced), 75
 MATH 1902 Linear Algebra (Advanced), 76
 MATH 1903 Integral Calculus and Modelling Advanced, 76
 MATH 1904 Discrete Mathematics (Advanced), 76
 MATH 1905 Statistics (Advanced), 76
 MATH 1906 Mathematics (Special Studies Program) A, 76
 MATH 1907 Mathematics (Special Studies Program) B, 76
 MATH 2001 Vector Calculus and Complex Variables, 77
 MATH 2002 Matrix Applications, 77
 MATH 2003 Introduction to Mathematical Computing, 77
 MATH 2004 Lagrangian Dynamics, 77
 MATH 2005 Fourier Series & Differential Equations, 77
 MATH 2006 Nonlinear Systems and Chaos Introduction, 77
 MATH 2007 Analysis, 77
 MATH 2008 Introduction to Modern Algebra, 77
 MATH 2009 Graph Theory, 78
 MATH 2010 Optimisation, 78
 MATH 2033 Financial Mathematics 1, 78
 MATH 2901 Vector Calculus and Complex Var (Adv), 78
 MATH 2902 Linear Algebra (Advanced), 78
 MATH 2903 Intro to Mathematical Computing (Adv), 78
 MATH 2904 Lagrangian Dynamics (Advanced), 78
 MATH 2905 Mathematical Methods (Advanced), 78
 MATH 2906 Nonlinear Systems and Chaos (Advanced), 78
 MATH 2907 Analysis (Advanced), 78
 MATH 2918 Introduction to Modern Algebra (Adv), 78
 MATH 2933 Financial Mathematics 1 (Advanced), 79
 MATH 3001 Topology, 80
 MATH 3002 Rings and Fields, 80
 MATH 3003 Ordinary Differential Equations, 80
 MATH 3004 History of Mathematical Ideas, 80
 MATH 3005 Logic, 80
 MATH 3006 Geometry, 80
 MATH 3007 Coding Theory, 80
 MATH 3008 Real Variables, 80
 MATH 3009 Number Theory, 80
 MATH 3010 Information Theory, 81
 MATH 3015 Financial Mathematics 2, 81
 MATH 3016 Mathematical Computing I, 81
 MATH 3018 Partial Differential Equations and Waves, 81
 MATH 3019 Signal Processing, 81
 MATH 3020 Nonlinear Systems and Biomathematics, 81
 MATH 3024 Elementary Cryptography and Protocols, 81
 MATH 3901 Metric Spaces (Advanced), 81
 MATH 3902 Algebra I (Advanced), 81
 MATH 3903 Differential Geometry (Advanced), 81
 MATH 3904 Complex Variable (Advanced), 82
 MATH 3905 Categories and Computer Science (Adv), 82
 MATH 3906 Group Representation Theory (Advanced), 82
 MATH 3907 Algebra II (Advanced), 82
 MATH 3908 Nonlinear Analysis (Advanced), 82
 MATH 3909 Lebesgue Int and Fourier Analysis (Adv), 82
 MATH 3912 Combinatorics (Advanced), 82
 MATH 3914 Fluid Dynamics (Advanced), 82
 MATH 3915 Mathematical Methods (Advanced), 82
 MATH 3916 Mathematical Computing I (Advanced), 82
 MATH 3917 Hamiltonian Dynamics (Advanced), 82
 MATH 3919 Signal Processing (Advanced), 83
 MATH 3920 Nonlinear Systems & Biomathematics (Adv), 83
 MATH 3921 P D E And Waves (Advanced), 83
 MATH 3925 Public Key Cryptography (Advanced), 83
 MATH 3933 Financial Mathematics 2 (Advanced), 83
 MATH 5001 Mathematics Option 1, 208
 MATH 5002 Mathematics Option 2, 208
 MATH 5003 Mathematics Option 3, 208
 MATH 5004 Mathematics Option 4, 208
 MATH 5005 Research Project A, 208
 MATH 5006 Research Project B, 208
 MATH 5007 Research Project C, 208
 MATH 5008 Research Project D, 208
 MATH 5010 Research Project E, 208
 MATH 5011 Research Project F, 208
 Mathematical Computing I (Advanced) MATH 3916, 82
 Mathematical Computing I MATH 3016, 81
 Mathematical Methods (Advanced) MATH 2905, 78
 Mathematical Methods (Advanced) MATH 3915, 82
 Mathematics (Special Studies Program) A MATH 1906, 76
 Mathematics (Special Studies Program) B MATH 1907, 76
 Mathematics Option 1 MATH 5001, 208
 Mathematics Option 2 MATH 5002, 208
 Mathematics Option 3 MATH 5003, 208
 Mathematics Option 4 MATH 5004, 208
 Matrix Applications MATH 2002, 77
 MBLG 2001 Molecular Biology and Genetics A, 84, 85
 MBLG 2002 Molecular Biology and Genetics B, 46, 84
 MBLG 2101 Molecular Biology & Genetics A (Theory), 84, 85
 MBLG 2102 Molecular Biology & Genetics B (Theory), 46, 85
 MBLG 2901 Molecular Biology and Genetics A (Adv), 84, 86
 MBLG 2902 Molecular Biology and Genetics B (Adv), 46, 85
 MCAN 4001 Principles of Microscopy & Microanalysis, 209
 MCAN 4007 Instrumentation - Monitoring Microscopes, 209
 MCAN 4008 Intro Specimen Preparation for Opt Micro, 209
 MCAN 4009 Adv Biological Specimen Preparation, 209
 MCAN 4101 Biological Specimen Prep - Tem & Sem, 209
 MCAN 4102 Materials Specimen Prep - Tem & Sem, 209
 MCAN 4103 Surface Microscopy, 209
 MCAN 4104 Signal and Image Processing, 209
 MCAN 4105 Advanced Instrumentation - Spectroscopy, 209
 MCAN 4108 Independent Project and Report, 209
 MCAN 4109 Introduction to Diffraction, 209
 MCAN 4201 Diffraction Techniques (Advanced), 209
 MCAN 4202 Microanalysis - Electron Techniques, 209
 MCAN 4203 Microanalysis for Materials-Non Electron, 209
 MCAN 4204 Microanalysis in the Life Sciences, 209
 MCAN 4205 Adv Techniques in Biological Electron M, 209
 MCAN 4207 Image Capture and Recording, 209
 MCAN 4209 Stereology, 209
 MCAN 4301 Instrumentation - Light Microscopy, 209
 MCAN 4302 Instrumentation-Transmission EM, 209
 MCAN 4303 Instrumentation - Scanning EM, 210
 MCAN 4304 Instrumentation - Confocal Microscopy, 210
 MCAN 4305 Instrumentation - Transmission EM (Adv), 210
 MCAN 4306 Instrumentation - Scanning EM (Adv), 210
 MCAN 4307 Advanced Instrumentation - Confocal, 210
 MCAN 4308 Image Analysis, 210
 MCAN 5001 Project 1, 210
 MCAN 5002 Project 2, 210
 MCAN 5003 Essay, 210
 MECO 1001 Introduction to Media Studies 1, 154
 MECO 1002 Introduction to Media Studies 2, 154
 MECO 2001 Broadcast News (Radio and Online), 154
 MECO 2002 Writing for Print Media, 154
 MECO 2003 Media Relations and Advertising, 154
 MECO 3001 Video Production, 154
 MECO 3002 Online Media Production, 155
 MECO 3003 Media, Law and Ethics, 155
 Media Politics GOVT 2303, 154
 Media Relations and Advertising MECO 2003, 154
 Media, Law and Ethics MECO 3003, 155
 Metric Spaces (Advanced) MATH 3901, 81
 MICR2001 Introductory Microbiology, 88
 MICR 2002 Applied Microbiology, 88
 MICR 2003 Theoretical Microbiology A, 88
 MICR 2004 Theoretical Microbiology B, 88
 MICR 2011 Introductory Microbiology (Nutrition), 119
 MICR 2012 Applied Microbiology (Nutrition), 119
 MICR 2901 Introductory Microbiology (Advanced), 88
 MICR 2902 Applied Microbiology (Advanced), 88
 MICR 2909 Fundamental and Applied Microbiology Adv, 113
 MICR 3001 General and Medical Microbiology, 88
 MICR 3002 Molecular/Environmental Microbiology, 89
 MICR 3003 Molecular Biology of Pathogens, 151
 MICR 3004 Molecular Biology of Pathogens Molecular, 114
 MICR 3901 General and Medical Microbiology (Adv), 89
 MICR 3902 Molecular/Environmental Microbiology Adv, 89
 MICR 3903 Molecular Biology of Pathogens Advanced, 151
 MICR 3904 Molecular Biology of Pathogens Mol (Adv), 114
 Microanalysis - Electron Techniques MCAN 4202, 209
 Microanalysis for Materials-Non Electron MCAN 4203, 209
 Microanalysis in the Life Sciences MCAN 4204, 209
 Microbes and Body Defence Systems BMED 2506, 150
 Microscopy and Histochemistry ANAT 3001, 42
 Mining, Rural Change and Globalisation GEOG 3302, 66
 MKTG 6015 Electronic Marketing, 202
 MOBT2001 Molecular Biotechnology 2A, 116
 MOBT 2002 Molecular Biotechnology 2B, 116

MOBT3001 Molecular Biotechnology 3A, 116
 MOBT 3002 Molecular Biotechnology 3B, 116
 MOBT 5101 Applied Molecular Biotechnology A, 216
 MOBT 5102 Applied Molecular Biotechnology B, 216
 MOBT 5103 Applied Molecular Biotechnology C, 216
 Modelling Earth Processes GEOP 3201, 68
 Modern Optics PHYS 3107, 95
 Mol Biology and Structural Biochem (Adv) BCHM 3901, 87
 Mol Biology and Structural Biochemistry BCHM 3001, 86
 Molecular Biology & Genetics A (Theory) MBLG 2101, 84, 85
 Molecular Biology & Genetics B (Theory) MBLG 2102, 46, 85
 Molecular Biology and Genetics A (Adv) MBLG 2901, 84, 86
 Molecular Biology and Genetics A MBLG 2001, 84, 85
 Molecular Biology and Genetics B (Adv) MBLG 2902, 46, 85
 Molecular Biology and Genetics B MBLG 2002, 46, 84
 Molecular Biology of Pathogens Advanced MICR 3903, 151
 Molecular Biology of Pathogens MICR 3003, 151
 Molecular Biology of Pathogens Mol (Adv) MICR 3904, 114
 Molecular Biology of Pathogens Molecular MICR 3004, 114
 Molecular Biotechnology 2A MOBT 2001, 116
 Molecular Biotechnology 2B MOBT 2002, 116
 Molecular Biotechnology 3A MOBT 3001, 116
 Molecular Biotechnology 3B MOBT 3002, 116
 Molecular Pharmacology & Toxicology Adv PCOL 3901, 90
 Molecular Pharmacology and Toxicology PCOL 3001, 90
 Molecular Processes in Ecosystems AGCH 2001, 39
 Molecular/Environmental Microbiology Adv MICR 3902, 89
 Molecular/Environmental Microbiology MICR 3002, 89
 Molecules, Metabolism and Cells (Adv) BCHM 2902, 86
 Molecules, Metabolism and Cells BCHM 2002, 86
 Molecules, Metabolism and Cells Theory BCHM 2102, 86
 Movement and Motor Control NEUR 5105, 217
 MTEC 6003 Management of Technology, 202
 Multimedia Authoring and Production COMP 5415, 200
 Multimedia Systems and Applications ELEC 7606, 201
 Multivariate Analysis (Advanced) STAT 3907, 84
 Musculoskeletal Anatomy ANAT 3008, 42
N
 NETS 2008 Computer System Organisation, 57
 NETS 2009 Network Organisation, 57
 NETS 2908 Computer System Organisation (Adv), 57
 NETS 2909 Network Organisation (Adv), 58
 Network Organisation (Adv) NETS 2909, 58
 Network Organisation NETS 2009, 57
 Networked Systems (Advanced Topic) COMP 4305, 61
 Networked Systems (Advanced) COMP 3907, 59
 Networked Systems COMP 3007, 59
 NEUR 5001 Neuroscience Library Project, 217
 NEUR 5002 Neuroscience Laboratory Project A, 217
 NEUR 5003 Neuroscience Laboratory Project B, 217
 NEUR 5004 Neuroscience Laboratory Project C, 217
 NEUR 5101 Neurobiology of Addiction, 217
 NEUR 5102 Neuroscience of Aging, 217
 NEUR 5103 Brain Development, 217
 NEUR 5104 Psychobiology of Learning and Memory, 217
 NEUR 5105 Movement and Motor Control, 217
 NEUR 5106 Pain, 217
 NEUR 5107 Neurobiology of Psychoses, 217
 NEUR 5108 Visual Neuroscience, 218
 Neuro & Cardiovascular Pharmacology Adv PCOL 3902, 91
 Neuro- and Cardiovascular Pharmacology PCOL 3002, 90
 Neurobiology of Addiction NEUR 5101, 217
 Neurobiology of Psychoses NEUR 5107, 217
 Neuropsychological Disorders PSYC 6017, 189
 Neuroscience - Cellular and Integrative PHSI3002, 96
 Neuroscience (Advanced) PHSI 3901, 96
 Neuroscience- Cellular & Integrative Adv PHSI 3902, 96
 Neuroscience Laboratory Project A NEUR 5002, 217
 Neuroscience Laboratory Project B NEUR 5003, 217
 Neuroscience Laboratory Project C NEUR 5004, 217
 Neuroscience Library Project NEUR 5001, 217
 Neuroscience of Aging NEUR 5102, 217
 Neuroscience PHSI 3001, 96
 Nonlinear Analysis (Advanced) MATH 3908, 82
 Nonlinear Systems & Biomathematics (Adv) MATH 3920, 83
 Nonlinear Systems and Biomathematics MATH 3020, 81
 Nonlinear Systems and Chaos (Advanced) MATH 2906, 78
 Nonlinear Systems and Chaos Introduction MATH 2006, 77
 NTDT 5301 Nutritional Science, 211
 NTDT 5302 Food Science, 211
 NTDT 5303 Dietary Intake & Nutritional Assessment, 211
 NTDT 5304 Principles of Dietetic Practice, 211
 NTDT 5305 Food Service Management, 211
 NTDT 5306 Introduction to Food Service, 211
 NTDT 5307 Clinical Nutrition and Dietetics, 211
 NTDT 5308 Community and Public Health Nutrition, 211
 NTDT 5309 Communication, 211
 NTDT 5310 Nutrition Research Project, 211
 NTDT 5311 Nutrition Practice, 211
 NTDT 5312 Nutrition & Dietetics Training Placement, 211
 NTDT 5313 Nutritional Science Research A, 211
 NTDT 5314 Nutritional Science Research B, 211
 NTDT 5315 Scientific Methodology in Nutrition, 211
 NTDT 5321 Nutrition Research Project (Full-Time), 211
 NTDT 5322 Nutrition Research Project A, 211
 NTDT 5323 Nutrition Research Project B, 211
 NTMP3001 Coral Reef Ecosystems, 110
 NTMP 3002 Marine Biotechnology, 110
 NTMP 3003 Fisheries Biology and Management, 110
 NTMP 3004 Aquaculture, 110
 NTMP 3005 Coastal Management, 110
 NTMP 3006 Coastal Oceanography, 110
 Nuclear and Particle Physics PHYS 3108, 95
 Number Theory MATH 3009, 80
 NUTR 2901 Introductory Food Science (Advanced), 119
 NUTR 2902 Introductory Nutritional Science (Adv), 119
 NUTR 3901 Nutrition in Individuals (Advanced), 119
 NUTR 3902 Nutrition in Populations (Advanced), 120
 Nutrition & Dietetics Training Placement NTDT 5312, 211
 Nutrition in Individuals (Advanced) NUTR 3901, 119
 Nutrition in Populations (Advanced) NUTR 3902, 120
 Nutrition Practice NTDT 5311, 211
 Nutrition Research Project (Full-Time) NTDT 5321, 211
 Nutrition Research Project A NTDT 5322, 211
 Nutrition Research Project B NTDT 5323, 211
 Nutrition Research Project NTDT 5310, 211
 Nutritional Science NTDT 5301, 211
 Nutritional Science Research A NTDT 5313, 211
 Nutritional Science Research B NTDT 5314, 211
O
 Object-Oriented Programming in C++ COMP 5018, 198
 Object-Oriented Programming in Java COMP 5218, 206
 Object-Oriented Systems (Advanced Topic) COMP 4309, 62
 Object-Oriented Systems (Advanced) COMP 3908, 59
 Object-Oriented Systems COMP 3008, 59
 Online Media Production MECO 3002, 155
 0-0 Analysis and Design COMP 5028, 199
 OO Techniques in Multimedia COMP 5445, 200
 Operating Systems (Advanced Topic) COMP 4400, 62
 Operating Systems (Advanced) COMP 3909, 59
 Operating Systems COMP 3009, 59
 Optical Networks ELEC 7506, 201
 Optical Networks PHOT 5004, 218
 Optimisation MATH 2010, 78
 Option 1 PSYC 5201, 213
 Option 2 PSYC 5202, 213
 Ordinary Differential Equations MATH 3003, 80
 Ore Deposit Geology & Structural Mapping GEOL 3103, 68
 Organisational Database Systems (Adv) INFO 3905, 60
 Organisational Database Systems INFO 3005, 60
P
 P D E And Waves (Advanced) MATH 3921, 83
 Pain NEUR 5106, 217
 Parallel Computing COSC 3601, 55
 Partial Differential Equations and Waves MATH 3018, 81
 Passive Photonics Components PHOT 5002, 218
 Pathological Basis of Human Disease CPAT 3101, 51
 PCOL 2001 Pharmacology Fundamentals, 89
 PCOL 2002 Intro Pharmacology - Drugs and People, 90
 PCOL 2003 Pharmacology - Drugs and Society, 90
 PCOL 3001 Molecular Pharmacology and Toxicology, 90
 PCOL 3002 Neuro- and Cardiovascular Pharmacology, 90
 PCOL 3901 Molecular Pharmacology & Toxicology Adv, 90
 PCOL 3902 Neuro & Cardiovascular Pharmacology Adv, 91
 Perceptual Systems PSYC 3210, 99
 Personal Database Tools INFO 2005, 57
 Personality and Individual Differences PSYC 2114, 98
 Pharmacology - Drugs and Society PCOL 2003, 90
 Pharmacology Fundamentals PCOL 2001, 89
 Philosophy of Mathematics HPSC 3106, 70
 Philosophy of Physics HPSC 3105, 70
 Philosophy of Science HPSC 4101, 70, 192

INDEX

- Philosophy of the Biological Sciences HPSC 3103, 69
 PHOT 5001 Fundamentals of Photonics, 218
 PHOT 5002 Passive Photonics Components, 218
 PHOT 5003 Active Photonics Components, 218
 PHOT 5004 Optical Networks, 218
 PHOT 5005 Advanced Photonics I, 218
 PHOT 5006 Advanced Photonics II, 218
 PHOT 5010 Experimental Photonics I, 218
 PHOT 5011 Experimental Photonics II, 218
 PHOT 5020 Photonics Project A, 218
 PHOT 5021 Photonics Project B, 219
 Photonics Project A PHOT 5020, 218
 Photonics Project B PHOT 5021, 219
 PHSI2001 Introductory Physiology A, 95
 PHSI2002 Introductory Physiology B, 95
 PHSI 2101 Physiology A, 95
 PHSI 2102 Physiology B, 96
 PHSI 3001 Neuroscience, 96
 PHSI 3002 Neuroscience - Cellular and Integrative, 96
 PHSI 3003 Heart and Circulation, 96
 PHSI 3004 Human Cellular Physiology, 97
 PHSI 3901 Neuroscience (Advanced), 96
 PHSI 3902 Neuroscience- Cellular & Integrative Adv, 96
 PHSI 3903 Heart and Circulation (Advanced), 97
 PHSI 3904 Human Cellular Physiology (Advanced), 97
 PHYS 1001 Physics 1 (Regular), 91
 PHYS 1002 Physics 1 (Fundamentals), 91
 PHYS 1003 Physics 1 (Technological), 91
 PHYS 1004 Physics 1 (Environmental & Life Science), 91
 PHYS 1500 Astronomy, 92
 PHYS 1901 Physics IA (Advanced), 92
 PHYS 1902 Physics IB (Advanced), 92
 PHYS 2001 Physics (Regular), 92
 PHYS 2002 Physics (Technological), 92
 PHYS 2105 Physics for Medical Sciences, 92, 150
 PHYS 2901 Physics (Advanced) A, 92
 PHYS 2902 Physics (Advanced) B, 93
 PHYS 3003 Quantum Mechanics and Relativity, 93
 PHYS 3004 Condensed Matter Physics and Photonics, 93
 PHYS 3005 Topics in Modern Physics A, 93
 PHYS 3006 Topics in Modern Physics B, 93
 PHYS 3008 Experimental Physics A, 93
 PHYS 3009 Experimental Physics B, 93
 PHYS 3101 Experimental Physics C, 93
 PHYS 3102 Experimental Physics D, 94
 PHYS 3103 Special Project A, 94
 PHYS 3104 Special Project B, 94
 PHYS 3105 Astrophysics, 95
 PHYS 3106 Plasma Physics, 95
 PHYS 3107 Modern Optics, 95
 PHYS 3108 Nuclear and Particle Physics, 95
 PHYS 3200 Quantum Physics, 95
 PHYS 3301 Scientific Computing, 94
 PHYS 3303 Scientific Visualisation, 94
 PHYS 3600 Energy and the Environment, 104
 PHYS 3801 Experimental Physics C (Advanced), 94
 PHYS 3802 Experimental Physics D (Advanced), 94
 PHYS 3803 Special Project A (Advanced), 94
 PHYS 3804 Special Project B (Advanced), 94
 PHYS 3903 Quantum Mechanics and Relativity (Adv), 94
 PHYS 3904 Condensed Matter Physics & Photonics Adv, 94
 PHYS 3905 Topics in Modern Physics A (Advanced), 94
 PHYS 3906 Topics in Modern Physics B (Advanced), 94
 PHYS 3908 Experimental Physics A (Advanced), 94
 PHYS 3909 Experimental Physics B (Advanced), 94
 PHYS 3931 Scientific Computing (Advanced), 94
 PHYS 3933 Scientific Visualisation (Advanced), 95
 Physical Environmental Processes ENVI2002, 104
 Physics (Advanced) A PHYS 2901, 92
 Physics (Advanced) B PHYS 2902, 93
 Physics (Regular) PHYS 2001, 92
 Physics (Technological) PHYS 2002, 92
 Physics 1 (Environmental & Life Science) PHYS 1004, 91
 Physics 1 (Fundamentals) PHYS 1002, 91
 Physics 1 (Regular) PHYS 1001, 91
 Physics 1 (Technological) PHYS 1003, 91
 Physics IA (Advanced) PHYS 1901, 92
 Physics IB (Advanced) PHYS 1902, 92
 Physics for Medical Sciences PHYS 2105, 92, 150
 Physiology A PHSI 2101, 95
 Physiology B PHSI 2102, 96
 Plant Anatomy and Physiology (Advanced) BIOL 2903, 45
 Plant Anatomy and Physiology BIOL 2003, 45
 Plant Development (Advanced) BIOL 3931, 49
 Plant Development BIOL 3021, 48
 Plant Ecology and Diversity (Advanced) BIOL 2904, 45
 Plant Ecology and Diversity BIOL 2004, 45
 Plant Physiology (Advanced) BIOL 3932, 49
 Plant Physiology BIOL 3022, 49
 Plant Systematics and Biogeography (Adv) BIOL 3915, 48
 Plant Systematics and Biogeography BIOL 3015, 48
 Plasma Physics PHYS 3106, 95
 Pollution Law LAWS 6082, 191
 Polymer Science, Emulsion Polymerisation SUCO 4001, 220
 Principles of Development ANAT 2004, 41
 Principles of Dietetic Practice NDT 5304, 211
 Principles of Histology ANAT 2001, 41
 Principles of Microscopy & Microanalysis MCAN 4001, 209
 Processes in Geomorphology GEOG 2001, 64
 Product Development Project COMP 3205, 60
 Programming Distributed Object Systems COMP 5319, 200
 Project - Assess Living Marine Resources QMEC 5330, 208
 Project - Conservation and Biodiversity QMEC 5320, 207
 Project - Environment Impacts/Restoration QMEC 5310, 207
 Project 1 MCAN 5001, 210
 Project 2 MCAN 5002, 210
 Project Management and Practice ISYS 3012, 61
 Project Part-Time Part A ELEC 8901, 202
 Project Part-Time Part B ELEC 8902, 203
 Project, Full-Time ELEC 8900, 202
 PSYC 1001 Psychology 1001, 97
 PSYC 1002 Psychology 1002, 98
 PSYC 2111 Learning, Neuroscience and Perception, 98
 PSYC 2112 Psychological Statistics, 98
 PSYC 2113 Cognitive Processes & Social Psychology, 98
 PSYC 2114 Personality and Individual Differences, 98
 PSYC 3201 Statistics and Psychometrics, 98
 PSYC 3202 History and Philosophy of Psychology, 98
 PSYC 3203 Abnormal Psychology, 98
 PSYC 3204 Behavioural Neuroscience, 99
 PSYC 3205 Cognitive Psychology, 99
 PSYC 3206 Developmental Psychology, 99
 PSYC 3208 Intelligence, 99
 PSYC 3209 Learning and Motivation, 99
 PSYC 3210 Perceptual Systems, 99
 PSYC 3211 Psychological Assessmt. & Organisational, 99
 PSYC 3212 Social Psychology, 99
 PSYC 3214 Communication and Counselling, 99
 PSYC 4710 Research Project (A), 213
 PSYC 4711 Psychological Research Methods, 212
 PSYC 4712 Ethics and Current Issues in Psychology, 212
 PSYC 4715 Special Fields Topic (A), 212
 PSYC 4716 Health Psychology, 212
 PSYC 4718 Psychology of Addiction, 212
 PSYC 4719 Special Fields Topic (B), 212
 PSYC 4720 Research Project (B), 213
 PSYC 4721 Theories & Techniques of Coaching Psych, 219
 PSYC 4722 Fundamentals of Coaching Practice, 219
 PSYC 4723 Socio-cognitive Issues in Coaching Psych, 219
 PSYC 4724 Coaching Practice - Co-Coaching & Groups, 219
 PSYC 4725 Assessment and Selection, 219
 PSYC 4726 Intro to Organisational & Coaching Psych, 219
 PSYC 5106 Research Thesis A, 213
 PSYC 5109 Family, Couple and Sex Therapy, 213
 PSYC 5201 Option 1, 213
 PSYC 5202 Option 2, 213
 PSYC 5203 Clinical Placements A, 213
 PSYC 5204 Case Discussions A, 213
 PSYC 5205 Case Discussions B, 213
 PSYC 5206 Clinical Placements B, 213
 PSYC 5207 Research Thesis B, 213
 PSYC 6001 Adult Psychological Disorders, 188
 PSYC 6002 Psychological Assessment of Adults, 188
 PSYC 6003 Clinical Internship 1, 188
 PSYC 6004 Ethics and Professional Practice 1, 188
 PSYC 6005 Research 1, 188
 PSYC 6006 Child and Family Psychology, 188
 PSYC 6007 Psychological Assessment of Children, 188
 PSYC 6008 Clinical Internship 2, 188
 PSYC 6009 Ethics and Professional Practice 2, 188
 PSYC 6010 Research 2, 188
 PSYC 6013 Clinical Internship 3, 188

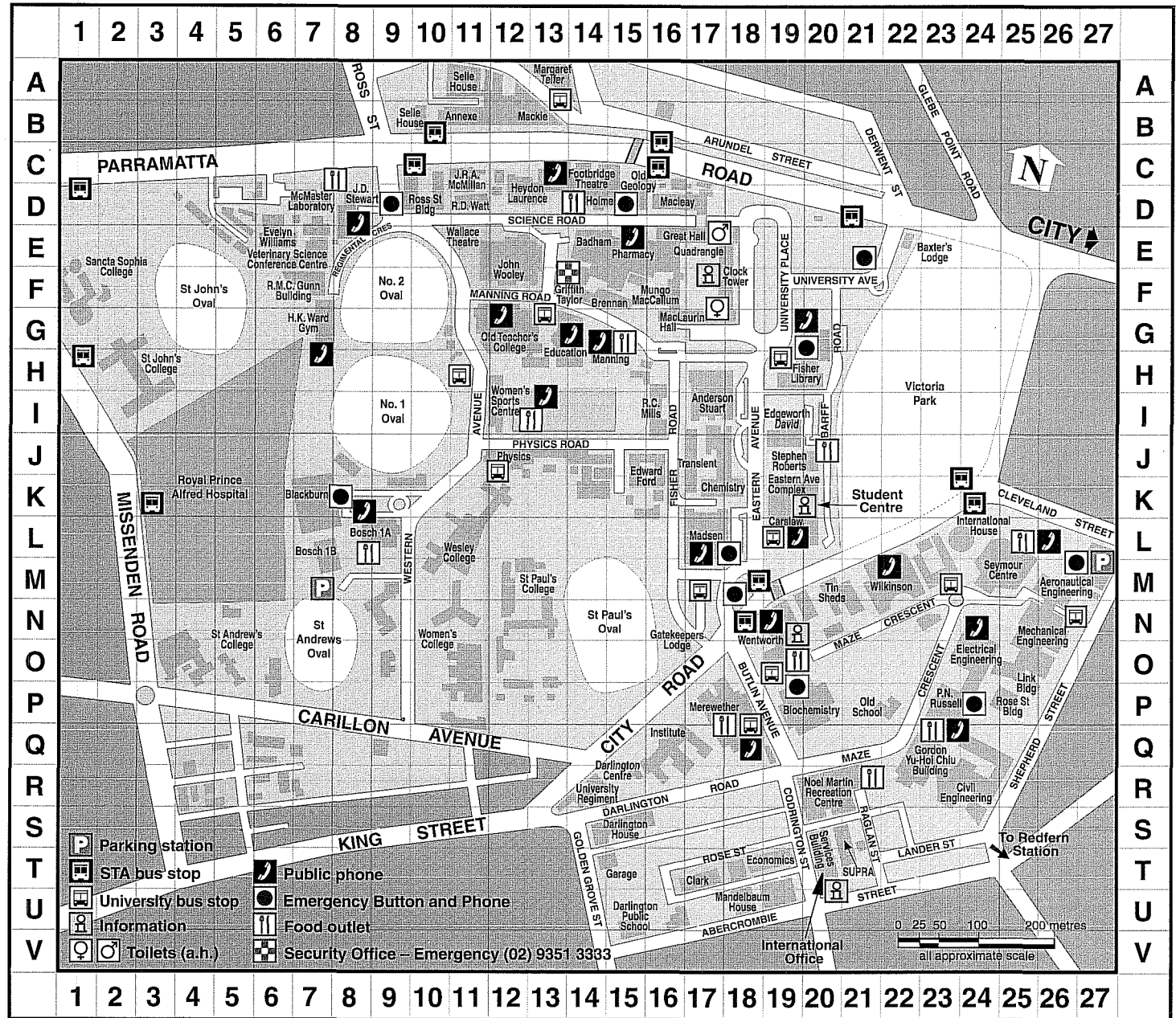
- PSYC 6014 Ethics and Professional Practice 3, 189
 PSYC 6015 Research 3, 189
 PSYC 6016 Specialist Seminars, 189
 PSYC 6017 Neuropsychological Disorders, 189
 PSYC 6018 Clinical Internship 4, 189
 PSYC 6019 Ethics and Professional Practice 4, 189
 PSYC 6020 Research 4, 189
 PSYC 6022 Clinical Internship 5, 189
 PSYC 6023 Ethics and Professional Practice 5, 189
 PSYC 6024 Research 5, 189
 PSYC 6025 Clinical Internship 6, 189
 PSYC 6026 Ethics and Professional Practice 6, 189
 PSYC 6027 Research 6, 189
 Psychobiology of Learning and Memory NEUR 5104, 217
 Psychological Assessment of Adults PSYC 6002, 188
 Psychological Assessment of Children PSYC 6007, 188
 Psychological Assessmt. & Organisational PSYC 3211, 99
 Psychological Research Methods PSYC 4711, 212
 Psychological Statistics PSYC 2112, 98
 Psychology 1001 PSYC 1001, 97
 Psychology 1002 PSYC 1002, 98
 Psychology of Addiction PSYC 4718, 212
 Public Key Cryptography (Advanced) MATH 3925, 83
 Public Policy LAWS 6257, 192
- Q**
- QMEC 5110 Structure & Management of Research Proj, 206
 QMEC 5120 Design and Analysis of Sampling (Intro), 206
 QMEC 5140 Intro Assessment - Living Marine Resources, 207
 QMEC 5150 Ecological Sci & Enviro Impact Assess, 207
 QMEC 5270 Enviro Impacts & Ecological Restoration, 207
 QMEC 5280 Conservation and Biodiversity, 207
 QMEC 5290 Assessment of Living Marine Resources, 207
 QMEC 5310 Project - Environment Impacts/Restoration, 207
 QMEC 5320 Project - Conservation and Biodiversity, 207
 QMEC 5330 Project -Assess Living Marine Resources, 208
 Quantum Mechanics and Relativity (Adv) PHYS 3903, 94
 Quantum Mechanics and Relativity PHYS 3003, 93
 Quantum Physics PHYS 3200, 95
- R**
- Radio Frequency Engineering ELEC 8521, 201
 Real Variables MATH 3008, 80
 Recent Topics in HPS HPSC 4104, 70, 193
 Regulation of the Internal Environment BMED 2503, 149
 Relational Database Systems COMP 5015, 198
 Research 1 PSYC 6005, 188
 Research 2 PSYC 6010, 188
 Research 3 PSYC 6015, 189
 Research 4 PSYC 6020, 189
 Research 5 PSYC 6024, 189
 Research 6 PSYC 6027, 189
 Research Preparation INFO 4901, 63
 Research Project (A) PSYC 4710, 213
 Research Project (B) PSYC 4720, 213
 Research Project A HPSC 4106, 70, 193
 Research Project A MATH 5005, 208
 Research Project B HPSC 4107, 70, 193
 Research Project B MATH 5006, 208
 Research Project C MATH 5007, 208
 Research Project D MATH 5008, 208
 Research Project E MATH 5010, 208
 Research Project F MATH 5011, 208
 Research Project INFO 4902, 63
 Research Project WILD 5009, 221
 Research Thesis A PSYC 5106, 213
 Research Thesis B PSYC 5207, 213
 Resource and Environmental Management GEOG 2102, 64
 Resource Exploration and Management GEOL 2002, 67
 Rings and Fields MATH 3002, 80
 Rural Environmental Chemistry AGCH 3012, 104
- S**
- Sampling Theory and Categorical Data STAT 3006, 83
 Satellite Communication Systems ELEC 7502, 200
 Science and Ethics HPSC 3007, 69
 Science Communication ICOM 5002, 215
 Scientific Computing (Advanced) PHYS 3931, 94
 Scientific Computing PHYS 3301, 94
 Scientific Methodology in Nutrition NTDT 5315, 211
 Scientific Visualisation (Advanced Topic) COMP 4404, 62
 Scientific Visualisation (Advanced) PHYS 3933, 95
 Scientific Visualisation PHYS 3303, 94
 Sedimentary Processes GEOL 3104, 68
 Signal and Image Processing MCAN 4104, 209
 Signal Processing (Advanced) MATH 3919, 83
 Signal Processing MATH 3019, 81
 Social Psychology PSYC 3212, 99
 Social Relations of Science HPSC 3003, 69
 Socio-cognitive Issues in Coaching Psych PSYC 4723, 219
 Sociology of Science HPSC 4103, 70, 192
 SOFT 1001 Software Development 1, 56
 SOFT 1002 Software Development 2, 56
 SOFT 1901 Software Development 1 (Adv), 56
 SOFT 1902 Software Development 2 (Adv), 56
 SOFT 2001 Concurrent Programming, 58
 SOFT 2004 Software Development Methods 1, 58
 SOFT 2901 Concurrent Programming (Adv), 58
 SOFT 2904 Software Development Methods 1 (Adv), 58
 Software Development 1 (Adv) SOFT 1901, 56
 Software Development 1 SOFT 1001, 56
 Software Development 2 (Adv) SOFT 1902, 56
 Software Development 2 SOFT 1002, 56
 Software Development in Java COMP 5214, 206
 Software Development Methods 1 (Adv) SOFT 2904, 58
 Software Development Methods 1 SOFT 2004, 58
 Software Engineering (Advanced Topic) COMP 4401, 62
 Software Engineering (Advanced) COMP 3800, 59
 Software Engineering COMP 3100, 59
 Software Engineering Project COMP 3204, 60
 Software Project (Advanced) COMP 3809, 60
 SOIL 2001 Soil Properties and Processes, 40
 SOIL 2002 Soil Resources and Conservation, 40
 SOIL 3001 Environmental Soil Science A, 40
 SOIL 3002 Environmental Soil Science B, 41
 Soil Properties and Processes SOIL 2001, 40
 Soil Resources and Conservation SOIL 2002, 40
 Special Fields Topic (A) PSYC 4715, 212
 Special Fields Topic (B) PSYC 4719, 212
 Special Project A (Advanced) PHYS 3803, 94
 Special Project A PHYS 3103, 94
 Special Project B (Advanced) PHYS 3804, 94
 Special Project B PHYS 3104, 94
 Specialist Seminars PSYC 6016, 189
 STAT 2001 Statistical Distributions, 79
 STAT 2002 Data Analysis, 79
 STAT 2003 Estimation Theory, 79
 STAT 2004 Hypothesis Testing, 79
 STAT 2901 Introduction to Probability (Advanced), 79
 STAT 2903 Estimation Theory (Advanced), 79
 STAT 3001 Distribution Theory and Inference, 83
 STAT 3002 Applied Linear Models, 83
 STAT 3003 Time Series Analysis, 83
 STAT 3004 Design of Experiments, 83
 STAT 3005 Applied Stochastic Processes, 83
 STAT 3006 Sampling Theory and Categorical Data, 83
 STAT 3901 Statistical Theory (Advanced), 83
 STAT 3902 Linear Models (Advanced), 83
 STAT 3905 Markov Processes (Advanced), 84
 STAT 3907 Multivariate Analysis (Advanced), 84
 Statistical Distributions STAT 2001, 79
 Statistical Theory (Advanced) STAT 3901, 83
 Statistics (Advanced) MATH 1905, 76
 Statistics and Psychometrics PSYC 3201, 98
 Statistics MATH 1005, 75
 Stereology MCAN 4209, 209
 Structure & Management of Research Proj QMEC 5110, 206
 SUCO 4001 Polymer Science, Emulsion Polymerisation, 220
 SUCO 4002 Synthetic Resin Technology & Design, 220
 SUCO 4003 Interfacial Sci & Coatings Tech & Design, 220
 SUCO 4004 Coating Formulation, Manufacture & App, 220
 SUCO 4005 Surface Coatings Project A, 220
 SUCO 4006 Surface Coatings Project B, 220
 Surface Coatings Project A SUCO 4005, 220
 Surface Coatings Project B SUCO 4006, 220
 Surface Microscopy MCAN 4103, 209
 Sustainable Cities & Regional Change GEOG 3202, 66
 Sustainable Wildlife Use and Stewardship WELD 5007, 221
 Synthetic Resin Technology & Design SUCO 4002, 220
 System Analysis and Design INFO 2000, 57
 System and Network Administration COMP 5019, 199
 Systems Modelling and Design INFO 5210, 205
- T**
- The Birth of Modern Science HPSC 2002, 69

INDEX

The Internet as a Resource in Science ICOM 5001, 215
The Urban Environment and Planning ENVI5805, 214
Theoretical Microbiology A MICR 2003, 88
Theoretical Microbiology B MICR 2004, 88
Theories & Techniques of Coaching Psych PS YC 4721, 219
Time Series Analysis STAT 3003, 83
Topics in Modern Physics A (Advanced) PHYS 3905, 94
Topics in Modern Physics A PHYS 3005, 93
Topics in Modern Physics B (Advanced) PHYS 3906, 94
Topics in Modern Physics B PHYS 3006, 93
Topographical Anatomy ANAT 3005, 151
Topology MATH 3001, 80
Torts LAWS 1010, 122
Trade and Environment LAWS 6173, 192
Transmission & Scanning Electron Microsc ANAT 3003, 42
U
Urban and Political Geography GEOG 2202, 65
User Interface Design and Programming COMP 5112, 199
User Interfaces (Advanced Topic) COMP 4402, 62
User Interfaces (Advanced) COMP 3802, 60
User Interfaces COMP 3102, 59
V
Vector Calculus and Complex Var (Adv) MATH 2901, 78
Vector Calculus and Complex Variables MATH 2001, 77
Vertebrate Pest Management WILD 5004, 221
Video Production MECO 3001, 154
Visceral Anatomy ANAT 3007, 42
Visual Information Processing COMP 5414, 200
Visual Neuroscience NEUR 5108, 218
W
Water Law LAWS 6191, 191
Weathering Processes and Applications ENVI 5901, 214
What Is This Thing Called Science? HPSC 2001, 69
WILD 5001 Australian Wildlife - Introduction, 221
WILD 5002 Australian Wildlife - Field Studies, 221
WILD 5003 Wildlife Health, 221
WILD 5004 Vertebrate Pest Management, 221
WILD 5005 In Situ Wildlife Management, 221
WILD 5006 Ex Situ Wildlife Management, 221
WILD 5007 Sustainable Wildlife Use and Stewardship, 221
WILD 5008 Community Relations and Education, 221
WILD 5009 Research Project, 221
Wildlife Health WILD 5003, 221
Writing for Print Media MECO 2002, 154

w Map of main campus

- CD Academic and Executive Services 16E
 Accounting 17P
 Accommodation Service 13G
 Administrative Policy & Strategic Planning Div'n 16E
 Administrative Support Services Div'n 16E
 Aeronautical Engineering 26M
 Agricultural Chemistry and Soil Science 10D
 Agricultural Economics HD
 Agriculture Faculty Office 11C
 Graduate School of Business **Burren St**
 Alma Street Glasshouse 23N
 Alumni Relations 16E
 Anaesthesia 7K
 Anderson Stuart Bldg 17I
 Anatomy and Histology 17I
 Ancient History and Classics 16F
 Animal Health **Camden**
 Animal Science 7F
 Anthropology 16F
 Archaeology 16F
 Architectural and Design Science 22M
 Architecture, Dept and Faculty Office 22M
 Architecture, Planning and Allied Arts 22M
 Archives 19H
 Art History and Theory 16I
 Art Workshop 20M
 Arts Faculty Office 16F
 Asset Management 13A
 Asian Studies 14F
 Badham Bldg and Library 14E
 Banks *see* Financial institutions
 Baxter's Lodge 22E
 Behavioural & Social Sciences in Nursing **Mallett St**
 Behavioural Science Cumberland
 Behavioural Sciences in Medicine 7K
 Biochemistry 20P
 Biological Sciences 15D
 Biomedical Science **Cumberland**
 Blackburn Bldg 7K
 Bookshops:
 Medical 7K
 SRC Secondhand 19N
 University Co-operative 21R
 Bosch IA (lecture theatres) 8L
 Bosch IB Bldg 7M
 Brennan, C. Bldg 15F
 Budget Office 16E
 Business Liaison Office 12E
 Business Services 19U
 Campus Services 20T
 Careers Centre 13B
 Carlsaw Bldg 19L
 Cashiers 13A
 Central Services 20T
 Central Records Office 16E
 Centre for English Teaching **Mallett St**
 Centre for Teaching and Learning 19L



Chancellor's Committee Shop 17F
Chaplains' Centre 10G
Chemical Engineering 23Q
Chemistry 17K
Child Care:
 Boundary Lane 16U
 Carillon Avenue 9Q
 Laurel Tree House (Glebe) 16B
 Union (Darlington) 21S
Civil Engineering 24R
Clark Bldg 17T
Clinical Nursing Mallett St
Clinical Ophthalmology & Eye Health Sydney
 Eye Hospital
Clock Tower 17F
Clinical Trials Mallett St
Communication Disorders Cumberland
Community & Mental Health Nursing Cumberland
Community Health Cumberland
Community Medicine 15K
Computer Sales:
 Computer Sales and Service 23U
 Computer Shop 21R
Computer Science, Bassett Dept 17L
Continuing Education, Centre for 13B
Coppleson Postgraduate Medical Institute 9K
Copy Centre 21R
Counselling Service 13G
Crop Sciences 13F
Darlington Centre 15R
Darlington House 14S
Dentistry Faculty Office & Dental Studies Surry Hills
Development Office 16E
Disability Services 13G
Eastern Avenue Auditorium & Lecture Theatres 19K
Econometrics 17P
Economic History 17P
Economics Bldg 19T
Economics, Dept and Faculty Office 17P
Edgeworth David Bldg 19J
Education Bldg and Faculty Office 13G
Educational Development & Evaluation 15K
Educational Psychology, Literacies & Learning 13G
Edward Ford Bldg 15K
Electrical Engineering 240
Employment Service, Casual 14C
Engineering Faculty Office 250
English 12E
Equal Employment Opportunity Unit 13A
Evelyn Williams Bldg 6E
Experimental Medicine 7K
External Relations Division 16E
Facilities Planning, Office of 20T
Family and Community Health in Nursing Mallett St
Financial institutions:
 Commonwealth Bank 14D
 Credit Union - ATM only 14D
 National Australia Bank 15E, 19N

Finance, Dept of 16Q
Financial Management & Reporting 13A
Financial Services Division 13A
Financial Systems Development 13A
Fine Arts (Art History & Theory) 16I
Fisher Library 19G
Footbridge Theatre 14C
French Studies 15F
Garage, University 15T
Gender Studies 16E
General Practice Westmead Hospital
Geography 16Q
Geology and Geophysics 19 J
Germanic Studies 15F
Government and Public Administration 17P
Great Hall 18E
Greek, Modern 14F
Griffith Taylor Bldg 14F
Gunn, R.M.C. Bldg 7F
Heydon Laurence Bldg 12D
Health Information Management Cumberland
Health Sciences Faculty Office Cumberland
Health Service (Holme Bldg, Wentworth Bldg) 14D, 19N
History 15F
History and Philosophy of Science 19L
Holme Bldg 14D
Industrial Relations, Dept of 16Q
Infectious Diseases 7K
Information Technology Services 19U
Institute Bldg 16Q
International Office and International Student Services 20T
International House 23L
International Preparation Program 20T
Italian 16I
Jurisprudence St James
Koori Centre 12G
Law Dept and Faculty Office St James
Learning Assistance Centre 13G
Life Sciences in Nursing Mallett St
Linguistics 17J
Link Bldg 250
Lost Property 14F
Mackie Bldg 13B
MacLaurin Hall 16G
Macleay Bldg and Museum 16D
Madsen Bldg 17L
Mail Room (Internal) 20T
Main Bldg 17F
Management Studies Burren Street
Mandelbaum House 18U
Manning House 14H
Margaret Telfer Bldg 13A
Marketing, Dept of 16Q
Mathematics and Statistics 19L
McMaster Bldg 7D
McMillan, J.R.A., Bldg 11C
Mechanical and Aeronautical Engineering Bldg 25N

Media and Publications 16E
Mechanical Engineering 25N
Media Office 16E
Medical Radiation Technology Cumberland
Medicine, Dept of 7K
Medicine, Faculty of 15K
Merewether Bldg 17P
Microbiology 20P
Mills, R.C. Bldg 16I
Mungo MacCallum Bldg 16F
Music, Dept of 24M
Nicholson Museum 16G
Nursing Therapeutics Cumberland
Obstetrics and Gynaecology 9K
Occupational Therapy Cumberland
Old Geology Bldg 15D
Old School Bldg 21P
Old Teachers' College Bldg 12G
Operations Accounting 13A
Orange - Rural Management, Faculty Orange
Orthoptics Cumberland
Paediatrics and Child Health New Children's Hospital
Pathology 7K
Personnel Services 13A
Pharmacology 7L
Pharmacy 15E
Philosophy 17G
Photowise Imaging 20T
Physics 13J
Physiology 17I
Physiotherapy Cumberland
Planning Support Office 16E
Post Office 15E
Printing Services, University 20T
Professional Studies 13G
Properties and Investments 13A
Prospective Students Unit 12B
Psychological Medicine 4K
Psychology 14E
Purchasing 13A
Publications Unit 16E
Public Health and Community Medicine 15K
Quadrangle 17F
Queen Elizabeth II Research Institute 9K
Regiment, University 14R
Religion, School of Studies in 12E
Research and Scholarships 16E
Revenue Services 13A
Risk Management 13A
Rose Street Bldg 24P
Ross Street Bldg 10D
Russell, Peter Nicol, Bldg 23P
St Andrew's College 50
St John's College 3H
St Paul's College 12N
Sancta Sophia College IF

