Subjects, courses and any arrangements for courses including staff allocated as stated in this Handbook are an expression of intent only. The University reserves the right to discontinue or vary arrangements at any time without notice. Information has been brought up to date as at 1 November 1996, but may be amended without notice by the University Council.

**CREDIT POINTS – IMPORTANT NOTE**

From 1996, UNSW introduced a university wide credit point system for all subjects offered to both undergraduate and postgraduate students. The system means that a subject will have the same credit point value irrespective of which faculty's course it is counting towards. Students are able to determine the value of subjects taken from other faculties when planning their programs of study. The student load for a subject is calculated by dividing the credit point value of a subject by the total credit points required or for the standard program for that year of the course. Student load is used to determine both HECS and overseas student fees. Students who take more than the standard load for that year of a course will pay more HECS.

Old subject measures have been replaced by new university credit points. Every effort has been made to ensure the accuracy of the credit point values shown for all subjects. However, if any inconsistencies between old and new credit point measures cause concern, students are advised to check with their faculty office for clarification before making 1997 subject selections based on the credit points shown in this handbook.

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# Contents

Message to New Students 1

Calendar of Dates 3

Staff 5

Handbook Guide 17

Faculty Information
- Board of Studies in Science and Mathematics 19
- Some People Who Can Help You 19
- Enrolment Procedures 20
- General Education Program 20
- General Information 21
- Computing at UNSW 21
- Library Information 23
- Faculty of Biological and Behavioural Sciences Library Facilities 23
- Faculty of Science Library Facilities 23

Undergraduate Study
- Overview of Courses 25
- Course Design 26
- Course Objectives 27
- Course Assessment 27
- Course Requirements and Rules 28
- Advanced Science Courses 30
- Range of Programs 33
- Details of Programs 36
- ANATOMY 36
- BIOCHEMISTRY 36
- BIOLOGICAL SCIENCE 37
- BIOMEDICAL SCIENCE 37
- BIOTECHNOLOGY 38
- BOTANY 39
- CHEMISTRY 39
- COMPUTER SCIENCE 41
- EARTH AND ENVIRONMENTAL SCIENCE 41
- ECOLOGY 41
- EARTH ENVIRONMENTS 44
- GENETICS 46
- GEOGRAPHY 47
- GEOLOGY 47
- GEOPHYSICS 48
### Undergraduate Study

<table>
<thead>
<tr>
<th>Course</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Science degree courses</td>
<td>65</td>
</tr>
<tr>
<td>Board of Studies in Science and Mathematics</td>
<td>65</td>
</tr>
<tr>
<td>3980 Aviation Degree Course Full Time</td>
<td>65</td>
</tr>
<tr>
<td>2001 Flying Stream</td>
<td>65</td>
</tr>
<tr>
<td>2002 Operations Management Stream</td>
<td>66</td>
</tr>
<tr>
<td>2003 Operations Management Stream</td>
<td>66</td>
</tr>
<tr>
<td>3431 Psychology Degree Course Full-time</td>
<td>66</td>
</tr>
<tr>
<td>3971 Business Information Technology Full-time</td>
<td>67</td>
</tr>
<tr>
<td>3950 Optometry Degree Course Full-time</td>
<td>68</td>
</tr>
<tr>
<td>Professional and Combined degrees with Science</td>
<td>70</td>
</tr>
<tr>
<td>Board of Studies in Science and Mathematics and another Faculty</td>
<td>70</td>
</tr>
<tr>
<td>Board of Studies in Science and Mathematics and the Faculty of Engineering</td>
<td>70</td>
</tr>
<tr>
<td>Board of Studies in Science and Mathematics and the Faculty of Medicine</td>
<td>71</td>
</tr>
<tr>
<td>Board of Studies in Science and Mathematics and the Faculty of Commerce and Economics</td>
<td>71</td>
</tr>
<tr>
<td>Board of Studies in Science and Mathematics and the Faculty of Professional Studies</td>
<td>71</td>
</tr>
<tr>
<td>Board of Studies in Science and Mathematics and the Faculty of Law</td>
<td>71</td>
</tr>
</tbody>
</table>

### Subject Descriptions

<table>
<thead>
<tr>
<th>Course</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Study</td>
<td>73</td>
</tr>
<tr>
<td>Accounting</td>
<td>73</td>
</tr>
<tr>
<td>Anatomy</td>
<td>74</td>
</tr>
<tr>
<td>Aviation</td>
<td>76</td>
</tr>
<tr>
<td>Banking and Finance</td>
<td>77</td>
</tr>
<tr>
<td>Biochemistry and Molecular Genetics</td>
<td>78</td>
</tr>
<tr>
<td>Biological Science</td>
<td>80</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>84</td>
</tr>
<tr>
<td>Board of Studies in Science and Mathematics</td>
<td>85</td>
</tr>
<tr>
<td>Chemical Engineering and Industrial Chemistry</td>
<td>85</td>
</tr>
<tr>
<td>Polymer Science</td>
<td>85</td>
</tr>
<tr>
<td>Chemistry</td>
<td>85</td>
</tr>
<tr>
<td>Community Medicine</td>
<td>90</td>
</tr>
<tr>
<td>Computer Science and Engineering</td>
<td>90</td>
</tr>
<tr>
<td>Economics</td>
<td>93</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>94</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>94</td>
</tr>
<tr>
<td>Geography</td>
<td>95</td>
</tr>
<tr>
<td>Applied Geology</td>
<td>99</td>
</tr>
<tr>
<td>Industrial Relations and Organisational Behaviour</td>
<td>106</td>
</tr>
<tr>
<td>Information Systems</td>
<td>106</td>
</tr>
<tr>
<td>Marine Science</td>
<td>113</td>
</tr>
<tr>
<td>Mathematics</td>
<td>114</td>
</tr>
<tr>
<td>Materials Science and Engineering</td>
<td>128</td>
</tr>
<tr>
<td>Mechanical and Manufacturing Engineering</td>
<td>129</td>
</tr>
<tr>
<td>Medicine</td>
<td>132</td>
</tr>
<tr>
<td>Microbiology and Immunology</td>
<td>132</td>
</tr>
<tr>
<td>Optometry</td>
<td>134</td>
</tr>
<tr>
<td>Pathology</td>
<td>136</td>
</tr>
<tr>
<td>Philosophy</td>
<td>137</td>
</tr>
</tbody>
</table>
Prizes

Undergraduate Prizes

The University of New South Wales (General category for Prizes)

Human Rights Centre

School of Biochemistry and Molecular Genetics

School of Chemistry

School of Mathematics

School of Microbiology and Immunology

School of Optometry

School of Physics

School of Psychology

School of Science and Technology Studies

Undergraduate and Graduate Prizes

School of Mathematics

School of Optometry
Welcome to the University of New South Wales

This Handbook sets out information about Undergraduate and Postgraduate Science Courses, which are among the most varied and flexible available in our University.

In such a large institution as the University of New South Wales, Science based subjects are taught by Schools in a number of different Faculties. At the undergraduate level they are brought together through a cross-Faculty organisation known as the Board of Studies in Science and Mathematics (BSSM), which embraces topics from chemistry to psychology, from biology to mathematics. The Science & Advanced Science courses are organised so as to lead directly to a career in experimental science or to provide a broad program which enables a number of options to be kept open.

All of you will have the opportunity to be taught by active scientists who are engaged in research of international significance, and all of you will acquire skills of great importance for the future of the community. While this handbook sets out the possibilities, we hope that you will feel free to take personal advice over your subject and career choices.

General course advice is always available from the Board of Studies in Science and Mathematics office and every science-based School will be happy to discuss options with interested students. Naturally, not all new students are new to universities, and many of the new students this year will have chosen to pursue higher degree work in science at the University of New South Wales.

For graduate students the link with an individual school and discipline is even closer, but each of you should feel that the general resources of the Board and Faculties associated with it, are very much at your disposal. Remember that science is always an adventure and that science is fun. We wish you every success and sincerely hope that your student years as valued members of our community will be stimulating, happy and rewarding.

WJ O'Sullivan
Dean
Board of Studies in Science and Mathematics
Calendar of Dates

The academic year is divided into two sessions, each containing 14 weeks for teaching. Between the two sessions there is a break of approximately six weeks, which includes a one-week study period, two weeks for examinations, and three weeks recess. There is also a short recess of one week within each session.
Session 1 commences on the Monday nearest 1 March.

Faculties other than Medicine, AGSM and University College

<table>
<thead>
<tr>
<th>Session 1</th>
<th>1997</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>(14 weeks)</td>
<td>3 March to 27 March</td>
<td>2 March to 9 April</td>
</tr>
<tr>
<td></td>
<td>7 April to 13 June</td>
<td>20 April to 12 June</td>
</tr>
<tr>
<td>Mid-session recess</td>
<td>28 March to 6 April</td>
<td>10 April to 19 April</td>
</tr>
<tr>
<td>Study period</td>
<td>14 June to 19 June</td>
<td>13 June to 18 June</td>
</tr>
<tr>
<td>Examinations</td>
<td>20 June to 8 July</td>
<td>19 June to 7 July</td>
</tr>
<tr>
<td>Mid-year recess</td>
<td>9 July to 27 July</td>
<td>8 July to 26 July</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Session 2</th>
<th>1997</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>(14 weeks)</td>
<td>28 July to 26 September</td>
<td>27 July to 25 September</td>
</tr>
<tr>
<td></td>
<td>7 October to 7 November</td>
<td>6 October to 6 November</td>
</tr>
<tr>
<td>Mid-session recess</td>
<td>27 September to 6 October</td>
<td>26 September to 5 October</td>
</tr>
<tr>
<td>Study period</td>
<td>8 November to 13 November</td>
<td>7 November to 12 November</td>
</tr>
<tr>
<td>Examinations</td>
<td>14 November to 2 December</td>
<td>13 November to 1 December</td>
</tr>
</tbody>
</table>

Important dates for 1997

**January 1997**
- **W 1** New Year's Day – Public Holiday
- **M 13** Medicine IV – Term 1 begins
- **Th 16** Medicine V – Term 1 begins
- **M 27** Australia Day – Public Holiday
- **T 28** Enrolment period begins for new undergraduate students and undergraduate students repeating first year
- **W 29** AGSM EMBA Executive Year – Session 1 begins

**February 1997**
- **M 10** AGSM EMBA GMQ and GDM programs – Session 1 begins
- **M 24** AGSM MBA program – Year 1 classes – Term 1 begins
  Medicine VI – Term 2 begins

**March 1997**
- **M 3** Session 1 begins – for Faculties other than Medicine and AGSM
  University College, ADFA – Session 1 begins
  AGSM MBA program – Year 2 classes – Term 1 begins
- **F 14** Last day applications are accepted from students to enrol in Session 1 or whole year subjects
- **Su 16** Medicine IV – Term 1 ends
- **M 17** Medicine IV – Term 2 begins
- **Su 23** Medicine V – Term 1 ends
- **F 28** Good Friday – Public Holiday
  Mid-session recess begins – for Faculties other than Medicine, AGSM and University College, ADFA
- **S 29** Easter Saturday
- **Su 30** Easter Sunday
April 1997

T  1  Medicine V - Term 2 begins
Su  6  Mid-session recess ends - for Faculties other than Medicine, AGSM and University College, ADFA
Su 13  Medicine VI - Term 2 ends
M 14  Medicine VI - Recess begins
Su 20  Medicine VI - Recess ends
M 21  Medicine VI - Term 3 begins
F 25  Anzac Day - Public Holiday
Su 27  Medicine IV - Term 2 ends
M 28  Medicine IV - Recess begins

May 1997

S  3  University College, ADFA - May recess begins
Su  4  Medicine IV - Recess ends
M  5  Medicine IV - Term 3 begins
F  9  AGSM MBA program - all classes - Term 1 ends
M 12  AGSM MBA program - all classes - Examinations begin
T 13  Publication of provisional timetable for June examinations
F 16  AGSM MBA program - all classes - Examinations end
Su 18  University College, ADFA - May recess ends
W 21  Last day for students to advise of examination clashes
S 24  AGSM EMBA GMQ and GDM programs - Session 1 begins
T  27  AGSM EMBA Executive Year - Session 1 ends

June 1997

Su  1  Medicine V - Term 2 ends
Medicine VI - Term 3 ends
M  2  AGSM MBA program - all classes - Term 2 begins
Medicine VI - Term 4 begins
T  3  Publication of timetable for June examinations
M  9  Queen's Birthday - Public Holiday
T 10  Medicine V - Term 3 begins
F 13  Session 1 ends - for Faculties other than Medicine, AGSM and University College, ADFA
Su 15  Study period begins - for Faculties other than Medicine, AGSM and University College, ADFA
Tu 16  Medicine IV - Term 3 ends
M 19  Study period ends - for Faculties other than Medicine, AGSM and University College, ADFA
F 20  Examinations begin - for Faculties other than Medicine, AGSM and University College, ADFA
M 23  University College, ADFA - Examinations begin
AGSM EMBA Executive Year - Session 2 begins

July 1997

S  5  University College, ADFA - Examinations end
Su  6  University College, ADFA - Mid-year recess begins
T  8  Examinations end - for Faculties other than Medicine, AGSM and University College, ADFA
W  9  Mid-year recess begins - for Faculties other than Medicine, AGSM and University College, ADFA
M 14  AGSM EMBA GMQ and GDM programs - Session 2 begins
Su 20  University College, ADFA - Mid-year recess ends
M 21  University College, ADFA - Session 2 begins
F 25  Medicine VI - Term 4 ends
S 26  Medicine VI - Recess begins
Su 27  Mid-year recess ends - for Faculties other than Medicine, AGSM and University College, ADFA
M 28  Session 2 begins - for Faculties other than Medicine, AGSM and University College, ADFA

August 1997

Su  3  Medicine VI - Recess ends
M  4  Medicine VI - Term 5 begins
F  8  Last day applications are accepted from students to enrol in Session 2 subjects
Su 10  Medicine IV - Term 4 ends
M 11  AGSM MBA program - all classes - Term 2 ends
F 15  AGSM MBA program - all classes - Examinations begin
Su 17  Medicine IV - Recess ends
M 18  Medicine IV - Term 5 begins
M 21  Medicine V - Term 4 begins
Su 31  Last day for students to discontinue without failure subjects which extend over Session 2 only
HECS Census Date for Session 2

September 1997

M  1  AGSM MBA program - all classes - Term 3 begins
S  6  Open Day
Su 14  Medicine VI - Term 5 ends
M 15  Medicine VI - Term 6 begins
F 26  Closing date for applications to the Universities Admission Centre
S 27  Mid-session recess begins - for Faculties other than Medicine and AGSM
University College, ADFA - September recess begins
Su 28  Medicine IV - Term 5 ends
M 29  Medicine IV - Term 6 begins

October 1997

M  6  Labour Day - Public Holiday
Mid-session recess ends - for Faculties other than Medicine and AGSM
University College, ADFA - September recess ends
T  7  Publication of provisional timetable for the November examinations
W 15  Last day for students to advise of examination clashes
F 17  AGSM EMBA Executive Year - Session 2 ends
Su 19  Medicine V - Term 4 ends
F 24  University College, ADFA - Session 2 ends
Su 26  Medicine VI - Term 6 ends
M 27  University College, ADFA - Examinations begin
T 28  Publication of timetable for November examinations

November 1997

S  1  AGSM EMBA GDM program - Session 2 ends
AGSM EMBA GDM program - Examination
F  7  Session 2 ends - for Faculties other than Medicine, AGSM and University College, ADFA
AGSM MBA program - all classes - Term 3 ends
S  8  Study period begins - for Faculties other than Medicine, AGSM and University College, ADFA
AGSM EMBA GMQ program - Session 2 ends
AGSM EMBA GMQ program - Examination
Su  9  Medicine IV - Term 6 ends
M 10  AGSM MBA program - all classes - Examinations begin
Th 15  Study period ends - for Faculties other than Medicine, AGSM and University College
F 14  Examinations begin - for Faculties other than Medicine, AGSM and University College
AGSM MBA program - all classes - Examinations end
University College, ADFA - Examinations end

December 1997

T  2  Examinations end - for Faculties other than Medicine, AGSM and University College, ADFA
Th 25  Christmas Day - Public Holiday
F 26  Boxing Day - Public Holiday
Board of Studies in Science and Mathematics

The Board of Studies in Science and Mathematics includes all members of the Faculty of Biological and Behavioural Sciences and the Faculty of Science, and some members of specific schools in other faculties contributing to the Science and Mathematics Courses: Applied Geology (Department), Biotechnology (Department), Chemical Engineering and Industrial Chemistry, Geography, Materials Science and Engineering; Philosophy, Science and Technology Studies (Arts and Social Sciences); Accounting, Economics, Information Systems (Commerce and Economics); Electrical Engineering, Computer Science and Engineering, Mechanical and Manufacturing Engineering, Geomatic Engineering (Engineering); Anatomy, Community Medicine, Physiology and Pharmacology (Medicine); and Education (Professional Studies).

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Presiding Member
Associate Professor G Russell

Associate Dean
Dr K Moon

Administrative Officer
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Comprises Schools of Biochemistry and Molecular Genetics, Biological Science, Microbiology and Immunology, and Psychology.

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(in association with the Faculty of Applied Science)

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Professor HGL Coster

Director, Chemical Engineering
Professor AG Fane
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1. Faculty Information

2. Undergraduate Study
   This contains:
   • Courses: Science and Advanced Science
   • Information on how to structure your course
   • Program outlines
   • Specific, Professional and Combined courses: followed by program outlines of these courses
   • Subject descriptions: this section includes HSC requirements, prerequisites, corequisites, exclusions and other notes

3. Graduate Study
   This contains:
   • Courses and Programs: followed by course outlines
   • Subject descriptions: this section includes prerequisites, corequisites, exclusions and other notes
   • Conditions for the Award of Degrees

4. Scholarships and Prizes

Information Key

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

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP</td>
<td>credit points</td>
</tr>
<tr>
<td>F</td>
<td>full year (Session 1 plus Session 2)</td>
</tr>
<tr>
<td>HPW</td>
<td>hours per week</td>
</tr>
<tr>
<td>L</td>
<td>lecture</td>
</tr>
<tr>
<td>P/T</td>
<td>part-time</td>
</tr>
<tr>
<td>S1</td>
<td>Session 1</td>
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<tr>
<td>S2</td>
<td>Session 2</td>
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<tr>
<td>SS</td>
<td>single Session, but which Session taught is not known at time of publication</td>
</tr>
<tr>
<td>T</td>
<td>tutorial/laboratory</td>
</tr>
<tr>
<td>WKS</td>
<td>weeks of duration</td>
</tr>
<tr>
<td>X</td>
<td>external</td>
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Prefixes

The identifying alphabetical prefixes for each organisational unit offering subjects to students in the Board of Studies in Science and Mathematics follow.

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Organisational Unit</th>
<th>Faculty/Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT</td>
<td>School of Accounting</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>ANAT</td>
<td>School of Anatomy</td>
<td>Medicine</td>
</tr>
<tr>
<td>BIOC</td>
<td>School of Biochemistry and Molecular Genetics</td>
<td>Biological and Behavioural Sciences</td>
</tr>
<tr>
<td>BIOS</td>
<td>School of Biological Science</td>
<td>Biological and Behavioural Sciences</td>
</tr>
<tr>
<td>BIOM</td>
<td>Centre for Biomedical Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td>BIOT</td>
<td>Department of Biotechnology</td>
<td>Applied Science</td>
</tr>
<tr>
<td>BSSM</td>
<td>Board of Studies in Science and Mathematics</td>
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<tr>
<td>CHEM</td>
<td>School of Chemistry</td>
<td>Science</td>
</tr>
<tr>
<td>CIVL</td>
<td>School of Civil Engineering</td>
<td>Engineering</td>
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<tr>
<td>CMED</td>
<td>School of Community Medicine</td>
<td>Medicine</td>
</tr>
<tr>
<td>COMP</td>
<td>School of Computer Science and Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td>ECOH</td>
<td>Department of Economic History</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>ECON</td>
<td>School of Economics, Departments of Economics and Econometrics</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>ELEC</td>
<td>School of Electrical Engineering</td>
<td>Engineering</td>
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<tr>
<td>ENVS</td>
<td>Environmental Studies</td>
<td>Biological and Behavioural Sciences</td>
</tr>
<tr>
<td>FINS</td>
<td>School of Banking and Finance</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>GEOG</td>
<td>School of Geography</td>
<td>Applied Science</td>
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<tr>
<td>GEOL</td>
<td>Department of Applied Geology</td>
<td>Applied Science</td>
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<tr>
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<td>School of Information Systems</td>
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<td>JAPN</td>
<td>Asian Studies Unit</td>
<td>Commerce and Economics</td>
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<td>LAWS</td>
<td>School of Law</td>
<td>Law</td>
</tr>
<tr>
<td>LEGT</td>
<td>Department of Legal Studies and Taxation</td>
<td>Commerce and Economics</td>
</tr>
<tr>
<td>MANF</td>
<td>School of Mechanical and Manufacturing Engineering</td>
<td>Engineering</td>
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<tr>
<td>MATH</td>
<td>School of Mathematics</td>
<td>Science</td>
</tr>
<tr>
<td>MDCN</td>
<td>School of Medicine</td>
<td>Medicine</td>
</tr>
<tr>
<td>MECH</td>
<td>School of Mechanical and Manufacturing Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td>MICR</td>
<td>School of Microbiology and Immunology</td>
<td>Biological and Behavioural Sciences</td>
</tr>
<tr>
<td>MINP</td>
<td>School of Chemical Engineering and Industrial Chemistry</td>
<td>Applied Science</td>
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<tr>
<td>MSCI</td>
<td>Centre for Marine Science</td>
<td>Science</td>
</tr>
<tr>
<td>OCEA</td>
<td>Oceanography (Mathematics)</td>
<td>Science</td>
</tr>
<tr>
<td>OPTM</td>
<td>School of Optometry</td>
<td>Science</td>
</tr>
<tr>
<td>PATH</td>
<td>School of Pathology</td>
<td>Medicine</td>
</tr>
<tr>
<td>PHIL</td>
<td>School of Philosophy</td>
<td>Arts and Social Sciences</td>
</tr>
<tr>
<td>PHPH</td>
<td>School of Physiology and Pharmacology</td>
<td>Medicine</td>
</tr>
<tr>
<td>PHYS</td>
<td>School of Physics</td>
<td>Science</td>
</tr>
<tr>
<td>POLY</td>
<td>Department of Polymer Science</td>
<td>Applied Science</td>
</tr>
<tr>
<td>PSCY</td>
<td>School of Psychiatry</td>
<td>Medicine</td>
</tr>
<tr>
<td>PSYC</td>
<td>School of Psychology</td>
<td>Biological and Behavioural Sciences</td>
</tr>
<tr>
<td>REMO</td>
<td>Centre for Remote Sensing</td>
<td>Engineering</td>
</tr>
<tr>
<td>SAFE</td>
<td>Department of Safety Science</td>
<td>Applied Science</td>
</tr>
<tr>
<td>SCTS\</td>
<td>School of Science and Technology Studies</td>
<td>Arts and Social Sciences</td>
</tr>
<tr>
<td>HPST</td>
<td>Technology Studies</td>
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</tr>
<tr>
<td>WOOL</td>
<td>Department of Wool and Animal Science</td>
<td>Applied Science</td>
</tr>
</tbody>
</table>
Science courses take advantage of a wide range of science and technology based subjects available across the University.

The Board of Studies in Science and Mathematics administers these courses and is therefore responsible for the undergraduate studies of students specialising in disciplines associated with the faculties of Biological and Behavioural Sciences and of Science along with several schools from other faculties.

Board of Studies in Science and Mathematics

The Science Courses are administered by the Board of Studies in Science and Mathematics which includes all members of the Faculty of Biological and Behavioural Sciences and the Faculty of Science and some members of specific Schools in other faculties contributing to the Science and Mathematics Course: Biotechnology, Chemical Engineering and Industrial Chemistry, Geography, Mines (Applied Science); Science and Technology Studies, Philosophy (Arts); Accounting, Economics, Information Systems (Commerce); Electrical Engineering, Computer Science and Engineering, Mechanical and Manufacturing Engineering, Surveying (Engineering); Anatomy, Community Medicine, Physiology and Pharmacology (Medicine); Education (Professional Studies); and the Centre for Liberal and General Studies.

The Dean is Professor W O'Sullivan who is also the Dean of the Faculty of Biological and Behavioural Sciences.

The Presiding Member is Associate Professor G Russell.

The Associate Dean is Dr K Moon.

The Administrative Officer is Mr P Buist.

Some People Who Can Help You

If after reading this handbook you still have problems which concern the administration of the science course, consult the staff of the Board of Studies in Science and Mathematics Office (The Undercroft, Electrical Engineering Building, map reference G18).

If you require academic advice regarding particular programs or subjects consult the appropriate staff member for each program of study or subject, as listed later in this handbook.
Enrolment Procedures

New students will receive enrolment information with their offer of a place in a Science or Advanced Science course. All students re-enrolling in 1997 should obtain a copy of the leaflet *Re-Enrolling 1997: Procedures and Fees for Science Courses*. This is available from the Course Administration Office and the Admissions Office. *All quotas are assessed on the basis of applications made at the time of preliminary enrolment. Students enrolling in graduate courses should contact the Postgraduate Section.*

The subject timetable for the Science and Mathematics Course and the Advanced Science Courses is available in late October/early November from the Science and Mathematics Course Office, The Undercroft, Electrical Engineering Building. All re-enrolling students should collect one of these timetables along with a preliminary enrolment form (SM97). The preliminary enrolment form is to be completed and returned to the Science and Mathematics Office by late December.

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

*It should be noted that quotas apply to certain subjects and programs, as indicated in the relevant programs or subject descriptions.*

General Education Program

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

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

Objectives of the General Education Program

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

1. To provide a learning environment in which students acquire, develop, and deploy skills of rational thought and critical analysis.
2. To enable students to evaluate arguments and information.
3. To empower students to systematically challenge received traditions of knowledge, beliefs and values.
4. To enable students to acquire skills and competencies, including written and spoken communication skills.
5. To ensure that students examine the purposes and consequences of their education and experience at University, and to foster acceptance of professional and ethical action and the social responsibility of graduates.
6. To foster among students the competence and the confidence to contribute creatively and responsibly to the development of their society.
7. To provide structured opportunities for students from disparate disciplines to co-operatively interact within a learning situation.
8. To provide opportunities for students to explore discipline and paradigm bases other than those of their professional or major disciplinary specialisation through non-specialist subjects offered in those other areas.

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

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

**General Education requirements**

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

- Four (4) session length subjects carrying 7.5 credit points each or their equivalent in combinations of session length and year long subjects
- An additional fifty-six (56) hours of study which fosters acceptance of professional and ethical action and social responsibility. This fifty-six hours of study may be distributed throughout the course, or exist as a separate subject, depending on the course.

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

Each Faculty has responsibility for deciding what subjects are not able to be counted towards the General Education requirement for their students. In most cases, this means that subjects offered by the Faculty in which a student is enrolled, or subjects which are a required part of a course even though offered by another Faculty, are not able to be counted toward the General Education requirement.

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

**Additional information for undergraduate students who first enrolled before 1996**

*Transitional arrangements*

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

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

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

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

**General Information**

While this Handbook has been specially designed as a detailed source of reference in all matters related to both the Faculty of Biological and Behavioural Sciences, and the Faculty of Science, the University's *Student Guide* is intended to provide general information on some important rules and procedures, and introduces students to many of the services available to them. The *Guide*, which puts the Faculties into perspective within the University as a whole, is issued free of charge to all enrolled students. For other details about some aspects of the University and its activities students might need to consult the *University Calendar*. 
Computing at UNSW

The Division of Information Services (DIS) encompasses information technology and the University Library at UNSW.

Specific University information which is frequently updated is available on the World Wide Web (WWW) in the UNSW home page at http://www.unsw.edu.au which has an index to its contents which includes URLs http://www.ascu.unsw.edu.au and http://www.misu.unsw.edu.au. You can access this information from your workstation and in any computing laboratory with access to WWW through Mosaic or Netscape.

The information provided on the WWW includes more details about DIS information technology units such as points of contact for particular areas of responsibility and services provided.

The Faculty of Science manages a number of computer laboratories, equipped with X-terminals, Macintoshes and PCs. They are used for teaching purposes, and are linked via the campus-wide optical fibre network which supports TCP/IP, IPX and Appletalk protocols, and also provides access to AARNET. The Faculty also supports some specialised computing facilities for research purposes, together with the Faculty of Engineering. These include a cluster of seven HP735 workstations, managed by CANCES (the Centre for Advanced Numerical Computation in Engineering and Science), and a 32-node Thinking Machines CM5 parallel supercomputer, operated by the Sydney Regional Centre for Parallel Computing. The latter machine is shortly to be replaced by a 16-processor Silicon Graphics Power Challenge system.

The School of Chemistry has Macintosh computers and laser printers used by staff and students. A colour inkjet printer has been purchased for the production of posters and conference presentations. Postgraduate students in the School also have email addresses and access to Internet software such as World Wide Web browsers.

The School of Mathematics maintains a Computer Centre for staff and student use. The School makes extensive use of computing in its teaching, research and administration. Information about the School and its computing facilities is available on the World Wide Web at http://solution.maths.unsw.edu.au.

The School of Optometry has a mixed platform network of personal computers, predominantly Macintosh, with communal laser printers. The production of high quality 35 mm slides for presentations is available through a Lasergraphics slide printer. There is also access to a range of colour printers. Experimental research is supported through dedicated low-end workstations (both Mac and PC). The School Clinic is serviced by an on-line scheduling and job-tracking database system (PC) with accounting and patient information capability – with provision for modern ordering of appliances.

The School of Physics has its own general purpose DEC station 5000 computer which is heavily used by staff and students. This has recently been supplemented by a dual-processor DEC Alphaserver 2000 4/233 workstation for intensive numerical computations. A VisLab facility is also located within the School, with several Silicon Graphics machines intended for visualisation and graphics applications. These systems can be accessed either via 36 X-terminals attached to the Ethernet, or form individual PCs. Individual research groups also possess their own dedicated workstations for specialised use. Finally, there are about 80 Macintosh and IBM-compatible PCs distributed around the School.
Library Information

Faculty of Biological and Behavioural Sciences Library Facilities

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

The Biomedical Library

The Biomedical Library provides library services for staff and students from the Faculties of Medicine and Biological and Behavioural Sciences, the Schools of Applied Bioscience, Health Services Management, Fibre Science and Technology, Food Science and Technology and the Department of Safety Science.

The Biomedical Library is located on Levels 2, 3 and 4 of the Mathews Building Annexe and is connected to the other Special Libraries via a link through Level 3 of the Library Building. Professional staff are available at the Information Desk on Level 2 to provide reference services and to assist in the use of the catalogues. Instructional classes in the use of the library and specific subject material can be arranged through the Information Desk. Serials in the Biomedical Library are shelved in alphabetical order by title and carry the prefix MB or MBQ. Details about Biomedical Library books, serials and audiovisual material can be found in the Library Catalogue.

In addition, the Biomedical Library offers the following services: literature searches; on-site and remote access to a wide range of bibliographic databases; and a document supply service for external and remote students.

Biomedical Librarian: Jill Denholm

Faculty of Science Library Facilities

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

The Physical Sciences Library

The Physical Sciences Library, located on levels 5, 6 and 7 of the Library Building, provides information for students and staff from the Faculties of Science, Engineering, the Built Environment and Applied Science.

During the academic year, the Library is open from 8.00 to 10.00 Monday to Thursday, 8.00 to 6.00 on Friday and 12.00 to 5.00 Saturday and Sunday. During vacations, Library hours of opening will vary.

Staff assisted service is available after 10.00am including help with catalogue, CD-Roms, interlibrary loans, maps and online searching. An information skills program is in place with emphasis on developing basic information access and management skills for first years and advanced skills for final year and postgraduate students.

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

Physical Sciences Librarian: Rhonda Langford
Overview of Courses

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

The Science and Mathematics Courses (3970; 3978; 3979) lead to the award of the degree of Bachelor of Science (BSc) at pass level on the completion of a three stage program, taking three years of full-time study.

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

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

Both the Science and Mathematics and the Advanced Science courses are controlled by the Board of Studies in Science and Mathematics (BSSM).

Admission

For admission requirements for Science and Mathematics courses see the appropriate entry in the current UAC Handbook.

Applicants for admission to Science and Mathematics courses should note that a number of new UAC entry codes have been introduced which correspond to specific courses and programs of study. UAC entry codes for Science courses are:

423970 Science and Mathematics
This is applicable to study in a wide range of science and mathematics areas in course 3970 as indicated in the programs outlined on pages 33-35.

423978 Computer Science
This is applicable specifically to a major in Computer Science in course 3978 as outlined on pages 40-41.
423979 Information Systems
This is applicable specifically to a major in Information Systems in course 3979 as outlined on page 48.

423985 Advanced Science (Chemical, Mathematical, and Physical Sciences)
This is applicable to study in areas of mathematics, chemistry and physics in course 3985 as outlined in the program descriptions commencing on page 36, and in course 3973 as outlined in the Medical Physics program on page 54.

423990 Advanced Science (Life Sciences)
This is applicable to study in areas of biological, biomedical and behavioural sciences in course 3990 as outlined in the program descriptions commencing on page 36.

423976 Advanced Science (Environmental Science)
This is applicable to study in environmental science in course 3976 as outlined in programs 6861 – 6869 commencing on page 42.

See Table 2 below for details of programs available within these courses for each UAC admission code.

The number of places available each year in the Advanced Science courses is limited, and this is reflected in a higher TER cut-off for these courses.

Course Design

Programs

A feature of the design of both the Science and Mathematics and Advanced Science courses is the requirement that all students enrol in and complete requirements for a specified program. Programs are designed to link subjects in such a way that a coherent pattern of study is achieved in a specific discipline or specialisation. Each program is identified by its own code (eg 1200 Psychology). A wide choice of programs, designed to meet specific aims and objectives, is available. Most programs are identified with a particular School or discipline (eg Anatomy, Chemistry) but some are multidisciplinary (eg Mathematics of Management). Some programs are only available in the Advanced Science courses. See Table 2 below for details.

Students are required to fulfil all of the requirements of their particular program as specified in the handbook in the year in which they first enrolled.

Each program has a four-digit identifying number. Programs are set out in stages – Stage 1, 2, 3 and 4 (Stage 4 is for Advanced Science programs only). While a number of programs are available in both the Science and Mathematics and Advanced Science courses, some are only available as 3 stage programs in the Science and Mathematics course and lead to the award of degree of Bachelor of Science at pass level only. See Table 2 and the program outlines (commencing on page below) for details.

Subjects

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

- Level I Stage 1
- Level II Stage 2
- Level II/III Stage 2 or 3
- Level III Stage 3 (also Stage 4 in some Advanced Science programs)
- Level IV Stage 4 (or Honours year) – Advanced Science only
Course Objectives

Programs in the Science and Mathematics Course and the Advanced Science Courses have been designed for students to:

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

Course Assessment

Students' assessment results are submitted by subject authorities for final review by the Board of Studies in Science and Mathematics Assessment Committee at the end of each assessment period. The Committee has the authority to exercise some latitude in determining final grades for the science subjects or their equivalent in the light of the overall performance of a student in those subjects for single session and whole year subjects.

If a student's overall performance in the science subjects or their equivalent is rated as:
- good - i.e. if the average in those subjects is 55.0 or higher;
- reasonable - i.e. if the average in those subjects is 50.0 or higher and less than 55.0;
- poor - i.e. if the average in those subjects is less than 50.0,

then for a mark of 49 a PC (pass conceded) can be awarded for a reasonable or good performance; for a mark of 48 a PC can be awarded for a good performance and a PT (pass terminating) can be awarded for a reasonable performance;

for a mark of 47 a PT can be awarded for a good performance.

Students with a poor performance may be awarded concessional passes only on the basis of one subject for each subject passed with the equivalent or greater Credit Point value. These can only be 49PC or 48PT.

Where results are available for one subject only in a particular session a PC may be awarded if the mark in that subject is 49, or a PT may be awarded for a mark of 48.
Course Requirements and Rules

Science and Mathematics Courses (3970; 3978; 3979)  
– pass course (3 years)

Program Requirement

1. Students must select and be enrolled in one of the approved programs of study – see Table 2 below for details of programs available. All programs consist of a total of 345 Credit Points specified as combinations or sequences of Level I, II, II/III or III subjects, and include prescribed and elective subjects.

Students must complete not less than 120 nor more than 150 Credit Points of Level I subjects and a minimum of 60 Credit Points of Level III subjects. All students must complete 30 Level I Credit Points of Mathematics as specified for individual programs.

Subject Requirement

2. Students must complete subjects with a total value of 345 Credit Points and General Education. Each subject available in Science programs has a Credit Point value (usually 15 but ranging from 7.5 to 60) based on the number of hours taught and the mode of study.

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

General Education Requirement

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

Students in the Science and Mathematics course must complete General Education subjects totalling 112 hours. See Table 1 – for a description of General Education subject categories.

Prerequisites, Corequisites and Excluded Subjects

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

Credit Transfer

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

Students admitted to the Science and Mathematics course may be granted credit by the BSSM for previous studies and attainments provided that:

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

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

6. Students may not undertake a study load of more than 60 Credit Points in any session. This can be exceeded only in exceptional circumstances by students with an excellent academic record and requires the permission of the Associate Dean. Students with external commitments – such as part-time employment – in excess of ten hours per week, should take fewer subjects each session. External commitments will not be taken into consideration in relation to such matters as extensions of time for submission of written work or failure to attend examinations (which may, for some subjects, be scheduled on Saturday mornings). Students who do not make satisfactory progress may be required to show cause why they should be allowed to continue in the course or may be given a restricted program (see 7. Progression and Exclusion below).

Progression and Exclusion

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

Unsatisfactory progress may include:

- failure in 50% or more of subjects attempted in an academic year;
- failing to pass subjects totalling at 60 Credit Points in one year;
- failing to complete 120 Credit Points of level I subjects in the first two years of study.

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

Program and Subject Quotas

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

Graduation and majors

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

   Bachelor of Science in (name of program)

Transferring Programs

10. Students must apply in writing to transfer between programs within the Science and Mathematics courses. Applications are assessed on academic performance and approval is subject to places being available in the nominated program. Applications must be lodged with submission of the pre-enrolment form to the BSSM office by the end of December in the preceding academic year.

Transfers to Advanced Science Courses

11. Students who wish to proceed to Stage 4 in a given program must apply to the Admission and Re-enrolment Committee of the BSSM to transfer to Advanced Science courses. Applications are only accepted for transfer at the end of each year of study. Applicants must lodge the Internal Course Transfer form with the Student Centre by 30 November in the preceding academic year.

Transfer should not be considered automatic. Applications are assessed on academic performance and approval is subject to places being available in the nominated program of the relevant Course. Students must satisfy all prerequisites for the subjects specified in the
Advanced Science program, and have completed the relevant sequence of subjects for the proposed program.

Students seeking to enrol in a Stage 4 honours program should seek the guidance of the appropriate Head of School at an early stage of study to ensure that the program being followed is best suited for the pursuit of an honours program.

**Advanced Science Courses (3973 – 3979; 3985; 3990) – Honours/advanced Course (4 years)**

**Program Requirement**

1. Students must select and be enrolled in one of the approved programs of study – see Table 2 for details of programs available. All Advanced Science programs are four stage programs consisting of a total of 360 Credit Points to be completed in Stages 1-3, specified as combinations or sequences of Level I, II, II/III or III subjects, and including prescribed and elective subjects. Most programs indicate a total of 345 Credit Points for Stages 1-3, since this is the requirement for course 3970. Students in Advanced Science courses must take a total of 360 Credit Points in stages 1-3. Except where otherwise indicated, the additional subject/s would normally be an elective subject/s. Students also undertake a Stage 4 sequence consisting of either:
   - in designated programs, an advanced structured coursework sequence of Level IV subjects, or level IV subjects in combination with other subjects (where specified), totalling at least 120 Credit Points, and which may include a short research program;
   - or
   - an approved honours program offered by one or more schools, consisting of a significant research program in combination with other requirements specified for individual programs.

See Table 2 below for available Advanced Science programs. Study sequences for Stage 4 are given in the details of programs commencing on page .

All Advanced Science students also complete General Education subjects see Table 1 below.

Students must not complete more than 120 Credit Points of Level I subjects except where specified in particular programs, students must also complete a minimum of 60 Credit Points of Level III subjects. All students must complete 30 Level I Credit Points Mathematics as specified for individual programs.

**Subject Requirement**

2. Students must complete subjects specified for their program.

Each subject available in Science programs has a Credit Point value (usually 15 but ranging from 7.5 to 60) based on the number of hours taught and the mode of study.

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

**General Education Requirement**

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

Students in the Advanced Science course must complete General Education subjects totalling 112 hours Category C is designed to permit students to address questions concerning the design and responsible management of the human and planetary future. See Table 1 – for a description of General Education subject categories.
Prerequisites, Corequisites and Excluded Subjects

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

Credit Transfer

5. In addition to University rules governing admission with credit for previous studies or attainments, the following provisions apply for the Advanced Science courses.

Students admitted to an Advanced Science course may be granted credit by the BSSM for previous studies and attainments provided that:

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

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

Study Load

6. Students may not undertake a study load of more than 60 Credit Points per session in Stages 1 – 3. This can be exceeded only in exceptional circumstances by students with an excellent academic record and requires the permission of the Associate Dean. Students with external commitments – such as part-time employment – in excess of ten hours per week, should take fewer subjects per session. External commitments will not be taken into consideration in relation to such matters as extensions of time for submission of written work or failure to attend examinations (which may, for some subjects, be scheduled on Saturday mornings). Students who do not make satisfactory progress may be required to show cause why they should be allowed to continue in the course or may be given a restricted program (see 7. Progression and Exclusion below).

Progression and Exclusion

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

 Unsatisfactory progress may include:
• failure to achieve an average of 65 or higher in subjects attempted in an academic year;
• failing to pass Subjects totalling at least 60 Credit Points in one year;
• failing to complete the requirements for stage one of the course in the first two years of study.

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

Accelerated Progression

8. There is provision for exceptionally talented students to take higher level subjects in Stage 1. Contact the BSSM Course office for details.
Program and Subject Quotas

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

Graduation and Majors

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

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

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

The award will appear on the testamur as:

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

Transferring Programs

12. Students must apply in writing to transfer between programs within each of the Advanced Science courses. Applications are assessed on academic performance and approval is subject to places being available in the nominated program. Applications must be lodged with submission of the pre-enrolment form to the BSSM office by the end of December in the preceding academic year.

Transferring within the Advanced Science Courses

13. Applications for transfer from one Advanced Science Course to another are only accepted at the end of each year of study. Applicants must lodge the Internal Course Transfer form with the Student Centre by 30 November in the preceding academic year.

Transfer should not be considered automatic. Applications are assessed on academic performance and approval is subject to places being available in the nominated program of the Course. Students must satisfy all prerequisites for the subjects specified in the program of the particular Advanced Science course, and have completed the relevant sequence of subjects for the proposed program.

Progression to Stage 4 Honours Program

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

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

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

In addition, admission to a particular Stage 4 program is subject to appropriate research and supervision resources being available. Quotas may be imposed for entry in any year, in which case admission will be determined on academic merit.
Students who do not attain an average or 65 or higher in Stage 3 of their program are normally required to transfer to the Science and Mathematics course (3970) and take out the BSc award at pass level.

Transfers to the Science and Mathematics Course

15. Students enrolled in the Advanced Science courses (course code 3972-3; 3976; 3985; 3990) who wish to take out the BSc award at pass level and without proceeding to Stage 4 are required to transfer to the Science and Mathematics course (3970). Applications to transfer should be lodged with the BSSM Office no later than the HECS census date in the session in which the student expects to satisfy requirements. Students applying after that date may not be able to graduate in the next round of graduation ceremonies. The application should state the course 3970 Program in which the student wishes to be enrolled. Students must satisfy all requirements for the designated Science and Mathematics course (3970) program in order to qualify for the award of the BSc. Further information regarding the transfer from Advanced Science course programs to programs that are available in the Science and Mathematics course is available through the BSSM Office.

Range of Programs

The range of programs has been designed to cover a wide variety of needs in the various areas of science and mathematics. The programs are listed below in Table 2 in alphabetical order with the program number. The appropriate course code(s) for each program is indicated. Details of the programs follow in the next section.

Table 2

Programs available for Science and Advanced Science Courses:

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Program Number</th>
<th>Available in Course(s)</th>
<th>UAC Entry Code(s)</th>
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Note: Entry to Anatomy and Neuroscience programs is at stage 2. Quotas apply and entry will be based solely on academic achievement. Students planning to enrol in these programs should enrol for stage 1 in the Biological Sciences Holding Program (6817).

Certain of the programs listed above are appropriate for Courses 3930 (Science/Arts), 3931 (Advanced Science/Arts), 3611 (Science/Aeronautical Engineering), 3661 (Science/Industrial Engineering), 3681 (Science/Mechanical Engineering), 3701 (Science/Naval Architecture), 3725 (Science/Electrical Engineering), 3730 (Science/Civil Engineering), 3820 (Science/Medicine), 3951 (Science/Optometry), 3996 (Science/Commerce), 4075 (Science/Education), 4770 (Science/Law). Students in these courses should consult their course advisor for details.
Details of Programs

ANATOMY

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

Entry to Anatomy programs is only possible at Level II or above, and academic merit is the sole criterion. All students are advised to enrol initially in the Biological Sciences holding program 6817 and apply to meet the quota at the time of pre-enrolment for Level II.

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

BIOCHEMISTRY AND MOLECULAR GENETICS

Biochemistry is concerned with understanding life processes, especially molecular aspects of living organisms. Historically, the diverse approaches of chemistry and physiology were applied to biological systems but now Biochemistry has achieved its own techniques, approaches and body of knowledge, and its ideas pervade biology. It, however, retains a molecular basis and is an ideal study for those students who are interested in understanding and appreciating biological processes at the molecular rather than descriptive level. Integration of this molecular approach at the cellular, tissue, organ and whole organism level is an important part of Biochemistry. Biochemistry also represents a fundamental component of medical science and has an important role in many aspects of modern medicine.

4100
Biochemistry

The program allows students to combine Biochemistry with other disciplines, for example Microbiology, Chemistry, Physiology, Biotechnology, Biological Science, Genetics or Anatomy.

Stage 1
BIOS1101, BIOS1021
CHEM1101, CHEM1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
Elective subjects totalling 30 Credit Points

Stage 2
ANAT2111, ANAT2211
Elective subjects totalling 75 or 90 Credit Points
Recommended: Biological Science, Biochemistry, Physiology, Psychology
One 56 hour or two 28 hour General Education subjects

Stage 3
Level III Anatomy subjects totalling at least 60 Credit Points
(may include PATH3201)
One 56 hour or two 28 hour General Education subjects
Further subjects to give a total of 345 Credit Points

Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 90 Credit Points

Stage 4 (Honours)
ANAT4000, or ANAT4509 and further subjects totalling 60 Credit Points (normally including ANAT4510) approved by the Head of School
BIOLOGICAL SCIENCE

Biological Science encompasses all aspects of plants and animals including their relationship to each other and to the environment. The programs leading to the award of a science degree in Biological Science include cell biology, plant and animal physiology, ecology, genetics, taxonomy, marine biology, entomology and evolutionary studies. These studies are particularly relevant in the fields of agriculture, forestry, wildlife management, conservation and related environmental sciences. Specialisations are available in both Botany and Zoology as well as Ecology (6853), Marine Science-Biological Oceanography (6832) and Environmental Science (6861).

Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 105 Credit Points

Stage 4 (Honours)
BIOS4018 (F/T), BIOS4014 (P/T)

BIOMEDICAL SCIENCE

Entry to this program is limited to Advanced Science students at Level II and academic merit is the sole criterion. Students planning this are advised to enrol initially in the Biological Sciences Holding Program (6817) and apply to meet the Anatomy quota at the time of pre-enrolment for Level II.

6817
Biological Sciences Holding Programs

Level I is identical in most programs in the Biological Sciences. Students who wish to study the biological sciences, but at Level I are unsure of the field in which they wish to specialise, are advised to enrol in this program and then transfer to the appropriate program in Level II.

Stage 1
BIOS1101, BIOS1201
CHEM1101, CHEM1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
Elective subjects totalling 30 Credit Points

1700
Biological Science

Stage 1
BIOS1101, BIOS1201
CHEM1101, CHEM1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
Elective subjects totalling 30 Credit Points

Stage 2
BIOC2101, BIOC2201
BIOC2181, BIOC2291
BIOS2011, BIOS2021, BIOS2041, BIOS2051 and
A further 30 Credit Points from BIOS2031, BIOS2061 or
MICR2201
One 56 hour or two 28 hour General Education subjects

Stage 3
Subjects Totalling 75 Credit Points Chosen from
BIOS3011, BIOS3021, BIOS3031, BIOS3041, BIOS3051,
BIOS3061, BIOS3071, BIOS3081, BIOS3091, BIOS3101,
BIOS3111, BIOS3121, BIOS3131, BIOS3151, MICR3071
Elective subjects totalling 30 Credit Points (which may be
also from this list)
One 56 hour or two 28 hour General Education subjects

Stage 4
Subjects Totalling 120 Credit Points from
ANAT2111, ANAT2211, BIOC2101 and BIOC2201, or
BIOC2181 and BIOC2291**, BIOS2021, MICR2201 or
MICR2011*, PHYP1122**
One 56 hour or two 28 hour General Education subjects
Elective subjects should be preferably in subject areas such
as Mathematics, Physics, Chemistry, Computing or Psychology (see comments for Stage 4).

Stage 3
After consultation with appropriate Schools about the
proposed Honours Stage subject students would ordinarily
choose subjects totalling 105 or 120 Credit Points (to
complete a total of 345 or 360 Credit Points) from the
following subject areas: Physiology and Pharmacology**,
Anatomy, Biochemistry, Microbiology and Immunology,
Pathology, Biotechnology
One 56 hour or two 28 hour General Education subjects

Stage 4
Subject to satisfactory progress through the course
(normally a credit average in subjects completed) students
may proceed to the honours Stage. Before commencement
of Level II students should consult an appropriate school
(see the lists under Stage 3) about the subjects required for
a particular honours program. Students should also note general guidelines for Advanced Science Stage 4.

*Students wishing to enrol in MICR2011 are required to attend a one day bridging course in the mid-Stage break.

** Student numbers in Physiology and Pharmacology subjects are limited. If quotas are exceeded, entry will be based on academic merit.

***Students who take BIOC2181 and BIOC2291 are advised that a grade of credit is normally required for progression to level III Physiology subjects. Students who do not obtain a credit in these subjects may be enrolled at the discretion of the Head of School.

**BIOTECHNOLOGY**

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

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

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

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

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

The Department of Biotechnology offers undergraduate training through the Board of Studies in Science and Mathematics (BSc Course) and in the BE Course in Bioprocess Engineering and the BSc course in Biotechnology. The BSc Course is three Stages for a Pass degree during which the student can study aspects of biotechnology in combination with another major in a relevant discipline, preferably biochemistry, microbiology or chemistry. The fourth Honours Stage of the BSc Course includes further formal training in biotechnology as well as an extensive research project. The BE Degree Course in Bioprocess Engineering is four Stages full-time and has been designed to meet the requirements for membership of the Institution of Engineers, Australia. The BSc degree course in Biotechnology is four Stages full-time. Details of the Honours Stage in Bioprocess Engineering and the BSc degree course in Biotechnology are given in the Faculty of Applied Science Handbook. Honours gradings can be achieved in both courses.

**4200 Biotechnology**

**Stage 1**
BIOS1101, BIOS1201
CHEM1101, CHEM1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
Elective subjects totalling 30 Credit Points

**Stage 2**
BIOC2101, BIOC2201
BIOS2011, BIOS2021
MICR2201
Elective subjects totalling 30 Credit Points (Recommended: Chemistry, Microbiology)
All General Education subjects (112 hours)

**Stage 3**
BIOT3011, BIOT3021, BIOT3031, BIOT3061
Additional elective subjects to give a total of 345 Credit Points.

Students proposing to undertake Stage 4 (Honours) must complete Level III subjects totalling 120 Credit Points.

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

**BOTANY**

Plant Science is concerned with all aspects of the structure and function of both green and non-green plants and the relationship of plants to their environments. The major aspects of the subject range from plant anatomy and morphology through physiology, ecology, taxonomy, palynology, phycology and mycology. The applications of these studies are particularly relevant in the fields of agriculture, horticulture, forestry, marine studies, conservation and related environmental sciences.
1743

Botany

Stage 1
BIOS1101, BIOS1201
CHEM1101, CHEM1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
Elective subjects totalling 30 Credit Points

Stage 2
BIOS2101, BIOS2201
CHEM2101, CHEM2201
Elective subjects totalling 30 Credit Points to make a total of 8
One 56 hour or two 28 hour General Education subjects

Stage 3
Subjects totalling 60 Credit Points from BIOS3071, BIOS3061, BIOS3091, BIOS3121, BIOS3151, MIRC3071
Elective subjects totalling 45 Credit points (which may be also from this list)
Students with an interest in molecular aspects of plant science should choose at least two of BIOS3131, BIOS3271 or BIOS3281.
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 120 Credit Points

Stage 4 (Honours)
BIOS4028 (F/T), BIOS4024 (P/T)

CHEMISTRY

The programs in Chemistry are 0200 (Chemistry), 0205 (Pure and Applied Chemistry, for Advanced Science only), 0210 (Medical Chemistry, for Advanced Science only) and 0225 (Geological Chemistry, for Advanced Science only). These programs provide a basic scientific education and a professional training in the chemical sciences. Fundamental, applied, environmental and industrial aspects of chemistry are included.

0200
Chemistry

Program 0200 combines chemistry with other disciplines such as physics, geology, biochemistry, mathematics, computer science, biotechnology, physiology and pharmacology. These programs with more than one field of specialisation result in a broadly based degree in the chemical sciences. For example: a combination of chemistry and biochemistry leads to further work in areas such as toxicology and neurochemistry; a combination of Level III chemistry with mathematics or computing provides a valuable basis for the many applications of computers in chemistry; chemistry with physics or materials science allows entry into the rapidly developing fields of hitech materials.
0210
Medical Chemistry (Advanced Science Course 3985 only)

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

Stage 1
CHEM1101, CHEM1201
PHYS1002
MATH1011 or MATH1131 or MATH1141
MATH1021 or MATH1231 or MATH1241
BIOS1101, BIOS1201

Stage 2
CHEM2011, CHEM2021, CHEM2031, CHEM2041
PHHP2112*, BIOC2101 and BIOC2201
One 56 hour or two 28 hour General Education Subjects

Stage 3
CHEM3021, CHEM3041
PHHP3152*
BIOC3111 and BIOC3281
Choose two additional level 3 units (one from Chemistry and one from either Biochemistry or Physiology and Pharmacology)
One 56 hour or two hour General Education Subjects

Stage 4
CHEM4003 or PHHP4258/PHHP4264 or BIOC4318/4618
One Catagory C General Education Subjects

Joint supervision of honours research projects between the School of Chemistry and the Schools of either Physiology and Pharmacology are strongly encouraged.

* Student numbers in these subjects are limited. Entry to these subjects will be based on academic merit.

0225
Geological Chemistry (Advanced Science Course 3985 only)

This program combines a knowledge of Chemistry particularly Analytical Chemistry and Geochemical aspects of Applied Geology. The program produces graduates who have a broad background in both Chemistry and Geology.

Stage 1
CHEM1101, CHEM1201
PHYS1002
MATH1011 or MATH1131 or MATH1141 and MATH1021
or MATH1231 or MATH1241
GEOL1101, GEOL1201

Stage 2
CHEM2011, CHEM2021, CHEM2031, CHEM2041
GEOL2101, GEOL2041, GEOL2042, GEOL2072,
GEOL2092, GEOL8202
One 56 or two 28 hour General Education Subjects

Stage 3
CHEM3021, CHEM3031, CHEM3041 and CHEM3141 or CHEM3311
GEOL3011, GEOL3021, GEOL3101, GEOL3092, GEOL8303
One 56 or two 28 hour General Education Subjects

Stage 4
CHEM4003 (Program 0225)
One General Education Subject

Honours research projects co-supervised by members of the School of Chemistry and Department of Applied Geology are strongly encouraged.

General Comments
Chemistry is a fundamental science and impinges on many other area of study. Where appropriate the School of Chemistry encourages joint areas of specialisation.

The following combinations should be considered:
- Chemistry/Biochemistry: programs 0200 and 4100 are mutually compatible;
- Chemistry/Computer Science: programs 0200 and 0600 are mutually compatible;
- Chemistry/Geology: programs 0200 and 2500 can be made compatible (initially consult the School of Chemistry);
- Chemistry/Mathematics: programs 0200 and 1000 are mutually compatible;
- Chemistry/Physics: programs 0200 and 0100 are not mutually compatible, but an appropriate program can be arranged by consultation with the Schools of Chemistry and Physics;
- Chemistry/Biotechnology: programs 0200 and 4200 are mutually compatible;
- Chemistry/Physiology: programs 0200 and 7301 Pharmacology are mutually compatible; Other combinations can be arranged by consultation initially with the School of Chemistry.

COMPUTER SCIENCE

Entry to this program is restricted to students who have been offered a place directly (UAC code 423978). Entry to later Stages is considered only in exceptional circumstances.

Computer Science involves the study of the design, construction and uses of computer systems. It is concerned with the representation of data and data structures in computer systems and the design of algorithms for automatic manipulation of this information by programming languages and machine systems. It is very much concerned with the design and development of hardware and software tools by which computer applications may be developed, but not so much with the applications themselves. It is, however, noted that noncomputing elements (such as human interface or psychological aspects) can often dictate the level of success of computing systems. At the University of New South Wales, particular emphasis is given to comprehension of the basic principles behind computing tools, operating systems, compilers and translators, and computer hardware.
Students in other programs may take some Level I and Level II Computer Science subjects. Level III studies in Computer Science are available in several combined programs. Appropriate disciplines are Physics (Program 0161); Mathematics (programs 1060 and 1066); Psychology (program 1206 (UAC entry code 423978)); Philosophy (program 5206 (UAC entry code 423978)).

0600
Computer Science

Stage 1
COMP1011**, COMP1021
MATH1131 or MATH1141
MATH1231 or MATH1241
MATH1081
Elective subjects totalling 45 Credit points*

Stage 2
COMP2011, COMP2021, COMP2031
Elective subjects totalling 75 Credit Points*
One 56 hour or two 28 hour General Education subjects

Stage 3
Level III Computer Science subjects totalling 60 Credit Points including at least 15 Credit Points from COMP3111, COMP3121, COMP3131 and at least 15 Credit Points from COMP3211, COMP3221, COMP3231, COMP3331
Further elective subjects to make a total of 105 Credit points for the year*
One 56 hour or two 28 hour General Education subjects

Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 90 Credit Points.

Stage 4 (Honours)
COMP4914

* Subjects up to 120 Credit Points may be counted from appropriate subjects not listed in this handbook. Enrolment in subjects available for study in the Faculty of Arts and Social Sciences is subject to approval by the relevant subject authority.

** Students who do not meet the prerequisite for COMP1011 must enrol in COMP1001 in session 1 and COMP1011 in session 2. COMP1001 is not included in the Credit Points for the course.

EARTH AND ENVIRONMENTAL SCIENCE

This program combines Geology and Geography giving an understanding of present geological processes and their relationships with the land surface. The effects on the natural processes of human activities, from industrial pressures to urban developments, are an integral part of the course. Community need for developments in a variety of environments and the vital role of environmental interdisciplinary safeguards have been among the main guidelines in the selection of subjects within the program.

2527
Earth and Environmental Science

Stage 1
CHEM1101, CHEM1201*
GEOG1064, GEOG1073
GEOL1101, GEOL1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
*Students who have not undertaken chemistry at HSC level should take chemistry at the introductory level (CHEM1401 and CHEM1101) in year 1, and CHEM1201 in the summer session before commencing year 2.

Stage 2
BIOS1101, BIOS1201
GEOG2021, GEOG3025, GEOG2051
GEOL6231, GEOL7223, GEOL7233
One 56 hour or two 28 hour General Education subjects

Stage 3
GEOL6321, GEOL7323, GEOL7333
Plus Level III subjects from Geology and/or Biology and/or Geography totalling 60 Credit points
One 56 hour or two 28 hour General Education subjects

Stage 4 (Honours)
GEOL4313 or GEOG4050/GEOG4100 or GEOL4333
(Only offered over two Stages)

ECOLOGY

The Ecology programs allow students to specialise in selected areas of Ecology yet provide experience in a range of related cross disciplinary subjects, Biological Ecology (6853), Geographical Ecology (6851) and Mathematical Ecology (6852). Optional subjects allow students to match their interests and career aspirations. The selection of these subjects must be discussed with a Program adviser.

6851
Geographical Ecology

Stage 1
BIOS1101, BIOS1201
GEOG1064, GEOG1073
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
Choose 1 of the strands:
1. CHEM1101, CHEM1201
2. GEOL1101, GEOL1201
3. Elective subjects totalling 30 Credit Points

Stage 2
BIOS2011, BIOS2051 and BIOS2031 or BIOS2061
BIOS2041 or GEOG2013
GEOG2021, GEOG2025
Subjects totalling at least 15 Credit Points from:
BIOL2101, BIOS2021, BIOS2031, BIOS2051, GEOG2051, GEOG3025, GEOL7223, GEOL6231,
MICR2201, MICR2011
One 56 hour or two 28 hour General Education subjects

Stage 3
BIOS3061, BIOS3071, BIOS3111
GEOG3042, GEOG3062, GEOG3211
subjects totalling at least 15 Credit Points from:
BIOS3011, BIOS3031, BIOS3051, BIOS3081, BIOS3091,
BIOS3121, BIOS3131, BIOS3151, GEOG2032,
GEOG2051, GEOG3011, GEOG3025, GEOG3032,
MICR3071
Further elective subjects (to be discussed with Program adviser) to give a total of 345 Credit Points
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 90 Credit Points

Stage 4 (Honours)
BSSM4023 (F/T), BSSM4029 (P/T)

6852
Mathematical Ecology

Stage 1
BIOS1101, BIOS1201
COMP1001
MATH1131 or MATH1141
MATH1231 or MATH1241
MATH1081
Choose 1 of the strands:
1. CHEM1101, CHEM1201
2. GEOG1064, GEOG1073
3. PHYS1002 or PHYS1022

Stage 2
BIOS2011, BIOS2051,
MATH2501, MATH2510
BIOS2031 or BIOS2061
Choose 1 of the strands:
1. MATH2120, MATH2200, MATH2841
2. MATH2801, MATH2831
Subjects totalling at least 15 Credit Points from: BIOS2031,
BIOS2051, GEOG2021, GEOG2051, GEOG3042, GEOG3062,
MATH2160, MATH2180, MATH2220, MATH2201,
MATH2520, MATH2810, MATH2840, MICR2211 or
MICR2071
One 56 hour or two 28 hour General Education subjects

Stage 3
BIOS3061, BIOS3111 and GEOG2025 or GEOG3211
Subjects totalling at least 45 Credit Points from subjects related to the strand chosen in Stage 2:
1. MATH3161, MATH3181, MATH3201, MATH3540,
MATH3550, MATH3050, MATH3060
2. MATH2810, MATH2840, MATH3801, MATH3800,
MATH3810, MATH3820, MATH3830, MATH3840,
MATH3850, MATH60, MATH3870, MATH3880
Subjects totalling at least 15 Credit Points from: BIOS3011,
BIOS3021, BIOS3031, BIOS3051, BIOS3061, BIOS3071,
BIOS3081, BIOS3091, BIOS3121, BIOS3131, BIOS3151,
GEOG2013, GEOG2025, GEOG2051, GEOG3011,
GEOG3025, GEOG3051, GEOG3062, MICR3071
Further elective subjects (to be discussed with Program adviser) to give a total of 345 Credit Points
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 90 Credit Points

Stage 4 (Honours)
BSSM4023 (F/T), BSSM4029 (P/T)

6853
Biological Ecology

Stage 1
BIOS1101, BIOS1201
CHEM1101, CHEM1201
GEOG1064, GEOG1073
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021

Stage 2
BIOS2181, BIOS2291
BIOS2011, BIOS2021, BIOS2041, BIOS2051 and
BIOS2031 or BIOS2061
Subjects totalling at least 15 Credit Points from: BIOS2031,
BIOS2051, GEOG2021, GEOG2051, GEOG3042, GEOG3062,
MATH2160, MATH2180, MATH2220, MATH2201,
MATH2520, MATH2810, MATH2840, MICR2211 or
MICR2071
One 56 hour or two 28 hour General Education subjects

Stage 3
BIOS3061, BIOS3071, BIOS3111
GEOG3211
Further elective subjects (to be discussed with Program adviser) to give a total of 345 Credit Points
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 90 Credit Points

Stage 4 (Honours)
BSSM4023 (F/T), BSSM4029 (P/T)

ENVIRONMENTAL SCIENCE

Environmental Science programs allow specialisation in a number of aspects: Biological Environments (Terrestrial, Marine, Microbial), Environmental Chemistry, Earth Environments (Geography, Geology), Environmental Mathematics (Fluid Dynamics, Statistics and Population Dynamics). All programs include 16 core subjects and electives as set out below.

Core subjects to be completed by all students in Course 3976 are:
BIOS1101, BIOS3071
CHEM1101, CHEM1201, CHEM3901
ECON1107
ENVS1011, ENVS2010, ENVS2020, ENVS2801  
GEOG1073, GEOG3042  
GEOL1101 or GEOL1201 or GEOL6231 or GEOL6321  
MATH1011 or MATH1131 or MATH1141  
MATH1021 or MATH1231 or MATH1241  
BIOS2041 or GEOG2013 or MATH2841 or MATH2301  
An ENVS honours project in Stage 4  

*Students who have not undertaken chemistry at HSC level should take chemistry at the introductory level (CHEM1401 and CHEM1101) in year 1, and CHEM1201 in the summer session before commencing year 2.

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6862  
Biological Environments (Marine)  
(Advanced Science only)  

Stage 1  
BIOS1101, BIOS1201  
CHEM1101, CHEM1201*  
ENVS1011  
GEOG1073  
MATH1011 or MATH1131 or MATH1141  
MATH1021 or MATH1231 or MATH1241  

Stage 2  
BIOS2011, BIOS2041  
ECON1107  
ENVS2010, ENVS2020, ENVS2801  
GEOL1101  
MSCI2001  
subjects totalling 15 Credit Points from BIOS2031, BIOS2051, BIOS2061, GEOG2021, MICR2011, MICR2201, or other subjects approved by the program advisor  
One 56 hour or two 28 hour General Education subjects  

Stage 3  
BIOS3071, BIOS3081, BIOS3091, BIOS3111  
CHEM3091  
GEOG3042  
subjects totalling at least 15 Credit Points from:  
GEOG3062, GEOG3211, GEOL6231, GEOL6321, MSCI3001  
Further subjects for major sequence, or other subjects approved by the program advisor to complete core subjects and a total of at least 360 Credit Points.  
One 56 hour or two 28 hour General Education subjects  

Stage 4  
ENVS4208/ENVS4209 (Full Stage honours thesis project) with permission of Program Adviser and Head of School or ENVS4218 (Combination of an honours thesis project and course work approved by Program Adviser) or ENVS4204 (Half Stage honours thesis project) and additional subjects approved by Program Adviser to make up full Stage  
General Education requirement  

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6863  
Biological Environments (Microbial)  
(Advanced Science only)  

Stage 1  
BIOS1101, BIOS1201  
CHEM1101, CHEM1201*  
ENVS1011  
GEOG1073  
MATH1011 or MATH1131 or MATH1141  
MATH1021 or MATH1231 or MATH1241  

Stage 2  
BIOS4108  
BIOS4109 (Full Stage honours thesis project) with permission of Program Adviser and Head of School or ENVS4118 (Combination of an honours thesis project and course work in Biological Science approved by Program Adviser) or BIOS4104 (Half Stage honours thesis project) and additional subjects approved by Program Adviser to make up full Stage  
General Education requirement  

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BIOS2011
ECON1107
ENVS2010, ENVS2020, ENVS2801
MICR2011, MICR2201
subjects totalling 15 Credit Points from: BIOS2031, BIOS2041, BIOS2051, BIOS2061, GEOG2021, GEOL1101, GEOL1201, MSCI2001, or other subjects approved by the program advisor
One 56 hour or two 28 hour General Education subjects

Stage 3
BIOS3071
CHEM3901
GEOG3042
MICR3021, MICR3071
subjects totalling 15 Credit Points from: BIOS2041, GEOG2025, GEOG3062
Further subjects for major sequence, or other subjects approved by the program advisor
to complete core subjects and a total of at least 360 Credit Points.
One 56 hour or two 28 hour General Education subjects

Stage 4
ENVS4418 (Combination of an honours thesis project and course work approved by Program Adviser) or with permission of Program Advisor and Head of School, ENVS 4408/ENVS4409 (Full Stage honours thesis project), ENVS4404 (Half stage honours thesis project) and additional subjects approved by Program Advisor to make up full Stage
General Education requirement

6864
Environmental Chemistry (Advanced Science only)

Stage 1
BIOS1101
CHEM1101, CHEM1201*
ENVS1011
GEOG1073
GEOL1101
MATH1011 or MATH1131 or MATH1141
MATH1021 or MATH1231 or MATH1241

Stage 2
Any three of:
CHEM2011, CHEM2021, CHEM2031 CHEM2041
(Consult the School of Chemistry)
ECON1107
ENVS2010, ENVS2020, ENVS2801
PHYS1002
One 56 hour or two 28 hour General Education subjects

Stage 3
BIOS3071
CHEM3901
Any three of:
CHEM3041, CHEM3221**, CHEM3231, CHEM3311
plus the remaining Stage 2 Chemistry subject
GEOG3042
Statistics subjects totalling 15 Credit Points from BIOS2041, GEOG2013, or MATH2841
Further subjects for major sequence, or other subjects approved by the program advisor
to complete core subjects and a total of at least 360 Credit Points
One 56 hour or two 28 hour General Education subjects
** The prerequisite of CHEM3021 for CHEM3221 is waived for 6864 students only.

Stage 4
ENVS4408/ENVS4409 (Full Stage honours thesis project) or with permission of Program Advisor and Head of School, ENVS 4408/ENVS4409 (Full Stage honours thesis project), ENVS4404 (Half stage honours thesis project) and additional subjects approved by Program Advisor to make up full Stage
General Education requirement

6865
Earth Environments (Geography)
(Advanced Science only)

Stage 1
CHEM1101, CHEM1201*
ENVS1011
GEOG1064, GEOG1073
GEOL1101 or GEOL1201
MATH1011 or MATH1131 or MATH1141
MATH1021 or MATH1231 or MATH1241

Stage 2
BIOS1101
ECON1107
ENVS2010, ENVS2020, ENVS2801
GEOG2021, GEOG2051, GEOG3025
One 56 hour or two 28 hour General Education subjects

Stage 3
BIOS3071
CHEM3901
GEOG3042, GEOG3062 or GEOG3211
Further subjects for major sequence, or other subjects approved by the program advisor
to complete core subjects and a total of at least 360 Credit Points.
One 56 hour or two 28 hour General Education subjects

Stage 4
ENVS4508/ENVS4509 (Full Stage honours thesis project) or with permission of Program Advisor and Head of School, ENVS 4508/ENVS4509 (Full Stage honours thesis project), ENVS4504 (Half stage honours thesis project) and additional subjects approved by Program Advisor to make up full Stage
General Education requirement
6866
Earth Environments (Geology)
(Advanced Science only)

Stage 1
CHEM1101, CHEM1201*
ENVS1011
GEOG1073
GEOL1101, GEOL1201
MATH1011 or MATH1131 or MATH1141
MATH1021 or MATH1231 or MATH1241

Stage 2
BIOS1101
ECON1107
ENVS2010, ENVS2020, ENVS2801
GEOL7223, GEOL7233
MSCI2001

Additional subjects to make a total of 120 Credit Points for the year.
One 56 hour or two 28 hour General Education subjects

Stage 3
BIOS3071
CHEM3901
GEOG3042
GEOL6231, GEOL6321, GEOL7323, GEOL7333
subjects totalling 15 Credit Points from: GEOG2021,
GEOG3032, GEOG3062, GEOL6221, or other subjects
approved by the program advisor.

Further subjects for major sequence to complete core
subjects and a total of at least 360 Credit Points.
One 56 hour or two 28 hour General Education subjects

Stage 4
ENVS4608/ENVS4609 (Full Stage honours thesis project)
with permission of Program Adviser and Head of School or
ENVS4618 (Combination of an honours thesis project and
course work approved by Program Adviser) or
ENVS4604 (Half Stage honours thesis project) and
additional subjects approved by Program Advisor to make
up full Stage

General Education requirement

6867
Environmental mathematics (fluid dynamics)
(Advanced Science only)

Stage 1
ENVS1011
GEOG1073
CHEM1101, CHEM1201*
MATH1131 or MATH1141
MATH1231 or MATH1241
PHYS1002

Stage 2
BIOS1101
ECON1107
ENVS2010, ENVS2020, ENVS2801
MATH2100, MATH2120, MATH2240, MATH2220

MATH2301, MATH2520, MATH2510
One 56 hour or two 28 hour General Education subjects

Stage 3
BIOS3071
GEOG1073
MATH3121, MATH3301, MATH3241, MATH3261
One 56 hour or two 28 hour General Education subjects

Stage 4
CHEM3901
GEOG3042, GEOG3062
MATH5265 or MATH5285 or MATH5295
ENVS4704

An additional subject will be taken in a topic associated with
environmental fluid dynamics, numerical modelling or data
analysis, chosen after consultation.

General Education requirement

6868
Environmental mathematics (statistics)
(Advanced Science only)

Stage 1
BIOS1101, BIOS1201
ENVS1011
GEOG1073
CHEM1101, CHEM1201*
MATH1131 or MATH1141
MATH1231 or MATH1241

Stage 2
ECON1107
ENVS2010, ENVS2020, ENVS2801
GEOG1073
MATH2501, MATH2801, MATH2831

Subjects totalling 15 Credit Points from: BIOS2011,
MATH2501, MATH2520, or other subjects approved by the
program advisor.

One 56 hour or two 28 hour General Education subjects

Stage 3
CHEM3901
ENVS4704

GEOS3042, GEOG3062

Additional subjects to make a final total of 480 Credit Points.

General Education requirement
Environmental Mathematics (population dynamics) (Advanced Science only)

Stage 1
BIOS1101, BIOS1201
CHEM1101, CHEM1201*
ENVS1011
GEOG1073
MATH1131 or MATH1141
MATH1231 or MATH1241

Stage 2
ECON1107
ENVS2010, ENVS2020, ENVS2801
MATH2200, MATH2220, MATH2501, MATH2510, MATH2520, MATH2841
Subjects Totaling 15 Credit Points from BIOS2011, or other subjects approved by the program advisor
One 56 hour or two 28 hour General Education subjects

Stage 3
BIOS3071, BIOS3111
GEOI1101
MATH3201, MATH3531
Further subjects totalling 30 Credit Points from BIOS3061, GEOG3062, or other subjects approved by the program advisor, for major sequence to complete core subjects and a total of at least 360 Credit Points.
One 56 hour or two 28 hour General Education subjects

Stage 4
CHEM3901
ENVS4704
GEOG3042
MATH3161, MATH3181
Additional subjects to make a final total of 480 Credit Points.
General Education requirement

GENETICS

Genetics is covered in two programs: Program 6840 is broadly based and initially covers all aspects of Genetics. It allows students at Level III to maintain a broad range of interests including Molecular Genetics, Evolutionary and Population Genetics and Human Genetics or to concentrate on a particular field. Molecular Genetics (Program 4110) allows students to specialise in Molecular Biology and Genetics. In both programs students can also specialise in Biochemistry, Biological Science, Biotechnology or Microbiology/Immunology. Stage 4 (Honours) programs in Genetics are available in any of these schools and also in the School of Community Medicine.

Stage 1
BIOS1101, BIOS1201
CHEM1101, CHEM1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021

Elective subjects totalling 30 Credit Points

Stage 2
BIOS2101 and BIOS2201
BIOS2011 or MICR2201
BIOS2021
MATH2841 or BIOS2041
2 or Elective subjects totalling 45 Credit points, Recommended: BIOS2031, BIOS2051, BIOS2061, CHEM2021, COMP1001, MICR2011, WOOL3803 or CMED3111
One 56 hour or two 28 hour General Education subjects

Stage 3
Subjects totalling at least 60 Credit Points from: BIOS3121, BIOS3131, BIOS3281, BIOS3291, BIOT3031 or MICR3021, CMED8201, CMED8202 or CMED8302, CMED8303, WOOL4813 and further elective subjects to give a total of 345 Credit Points
Recommended: BIOS3111, BIOS3071, BIOS3121, BIOS3141, BIOT3011, MICR3041, WOOL3901
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete 7 Level III subjects

Stage 4 (Honours)
BSSM4103 (F/T), BSSM4109 (P/T)

GEOGRAPHY

Geography is the scientific study of variations from place to place on the earth's surface. It provides an analytical framework for understanding and investigating many of society's pressing problems such as the use and management of scarce resources, the impact of environmental hazards on human activities, soil erosion and conservation, land use conflicts, and the spatial organisation of human affairs.

The program 2700 includes physical and human Geography, with particular emphasis on studies of the natural environment, as well as a grounding in basic analytical skills and techniques (e.g. statistical methods and computing, remote sensing and airphoto interpretation, geographical information systems, field and laboratory techniques) required for problem solving and application.

Geography can be usefully combined with other sciences, especially Geology and Biological Science, studied with Geology in the Earth and Environmental Science (2527), with Biological Science in Ecology (6851) and with Environmental Science programs (especially 6865).
2700
Geography

Stage 1
GEOG1064, GEOG1073
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
Elective subjects to make a total of 120 Credit Points for the year

Stage 2
Geography subjects totalling 45 Credit Points
Elective subjects totalling 75 Credit Points
One 56 hour or two 28 hour General Education subjects

Stage 3
Level III Geography subjects totalling 60 Credit Points
Elective subjects totalling 45 Credit Points
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 120 Credit Points and must have completed GEOG2013

Stage 4 (Honours)
GEOG4100/GEOG4050

2500
Geology

UNDERGRADUATE STUDY 47

GEOLOGY AND GEOPHYSICS

Geology is the study of the nature and evolution of our planet. It is concerned with the composition and modes of formation and deformation of the igneous, sedimentary and metamorphosed rocks and concentrations of minerals that comprise the earth's crust and interior. Geology enquires into the essential controls on the development and distribution of such rocks and minerals in space and geological time. Likewise it is concerned with the nature, distribution, and evolution of life forms through time. Resource geology is concerned with the application of all geological knowledge to the location and extraction of mineral and energy deposits, and to engineering and environmental tasks, activities fundamental to society. Thus geology has an applied, professional function as well as being a scientific discipline.

Geophysics employs sophisticated instrumentation in order to construct physical earth models and is a companion discipline to Geology.

Program for Professional Geology
Since June 1986, the Australasian Institute of Mining and Metallurgy has required that its corporate members, including professional geologists, shall have completed a four Stage course. Students wishing to enter the geology profession through Science should take program 2500 with a double specialisation in Applied Geology and then take a Stage 4 honours program. Stage 4 is divided between a core of advanced geological topics, and one strand chosen from mineral resources, sedimentary basin resources, engineering and environmental geology, or geophysics. Session 2 of Stage 4 is devoted to a specialised research project.

Single Specialisation in Geology
Geology is a natural companion to other sciences, such as Chemistry (in Geochemistry program 2504), Botany and Zoology (in Palaeontology) and Geography. Program 2500 also allows a single specialisation in Geology. Students who wish to undertake an honours degree program that includes geology with another science should consult the Department of Applied Geology. Those interested in combining Geology with Biology should read the following section.

Geology with Biological Science
Geology and the Biological Sciences meet in palaeontology, the evolution and environmental controls on the growth of ancient life forms. Palaeontology provides geologists with essential information about the relative ages and depositional environments of sedimentary rocks, particularly the strata with potential to yield fossil fuels.

Geology in Marine Science
See Marine Science (Earth Science Oceanography) (6833).

Stage 4 (Honours)
GEOL4303 or GEOL4343 (Only offered over two Stages)
2503
Geophysics (Advanced Science only)

Professional geophysicists work closely with geologists and, appropriately, studies of both disciplines are undertaken in the one school. Fundamental and applied geophysics is taught to geology students in the geology program 2500, but program 2503 is for students who intend to become professional geophysicists. Students should consult the Department of Applied Geology for course approval.

Stage 1
COMP1011
GEOL1101, GEOL1201
MATH1131 or MATH1141
MATH1231 or MATH1241
PHYS1002 and PHYS1601

Stage 2
COMP2811, COMP2011
GEOL2051, GEOL2062, GEOL8220, GEOL8221
MATH2011 or MATH2110 and MATH2610, MATH2120 or MATH2130, MATH2520 or MATH2620
PHYS2601
One 56 hour or two 28 hour General Education subjects

Stage 3
COMP3111 or COMP3421
GEOL2072, GEOL3052, GEOL3072, GEOL3082, GEOL8350, MATH3150
GEOL8360, MATH3101, PHYS2011, PHYS3620
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 120 Credit Points

Stage 4 (Honours)
GEOL4303

2504
Geochemistry (Advanced Science only)

This program combines a knowledge of Chemistry particularly Analytical Chemistry and Geochemical aspects of Applied Geology. The program produces graduates who have a broad background in both Chemistry and Geology.

Stage 1
CHEM1101, CHEM1201
PHYS1002
MATH1011 or MATH1131 or Math1141 and MATH1021 or MATH1231 or MATH1241
GEOL1101, GEOL1201

Stage 2
CHEM2011, CHEM2021, CHEM2031, CHEM2041
GEOL2011, GEOL2041, GEOL2042, GEOL2072, GEOL2092, GEOL8201
One 56 hour or two 28 hour General Education Subjects

Stage 3
CHEM3021, CHEM3031, CHEM3041 and CHEM3141 or CHEM3311

GEOL3011, GEOL3021, GEOL3101, GEOL3092, GEOL8370, GEOL8380
One 56 hour or two 28 hour General Education Subjects

INFORMATION SYSTEMS

Entry to this program is restricted to students who have been offered a place directly (UAC code 423979). There is a strict quota on entry to later Stages of this program.

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

See also Course 3971

1400
Information Systems

Stage 1
ACCT1501, ACCT1511
COMP1011
ECON1101
INFS1602, INFS1603
MATH1131 or MATH1141
MATH1231 or MATH1241

Stage 2
COMP2811
INFS2603, INFS2607, INFS2609
MATH2841 or MATH2801
Elective subjects totalling 45 Credit points
One 56 hour or two 28 hour General Education subjects
Stage 2 (Direct Stage 2 Entrants)*
ACCT1501, ACCT1511
COMP2811
INFS1602, INFS1603, INFS2603, INFS2607, INFS2609
One 56 hour or two 28 hour General Education subjects

* Students admitted at Level II must enrol in another science program for Stage 1. Transfer is based on academic performance at Level I. Students in this category are not required to complete ECON1101 and ECON1102.

Stage 3**
INFS3605, INFS3606, INFS3608
Elective subjects totalling 60 Credit Points including at least one at Level III
One 56 hour or two 28 hour General Education subjects

** Stage 2 direct entry students must complete MATH2841 or MATH2801 in lieu of elective subjects totalling 15 Credit Points
Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 90 Credit Points

Stage 4 (Honours)
INFS4794

The General Education requirement is covered by components of compulsory subjects in the course.

MARINE SCIENCE

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

All students must select one major sequence from: Physical Oceanography (6831) or Biological Oceanography (6832) or Earth Science Oceanography (6833) or Environmental Chemistry (6834). In addition, two minor sequences from the Physical, Biological, Earth Science, and Chemical minor sequences must be taken.

6831
Marine Science (Physical Oceanography)

Stage 1
MATH1131 or MATH1141
MATH1231 or MATH1241
PHYS1002, PHYS1601
30 Credit Points from one of the strands:
1. BIOS1011, BIOS1021
2. CHEM1101, CHEM1201
3. GEOL1101, GEOL1201
MATH1081 or a further 15 Credit Points from the above strands

Stage 2
MATH2100, MATH2120, MATH2240, MATH2301, MATH2520, MATH2200 or MATH2220
MSCI2001
PHYS2991
Continue the strand chosen in Stage 1:
1. BIOS2011 or BIOS2031 or BIOS2051 or BIOS2061 or
2. CHEM2011 or CHEM2021 or CHEM2031 or CHEM2041
3. GEOL6231

Additional elective subjects totaling 120 Credit Points
One 56 hour or two 28 hour General Education subjects

Stage 3
MATH3121, MATH3201, MATH3241, MATH3261
MSCI3001
Choose an additional 30 Credit Points from:
CHEM3021, CHEM3031, CHEM3041, BIOS3081, BIOS3091, GEOL6321, MATH2160, MATH3101, MATH3150, MATH3301, PHYS2810, PHYS3829
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete 90 Credit Points of Level III subjects.

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

Subjects in waves, turbulence, ocean modelling, data analysis and geophysical fluid mechanics are offered

6832
Marine Science (Biological Oceanography)

Stage 1
BIOS1101, BIOS1201
CHEM1101, CHEM1201
MATH1131 or MATH1141 or MATH1081
MATH1231 or MATH1241 or MATH1021 subjects totalling 30 Credit Points from 1 of the strands:
1. GEOL1101, GEOL1201
2. PHYS1002 or PHYS1022

Stage 2
• BIOC2101
• BIOS2031, BIOS2051
• CHEM2011 or CHEM2041
• MCR2201
• MSCI2001
subjects totalling 15 Credit Points from the subjects related to the strand chosen in Stage 1:
1. GEOL6231
2. MATH2021 or MATH2801 or MATH2841
An additional 15 Credit Points: BIOS2011, BIOS2021, BIOS2041, BIOS2051, BIOS2061, to give a total of 120 for the Stage
One 56 hour or two 28 hour General Education subjects

Stage 3
BIOS3081, BIOS3091
MCR3071
Level III subjects totalling 30 Credit Points which may include the subjects corresponding to the strand chosen in Stages 1 and 2:
1. GEOL6321
2. MATH3021, MSCI3001
Elective subjects totalling 30 Credit Points
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 90 Credit Points

Stage 4 (Honours)
MSCI4003 F/T, MSCI4009 P/T
6833
Marine Science (Earth Science Oceanography)

Stage 1
GEOL1101, GEOL1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
Subjects totalling 60 Credit Points of the strands:
1. BIOS1101, BIOS1201
2. CHEM1101, CHEM1201
3. PHYS1002 or PHYS1022

Stage 2
MSCI2001
GEOL6201, GEOL6221, GEOL6231
Continue both of the strands chosen in Stage 1:
1. Subjects totalling at least 15 Credit Points from:
   BIOS2011, BIOS2031, BIOS2051
2. CHEM2011 or CHEM2041
3. MATH2021 or MATH2841 or MATH2801
Additional elective subjects to give a total of 120 Credit Points
One 56 hour or two 28 hour General Education subjects

Stage 3
GEOL6311, GEOL6321, GEOL6330, GEOL6331
Level III subjects totalling 45 Credit Points which may include
the subjects corresponding to the strands chosen in Stages 1 and 2:
1. BIOS3081, BIOS3091
2. CHEM3311
3. MSCI3001, MATH3021
Additional elective subjects to make a total of 105 Credit Points
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 90 Credit Points

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

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6834
Marine Science (Environmental Chemistry)

Stage 1
CHEM1101, CHEM1201
MATH1131 or MATH1141
MATH1231 or MATH1241
subjects totalling 60 Credit Points from 2 of the strands:
1. BIOS1101, BIOS1201
2. GEOL1101, GEOL1201
3. PHYS1002

Stage 2
CHEM2011, CHEM2041
MSCI2001
Continue both of the strands chosen in Stage 1:
1. Subjects totalling at least 15 Credit Points from:
   BIOS2011, BIOS2051, BIOS2031
2. GEOL6231
3. MATH2021 or MATH2841

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Additional elective subjects to give a total of 120
One 56 hour or two 28 hour General Education subjects

Stage 3
CHEM3041, CHEM3311
Level III units totalling 30 credit Points which may include
the subjects corresponding to the strands chosen in Stages 1 and 2:
1. BIOS3081, BIOS3091
2. None
3. MSCI3001, MATH3021
Additional elective subjects to give a total of 105
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 90 Credit Points

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

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MATHEMATICS

The School is divided into Departments of Pure Mathematics, Applied Mathematics and Statistics. Program 1000 allows specialisation in any of these areas. Students wishing to major or undertake Honours in Statistics should consult programs 1006, 1066 and 1067.

Students in the Advanced Science Course proceed to Stage 4 (Honours) and should select some higher mathematics subjects in the earlier Stages.

Students wishing to include some computing in their program should consult programs 1061 and 1067, while those in the Advanced Science Course wishing to include Level III Computer Science subjects should consult programs 1060 and 1066.

There is a specified interdisciplinary program, Mathematics of Management (6810), and Mathematics is also available through the Marine Science (Physical Oceanography) program 6831, Ecology (Mathematical Ecology) program 6852 and Environmental Science (Environmental Mathematics) programs 6867, 6868, 6869.

Pure Mathematics is the study of the essential structures of mathematics. Work by pure mathematicians underpins most of the technological advances of this century; the subject is concerned with problems and techniques which transcend specific applications. Research, focussing on the development of existing theories or the creation of new ones, may be driven by applications or by the internal demands of the discipline. Pure Mathematics subjects provide the insights and understanding required by those using mathematics, leading to mastery of the fundamental processes of mathematical science and the capacity for innovative applications in any area.

Applied Mathematics concerns the development of mathematics and models for understanding scientific phenomena, for the solution of technical and industrial problems, and for use in the social, economic and management sciences. Courses are designed to provide basic mathematical and computational skills needed for a wide range of applications, to develop the capability to construct, analyse and interpret mathematical models, and to encourage enthusiasm for the role of the mathematician in a variety of contexts.
Statistics is the science and art of using factual material for modelling and inference. Its mathematical foundations are in the theory of probability and it deals with how to estimate and make decisions using knowledge which is uncertain or observational material which is subject to error. There is a rich interplay between the theory of statistics and fields such as engineering, medicine and biological and behavioural sciences where statistical problems constantly arise.

Pure Mathematics majors
A Mathematics program is considered to be a degree in Pure Mathematics if it includes 60 Credit Points of Pure Mathematics Level III subjects.

Furthermore:
1. Pure Mathematics subjects relevant to the mathematical aspects of Computer Science are MATH2400 and MATH2410 in Stage 2, and MATH3400, MATH3411 and MATH3430 in Stage 3.
2. Pure Mathematics subjects relevant to mathematics teaching are MATH3511, MATH3521, MATH3531, MATH3560 and MATH3570 in Stage 3, or their higher equivalents.
3. Pure Mathematics subjects relevant to the applications of mathematics in physics or engineering are MATH3531, MATH3541 and MATH3570 in Stage 3, or their higher equivalents.

Applied Mathematics majors
A Mathematics program is considered to be a degree in Applied Mathematics if it includes 60 Credit Points of Level III Applied Mathematics subjects.

Note the following recommendation:
Level II: At least two of: MATH2160, MATH2180, MATH2200, MATH2220, MATH2240, MATH2301.
Level III: At least three of: MATH3101, MATH3110, MATH3121, MATH3130, MATH3161, MATH3170, MATH3181, MATH3201, MATH3241, MATH3261, MATH3301.

In addition, the following are recommended in Stage 1
1. For students interested in physical sciences or for theoretical oceanography and fluid mechanics: either PHYS1002 or appropriate Level I Engineering subjects.
2. For students interested in economic or management sciences: see Mathematics for Management (6810).
3. For students interested in social or biological sciences, at least 30 Credit Points from the following: BIOS1101 and BIOS1201; PSYC1002; PHYS1002; CHEM1101 and CHEM1201.
4. Applied mathematics for computational methods or computer science: COMP1001 and COMP1011.

Statistics majors
See programs 1006, 1066 or 1067.

A major revision of the Statistics programs involving many new and altered subjects has now been implemented. Stage 2 altered from 1996 and Stage 3 from 1997. Any student who has taken Level II Statistics subjects before 1996 or Level III Statistics subjects before 1997 and wishes to take further Statistics subjects should consult the Head of Department.

Higher Subjects
Throughout the Mathematics and Statistics programs, where a subject is mentioned at the ordinary level the higher equivalent (if any) may be substituted.

1000 Mathematics

Stage 1
MATH1131 or MATH1141
MATH1231 or MATH1241
Elective subjects totalling 90 Credit Points*

Advanced Science students must include MATH1081 in Stage 1. Science students must include MATH1081 in one of Stages 1 or 2. The School will advise which Stage is appropriate depending on the student's mathematical background.

Stage 2
MATH2011, MATH2120
MATH2501, MATH2520
Further Level II or Level III Mathematics subjects totalling 15 Credit Points
Elective subjects totalling 60 Credit Points*
General Education subjects totalling 15 Credit Points

Stage 3
Level III Mathematics subjects totalling 60 Credit Points
Elective subjects totalling 45 Credit Points*
General Education subjects totalling 15 Credit Points

Advanced Science students must complete 90 Credit Points of Level III Mathematics subjects and elective subjects totalling 30 Credit Points*. In special cases other subjects may be substituted for these subjects. These students should discuss their Level III selection of subjects with the Head of the appropriate Department.

Stage 4 (Honours) (Advanced Science Only)
MATH4103 or MATH4603 or MATH4903

* Up to 120 Credit Points may be from subjects that are restricted to this program or Arts subjects from the following subject areas: Chinese, Economics, English, French, German, History, Indonesian, Modern Greek, Music, Political Science, Russian, Sociology, Spanish and Latin American Studies and Theatre and Film Studies. Upper Level Economics subjects are restricted to those in Economic History plus ECON2103, ECON2104. Japanese and Korean are also available for students in Advanced Science.

1060 Mathematics with Computer Science
(Advanced Science only)

Stage 1
COMP1011, COMP2811
MATH1131 or MATH1141
MATH1231 or MATH1241
MATH1081
Elective subjects totalling 45 Credit Points*
Stage 2
COMP2011, COMP2031
MATH2011, MATH2501
MATH2301, MATH2400
MATH2801 or MATH2841

Level II or Level III elective subjects totalling 22.5 Credit Points*

(Recommended alternative strands: Applied Mathematics: MATH2120. Pure Mathematics: MATH2410.)

General Education subjects totalling 15 Credit Points

Stage 3
Level III Computer Science subjects totalling 30 Credit Points chosen from: COMP3111, COMP3121, COMP3411, COMP3412

Subjects totalling 15 Credit Points chosen from: MATH3301, MATH3400, MATH3430

Further Level III Mathematics subjects totalling 60 Credit Points

Elective subjects totalling 15 Credit Points*

(Recommended alternative strands: Applied Mathematics: MATH3101 and at least one of MATH3161, MATH3181, MATH3201. Pure Mathematics: MATH3411, MATH3430, MATH3521.)

General Education subjects totalling 15 Credit Points

Students should discuss their Level III selection of subjects with the Head of the appropriate Department. Students proposing to proceed to MATH4003 Mathematics and Computer Science Honours must complete 45 Credit Points of Level III Mathematics subjects.

Stage 4 (Honours) (Advanced Science only)
MATH4103 or MATH4603

* Up to 60 Credit Points may be from subjects that are restricted to this program or Arts subjects from the following subject areas: Chinese, Economics, English, French, German, History, Indonesian, Modern Greek, Music, Political Science, Russian, Sociology, Spanish and Latin American Studies and Theatre and Film Studies. Japanese and Korean are also available. Upper Level Economics subjects are restricted to those in Economic History plus ECON2103, ECON2104.

1006
Statistics

Stage 1
MATH1131 or MATH1141
MATH1231 or MATH1241

Elective subjects totalling 90 Credit Points*

Advanced Science students must include MATH1081 in Stage 1. Science students must include MATH1081 in one of Stages 1 or 2. The School will advise which Stage is appropriate depending on the student's mathematical background.

Stage 2
MATH2120
MATH2510 or MATH2011, MATH2501, MATH2520
MATH2801, MATH2810, MATH2831

Elective subjects totalling 45 Credit Points* (or 37.5 if MATH2011 taken)

General Education subjects totalling 15 Credit Points

Stage 3
MATH3801, MATH3840, MATH3800, MATH3810

Statistics subjects totalling 30 Credit Points chosen from: MATH3000 or MATH3001, MATH2840, MATH3820, MATH3830, MATH3850, MATH3860, MATH3870, MATH3880, MATH3890

Elective subjects totalling 37.5 Credit Points*

General Education subjects totalling 15 Credit Points

Advanced Science students must complete 90 Credit Points of Level III Mathematics subjects including 60 Credit
Points of Level III Statistics subjects including MATH3000 or MATH3001 and, in addition, 30 Credit Points of elective subjects*. These students should discuss their Level III selection of subjects with the Head of the Statistics Department.

Stage 4 (Honours) (Advanced Science only)
MATH4903

*Up to 120 Credit Points may be from subjects that are restricted to this program or Arts subjects from the following subject areas: Chinese, Economics, English, French, German, History, Indonesian, Modern Greek, Music, Political Science, Russian, Sociology, Spanish and Latin American Studies and Theatre and Film Studies. Upper Level Economics subjects are restricted to those in Economic History plus ECON2103, ECON2104. Japanese and Korean are also available for students in Advanced Science.

1066
Statistics with Computer Science
(Advanced Science only)

Stage 1
COMP1011, COMP2911
MATH1131 or MATH1141
MATH1231 or MATH1241
MATH1081
Elective subjects totalling 45 Credit Points*

Stage 2
COMP2011, COMP2031
MATH2501, MATH2510 or MATH2011
MATH2801, MATH2810, MATH2831, MATH2840
Level II or III elective subjects totalling 22.5 Credit Points* (or 15 if MATH2011 taken)
(MATH2301, MATH2400 are recommended)
General Education subjects totalling 15 Credit Points

Stage 3
Level III Computer Science subjects totalling 30 Credit Points chosen from: COMP3111, COMP3121, COMP3311, COMP3411
MATH3800, MATH3810, MATH3000 or MATH3001
Level III Statistics subjects totalling 37.5 Credit Points (or 30 if MATH3001 taken) chosen from: MATH3801, MATH3820, MATH3830, MATH3840, MATH3850, MATH3860, MATH3870, MATH3880, MATH3890
Further Level III Mathematics subjects totalling 15 Credit Points
Elective subjects totalling 15 Credit Points*
General Education subjects totalling 15 Credit Points

Students should discuss their Level III selection of subjects with the Head of the Statistics Department.

Stage 4 (Honours)
MATH4903

*Up to 75 Credit Points may be from subjects that are restricted to this program or Arts subjects from the following subject areas: Chinese, Economics, English, French, German, History, Indonesian, Modern Greek, Music, Political Science, Russian, Sociology, Spanish and Latin American Studies and Theatre and Film Studies. Upper Level Economics subjects are restricted to those in Economic History plus ECON2103, ECON2104.

8610
Mathematics of Management
(Advanced Science only)

This program includes subjects given by the Schools of Accountancy and of Economics. There has been an increasing trend towards more use of mathematics, and the use of more advanced mathematics, in scientific management. This program trains mathematicians with an
interest in the application of mathematics to management science. The mathematics content is that of a full Mathematics degree with Honours in either Applied or Pure Mathematics. Students completing this program with good records are eligible for entry to the Master of Commerce graduate degree program in the School of Accountancy. If appropriate subjects are selected, then this degree (MCom), which may be awarded by part-time study, qualifies the graduate for provisional membership of the Australian Society of Accountants; full membership is then granted after appropriate experience.

Stage 1
ACCT1501, ACCT1511
ECON1101, ECON1102
MATH1131 or MATH1141
MATH1231 or MATH1241
Elective subjects totalling 30 Credit Points*

Stage 2
MATH2011
MATH2120, MATH2160, MATH2180
MATH2501, MATH2520
MATH2801 or MATH2841
ACCT2522, INFS1602
Subjects totalling 15 Credit Points chosen from:
ACCT2542, INFS2603, FINS2613
General Education subjects totalling 15 Credit Points

Stage 3
Subjects totalling 30 Credit Points chosen from:
MATH3101, MATH3121, MATH3161, MATH3181,
MATH3801, MATH3050, MATH3060.
Further Level III Mathematics subjects totalling 45 Credit Points
Subjects totalling 30 Credit Points chosen from one of the strands:
1. ACCT3563, ACCT3583
2. INFS3605, INFS3607, INFS3608
3. FINS2624, FINS3625
Elective subjects totalling 15 Credit Points*
General Education subjects totalling 15 Credit Points
Students should discuss their Level III selection of subjects with the Head of the appropriate Department.

Stage 4 (Honours)
MATH4103 or MATH4603
*Up to 45 Credit Points may be from subjects that are restricted to this program or Arts subjects from the following subject areas: Chinese, Economics, English, French, German, History, Indonesian, Modern Greek, Music, Political Science, Russian, Sociology, Spanish and Latin American Studies and Theatre and Film Studies. Japanese and Korean are also available. Upper Level Economics subjects are restricted to those in Economic History plus ECON2103, ECON2104.

MEDICAL PHYSICS

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

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

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

0141
Medical Physics (Advanced Science only)

Stage 1
BIOS1101, BIOS1201
CHEM1101, CHEM1201
MATH1131 or MATH1141
MATH1231 or MATH1241
PHYS1002 (or PHYS1022 at distinction level)

Stage 2
BIOC2101 and BIOC2201 or
BIOC2181 and BIOC2291
MATH2011, MATH2120
PHYS2410, PHYS2001, PHYS2021, PHYS2011,
PHYS2031
One 56 hour or two 28 hour General Education subjects

Stage 3
ANAT2111 or ANAT2120
PHPH2112
PHYS3410, PHYS3041, PHYS3060, PHYS1601
Plus elective subjects to make a total of 120 Credit points
chosen from:
MATH2520, MATH2160, MATH2841, MATH3121
PATH3201
PHYS3630, PHYS3620, PHYS3710, PHYS3720,
PHYS2601, PHYS3010 or PHYS3210*, PHYS3050*,
PHYS3760, PHYS3110, PHYS3120, PHYS3310,
PHYS3610
One 56 hour or two 28 hour General Education subjects

Stage 4
PHYS3021, PHYS3030 or PHYS3230, PHYS4411,
PHYS4413, SAFE4410
1 General Education subject
Elective subjects totalling 30 Credit Points from the subjects listed for Stage 3 electives

* Students intending to undertake a higher degree in Physics would need to select PHYS3010 and PHYS3050.
MICROBIOLOGY AND IMMUNOLOGY

Microbiology is the scientific study of the smallest forms of life namely, bacteria, viruses, fungi and protozoa. These fascinating organisms impact on our lives in many ways. On the negative side, they cause disease in humans, animals and plants, they spoil our food and can destroy textiles and structural materials. However, microorganisms are also of great benefit. They contribute to a better environment via recycling of organic wastes, maintenance of soil fertility and biodegradation of pollutants. Many foodstuffs, beverages, pharmaceuticals, e.g. antibiotics and other industrial products, are products of microbial action. The genetic engineering of microorganisms is a fundamental aspect of molecular biology and the way of the future.

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

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

4400
Microbiology and Immunology

Stage 1
BIOS1101, BIOS1201
CHEM1101, CHEM1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
Elective subjects totalling 30 Credit Points

Stage 2
BIOC2101, BIOC2201
BIOS2021
MICR2201, MICR2011
Elective subjects totalling 30 or 45 Credit Points*
One 56 hour or two 28 hour General Education subjects

Stage 3
MICR3021
Subjects totalling at least 45 Credit Points from MICR3011, MICR3031, MICR3041, MICR3051, MICR3061, MICR3071, MICR3081
Additional elective subjects to give a total of 345 Credit Points overall
One 56 hour or two 28 hour General Education subjects

Students proposing to undertake Stage 4 (Honours) must complete Level III subjects totalling 120 Credit Points, 60 of these Credit Points must be from Microbiology and Immunology.

Stage 4 (Honours)
MICR4013 or MICR4023
*BIOC2041 Biometry is recommended.
Students in course 3970 intending to do Honours should only do 30 Credit Points of stage 2 electives.
Other recommended elective subjects include: Biochemistry, Biotechnology, Biological Science.

MOLECULAR GENETICS

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

4110
Molecular Genetics

Stage 1
BIOS1101, BIOS1201
CHEM1101, CHEM1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
Elective subjects totalling 30 Credit Points

Stage 2
BIOC2101 and BIOC2201
BIOS2011 or MICR2201
BIOS2021
CHEM2021 or CHEM2041
MICR2011
1 or Elective subjects totalling 30 Credit Points
One 56 hour or two 28 hour General Education subjects

Stage 3
BIOC3121, BIOC3281
Subjects totalling at least 15 Credit Points from:
BIOS3131, BIOT3031 or MICR3021
subjects totalling 15 or 30 Credit Points from:
BIOC3111, BIOC3291, BIOT3011, CMED8303, MICR3041 to give a total of at least 75 Credit Points from Level III from the above subjects,
Further subjects totalling 30 or 45 Credit Points to give a final total of 345 Credit Points
Highly recommended: BIOC3271, BIOT3061, CMED8302, MICR3051
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 120 Credit Points

Stage 4 (Honours)
BIOC4318 or BIOS4013 or BIOT4073 or CMED8001 or MICR4013

NEUROSCIENCE

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

Entry to the Neuroscience Programs is limited to Advanced Science students at Level II and academic merit is the sole criterion. Students planning this are advised to enrol initially in the Biological Sciences Holding Program (6817) and must apply and be accepted into the Anatomy quota at the time of pre-enrolment for Level II.

7312
Neuroscience A (Advanced Science only)

Stage 1
BIOS1101, BIOS1201
CHEM1101, CHEM1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
PSYC1002

Stage 2
ANAT2111
BIOC2101 and BIOC2201, or BIOC2181 and BIOC2291***
PHPH2112*
PSYC2001, PSYC2071 AND PSYC2081
One 56 hour or two 28 hour General Education subjects

Stage 3
ANAT3411, ANAT3421
PHPH3121*, PHPH3131*
Level III psychology subjects totalling 30 Credit Points
Subjects totalling 30 Credit Points at Level II or Level III to complete 360 credit Points**
One 56 hour or two 28 hour General Education subjects

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

*Student numbers in Physiology and Pharmacology subjects are limited. If quotas are exceeded, entry will be based on academic merit

** Select 1 subject (15 Credit Points) from Advanced Perceptual / Cognitive – PSYC3151, PSYC3161, PSYC3211, PSYC3211, PSYC3221, PSYC3221 and 1 subject (15 Credit Points) from Advanced Biological – PSYC3051, PSYC3241, PSYC3251, PSYC3261. Entry to PSYC4023 requires students to have completed Psychology subjects with an average of at least 70% (PSYC1002 is not included in the average) students whose average falls below 70% enrol in PSYC4033.

*** Students who take BIOC2181 and BIOC2291 are advised that a grade of credit is normally required for progression to Level III Physiology subjects. Students who do not obtain a credit in these subjects may be enrolled at the discretion of the Head of School

1273
Neuroscience B (Advanced Science only)

Stage 1
BIOS1101, BIOS1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
CHEM1101 and CHEM1201
and either
PHYS1002 or PHYS1022 or
COMP1001 and 1 elective subject totalling 15 Credit Points

Stage 2
ANAT2111
BIOC2101 and BIOC2201 or BIOC2181 and BIOC2291**
PHPH2112*
and subjects totalling 30 Credit Points from the following:
ANAT2211, BIOS2041, BIOS2021
CHEM2011, CHEM2021, PSYC1002
elective subjects totalling 15 Credit Points
or Level II subjects totalling 30 Credit Points from subjects offered from the Schools of Mathematics, Physics or Computer Science and Engineering and One 56 hour or two 28 hour General Education subjects

Stage 3
ANAT3411, ANAT3421
PHPH3121*, PHPH3131*
and further Level III subjects totalling 60 Credit Points from among those offered in the Schools of Mathematics, Physics, Chemistry, Biochemistry, Physiology and Pharmacology, Computer Science and Engineering, Anatomy (Histology II recommended), Pathology, and PSYC3031. Students who choose PSYC3031 as one of their Level III subjects must have completed PSYC1002 or may, in some circumstances, be admitted by the Head of School if they have completed a General Education elective in Human and Animal Behaviour
One 56 hour or two 28 hour General Education subjects

Stage 4
Subject to satisfactory progress throughout their course, students would normally be able to proceed to the Honours Stage. However, early in their course, and certainly before commencing Stage 3, students should consult with the appropriate Schools and the Neuroscience program
coordinating committee consisting of representatives from the Schools of Anatomy, Physiology and Pharmacology, and Psychology, about the subjects required for a particular Honours program. Students should also note general guidelines for Advanced Science Stage 4.

* Student numbers in Physiology and Pharmacology subjects are limited. If quotas are exceeded entry will be based on academic merit.

** Students who take BI0C2181 and BI0C2291 are advised that a grade of credit is normally required for progression to Level III Physiology subjects. Students who do not obtain a credit in these subjects may be enrolled at the discretion of the Head of School.

PHILOSOPHY

Philosophy is a wide ranging discipline, catering for a great diversity of interests, for instance, in science, reasoning, persons, and social issues, and encouraging critical and imaginative thought about the foundations of other subjects. Apart from providing considerable choices for students majoring in Philosophy, the diversity of Upper Level subjects makes it possible for students majoring in other disciplines to select subjects complementing their main interest.

Value of Upper Level Subjects in Philosophy

Specialisation in Philosophy

Students specialising in Philosophy must complete any two of the School’s Level I subjects (30 Credit Points): PHIL1006 (Reasoning, Values and Persons), PHIL1007 (Ways of Knowing), PHIL1008 (Ethics and Society), PHIL1009 (Points of View). In addition, students must complete 6 Upper Level (II/III) subjects (90 Credit Points). Of these, at least four subjects must be chosen from List A, which includes subjects in Logic, Philosophy of Mind, Philosophy of Science, and areas of History of Philosophy relevant to those subject areas. Students normally take two Level II/III subjects in Stage 2, and four Level II/III subjects in Stage 3. Subject to approval of the School, which considers the individual subjects nominated by a student and the student’s overall program in Philosophy, a student may be permitted to count up to 15 Credit Points offered outside the School toward specialisation in Philosophy.

List A

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL2106</td>
<td>Logic</td>
</tr>
<tr>
<td>PHIL2107</td>
<td>Advanced Philosophy of Science</td>
</tr>
<tr>
<td>PHIL2108</td>
<td>Ways of Reasoning</td>
</tr>
<tr>
<td>PHIL2109</td>
<td>Metaphysics (Realisms)</td>
</tr>
<tr>
<td>PHIL2116</td>
<td>Scientific Method</td>
</tr>
<tr>
<td>PHIL2117</td>
<td>Philosophical Logic</td>
</tr>
<tr>
<td>PHIL2118</td>
<td>Philosophy and Biology</td>
</tr>
<tr>
<td>PHIL2206</td>
<td>Contemporary Philosophy of Mind</td>
</tr>
<tr>
<td>PHIL2207</td>
<td>Issues in the Philosophy of Psychology</td>
</tr>
<tr>
<td>PHIL2208</td>
<td>Epistemology (Scepticisms)</td>
</tr>
<tr>
<td>PHIL2209</td>
<td>Epistemology (Knowledge and Justification)</td>
</tr>
<tr>
<td>PHIL2217</td>
<td>Personal Identity</td>
</tr>
<tr>
<td>PHIL2218</td>
<td>Philosophical Foundations of Artificial Intelligence</td>
</tr>
<tr>
<td>PHIL2219</td>
<td>Topics in Philosophy of Language</td>
</tr>
<tr>
<td>PHIL2226</td>
<td>Twentieth Century Analytic Philosophy</td>
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<tr>
<td>PHIL2228</td>
<td>Themes in Seventeenth Century Philosophy</td>
</tr>
<tr>
<td>PHIL2229</td>
<td>Themes in Eighteenth Century Philosophy</td>
</tr>
<tr>
<td>PHIL2417</td>
<td>Relativism: Cognitive and Moral</td>
</tr>
<tr>
<td>PHIL2518</td>
<td>Greek Philosophy: Issues in Ethics and Epistemology</td>
</tr>
<tr>
<td>PHIL3106</td>
<td>PreHonours Seminar</td>
</tr>
</tbody>
</table>

The remaining two subjects are to be chosen from other Upper Level Philosophy subjects.

Level II/III

Some Level II/III subjects deal with particular philosophical topics; others can be taken in sequence to give more sustained treatments of larger areas. Students may select freely among these, subject to stipulations regarding prerequisites. Students are welcome to seek advice and further information from the School.

In certain circumstances the prerequisite specified for a subject may be waived; for example, in the case of students who have already studied similar material, or who wish to take isolated subjects relevant to another discipline. Students who feel they have a case for a concession of this kind should consult the School.

Honours Entry Requirements

Students intending to proceed to an Honours degree in Philosophy must normally complete Stages 1 – 3 of Programs 5200 (Philosophy) or 5262 (Philosophy of Science) with an average of at least 70% in their Philosophy subjects, including at least one Distinction result; plus PHIL3106 (Pre-Honours Seminar). Subject to the approval of the School, which considers the individual subjects nominated by a student and the student’s overall program in Philosophy, a student may be permitted to count up to 15 Credit Points offered outside the School toward satisfying the Honours entry requirements. Students contemplating Honours are urged to seek advice from the School early in their course.

5200

Philosophy

Stage 1

MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
Any two of the following: PHIL1006, PHIL1007
PHIL1008, PHIL1009
Elective subjects totalling 60 Credit Points

Stage 2

Philosophy subjects totalling 30 Credit Points*
Elective subjects totalling 90 Credit Points
One 56 hour or two 28 hour General Education subjects
Stage 3
Philosophy subjects totalling 60 Credit Points*
Elective subjects totalling 45 Credit points
One 56 hour or two 28 hour General Education subjects

Students proposing to proceed to Stage 4 (Honours) must complete Level II/III or Level III subjects totalling 105 Credit Points including PHIL3106.

Stage 4 (Honours)
PHIL4000
* Refer to List A above for compulsory subjects.

5206
Philosophy with Computer Science
(Advanced Science only)

Stage 1
COMP1011, COMP1021
MATH1131 or MATH1141
MATH1231 or MATH1241
MATH1081
Any two of the following: PHIL1006, PHIL1007, PHIL1008, PHIL1009
Elective subjects totalling 15 Credit points

Stage 2
COMP2011, COMP2031
PHIL2218
Philosophy subjects totalling at least 30 Credit Points from:
PHIL2106, PHIL2806, PHIL2207, PHIL2107, PHIL2108,
PHIL2218, PHIL2116, PHIL2117, PHIL2118, PHIL2217,
PHIL2216, PHIL2109, PHIL2208, PHIL2209
One 56 hour or two 28 hour General Education subjects

Stage 3
COMP3411
A further 2 Computer Science subjects must be selected from: COMP3131, COMP3191, COMP3131, COMP3121, COMP3111
A further three subjects from Philosophy must be selected from the previous list
One 56 hour or two 28 hour General Education subjects

Stage 4
The fourth Stage honours program allows specialisation in either computer Science or Philosophy or in the combined program. The specialisation is determined by the thesis. Students intending to specialise in philosophy must complete PHIL3106.

5262
Philosophy of Science

Stage 1
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
subjects totalling 15 Credit Points from: HPST1106, HPST1107, HPST1108
PHIL1006, PHIL1007, PHIL1008, PHIL1009
Elective subjects totalling 75 Credit Points

Stage 2
PHIL2106
PHIL2116 or HPST2106
HPST2116
Further elective subjects to make a total of 120 Credit Points
one 56 hour or two 28 hour General Education subjects

Stage 3
*PHIL2107 or *PHIL2117, and subjects totalling 45 Credit Points from: PHIL2107, PHIL2109, PHIL2116, *PHIL2117, PHIL2118, PHIL2207, PHIL2208, PHIL2209, PHIL2218,
HPST2014, HPST2109, HPST3106, HPST3117
Elective subjects totalling 45 Credit points
One 56 hour or two 28 hour General Education subjects
*Students may not count the same subject toward satisfaction of both requirements

Stage 4 (Honours)
PHIL4000 or SCTS4106

PHYSICS

The programs offered by the School (0100, 0110, 0121, 0141, 0161 and 0176) reflect the importance of Physics in science and technology at both the fundamental and at the applied levels.

0100
Physics (Advanced Science only)

Program 0100 Physics offers great flexibility in the choice of subjects. Students may take honours in either Physics or Physics/Geology.

Stage 1
MATH1131 or MATH1141*
MATH1231 or MATH1241*
PHYS1002
Elective subjects totalling 60 Credit Points** ***

Stage 2
MATH2011, MATH2120, MATH2520*
PHYS2001, PHYS2011, PHYS2021, PHYS2031
Elective subjects totalling 30 Credit Points****
One 56 hour or two 28 hour General Education subjects
Stage 3
PHYS3010, PHYS3021, PHYS3030, PHYS3041, PHYS3050***, PHYS3060***
Level III elective subjects totalling 60 Credit points*****
One 56 hour or two 28 hour General Education subjects

Stage 4 (Honours)
Choose one of PHYS4103, BSSM4013 (A General Education subject is incorporated)

*Students are encouraged to select Higher Level Mathematics subjects where applicable.

**Appropriate Level I electives include: COMP1001, PHYS1601, CHEM1101 and CHEM1201.

***Students interested in Biophysics may replace PHYS3050 (or PHYS3060) with PHYS3410 provided CHEM1101, CHEM1201, BIOS1101 and BIOS1201 are completed in Stage 1 and BIOC2101 and BIOC2201 are taken in Stage 2.

****For students specialising in Theoretical Physics, additional mathematics subjects are specified. In Stage 2 students should include subject MATH2501 (or MATH2601) and in Stage 3 MATH3121 and Theoretical Physics subjects.

0110
Physics

Program 0110 Physics offers great flexibility in the choice of subjects for students enrolled in the BSc at pass level. This program is not available to advanced science students.

Stage 1
MATH1131 or MATH1141
MATH1231 or MATH1241
PHYS1002
PHYS1601 and/or COMP1001
Elective subjects to make a total of 120 Credit Points*

Stage 2
MATH2011, MATH2120
PHYS2001, PHYS2011, PHYS2021, PHYS2031
Elective subjects totalling 37.5 Credit Points
One 56 hour or two 28 hour General Education subjects

Stage 3
PHYS3021, PHYS3041, PHYS3060, PHYS3210, PHYS3230, PHYS3630 or PHYS3610 or PHYS3050
Elective subjects totalling 45 Credit points
One 56 hour or two 28 hour General Education subjects

*CHEM1101 is recommended.

0121
Physics and Astronomy
(Advanced Science only)

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

There is astronomy content in each Stage of the program. There are special lectures and projects in the version of PHYS1002 for physics majors. The other astronomy subjects are PHYS2160 and PHYS3160 and a lecture subject and projects in the Honours Stage.

Stage 1
MATH1131 or MATH1141*
MATH1231 or MATH1241*
PHYS1002
Elective subjects totalling 60 Credit Points**

Stage 2
MATH2011, MATH2120, MATH2520*
PHYS2001, PHYS2011, PHYS2021, PHYS2031, PHYS2160
Elective subjects totalling 22.5 Credit Points
One 56 hour or two 28 hour General Education subjects.

Stage 3
PHYS3010, PHYS3021, PHYS3030, PHYS3041, PHYS3050, PHYS3060, PHYS3160
Elective Level III subjects totalling 52.5 Credit Points
One 56 hour or two 28 hour General Education subject.

Stage 4 (Honours)
PHYS4103 (A General Education subject is incorporated)

* Students are encouraged to select Higher Level Mathematics subjects where available

**Appropriate Level I electives include: CHEM1101, CHEM1201, PHYS1601, COMP1001

0161
Physics with Computer Science

Program 0161 (Physics with Computer Science) provides a strong background in Physics together with the computing skills necessary to fully utilise computers in research and industrial laboratories.

Stage 1
COMP1001, COMP1011
MATH1131 or MATH1141
MATH1231 or MATH1241
PHYS1002, PHYS1601
Elective subjects totalling 15 Credit Points

Stage 2
COMP2811
MATH2011, MATH2120, MATH2520**
PHYS2001, PHYS2011, PHYS2021, PHYS2031
COMP2011
Elective subjects totalling 15 Credit Points from PHYS2601, MATH2301, COMP2011
One 56 hour or two 28 hour General Education subjects

Stage 3
PHYS2001, PHYS3010***, PHYS3021, PHYS3030***
Further Level III Physics subjects totalling 30 Credit Points*
Level III Computer Science subjects totalling 30 Credit Points
One 56 hour or two 28 hour General Education subjects
ENGINEERING PHYSICS

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

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

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

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

PHYSIOLOGY AND PHARMACOLOGY

Physiology, the study of the processes and mechanisms which serve and control the various functions of the body, begins at Level II with a full Year core subject Physiology 1.

Students majoring in Physiology (Program 7300) should note the prerequisites for Level III Physiology, normally: satisfactory completion of PHPH2112 Physiology 1 and BIIOC2101 and BIIOC2201 or BIIOC2181 and BIIOC2291*. Level III Physiology subjects provide the 60 Credit Points Level III required for a degree with a single specialisation in Physiology and can be taken with allied disciplines, such as Anatomy, Biochemistry and Molecular Genetics, Biological Science, Biotechnology, Chemistry, Microbiology and Immunology, Pharmacology or Psychology, to give a degree with a double specialisation. Note should be taken of the prerequisites and corequisites for the subjects taken with Physiology and restrictions on the entry to the Anatomy and Physiology and Pharmacology subjects.

Students majoring in Pharmacology (Program 7301) should note that the prerequisites for Pharmacology are normally the same as for Physiology, namely satisfactory completion of PHPH2112 Physiology 1 and either BIIOC2101 and BIIOC2201 or BIIOC2181 and BIIOC2291*. Pharmacology is a 30 credit Point subject at the Level III and students should note that the completion of program 7301 requires additional Level III subjects which must be chosen from the closely related subjects listed below in Physiology, Biochemistry and Molecular Genetics, Microbiology and Immunology, Chemistry, or Biotechnology. Where sufficient extra subjects are taken from these or allied subjects such as in Anatomy, Biological Science, Biotechnology or Psychology, a degree will then be taken with double specialisation. Note should also be taken of the prerequisites and corequisites for the subjects taken with Pharmacology and the restrictions on the entry to Anatomy and Physiology and Pharmacology subjects.

*Students who take BIIOC2181 and BIIOC2291 are advised that a grade of credit is normally required for progression to Level III Physiology subjects. Students who do not obtain a credit in these subjects may be enrolled at the discretion of the Head of School.
Chemistry, Psychology, Microbiology)
One 56 hour or two 28 hour General Education subjects

Stage 3
PHPH3121*, PHPH3131*, PHPH3211*, PHPH3221*
Further subjects to give a total of 345 Credit Points
(Recommended: Anatomy, Biochemistry, Biological Science, Biotechnology, Microbiology and Immunology, Pharmacology or Pathology)
One 56 hour or two 28 hour General Education subjects
Students taking Stage 4 (Honours) must complete Level III subjects totalling 105 Credit Points

Stage 4 (Honours)
PHPH4218
The General Education requirements are met within the Honours Program through seminars, an essay and participation in discussion groups. Students should also note general guidelines for Advanced Science Stage 4.

* Student numbers in Physiology and Pharmacology subjects are limited. If quotas are exceeded, entry will be based on academic merit.

** Students who take BIOC2181 and BIOC2291 are advised that a grade of credit is normally required for progression to Level III Physiology subjects. Students who do not obtain a credit in these subjects may be enrolled at the discretion of the Head of School

Stage 3
PHPH3152* and either:
subjects totalling at least 30 Credit Points selected from Level III Physiology subjects: PHPH3121, PHPH3131, PHPH3211 and PHPH3221
or subjects totalling at least 30 Credit Points selected from BIOC3111, BIOC3121, BIOC3261, BIOC3271 and BIOC3281
or subjects totalling at least 45 Credit Points selected from MICR3041, MICR3051, MICR3081, MICR3011 and MICR3061

Stage 4 (Honours)
PHPH4258
The General Education requirements are met within the Honours program through seminars, an essay and participation in discussion groups. Students should also note general guidelines for Advanced Science Stage 4.

Psychology
Psychology is a discipline of both scientific research and applied practice. As a science, psychology is concerned with the study of behaviour and its underlying mental and neural processes. Topics of study include learning, memory, cognition, perception, motivation, life-span development, personality, social interactions, and abnormal psychology. Psychology has many areas of application, especially in clinical, correctional, counselling, educational and organisational settings. In addition, people with training in psychology pursue careers in academic research, health research, developmental disabilities and rehabilitation; ergonomics; occupational health and safety; personnel selection, training, and management; vocational guidance; and marketing.

Registration as a Psychologist
In order to become a member of the professional body, the Australian Psychological Society (APS), and for registration as a psychologist in New South Wales, students first need a university bachelor degree which includes four years of approved training in psychology. In the Board of Studies in Science and Mathematics a BSc(honours) program in psychology, or the BSc(Psychol) degree course (3431) described later in this handbook provides four years of approved training in Psychology. Currently students must also follow this by completing either an accredited 5th and 6th year academic course such as the PhD or the Master of Psychology degree in the Applied or Clinical fields as offered by this University (entry being restricted to a minimum Class 2 Division 1 Honours degree in Psychology), or by two years of supervised experience in professional practice. The alternative of supervised experience for APS membership will no longer be available. Thus new undergraduate students will be required to complete six years of accredited academic training.

A full statement on the effect of changes to registration requirements for current and new undergraduate students is available from the School of Psychology.

English Proficiency
A high proficiency in English is needed to pass Psychology subjects.
1200
Psychology

Stage 1
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
PSYC1002
Elective subjects totalling 60 Credit Points*

Stage 2
PSYC2001, PSYC2061, PSYC2071, PSYC2081
Elective subjects totalling 60 Credit Points*
One 56 hour or two 28 hour General Education subjects

Stage 3
Level III Psychology subjects totalling 60 Credit Points
Elective subjects totalling 45 Credit Points*
One 56 hour or two 28 hour General Education subjects

Stage 4 (Honours)**
PSYC4023 or PSYC4033
* Suitable supporting subjects include Anatomy, Physiology, Genetics of Behaviour, Science and Technology Studies, and Philosophy. Students may contact the School for advice.
** Students in Advanced Science must include PSYC2001, PSYC2011, PSYC2061, PSYC2071 and PSYC2081 at Level II together with elective subjects totalling 45 Credit Points (a total of 135 Credit Points including General Education in Stage 2), PSYC3001, PSYC3011, PSYC3201 and 4 other Level III Psychology subjects including 1 subject selected from each of the following areas: Advanced Perceptual / Cognitive – PSYC3151, PSYC3161, PSYC3211, PSYC3221, PSYC3231; Advanced Biological – PSYC3051, PSYC3241, PSYC3251, PSYC3261; Advanced Social – PSYC3121, PSYC3141, PSYC3271, PSYC3281, together with elective subjects totalling 15 Credit Points (a total of 135 Credit Points including General Education in Stage 3). Entrance to PSYC4023 requires students to have completed Psychology subjects with an average of at least 70% (PSYC1002 is not included in the average). Students in Advanced Science whose average falls below 70% enrol in PSYC4033.

1206
Psychology with Computer Science
(Advanced Science only)

This program is for students with interests in computational modelling and artificial intelligence, on the one hand, and human information processing, cognition, and group decision making, on the other. The program should be particularly useful for those who will work in a commercial environment that requires both ‘people skills’ and an application oriented knowledge of computing. It would also serve as a good basis for interdisciplinary research in areas that include both Psychology and Computer Science.

Stage 1
COMP1011 and COMP1021
MATH1131 or MATH1141
MATH1231 or MATH1241
MATH1081
PSYC1002
Elective subjects totalling 15 Credit points

Stage 2
COMP2011 and COMP2031
PSYC2001, PSYC2011, PSYC2071 and PSYC2081
Elective subjects totalling 30 Credit Points from the list below*
One 56 hour or two 28 hour General Education subjects

Stage 3
COMP3111, COMP3411 and COMP3511
PSYC3001 and either PSYC3151 or PSYC3211
subjects totalling 45 Credit Points from the list below, including Level III Psychology subjects totalling at least 30 Credit Points
One 56 hour or two 28 hour General Education subjects

Stage 4 (Honours)
COMP4913 or PSYC4023 or PSYC4033
Students proposing to proceed to the honours Stage in Psychology must take Psychology subjects totalling 120 Credit Points in Stages 2 and 3 (PSYC2001, PSYC2011, PSYC2071 and PSYC2081, Level II and PSYC3001, either PSYC3151 or PSYC3211 and 2 other Psychology subjects at Level III). Entrance to PSYC4023 requires students to have completed Psychology subjects with an average of at least 70% (PSYC1002 is not included in the average). Students whose average falls below 70% enrol in PSYC4033.

Students proposing to proceed to the honours Stage in Computer Science must take Level III Computer Science subjects totalling 60 Credit Points

*Elective List
COMP2021, Level III Computer Science subjects not otherwise specified
PSYC2061, PSYC3011, PSYC3141, PSYC3151, PSYC3161, PSYC3211, PSYC3221, PSYC3241, PSYC3251

SCIENCE AND TECHNOLOGY STUDIES

Science and Technology Studies offers an integrated program combining subjects in the History and Philosophy of Science and Technology (HPST) and in Science, Technology, and Society (SCTS).

Subjects in the History and Philosophy of Science and Technology (HPST) examine the history of scientific and technological development, the nature and philosophical implications of the knowledge and methods involved in this development, and the historical dynamics of scientific and technological change. Subjects in Science, Technology, and Society (SCTS) examine the social, economic, environmental and political dimensions of scientific and technological change, especially in the twentieth century.
ZOOLOGY

Animal Science is the study of the structure, function, classification, genetics, evolution, habits and distribution of animals and their relationship to each other and to the environment. The school has special expertise in animal behaviour, ecology, entomology, evolutionary studies and palaeontology, marine biology, neurobiology and physiology. The courses leading to the award of a science degree in Zoology are dependent on adequate background in biometry and biochemistry.

1745
Zoology

Stage 1
BIOS1101, BIOS1201
CHEM1101, CHEM1201
MATH1131 or MATH1141 or MATH1011
MATH1231 or MATH1241 or MATH1021
Elective subjects totalling 45 Credit points
One 56 hour or two 28 hour General Education subjects
Students intending to proceed to Stage 4 (Honours) must complete Level III subjects totalling 105 Credit Points
Stage 2
BIOS2011, BIOS2021, BIOS2031, BIOS2041, BIOS2061
Elective subjects totalling 15 Credit points
One 56 hour or two 28 hour General Education subjects
Stage 3
subjects totalling 60 Credit Points from BIOS3011, BIOS3021, BIOS3031, BIOS3051, BIOS3071, BIOS3081, BIOS3091, BIOS3111, BIOS3131
Elective subjects totalling 45 Credit points (which may be also from this list)
One 56 hour or two 28 hour General Education subjects
Students proposing to proceed to Stage 4 (Honours) must complete Level III subjects totalling 105 Credit Points
Stage 4 (Honours)
BIOS4038 (F/T), BIOS4034 (P/T)
Specific Science degree courses

Besides the undergraduate studies in Science and Advanced Science there are other specific courses offered in the Faculty of Biological and Behavioural Sciences and in the Faculty of Science. These are the Aviation Course (UAC423980), Psychology Full-time Degree Course 3431 (UAC423431), Business Information Technology Course 3971 (UAC423979), Optometry Course 3950 (UAC423950), and Combined Science/Optometry Course 3951.

There are also other degrees from Faculties other than Science which can be combined with a science degree.

Board of Studies in Science and Mathematics

2001
Flying Stream

Stage 1
AVEN1300, AVEN 1500, AVEN1900
MATH1079
PHYS1889
PROF0101, PROF0102, PROF0103
AVIA1000,
Industrial Experience
One 28 hour General Education Subject

Stage 2
AVEN2200, AVEN2210, AVEN2400, AVEN2600,
AVEN2700, AVEN2900
MATH2079
PROF0202, PROF0203, PROF0204
AVIA2000

One 28 hour General Education Subject

Stage 3
AVEN3200, AVEN3210, AVEN3400, AVEN3600,
AVEN3700, AVEN3900
PHYS2819, PHYS 3789, PHYS3829
PROF0301, PROF0302, PROF0303, PROF0304
AVIA3000

Two 28 hour General Education Subjects
# 2002
## Operations Management Stream

### Stage 1
- AVEN1300, AVEN1500, AVEN1900
- AVIA1203, AVIA1103
- MATH1079
- PHYS1689, PHYS1159
- PROF0101, PROF0102
- PROF0103, PROF0102
- IROB2727

**Industrial Experience**

### Stage 2
- AVEN2200, AVEN2210, AVEN2400, AVEN2600, AVEN2700, AVEN2900
- AVIA2403, AVIA2203, AVIA2413, AVIA2503, AVIA2603
- MATH1011, MATH1021
- PHYS2869
- PROF0202, PROF0203, PROF0204, PROF2001, PROF2002

Choose one subject from:
- ECON1103, IROB2721, MATH2079
- Two 28 hour or one 56 hour General Education subject

### Stage 3
- AVEN3200, AVEN3210, AVEN3400, AVEN3600, AVEN3700, AVEN3900
- AVIA3002
- PHYS2819, PHYS3789
- PROF0301, PROF0303

Choose subjects totalling 30 Credit Points from:
- AVEN3920, AVIA3703, MATH2160, PROF3001, PROF3002, PROF3004, MATH2180, PHYS3829
- Two 28 hour or one 56 hour General Education subject

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# 2003
## Operations Management Stream

### Stage 1
- AVEN1300, AVEN1500, AVEN1900
- AVIA1203
- MATH1011, MATH1021
- PROF0101, PROF0102, PROF0103, PROF1002
- PHYS1022

**Industrial Experience**

### Stage 2
- AVEN2200, AVEN2210, AVEN2400, AVEN2600, AVEN2700, AVEN2900
- AVIA2403
- MATH2869
- PHYS2869
- PROF0202, PROF0203, PROF0204, PROF2001, PROF2002

Choose one subject from:
- ECON1103, IROB2721
- Choose subjects totalling 20 Credit Points from:
  - AVIA2203, AVIA2413, AVIA2503, AVIA2603, PHYS1159, AVIA1103, IROB2727
- Two 28 hour or one 56 hour General Education subject

### Stage 3
- AVEN3200, AVEN3210, AVEN3400, AVEN3600, AVEN3700, AVEN3900
- AVIA3002
- PHYS2819, PHYS3789
- PROF0301, PROF0303

Choose subjects totalling 30 Credit Points from:
- AVEN3920, AVIA3703, MATH2160, PROF3001, PROF0302, PROF0304, MATH2180, PHYS3829
- Two 28 hour or one 56 hour General Education subject

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# 3431
## Psychology Degree Course
### Full-time

**Bachelor of Science (Psychology)**

**BSc(Psychol)**

Psychology is a discipline of both scientific research and applied practice. As a science, psychology is concerned with the study of behaviour and its underlying mental and neural processes. Topics of study include learning, memory, cognition, perception, motivation, life-span development, personality, social interactions, and abnormal psychology. Psychology has many areas of application, especially in clinical, correctional, counselling, educational, and organisational settings. In addition, people with training in psychology pursue careers in academic research, health research, developmental disabilities and rehabilitation; ergonomics; occupational health and safety; personnel selection, training, and management; vocational guidance; and marketing.

The four-Stage full-time course leads to the degree of Bachelor of Science (Psychology). The course is designed to provide the student with (1) a sound understanding of psychological theory, research skills, and psychological techniques, (2) elective studies in areas of individual interest, and (3) supporting studies in mathematics and/or biology (a minimum of 30 Credit points at Level I), and in arts or social sciences (a minimum of 30 Credit Points at Level I).

### Registration as a Psychologist

In order to become a member of the professional body, the Australian Psychological Society (APS), and for registration as a psychologist in New South Wales, students first need a university bachelor degree which includes four years of approved training in psychology. The BSc(Psychol) course provides four years of approved training in psychology. Currently students must also follow this by completing either an accredited 5th and 6th year academic course such as the PhD or the Master of Psychology degree in the Applied or Clinical fields as offered by this University (entry being restricted to a minimum Class 2 Division 1 Honours degree in Psychology), or by two years of supervised experience in professional practice. The alternative of supervised experience for APS Membership will no longer be available. Thus new undergraduate students will be required to complete six years of accredited academic training.
A full statement on the effect of changes to registration requirements for current and new undergraduate students is available from the School of Psychology.

Degree Program

Stage 1
PSYC1002
BIOS1101 AND BIOS1201 or one of MATH1131 or MATH1141 or MATH1011 and one of MATH1231 or MATH1241 or MATH1021
Philosophy subjects or Science and Technology Studies subjects or other approved Arts and Social Science discipline at Level I to the value of 30 Credit Points.
Choose elective subjects at Level I to the value of 30 Credit Points from Arts and Social Sciences or Science.

Stage 2
PSYC2001, PSYC2011, PSYC2061, PSYC2071, PSYC2081, PSYC2091
Level II subjects to the value of 30 Credit Points following on from one of the Level I non-psychology subjects taken (30 Credit Points) which constitutes a recognised sequence of two Stages.
General Education (112 hours).

Stage 3
PSYC3001, PSYC3011, PSYC3201 and PSYC3291.
Select 1 subject from each of the following areas and 1 other Level III Psychology subject:
Advanced Perceptual / Cognitive – PSYC3151, PSYC3161, PSYC3211, PSYC3221, PSYC3231;
Advanced Biological – PSYC3051, PSYC3241, PSYC3251, PSYC3261;
Advanced Social – PSYC3121, PSYC3141, PSYC3271, PSYC3281.

Stage 4
PSYC4003 or PSYC4013

Prerequisites and Corequisites

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

Study Load

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

Progression and Exclusion

Students must maintain Honours level performance for progression from each of Stages 1, 2 and 3. Any student who fails to achieve an average of 65 percent or higher in psychology subjects undertaken in a stage (based on the first attempt result for each subject) will be deemed to be making unsatisfactory progress and will be required to show cause.
Students required to show cause will be informed by the Registrar in writing. Students who apply to show cause will be assessed in accordance with the University's procedures. Failure to show cause will result in exclusion from the course. Students should also see the section on progression and exclusion ('Restrictions on Students Re-enrolling') in the Student Guide.

Award of the Degree

In order to graduate students must satisfy requirements for the award by passing all subjects specified for the course.

The final grading for the degree is based on performance in all Psychology subjects excluding PSYC1002 taken over the four Stages. The degree may be awarded at either Pass level or with Honours.

3971
Business Information Technology
Full-time

Bachelor of Science
BSc

This is an industry linked education course leading to the award of the qualification Bachelor of Science. The course draws on three core disciplinary areas: Information Systems, Accounting, and Computer Science.

The course has been designed in conjunction with the Information Systems industry to provide for the needs of Australian businesses. The course combines the normal requirements for the award of the degree with coordinated industrial experience in the sponsoring organisations. A scholarship is payable from a fund donated by the sponsoring organisations. Entry to the course is limited to students awarded a scholarship through the BIT selection Procedure.

Consideration for entry to the course may proceed only on the basis of an application directly to Co-Op program Office at the University of New South Wales and application through UAC.

Students who are academically acceptable for the 3971 course but who are not offered a scholarship should consider registering for first Stage entry into the 1400 program. If scholarships become available at the end of Stage 1, students undertaking the 1400 program may be offered transfer to the 3971 course.

An Honours option is also available within the four Stage BIT course. This option is also available to students who perform well in Stages 1 and 2 and require additional courses in Stages 3 and 4; although it may also be possible to finalise the honours program within the first semester of a fifth Stage (possibly part-time).
Objectives of the Course

This four Stage course teaches Information Systems (see Program 1400 in 3970 for a description) and provides industrial training linked to that teaching. The three industrial training periods in the course are each of approximately six months duration, running from January of Stages 2 and 4, and July of Stage 3 of the program.

Degree Program

Stage 1
ACCT1501 ACCT1511
COMP1021,
ECON1101
INFS1602, INFS1603
MATH1131 or MATH1141
MATH1231 or MATH1241

Stage 2
COMP2011
INFS2603, INFS2607, INFS2609, INFS2691
Elective subjects totalling 15 Credit points
One 56 hour or two 28 hour General Education subjects

Stage 3
INFS3605, INFS3608, INFS3616, INFS3692
MATH2841
Elective subjects totalling 30 Credit Points
Honours students additionally take INFS3606 and a further elective subject totalling 15 Credit Points

Stage 4 (Pass Degree)
INFS3606, INFS3611, INFS4693
subjects totalling 30 Credit Points including at least 15 Credit Points at Level III
One 56 hour or two 28 hour General Education subjects

Stage 4 (Honours Degree)
INFS3611, INFS4693, INFS4794, INFS4886, INFS4887, INFS4893, INFS4898
One option must be chosen from INFS4805, INFS4810, INFS4811, INFS4812, INFS4825, INFS4848, INFS4853, INFS4857, INFS4891
Choose elective subjects totalling 15 Credit Points from Level III
One 56 hour or two 28 hour General Education subjects

Stage 4 (Honours Degree)
INFS3611, INFS4693, INFS4794, INFS4886, INFS4887, INFS4893, INFS4898
One option must be chosen from INFS4805, INFS4810, INFS4811, INFS4812, INFS4825, INFS4848, INFS4853, INFS4857, INFS4891
Choose elective subjects totalling 15 Credit Points from Level III
One 56 hour or two 28 hour General Education subjects

BSc BOptom

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

2. In order to qualify for the award of the degree of BSc, students so admitted shall be required to complete the appropriate general studies subjects and no less than 60 Credit Points of either Level II or Level III and a further 60 Credit Points from other Level III subjects, in accordance

3950
Optometry Degree Course
Full-time

Bachelor of Optometry
BOptom

The School provides a four Stage full-time course in Optometry leading to the award of the degree of Bachelor of Optometry, at either the Pass or Honours level. Professional training including clinical optometry are interwoven with basic studies of visual and ocular science over the four Stages of the course. The only entry point into Optometry will be at the Stage 1 level.
with the Science and Mathematics Course regulations. The subjects submitted for the award of the Bachelor's degree under these regulations must include at least 60 Credit points from Level III subjects chosen from related disciplines in accordance with the Science Course regulations.

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

*In Rule 1, the word 'undergraduates' includes graduands, ie persons may be admitted under these rules if they have met all requirements for a first degree which has not yet been conferred and admission under these rules shall be no bar to the subsequent award of the first degree.
Professional and Combined degrees with Science

Board of Studies in Science and Mathematics and another Faculty

3930
Combined Science / Arts Course

BSc/BA

The double degree of BSc/BA normally requires an additional Stage of study, and enables students to complete a major sequence in a School, Department, or Program of the Faculty of Arts while proceeding with their studies in Science. In each Stage of the combined degree course, students normally take subjects totalling 82.5 or 90 Credit Points from science and 30 Credit Points from Arts.

For admission to the course, students must satisfy the entry requirements to the Board of Studies in Science and Mathematics as well as to the Faculty of Arts and Social Sciences. In addition to the requirements of the BSc program being undertaken, students must complete a minimum of 120 Credit Points in subjects offered by Schools, Departments or Programs within the Faculty of Arts and Social Sciences, including an approved major sequence. This degree is administered by the Board of Studies in Science and Mathematics.

3935
Combined Science / Social Science Course

BSc/BSoSc

The double degree of BSc/BSoSc normally requires an additional Stage of study, and enables students to complete the core program of the Bachelor of Social Science degree in the Faculty of Arts while proceeding with their studies in Science. In each Stage of the combined degree course, students normally take subjects totalling 82.5 or 90 Credit Points from Science and 30 Credit Points from Arts.

For admission to the course, students must satisfy the entry requirements to the Board of Studies in Science and Mathematics as well as to the Faculty of Arts and Social Sciences. In addition to the requirements of the BSc program being undertaken, students must complete a minimum of 48 Credit Points in the core program from the Bachelor of Social Science degree. This degree is administered by the Board of Studies in Science and Mathematics and the Faculty of Arts and Social Sciences.

Board of Studies in Science and Mathematics and the Faculty of Engineering

3611
Combined Science / Aeronautical Engineering Course

Bachelor of Engineering / Bachelor of Science
BE BSc

3661
Combined Science / Industrial Engineering Course

Bachelor of Engineering / Bachelor of Science
BE BSc

3681
Combined Science / Mechanical Engineering Course

Bachelor of Engineering / Bachelor of Science
BE BSc

3701
Combined Science / Naval Architecture Course

Bachelor of Engineering / Bachelor of Science
BE BSc

3725
Combined Science / Electrical Engineering Course

Bachelor of Engineering / Bachelor of Science
BE BSc

3730
Combined Science / Civil Engineering Course

Bachelor of Engineering / Bachelor of Science
BE BSc

For details of the Combined Science/Aeronautical Engineering, Industrial Engineering, Mechanical Engineering, Electrical Engineering, Civil Engineering and Naval Architecture Courses refer to the Faculty of Engineering Handbook.
Board of Studies in Science and Mathematics and the Faculty of Medicine

3820
Combined Science and Medicine Course

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

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

Board of Studies in Science and Mathematics and the Faculty of Professional Studies

4075
Combined Science / Education Course

Bachelor of Science / Bachelor of Education
BSc BEd

For details of the Combined Science / Education Course refer to the Faculty of Professional Studies Handbook.

Board of Studies in Science and Mathematics and the Faculty of Commerce and Economics

3996
Combined Science / Commerce Course

Bachelor of Science / Bachelor of Commerce
BSc BCom

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

Board of Studies in Science and Mathematics and the Faculty of Law

4770
Combined Science / Law Course

Bachelor of Science / Bachelor of Laws
BSc LLB

For details of the Combined Science / Law Course refer to the Faculty of Law Handbook.
Undergraduate Study

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

Note/s: Some subjects that appear in this section may be restricted to students for whom the subject comprises a compulsory part of their program. Other subjects are electives in a range of programs. Where program 1000 is mentioned any of the mathematics or statistics programs may be substituted.

Accounting

Accounting Level I

ACCT1501
Accounting and Financial Management 1A
Staff Contact: School Office
CP15 S1 or S2 L2 T2
Note/s: Restricted to programs 0600, 1000, 1006, 1400, 6810, Courses 3681, 3971, 3978 and 3979. Not available in Year 1 of programs 0600, 1000, 1006, 1400 or Course 3978. May be counted in combined degree courses 3611, 3661 and 3701 only in special circumstances.

This is the first subject in a sequence of subjects dealing with the profession and practice of accounting and the literature associated with it. It illustrates the analysis and design of a financial accounting system which processes financial data and produces financial reports geared to the information needs of interested parties. It introduces students to the design of accounting systems based on double-entry book-keeping and incorporating other internal controls; also, to the problems of accounting for cash, debtors, inventories and property plant equipment. It also provides a critical introduction to the ideas underlying accounting practice and to issues associated with the uses and limitations of traditional financial reports. In so doing it introduces students to the practice of literature evaluation.

ACCT1511
Accounting and Financial Management 1B
Staff Contact: School Office
CP15 S1 or S2 L2 T2
Prerequisite: ACCT1501
Note/s: Restricted to programs 0600, 1000, 1006, 1400, 6810 and Courses 3971, 3978 and 3979.

The second subject in a sequence of financial accounting subjects including an examination of the regulatory environment of financial reporting: the definition and recognition of assets, liabilities, revenues and expenses; accounting for partnerships and corporations. Financing decisions and financial management including financial statement and cash flow analysis, an examination of cost/volume/profit relationships in a single product firm, and short term budgeting. Lotus 123 spreadsheet applications have been integrated with these topics.

Accounting Level II

ACCT2522
Accounting and Financial Management 2A
Staff Contact: School Office
CP15 S1 L2 T2
Prerequisite: ACCT1511
Note/s: Excluded ACCT2532. Restricted to programs 0600, 1000, 1006, 1400, 6810 and Courses 3971, 3978 and 3979.

Management Accounting is directed towards the effective use of organisational resources. Organisations create value through the use of resources, and can enhance such value by focusing and reconfiguring their internal processes in various ways; that is, by changing the ways in which they conduct business and perform work. It is argued that, in world class organisations, the management of time, flexibility, quality integration, variability and inter-dependence is critical to sustained value generation. This course explains how management accounting supports such value generation, within changing organisational processes.
ACCT2542
Accounting and Financial Management 2B
Staff Contact: School Office
CP15 S2 L2 T2
Prerequisite: ACCT1511
Note/s: Excluded ACCT2552. Restricted to programs 0600, 1000, 1006, 1400, 6810 and Courses 3971, 3978 and 3979.

This intermediate financial accounting subject builds on the foundation laid in ACCT1501 and ACCT1511. It is intended for students who will be involved in the preparation or use of company financial statements whether as accountants, financial executives, auditors, financial analysts or legal advisors. The effort to establish an agreed conceptual framework. The contracting cost framework for the analysis of financial reporting. Accounting or capital instruments. Profit reporting More advanced aspects of the definition, recognition and measurement of assets and liabilities. Lease accounting. Issues in accounting for company income tax including the effects of timing differences, divided imputation, and revaluations. Published financial reports including more advanced cash flow statement preparation and analysis. Accounting for the extractive industries and for superannuation plans.

Accounting Level III

ACCT3563
Accounting and Financial Management 3A
Staff Contact: School Office
CP15 S1 or S2 L2 T2
Prerequisite: ACCT2542
Note/s: Restricted to programs 1400, 6810 and Courses 3971 and 3979. Excluded ACCT3573.

The final financial reporting subject following ACCT1501, ACCT1511 and ACCT2542.

The examination of the accounting, reporting and legal problems associated with the preparation of consolidated accounts for complex mercantile structures, significant investments in joint arrangements and other inter-corporate holdings, generic trust designs, securitisation structures, cross-border forex dealings and translations, creative accounting, off-balance sheet mechanisms and structures, corporate regulation, the 'true and fair view' doctrine, business ethics, 'green' accounting and new generation (derivatives) financial instruments.

ACCT3583
Accounting and Financial Management 3B
Staff Contact: School Office
CP15 S1 or S2 T3
Prerequisite: ACCT2522
Note/s: Excluded ACCT3593. Restricted to programs 1400, 6810 and Courses 3971 and 3979

Strategic management accounting for the contemporary competitive environment. Topics include: environmental and value chain analysis, customer value and shareholder value analysis, strategic cost analysis, pricing, investment appraisal, product and customer profitability, strategic resource management and management information systems. These issues are explored through professional and disciplinary literatures and cases describing Australian and international practice.

Anatomy

Anatomy Level II

ANAT2111
Introductory Anatomy
Staff Contact: Dr P Pandey
CP15 S1 HPW6
Prerequisites: BIOS1101, BIOS1201
Note/s: Restricted to program 7000 or in the Anatomy Quota.

Introduction to gross anatomy, based on a study of prospected specimens. Musculoskeletal, cardiovascular, respiratory, gastrointestinal, genitourinary and nervous systems. General topographical and surface anatomy.

ANAT2211
Histology 1
Staff Contact: Dr A Anselin
CP15 F HPW3
Prerequisites: BIOS1101, BIOS1201
Corequisite: ANAT2111
Note/s: Restricted to program 7000 or in the Anatomy Quota.

Theory and practical aspects of modern histological techniques. Basic histology, including the morphological and functional properties of epithelial, connective, muscle and nervous tissues. Systematic histology, including a histological examination of the major systems of the body; cardiovascular, respiratory, lymphatic, integumentary, digestive, endocrine, urinary, reproductive and nervous (including eye and ear) systems. Emphasis on the ability to interpret histological sections and selected electron micrographs of mammalian tissues and organs and to relate morphology to tissue and organ function.

Anatomy Level III

ANAT3121
Visceral Anatomy
Staff Contact: Dr K Ashwell
CP15 S2 HPW6
Prerequisite: ANAT2111
Note/s: Restricted to program 7000 or in the Anatomy Quota.

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

ANAT3131
Functional Anatomy 1
Staff Contact: Prof D Tracey
CP15 S1 HPW6
Prerequisite: ANAT2111
Note/s: Restricted to program 7000 or in the Anatomy Quota.

Functional anatomy of the musculoskeletal system in the head and neck and upper limb. Includes biomechanics of connective tissue in particular bone, cartilage and tendon. Tutorials involve study of prosected specimens, X rays and
surface anatomy; students also carry out their own dissections of the upper limb.

**ANAT3141**
**Functional Anatomy 2**
*Staff Contact: Prof D Tracey*
CP15 S2 HPW6  
*Prerequisite: ANAT3131*
*Note/s: Restricted to program 7000 or in the Anatomy Quota.*

Functional anatomy of the musculoskeletal system in the trunk and lower limb. Includes functional aspects of muscle and a discussion of the mechanics and energetics of walking and running. Tutorials involve study of prosected specimens, Xrays and surface anatomy; students also carry out their own dissections of the lower limb.

**ANAT3231**
**Cell Biology**
*Staff Contact: Dr A Ansselin / Dr M Hill*
CP15 S1 HPW4  
*Prerequisites: BIC2101 or BIOC2201 or BIOC2181 or BIOC2291 or PHPH2112*
*Note/s: Restricted to program 7000 or in the Anatomy Quota.*

To develop an understanding of the anatomy and biology of the cell. Cell biology combines traditional anatomical methods with recent cell and molecular biology techniques. Key concepts will include developmental differentiation of the cell, its polarity, motility, cytoskeleton, signal transduction mechanisms and outcomes. An introduction to concepts of cell and extracellular matrix interactions will also be covered.

**ANAT3311**
**Mammalian Embryology**
*Staff Contact: Dr M Hill*
CP15 F HPW3  
*Corequisites: ANAT2211, ANAT2111*
*Note/s: Restricted to program 7000 or in the Anatomy Quota.*


**ANAT3411**
**Neuroanatomy 1**
*Staff Contact: Dr E Tancred*
CP15 S1 HPW6  
*Prerequisites: ANAT2211, ANAT2111*
*Note/s: Restricted to program 7000 or in the Anatomy Quota.*

Nerve cells and glial cells, cytoarchitecture of brain and spinal cord. Functional anatomy of sensory and motor processing, and higher cerebral functions such as language and emotions. Blood supply of the central nervous system, cerebrospinal fluid and membranous coverings. Comparative anatomy of the brain.

**ANAT3421**
**Research Topics in Neuroscience**
*Staff Contact: A/Prof P Waite*
CP15 S2 HPW3  
*Prerequisite: ANAT3411*

Focuses on selected areas of contemporary neuroscience research interest. Includes: brain development and axon guidance, peripheral nerve regeneration, spinal cord injury, pain pathways, visual system function, cortical plasticity, brain imaging, mechanisms of learning and memory, motor systems and the neuropathology in degenerative disorders. The subject is organised in seminar format with discussion of original research papers. It is ideal for students considering doing Honours as it provides a background to current research problems and the opportunity to undertake a small project.

**Anatomy Level IV**

**ANAT4000**
**Anatomy 4**
*Staff Contact: Dr M Hill*
CP120 F  
*Prerequisite: Completion of Year 3 of program 7000 or equivalent, including Level III subjects totalling 90 Credit Points, at least 4 of which must be Anatomy subjects.*

An honours program consisting of the preparation of a thesis proposal, an undergraduate thesis and participation in School seminars.

The General Education requirements are met within the Honours Program through seminars, essays and participation in School seminars.

**ANAT4509**
**Anatomy 4B Honours Project**
*Staff Contact: Dr M Hill*
CP90 F  
*Prerequisite: Completion of Year 3 of Program 7000 or equivalent, including Level III subjects totalling 90 Credit Points of which at least 4 must be Anatomy subjects. Excluded: ANAT4000*

An honours program consisting of a thesis proposal, a short undergraduate thesis in the form of a scientific paper, and participation in School seminars. For the award of honours, this subject must be taken in conjunction with other subjects totalling 60 Credit Points (normally including ANAT4510) approved by the Head of School.

**ANAT4510**
**Basic Research Methods**
*Staff Contact: Dr K Ashwell*
CP15 F  
*Prerequisite: Acceptance into Honours year.*

An introduction to basic research techniques and methods, appropriate for Honours level. Topics will include: laboratory safety, light and electron microscopy, photography, laboratory techniques and equipment, quantitative methods, stereology, analysis of data, presentation of data.
Aviation

AVIA1000
Flying Training 1
Staff Contact: Flight Standards Officer
CP 25 S2
Note/s: Restricted to Course 3980 Program 2001
Practical flying training and associated ground training by contracted flying school.

AVIA1103
Air Traffic Control
Staff Contact: Dept of Aviation Office
CP 5.6 S2
Note/s: restricted to students in course 3980 programs 2002 and 2003.
This subject is concerned with the procedures and structure of the Air Traffic system at both operational and administrative levels.
Emphasis is placed on the role of ATS (Air Traffic Services) from the perspective of the air traffic authority.
Topics will include: history, structure, legal aspects, communication, safety, future development.

AVIA1203
Risk Management 1
Staff Contact: Dept of Aviation Office
CP 5.6 S2
Note/s: restricted to students in course 3980 programs 2002 and 2003.
This subject gives an overview of risk and the risk management process. The subject briefly considers what is risk, why people take risks and the cost of risk. It then considers the steps of the risk management process as defined by Australian standards on risk management.
The steps are defining the system, risk identification, risk analysis and assessment risk control implementation and auditing. The class will apply each step of the process to case studies of aviation issues.

AVIA2000
Flying Training 2
Staff Contact: Flight Standards Officer
CP 65 F
Prerequisite : AVIA1000
Note/s: Restricted to Course 3980 program 2001.
Practical flying training and associated ground training by contracted flying school.

AVIA2203
Risk Management 2
Staff Contact: Dept of Aviation Office
CP 7.5 S2
Prerequisite: AVIA1203
Note/s: restricted to students in course 3980 programs 2002 and 2003.
This subject looks at safety issues in aviation, identifies problems which could lead to emergency situations then considers the planning required for different types of emergency.
The subject covers writing safety and emergency procedures, emergency plans, setting up an emergency control centre, running emergency exercises and the links with state emergency planning system.
General safety issues such as human factors in aviation safety and emergency planning, OHS and major hazard legislation, dangerous goods aviation medicine.

AVIA2403
Regulations 1
Staff Contact: Dept of Aviation Office
CP 7.5 S1
Note/s: restricted to students in course 3980 programs 2002 and 2003.
Aviation regulations 1 introduces the Laws and regulations under which an aviation operation functions. Beginning with regulatory authority and source, this subject develops an understanding and awareness of both the direct operational aspects of regulations and the commercial considerations that they demand.
The emphasis of Aviation Regulation 12 is that of routine implication of the Civil Aviation Act, civil aviation regulations and orders.

AVIA2413
Regulations 2
Staff Contact: Dept of Aviation Office
CP 7.5 S2
Prerequisite: AVIA2403
Aviation Regulations 2 builds on the fundamental concepts introduced in Aviation Regulations 1.
The emphasis of this subject is the legal ramifications for pilots and operations managers, imposed by the Civil Aviation Act and associated regulations.
Specific case studies will form a large part of this subject.

AVIA2503
Airline Marketing
Staff Contact: Dept of Aviation Office
CP 5.6 S2
Note/s: restricted to students in course 3980 programs 2002 and 2003.
This subject focuses the general issues of marketing within the airline environment. An industry specific subject it deals with the market specific nature of airlines and includes topics on, international marketing, community based attitude modification, the service of airlines to clients, airline product definition, impact of safety on marketing.

AVIA2603
Simulation Applications
Staff Contact: Dept of Aviation Office
CP 7.5 S2
Note/s: restricted to students in course 3980 programs 2002 and 2003.
This subject addresses the broad application of simulation to the aviation industry. While the emphasis will be on aircraft simulations, aspect of operations and systems simulations will also be covered. The perspective of this subject will be that of end user application, particularly from management and training of human resource basis.
AVIA3000
Flying Training 3
Staff Contact: Flight Standards Officer
CP 35 F
Prerequisite: AVIA2000
Note/s: Restricted to Course 3980 program 2001
Practical flying training and associated ground training by contracted flying school.

Note: Flying Training Syllabus. A detailed description of the Flying Training Syllabus is available from the Flight Standards Officer.

AVIA3002
Aviation Operations Management
Staff Contact: Dept of Aviation Office
CP 15 F
Prerequisites: AVIA1203, PROF2001, AVIA2403, PROF2003
Corequisites: AVEN3920, AVIA3703
Note/s: restricted to students in course 3980 programs 2002 and 2003.
This subject will provide an overview of the Operations Management Stream of the Bachelor of Aviation and will allow students to put into practice the theory which they have studied. The areas specifically covered in the course will include a synthesis of Environmental Issues, Industrial Relations, Risk Management, Organisational Structures and Practices, and Regulatory Background and Responsibilities. The course is designed to demonstrate to students how these issues are inter-related and how the consequences of their decisions in any of these areas can affect an airline at the operational level.

The first session of the course (14 weeks) will consist of lectures describing how each of the areas identified above influence decision making with regard to operational strategies. During second session (14 weeks), in addition to continuing lectures, students will complete a practical project/projects which will be designed to assess students overall comprehension of course material and its application to operational procedures. Projects will be formulated under the direction of the appropriate academic member of the Aviation Degree program and will involve liaison with industry.

AVIA3703
Airport Management and Security
Staff Contact: Dept of Aviation Office
CP 7.5 S1
This is an industry based issue which brings the generalities of large areas management into the specific context of Airports and Aviation.
Topics will include legislation, international movements, customs, health and freight. Engineering awareness and operational awareness are addressed in the context of senior airport authorities.
Aviation regulation and local government issues that pertain will also be covered.

Industrial Experience
Staff Contact: Flight Standards Officer
Note/s: Restricted to course 3980.
This will involve visiting Aerospace manufacturing facilities, airlines operation and maintenance bases, airport facilities, (including ATC) migration and custom activities and general tourist organisations to provide the student with a broad context for their specific studies.

Banking and Finance

Banking and Finance Level II
FINS2613
Business Finance
Staff Contact: School Office
CP15 S1 or S2 L2 T1
Prerequisites: FINS2612 or any two of ACCT1511, ECON1102 and MATH1231
Note/s: Restricted to programs 1400, 6810.
Looks at the essential aspects of financial decision making in business including: factors influencing capital expenditure decisions; alternative approaches to valuation; factors affecting the formulation of the capital structure; and influence of the capital market environment.

Banking and Finance Level II/III

FINS2612
Australian Capital Markets
Staff Contact: School Office
CP15 S1 or S2 L2 T1
Corequisites: ECON1102 and MATH1231 or completion of Stage 1
Note/s: Restricted to program 1400.
Analysis of markets for financial assets including the money, bond, stock and futures markets; the structure of interest rates; flow of funds of financial institutions; the regulatory structure of markets and the interrelations among markets.

Banking and Finance Level III

FINS2624
Investments
Staff Contact: School Office
CP15 S1 or S2 L2 T1
Prerequisite: FINS2613
Note/s: Excluded FINS2714 and FINS3615. Restricted to programs 1400 and 6810.
Introduces investment theory and practice. The first part of the subject develops the primary asset pricing models, including CAPM and APT models, examines relevant empirical tests, and applies the models to the problem of measuring portfolio performance. This is followed by a study of investment management in the social, ethical and economic context. Topics include security analysis of bonds and equities; the use of options, futures and forwards in portfolio hedging and risk management; and current issues in portfolio management including 'green' funds, passive vs active management, index funds and international diversification.
Biochemistry and Molecular Genetics

Registration for Laboratory Classes in Biochemistry

It is essential for all students to register for a laboratory class for each biochemistry subject. This is normally done through the pre-enrolment process by completing the appropriate registration form (Form BIOC/REG/97) during the pre-enrolment. Failure to do this may prejudice your chances of obtaining a locker for your preferred laboratory class.

Note: Some subjects that appear in this section may be restricted to students for whom the subject comprises a compulsory part of their program.

Biochemistry Level II

BIOC2181
An Introduction to Biochemistry
Staff Contact: Dr A Bagnara, A/Prof M Edwards
CP15 S1 HPW6
Prerequisites: BIOS1101 and BIOS1201, CHEM1101 and CHEM1201 or CHEM1002
Note/s: Excluded BIOC1319, BIOC2101, BIOC2312, BIOC2372, CHEM2929. This subject provides a comprehensive introduction to Biochemistry as an alternative to BIOC2101 for students who do not intend to proceed to Level III Biochemistry. It does not fulfill the prerequisite requirements for Level III Biochemistry but the Head of School may give approval for students with a grade of credit to enrol in Level III subjects.

An introduction to modern biochemistry covering fundamental aspects of the structure-function relationships of proteins and an overall coverage of intermediary metabolism. Major topics to be covered will include: the nature and functions of enzymes; the metabolic working of cells; tissues and organs; the interrelationships between pathways of carbohydrate, lipid and amino acid metabolism; the vital roles of enzymes and hormones in catalysis and metabolic regulation; the energy trapping mechanisms of animals and plants; interesting variations on the central metabolic pathways in various life forms.

Practical work to complement the lectures and to introduce the principles of biochemical analysis.

BIOC2201
Principles of Molecular Biology
Staff contact: Dr T Stewart, Mr H Shoory
CP15 S2 HPW6
Prerequisites: BIOS1101 and BIOS1201, CHEM1101 and CHEM1201 or CHEM1002
Note/s: Excluded BIOC2312, BIOC2372.

Enrolment in this subject may be subject to quota restrictions. Such restrictions will only apply to students taking this subject as an elective part of their program.

An introduction to modern biochemistry covering fundamental aspects of the structure-function relationships of proteins and an overall coverage of intermediary metabolism. Major topics to be covered will include: the nature and function of enzymes; the metabolic working of cells, tissues and organs; the interrelationships between the pathways of carbohydrate, lipid and amino acid metabolism; the vital role of enzymes and hormones in catalysis and metabolic regulation; the energy-trapping mechanisms of animals and plants; interesting variations on the central metabolic pathways in various life forms.

Practical work to complement the lectures and to introduce the principles of biochemical analysis.
An Introduction to Molecular Biology

Staff Contact: Dr G King, Mr H Shoory

CP15 S2 HPW6

Prerequisites: BIOS1101 and BIOS1201, CHEM1101 and CHEM1201 or CHEM1002

Note/s: Excluded BIOC1319, BIOC2201, BIOC2312, BIOC2372, CHEM2929. This subject provides a comprehensive introduction to Molecular Biology as an alternative to BIOC2201 for students who do not intend to proceed to Level III Biochemistry. It does not fulfill the prerequisite requirements for Level III Biochemistry but the Head of School may give approval for students with a grade of credit to enrol in Level III subjects.

This Subject provides an introduction to modern molecular biology and covers the molecular mechanisms of gene expression and the fundamental aspects of recombinant DNA technology. The major topics to be covered include: the structure and function of DNA and RNA; the replication and transcription of DNA; translation of genetic code into an amino acid sequence during protein synthesis; regulation of gene expression. Manipulation of DNA including: fragmentisation by restriction enzymes; cloning of DNA fragments into vectors; hybridization analysis and principles of DNA sequencing. Protein structure and function. Amplification of DNA by the polymerase chain reaction (PCR). Practical work to complement the lectures.

This subject covers the same material as in BIOC2201 Principles of Molecular Biology, but in less detail and with more emphasis on the general applications and less emphasis on some of the underlying mechanisms.

Biochemistry Level III

BIOC3111
Molecular Biology of Proteins

Staff Contact: Dr A Bagnara

CP15 S1 HPW6

Prerequisites: BIOC2312 or BIOC2372 or BIOC2101 and BIOC2201, CHEM2021 or CHEM2041

Note/s: Excluded 41.102, 41.102A.

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

BIOC3121
Molecular Biology of Nucleic Acids

Staff Contact: School office

CP15 S1 HPW6

Prerequisites: BIOC2312 or BIOC2372 or BIOC2101 and BIOC2201, CHEM2021 or CHEM2041

Note/s: Excluded 41.102, 41.102A.

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

BIOC3131
Biochemistry and Genetic Engineering of Plants

Staff Contact: Dr I McFarlane

CP15 S1 HPW6

Prerequisite: BIOC2312 or BIOC2372 or BIOC2101 and BIOC2201

The techniques of recombinant DNA technology and plant tissue culture with their application to the modification and improvement of plant productivity.

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

BIOC3261
Human Biochemistry

Staff Contact: A/Prof P Schofield

CP15 S2 HPW6

Prerequisite: BIOC2312 or BIOC2372 or BIOC2101 and BIOC2201

This subject covers the aspects of metabolism that are of particular relevance to the human. The major topics to be covered will be selected from: Nutrition, exercise, neurochemistry, xenobiotics, nucleotide and one-carbon metabolism, genetic diseases and molecular aspects of parasitology. The role of triglyceride, cholesterol and lipoprotein metabolism in human health, and other selected areas of human nutrition. Exercise, the metabolic fuels utilised and the use of in vivo NMR to monitor changes in energy metabolism. Specialised aspects of endocrinology and neurochemistry including prostaglandins, leukotrienes, enkephalins and endorphins. The interrelation of purines, pyrimidines, folate and cobalamin metabolism in humans. Xenobiotics: the metabolism of foreign compounds by humans. Biochemical aspects of genetic disease including the use of recombinant DNA techniques for prenatal diagnosis and carrier detection. Molecular studies of malaria and other parasites of the human. Practical work to amplify the lectures.

BIOC3271
Molecular Cell Biology

Staff Contact: A/Prof M Edwards

CP15 S2 HPW6

Prerequisite: BIOC2312 or BIOC2372 or BIOC2101 and BIOC2201

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

BIOC3281
Recombinant DNA Techniques and Eukaryotic Molecular Biology
Staff Contact: Prof I Dawes
CP15 S2 HPW6
Prerequisite: BIOC3121
Note/s: Excluded 41.132, 41.102E.
The organisation of the genomes of higher organisms derived mainly from the application of recombinant DNA technology and related techniques. Methods used for the isolation, identification and characterisation of eukaryotic genomes in terms of the organisation of single copy and repeated sequences and of coding and non-coding sequences and of several gene clusters, eg the alpha and beta globin gene cluster. Mechanisms known to operate in the control of eukaryotic gene expression, both at the DNA level and at the level of RNA processing. Review of several specialised genetic systems in plants and animals such as mitochondria, chloroplasts and RNA and DNA tumour viruses. Practical work provides training in the use of sterile techniques and in working with polynucleotides under nuclease-free conditions, using basic techniques such as hybridisation and DNA sequencing.

BIOC3291
Genes, Genomes and Evolution
Staff contact: Dr A Wilton
CP15 S2 HPW6
Prerequisite: BIOS2021
Current concepts and theories in genetics concentrating on Eucaryotes including humans. The generation of variation examined at the molecular level for fundamental genetic process of mutation, recombination and repair. The evolution of the genome, maintenance of variation, the effects of mutations and their relevance to disease. Ecological genetics and molecular evolution, genetics of cellular division process and developmental genetics. Practical uses of genetics including the use of transposable elements to manipulate genetic stock, transgenesis, genetics of cancer, pedigree analysis, disease gene mapping, gene therapy, cytogenetics. Unusual genetic mechanisms. Perspectives on genetics, history and future. Practical work and exercises to complement the lectures.

Biochemistry Level IV

BIOC4318/BIOC4618
Biochemistry 4 (Honours)
Staff Contact: Prof I Dawes
CP120 F
Prerequisite: Completion of program 4100 including Level III subjects totalling 120 Credit Points 4 of which must be Biochemistry subjects.
Advanced training in selected areas of biochemistry including a supervised research program that places emphasis on the use of specialised techniques relevant to the research area. A written thesis on the research is required.
The General Education requirements are met within the Honours Program by seminars, an essay and participation in discussion groups.

Servicing Subjects
These are subjects taught within courses offered by other faculties.
For further information regarding the following subjects see the Faculty of Medicine Handbook.

BIOC1319
Biochemistry for Medical Students
BIOC2329
Medical Biochemistry and Genetics

Biological Science Registration Centre
(for courses in Botany and Zoology)
This will be held in Biology Lab A (room G27, Biological Science building) as follows:
17-21 Feb 10.00-17.00
24-28 Feb 10.00-17.00
Students must obtain practical slots at that time for:
BIOS2011 Evolutionary and Physiological Ecology
BIOS2021 Introductory Genetics
BIOS2051 Flowering Plants
BIOS2061 Vertebrate Zoology
BIOS3071 Conservation Biology and Biodiversity
Pre-enrolment in another faculty does NOT automatically entitle you to a place in your chosen practical time. You must obtain a seat from the Biological Science Registration Centre.
Students enrolling in other subjects do not need to sign on at the Biological Science Registration Centre but only need to attend the first lecture of the relevant course for practical assignments and further details. The location and timetable of lectures and practicals for all subjects in the School of Biological Science (Botany and Zoology) can be obtained from the Biological Science Registration Centre, Room G27 or from the notice boards on the fifth floor of the Biological Sciences Building.
Note: Some subjects that appear in this section may be restricted to students for whom the subject comprises a compulsory part of their program.
Biological Science Level I

BIOS1101
Evolutionary and Functional Biology
Staff Contact: Dr ML Augee
CP15 S2 HPW6
Note/s: Excluded: BIOS1301 and BIOS1021.
The subject examines the evolutionary history of life on earth and the relationship between environment, adaptation and function. Animal and plant physiology are covered with an emphasis on adaptation to Australian environmental conditions.

Practical and tutorial seat assignments must be obtained at the Biology Enrolment Centre on the day of enrolment. The course guide is available for purchase during enrolment week. Equipment required for practical classes is listed in the Course Guide and must be purchased before session starts. Students must consult if for details of the course and assessments.

BIOS1201
Molecules, Cells and Genes
Staff Contact: Dr ML Augee
CP15 S1 HPW6
Prerequisites: HSC Exam Score Required: 2 unit Science (Physics) 53-100, or 2 unit Science (Chemistry) 53-100, or 2 unit Science (Geology) 53-100, or 2 unit Science (Biology) 53-100, or 3 unit Science 90-150, or 4 unit Science 1-50.
Excluded: BIOS1101 and BIOS1301.
Note/s: Prerequisites for BIOS1201 are minimal (and may be waived on application to the Director) Practical and tutorial seat assignments must be obtained at the Biology Enrolment Centre on the day of enrolment. The course guide is available for purchase during enrolment week. Equipment required for practical classes is listed in the Course Guide and must be purchased before session starts. Students must consult if for details of the course and assessments.

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

BIOS1301
Biology of Australian Flora and Fauna
Staff Contact: Dr ML Augee
CP15 S2 HPW6
Prerequisite: None.

Surveys the plants and animals of Australia and examines their relationship to those of the rest of the world, particularly Gondwana. Emphasis will be on vertebrate animals and flowering plants and the unique ways in which they have adapted to the Australian environment. This subject is not acceptable as a prerequisite for upper level Biology subjects.

Biological Science Level II

BIOS2011
Evolutionary and Physiological Ecology
Staff Contact: Dr P Steinberg
CP15 S1 HPW6
Prerequisites: BIOS1011 and BIOS1021 or BIOS1101 and BIOS1201
Note/s: Students must enrol at the Biological Science Registration Centre, Room G27, Biological Sciences Building. For further details, see Faculty timetable.

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

BIOS2021
Introductory Genetics
Staff Contact: Dr W Sherwin, Dr A Wilton
CP15 S2 HPW6
Prerequisites: BIOS1011 and BIOS1021 or BIOS1101 and BIOS1201, CHEM1101
Corequisite: CHEM1201
Note/s: Enrolment in this subject may be subject to quota restrictions. Such restrictions will only apply to students taking this subject as an elective part of their program. Students must enrol at the Biological Science Registration Centre, Room G27, Biological Sciences Building. For further details, see Faculty timetable.


BIOS2031
Biology of Invertebrates
Staff Contact: A/Prof P Greenaway
CP15 S2 HPW6
Prerequisites: BIOS1011 and BIOS1021 or BIOS1101 and BIOS1201
Note/s: Enrolment in this subject may be subject to quota restrictions. Such restrictions will only apply to students taking this subject as an elective part of their program.

A comparative study of morphology, taxonomy, functional biology and evolutionary relationships of invertebrates. Emphasis on major phyla and marine forms. Practical work includes anatomy of living and preserved specimens (including dissections) and a compulsory fieldcamp. Personal expenses will be incurred.
BIOS2041
Biometry
Staff Contact: School Student Office
CP15 S1 HPW6
Prerequisites: BIOS1011 and BIOS1021 or BIOS1101 and BIOS1201
Note/s: Excluded MATH2801, MATH2901, MATH2841.

BIOS2051
Flowering Plants
Staff Contact: Prof A Ashford
CP15 S2 HPW6
Prerequisites: BIOS1011 and BIOS1021 or BIOS1101 and BIOS1201
Note/s: Enrolment in this subject may be subject to quota restrictions. Such restrictions will only apply to students taking this subject as an elective part of their program. Students must enrol at the Biology enrolment Centre, Room G27, Biological Sciences Building. For further details, see Faculty timetable.
Basic plant biology including cell structure, plant morphology and anatomy, water and sugar transport, seed structure and physiology, plant growth and development arborescence, leaves and photosynthesis, roots, micro-organisms and nutrition, evolution of land plants and plant taxonomy. Practical work: plant anatomy and light microscopy; collection of numerical data and a statistical analysis, plant identification

BIOS2061
Vertebrate Zoology
Staff Contact: Dr M Augee
CP15 S1 HPW6
Prerequisites: BIOS1011 and BIOS1021 or BIOS1101 and BIOS1201
Note/s: Excluded 45.301, 17.732. Practical class allocations must be obtained during re-enrolment week from room G27, Biological Science Building. Enrolment in this subject may be subject to quota restrictions. Such restrictions will only apply to students taking this subject as an elective part of their program.
Comparative study of the Chordata, with particular reference to the vertebrates, including morphology, systematics, evolution and natural history, with reference to selected aspects of physiology and reproduction. Practical work to supplement lectures.
The course includes projects or field excursions. These may involve personal expenses.

Biological Science Level III

BIOS3011
Animal Behaviour
Staff Contact: Dr D Croft
CP15 S2 HPW6
Prerequisite: BIOS2031 or BIOS2061
Theory and practice in the biological study of animal behaviour: ethology and behavioural ecology. The observation and description of behaviour along with the development, function and evolution of behaviour in an ecological context are examined as important elements in the analysis of behaviour, particularly social behaviour. Topics include foraging behaviour, communication, home range, territorial behaviour, aggression and dominance, sexual behaviour, mate choice, mating systems, play and social organisation. Examples are drawn from the Australian fauna and both field and laboratory work are included.

BIOS3021
Comparative Animal Physiology
Staff Contact: A/Prof A Beal
CP15 S1 HPW6
Prerequisite: BIOS2031 or BIOS2061
The physiology of invertebrates and vertebrates including the special features of Australian mammals. The topics examined include reproduction, hormones, nerves, blood, circulation, respiration and kidneys with emphasis on the control and integration of organ systems and body functions.

BIOS3031
Ecological Physiology
Staff Contact: Prof T Dawson, A/Prof P Greenaway
CP15 S2 HPW6
Prerequisite: BIOS2031 or BIOS2061
Physiological adaptation to habitat in animals. The problems imposed by environmental conditions on salt and water balance, excretion, gas exchange, metabolism and temperature regulation/acclimation will be considered. Underlying themes include the colonisation of land from aquatic habitats and adaption to severe habitats. Emphasis will be placed on the Australian fauna. A field trip to Western NSW is part of the course and will incur expense.

BIOS3051
Insect Diversity and Management
Staff Contact: Dr C Orton
CP15 S1 HPW6
Prerequisite: BIOS2031
Note/s: Not offered in 1997.
Insect diversity, classification and identification, internal and external anatomy. Insect ecology, physiology and behaviour, including pheromones. Management of urban and agricultural insect pests, insecticides and their action, resistance, advantages and disadvantages of pest control methods. Practical classes to illustrate lectures. Students must present insect collection for assessment.

BIOS3061
Plant Ecosystem Processes
Staff Contact: A/Prof R McMurtie
CP15 S1 HPW6
Prerequisite: Any 2 Level II Science subjects
BIOS3071 Conservation Biology and Biodiversity  
Staff Contact: Dr W Sherwin  
CP15 S1 HPW6  
Prerequisites: BIOS1011 and BIOS1021 or BIOS1101 and BIOS1201, plus any 2 Level II Biological Science subjects (the latter may be waived upon application to the subject coordinator)  
Note/s: Students must enrol at the Biology Enrolment Centre, Room G27, Biological Sciences Building. For further details, see Faculty timetable.  
Applications of community biology, population ecology and genetics to management of environmental problems in nature and artificial ecosystems, including Australian examples. Nature and importance of global diversity. Management and design of programs for the conservation of species and ecosystems, including reserves, off site conservation, and computer simulations. Field excursions compulsory.

BIOS3081 Ocean Biology and Fisheries  
Staff Contact: Dr I Suthers  
CP15 S1 HPW6  
Prerequisite: MSCI2001 or Level II Biological Science subjects totalling 30 Credit Points  
Note/s: A compulsory field trip will be held during the mid-session break.  
Marine pelagic and estuarine habitats. The practical application of theory to the ocean environment and its effect on the life of marine organisms. Emphasis on the biology of phytoplankton, zooplankton and fish, together with the study of fisheries. Includes management, marine technology, computer simulations, conservation, other marine vertebrates, aquaculture and environmental concerns. Technical skills, taxonomy and sampling design. Personal expenses will be incurred.  
Complements BIOS3091 Marine Botany and Ecology.

BIOS3091 Marine Botany and Ecology  
Staff Contact: Prof R King  
CP15 S2 HPW6  
Prerequisite: MSCI2011 or Level II Biological Science subjects totalling 30 Credit Points  
Complements BIOS3081 Ocean Biology and Fisheries.

BIOS3111 Population and Community Ecology  
Staff Contact: A/Prof B Fox  
CP15 S2 HPW6  
Prerequisites: BIOS1021 and MATH1032 or MATH1231 or MATH1042 or MATH1241 or MATH1021  
Factors regulating dynamics of interacting populations, renewable resource management, ecosystem stability, cycles and chaos, simulation modelling in ecology, niche theory, competition, habitat selection, community structure, species diversity, island biogeography, ecological gradients. Succession following disturbance (fire, mining, or logging). Participation in fieldwork is essential.

BIOS3121 Plant Systematics and Development  
Staff Contact: A/Prof C Quinn  
CP15 S2 HPW6  
Prerequisite: BIOS2051  
Note/s: Not offered in 1997.  
Techniques of plant systematics, including the recognition and classification of species, genera and higher order taxa. Assessment of evolutionary relationships using molecular and other data, and the use of computer models to reconstruct and test hypothetical phylogenies. Modern approaches to the exploration of plant structure and development, includes the use of the electron microscope. The main emphasis is placed on seed plants.

BIOS3131 Mammalogy  
Staff Contact: Prof M Archer  
CP15 S2 HPW6  
Prerequisite: BIOS2061  
An introduction to the origin and nature of mammals, their evolutionary patterns, diversity, contemporary and historical biogeography, community structure, life history strategies compared with those from other lands, field techniques and aspects of conservation biology. Focus on endemic Australian mammals: monotremes, marsupials, bats, cetaceans, rodents, dingos and humans. Includes field excursions. Field excursions may incur personal expenses.  
Complements BIOS3081 Marine Biology and Fisheries.

BIOS3151 Lower Plants and Fungi  
Staff Contact: Prof A Ashford  
CP15 S1 HPW6, 2 hrs lectures, 4 hrs lab per week  
Prerequisite: BIOS2051  
Examines the structural diversity and evolution of plants, with emphasis on non-seed-bearing land plants (ferns, lycopods, mosses and liverworts) and fungi. The adaptive significance of some of the characteristics features of the major groups is explored.

Biological Science Level IV

BIOS4018 Biological Science 4 (Honours) Full-time  
Staff Contact: A/Prof C Quinn  
CP120  
Prerequisite: Completion of program 1700 including Level III subjects totalling 105 Credit Points

BIOS4014 Biological Science 4 (Honours) Part-time  
Staff Contact: A/Prof C Quinn  
CP50 F  
Prerequisite: Completion of program 1700 including Level III subjects totalling 105 Credit Points
The basic principles involved in the operation of microbial processes on an industrial scale. Includes: the selection, maintenance and improvement of microorganisms; the influence of physical and chemical factors on the microbial environment; the control of environmental factors; the effects of operational patterns on batch and continuous flow cultivation; aeration and agitation; scaleup of microbial processes; air and media sterilisation; the harvesting, purification and standardisation of products; the principles involved in microbial processes for chemical, pharmaceutical and food production, microbial waste treatment and environmental control. The laboratory component includes manipulation of microorganisms, laboratoriescale fermenter operation, microbial enzyme isolation, visits to industrial fermentation plants and industrial seminars.
Biotechnology Level IV
BIOT4073/BIOT4083
Biotechnology (Honours)
Staff Contact: Prof N Dunn
CP120 F
Prerequisite: Completion of Level III subjects totalling 120 Credit Points 4 of which must be Biotechnology or related discipline
Advanced formal training in selected areas of biotechnology and participation in one of the School’s research projects.
The General Education requirements are met within the Honours Program by seminars, an essay and participation in discussion groups.

Chemical Engineering and Industrial Chemistry

Polymer Science

POLY3010
Polymer Science
Staff Contact: A/Prof R Burford
CP15 S1 L2 S2 L2 Lab2
Prerequisites: CHEM2011, CHEM2021, MATH2021, MATH2819
Co or prerequisite: INDC3090
Note/s: Restricted to Combined degree course 3681.

Chemistry

Chemistry Level I

CHEM1101
Chemistry 1A
Staff Contact: Dr P Chia
CP15 S1 or S2 HPW6
Prerequisites: HSC Mark Range Required: 2 unit Mathematics 60-100, or 3 unit Mathematics 1-50, or 4 unit Mathematics 1-100 and 2 unit Chemistry 65-100, or 3 unit Science 90-150, or 4 unit Science 1-200, or 2 unit Physics 75-100, CHEM1401 60 or higher.

CHEM1201
Chemistry 1B
Staff Contact: Dr P Chia
CP15 S2 or Summer Session HPW6
Prerequisite: CHEM1101
Note/s: Students who require CHEM1101 and CHEM1201 but have not undertaken chemistry at HSC Level should take CHEM1401 before proceeding to CHEM1101. However, no more than 30 Credit Points of Chemistry at Level I may be counted towards a Science degree.

**CHEM1401**  
*Introductory Chemistry A*  
*Staff Contact: Dr P Chia*  
*CP15 S1 HPW6*  
*Prerequisites: HSC Mark Range Required: 2 unit Mathematics 60-100, or 3 unit Mathematics 1-50, or 4 unit Mathematics 1-100.*  
*Note/s: This subject is only for students who do not have the prerequisite for CHEM1101. Students proceeding to CHEM1101 must attain a mark of 60 or higher.*


**CHEM1800**  
*Chemistry 1EP*  
*Staff Contact: Dr P Chia*  
*CP7.5 S1 HPW3*  
*Prerequisites: HSC Exam Mark range required: 2 unit Mathematics 60-100, or 3 unit Mathematics 1-50, or 4 unit Mathematics 1-100 and 2 unit Science (Physics) 57-100, or 2 unit Science (Chemistry) 60-100, or 3 unit Science 90-150, or 4 unit Science 1-200*  
*Note/s: Restricted to program 0176 of Course 3985.*


**Chemistry Level II**

**CHEM2011**  
*Physical Chemistry*  
*Staff Contact: Prof RF Howe*  
*CP15 S1 or S2 HPW6*  
*Prerequisites: CHEM1101, CHEM1201, MATH1032 or MATH1231 or MATH1231 or MATH1042 or MATH1241 or MATH1021*  


**CHEM2021**  
*Organic Chemistry*  
*Staff Contact: Dr R Read*  
*CP15 S1 or S2 HPW6*  
*Prerequisites: CHEM1101, CHEM1201*  

Discussion of the major types of organic reaction mechanisms, eg addition, substitution, elimination, free radical, molecular rearrangement within context of important functional groups. Introduction to the application of spectroscopic methods to structure determination.

**CHEM2031**  
*Inorganic Chemistry and Structure*  
*Staff Contact: Dr N Duffy*  
*CP15 S1 or S2 HPW6*  
*Prerequisites: CHEM1101, CHEM1201*  


**CHEM2041**  
*Chemical and Spectroscopic Analysis*  
*Staff Contact: Dr M Mulholland*  
*CP15 S1 or S2 HPW6*  
*Prerequisites: CHEM1101, CHEM1201, MATH1032 or MATH1021 or MATH1042 or MATH1241 or MATH1021*  


**Chemistry Level III**

**CHEM3011**  
*Physical Chemistry*  
*Staff Contact: Dr D Alderdice*  
*CP15 S1 HPW6*  
*Prerequisites: PHYS1002, CHEM2011, CHEM2031, CHEM2041*  


**CHEM3021**  
*Organic Chemistry*  
*Staff Contact: A/Prof R Bishop*  
*CP15 S1 HPW6*  
*Prerequisite: CHEM2021*  


**CHEM3031**  
*Inorganic Chemistry*  
*Staff Contact: Dr N Roberts*  
*CP15 S1 HPW6*  
*Prerequisite: CHEM2031*  

Descriptive chemistry and bonding, stereochemistry, magnetic and spectroscopic properties, stabilities of complexes of normal and inner transition series elements. Stabilisation of oxidation states. Aspects of the chemistry of p-block elements including the inert pair effect.
CHEM3041
Analytical Chemistry
Staff Contact: A/Prof M Guilhaus
CP15 S1 or S2* HPW6
Prerequisite: CHEM2041
Note/s: *S2 availability subject to demand.
Instrument design, theory and operating principles for the following instrumental areas: electrochemical, atomic and molecular spectroscopy, chromatography, mass spectrometry, automated analysis.

CHEM3111
Surface Chemistry: Principles and Applications
Staff Contact: A/Prof R Lamb
CP15 S2 HPW6
Prerequisite: CHEM3011
Note/s: Availability of elective subjects depends on sufficient students enrolments.

CHEM3121
Synthetic Organic Chemistry
Staff Contact: Prof M Paddon-Row
CP15 S2 HPW6
Prerequisite: CHEM3021
Note/s: Availability of elective subjects depends on sufficient students enrolments.

CHEM3131
Advanced Inorganic Chemistry
Staff Contact: Dr N Duffy
CP15 S2 HPW6
Prerequisite: CHEM3031
Note/s: Availability of elective subjects depends on sufficient students enrolments.
Inorganic reactions and reactivity, reactions of co-ordinated ligands and activation of small molecules. Group theory and spectroscopy. Bio-inorganic chemistry; the occurrence and co-ordination of metals in biology, common metal containing enzymes. Heavy metals, detoxification mechanisms and inorganic aspects of environmental chemistry. Inorganic compounds and materials with significant electronic and magnetic properties.

CHEM3141
Advanced Analytical Chemistry
Staff Contact: A/Prof J Matousek
CP15 S2 HPW6
Prerequisite: CHEM3041
Note/s: Availability of elective subjects depends on sufficient students enrolments.
Advanced approaches to problem solving in analytical science using modern instrumental techniques and microcomputers for the analysis of complex organic, biological, inorganic and environmental materials.
Selection and optimisation of instrumental parameters; theory of separation strategies for identification and quantitative determinations. Networking of computer-controlled work stations for laboratory automation and management.

CHEM3221
Biological Organic Chemistry
Staff Contact: A/Prof N Cheetham
CP15 S2 HPW6
Prerequisite: CHEM3021
Note/s: Availability of elective subjects depends on sufficient students enrolments.
Interdisciplinary aspects of selected classes of organic compounds of biological significance. Properties of proteins, poly-saccharides. Structural and synthetic aspects of selected drugs; metabolism and analysis. Herbicides, fungicides, pesticides; synthesis, degradation, mode of action.

CHEM3231
Nuclear and Radiation Chemistry
Staff Contact: A/Prof M Long
CP15 S1* or S2* HPW6
Prerequisite: CHEM2011 or CHEM2021 or CHEM2031 or CHEM2041
Note/s: Not available in S1 1997.
Origin and properties of nuclear radiations, their interaction with matter and their detection and measurement. Effect of radiation on living cells, contamination and radiation hazards, factors affecting radiotoxicity. Applications of isotopes as tracers and radiation sources.

CHEM3311
Environmental Chemistry
Staff Contact: Prof R Howe
CP15 S2 HPW6
Prerequisites: CHEM2011, CHEM2041
Note/s: Availability of elective subjects depends on sufficient students enrolments.

CHEM3321
Applied Organic Chemistry
Staff Contact: A/Prof N Cheetham
CP15 S1 HPW6
Corequisite: CHEM3021
Note/s: Availability of elective subjects depends on sufficient students enrolments.
Polymerisation processes and synthetic polymers; initiators, chain transfer agents, retarders. Pigments and dyestuffs; Basis of colour in organic compounds. Oxidation and reduction processes; theory and industrial importance.
CHEM3510
Quantum Chemistry and Symmetry

Staff Contact: Prof R Howe
CP7.5 S2 HPW3
Prerequisite: CHEM2031

Note/s: Availability of elective subjects depends on sufficient students enrolments.

Principles of quantum mechanics. Approximate methods for quantum mechanical problems. Molecular orbital theories for molecules (e.g., Hückel, ab initio, SCF) and the calculation of molecular properties. Group theory and symmetry operations applied to molecules. Correlation diagrams for chemical reactions and bonding. Applications to vibrational spectroscopy.

CHEM3530
Molecular Structure Determination

Staff Contact: Dr N Duffy
CP7.5 S2 HPW3
Prerequisites: CHEM2031, CHEM2041

Note/s: Availability of elective subjects depends on sufficient students enrolments.

Techniques for the determination of molecular structure, with emphasis on multinuclear NMR and X-ray diffraction. Experimental requirements and procedures, instruments. Interpretation of results, applications in current research problems. Databases and computing; computer graphics and molecular modelling.

CHEM3630
Organometallic Chemistry

Staff Contact: Dr N Duffy
CP7.5 S2 HPW3
Prerequisites: CHEM2021, CHEM2031

Note/s: Availability of elective subjects depends on sufficient students enrolments.

Preparation, structure and reactions of transition metal and main group organometallic compounds. Structure and bonding of ligands; ligand stabilisation and activation; novel effects of ligand bulk and geometry. Catalytic applications of organometallic compounds.

CHEM3640
Computers in Chemistry

Staff Contact: Dr R Haines
CP7.5 S2 HPW3
Prerequisites: CHEM2011, CHEM2041

Note/s: Availability of elective subjects depends on sufficient students enrolments.

Computing techniques introduced through specific chemical applications; simple and complex equilibria, rate equations, analysis of multicomponent mixtures, instrumental calibration curves. Treatment of transient signals. Specific case studies selected from spectroscopy, chromatography, and electrochemistry. Chemical databases and the literature, spectroscopic databases.

CHEM3901
Environmental Toxicology

Staff Contact: Dr G Moran
CP15 S1 HPW6
Prerequisites: CHEM1002 or CHEM1101 and CHEM1201

Note/s: This course is only available in the Advanced Science Environmental Science Program.

Classification and properties of important classes of chemical compounds. Fate of xenobiotics in the human body, including detoxification and bioactivation. Chemical transformations of pollutants in the environment; air, water and soil pollution. Analysis of environmental pollutants at trace levels.

Chemistry Level IV

CHEM4003/CHEM4004
Chemistry 4 (Honours)

Staff Contact: Dr N Duffy
CP120 F

Prerequisites: Completion of Program 0200 or 0205 including Level III subjects totalling 120 Credit Points of which must be Chemistry subjects.

Consists of selected series of lectures on advanced topics in Chemistry and a research project.

The General Education requirements are met within the Honours Program by seminars, discussion and the safety training program.

Students intending to seek admission to this program should consult the School re selection of subjects in the earlier years and apply to the Head of the School for consideration for admission at the end of Year 3 (or completion of requirements for the award of the pass degree).

Servicing Subjects

These are subjects taught within courses offered by other faculties.

For further information regarding the following subjects see the Faculty of Applied Science Handbook and Faculty of Engineering Handbook.

CHEM1806
Chemistry 1EE

Staff Contact: Dr P Chia
CP7.5 S1 HPW3

Prerequisites: HSC Exam Score Range Required: 2 unit Mathematics 60-100, or 3 unit Mathematics 1-50, or 4 unit Mathematics 1-100 and 2 unit Science (Physics) 57-100, or 2 unit Science (Chemistry) 60-100, or 3 unit Science or 90-150, or 4 unit Science 1-200

Note/s: Restricted to Courses 3640 and 3725.


CHEM1807
Chemistry 1ME

Staff Contact: Dr P Chia
CP15 S1 HPW6

Prerequisites: CHEM1101, CHEM1201, CHEM1002

Restricted to Course 3681.

properties of polymers, fuels and lubricants. Surface chemistry.

CHEM1808
Chemistry I CE
Staff Contact: Dr P Chia
CP15 S2 HPW6
Note/s: Excluded CHEM1101, CHEM1201, CHEM1002
Restricted to course 3730.


CHEM1809
Biological Chemistry for Optometry Students
Staff Contact: Dr P Chia
CP30 F HPW6
Prerequisites: HSC Exam Score Range Required: 2 unit Mathematics 60-100, or 3 unit Mathematics 1-50, or 4 unit Mathematics 1-100 and 2 unit Chemistry 53-100, or 3 unit Science 90-150, or 4 unit Science 1-200
Note/s: Restricted to course 3950.


CHEM2818
Physical Chemistry for Materials Science and Engineering
Staff Contact: Prof RF Howe
S1 or S2 HPW6
Prerequisites: CHEM1002 or CHEM1101 and CHEM1201 and MATH1042 or MATH1241 or MATH1032 or MATH1231 or MATH1021
Note/s: Excluded 02.022A.


CHEM2828
Organic and Inorganic Chemistry for Chemical Engineers
Staff Contact: Dr N Duffy
Discussion of selected types of organic reactions to provide a broad cover of the chemistry of aliphatic and aromatic compounds. Survey of the structures, energetics, bonding, reactions and physical properties, and applications, of selected compounds of main group elements and of lanthanide and dblock transition elements.

CHEM2929
Fundamentals of Biological and Agricultural Chemistry
Staff Contact: Dr P Southwell-Keely

CHEM3829
Organic Chemistry
Staff Contact: Prof D Black
The spectroscopic identification of organic compounds, free radical chemistry and electroorganic processes, various aspects of the organic industrial processes such as industrial synthesis based on petrochemicals, and organometalllc reactions of industrial interest. Selected topics from the dyestuff, pharmaceutical and agricultural industries.

CHEM3926
Instrumental Methods of Food Analysis
Staff Contact: A/Prof N Cheetham
Treatment of theory and practice of modern instrumental methods of analysis, with strong emphasis on the analysis of food constituents. Variety of spectroscopic and chromatographic techniques.

CHEM3929
Food Chemistry
Staff Contact: A/Prof N Cheetham
Treatment of the chemistry of important food constituents. Topics include: proteins, carbohydrates, fats and oils, vitamins, natural and synthetic pigments essential oils and flavours, importance of water in foods.
Community Medicine

Community Medicine Level II/III

CMED3111
Genetics of Behaviour
Staff Contact: Dr L Lai
CP15 S1 HPW6
Prerequisite: BIOS1101

Principles of Mendelian, polygene and chromosomal genetics with examples from behavioural genetics. Emphasis on human behaviour in particular the genetics of mental retardation and psychiatric disorders. DNA technology in behavioural genetics. Practical classes aim at pedigree studies and the mathematical treatment of data.

CMED8303
Human Genetics
Staff Contact: Dr L Lai
CP15 S1 HPW6
Prerequisite: BIOS2021

The principles and concepts of human genetics and methods used to study the nature and extent of genetic differences; mechanisms of inheritance and gene expression, gene linkage and patterns of inheritance; principles and applications of population genetics and cytogenetics; modern molecular techniques for human gene mapping, gene localisation, disease and the prospects of gene therapy; genetic fingerprinting and current ethical issues in human genetics.

Community Medicine Level III

CMED8201
Population Genetics
Staff Contact: Dr A Stark
CP15 S1 HPW5
Prerequisite: One statistical methods or theory subject, as approved by the Head of School

The genetic structure of populations: genetic relationships, mating systems, random and assortative mating, inbreeding, sexual selection, finite populations, systematic forces, selection, mutation, migration, genetic distance between populations, genetic load, stable populations, molecular population genetics, evolutionary trees; computer methods.

CMED8202
Human Genetic Analysis
Staff Contact: Dr A Stark
CP15 S2 HPW5
Prerequisites: A genetics subject and a statistical methods or theory subject, as approved by the Head of School.

Principles and methods of human genetics: design of surveys, estimation and applications of genic and genotypic frequencies, selective values, mutation and migration rates, coefficients of kinship, inbreeding and assortative mating, recombination fractions and heritabilities; segregation analysis; risks of recurrence of disease; consequences of human intervention; computer methods.

CMED8302
Human Biochemical Genetics
Staff Contact: Dr L Lai
CP15 S2 HPW6
Prerequisites: BIOC2101, BIOS2021 or CMED8303

Inherited variation of blood group proteins, their possible selective roles, and their application to the study of biological relationships between populations and recent advances in their gene characterisation. Inherited DNA variation or restriction fragment length polymorphism and variable number of tandem repeats, their application to studies of genetic diseases and of human populations. General approach from two loci per chromosome. Application of statistical techniques to analysing population data.

Computer Science and Engineering

Computer Science and Engineering Level I

COMP1001
Introduction to Computing
Staff Contact: Dr G Whale
CP15 S1 or S2 HPW6
Prerequisites: none
Note/s: Excluded COMP1811.

Components of a computer system: hardware, software, users. Computer applications: spreadsheets, databases, word processing, communications. Software solutions to selected problems: document and data processing; WWW authoring and use of internet resources; introduction to application programming using a visual programming language.

COMP1011
Computing 1A
Staff Contact: Dr A Taylor
CP15 S1 or S2 L3 T3
Prerequisites: COMP1001 or HSC TER of 85 or equivalent
Corequisite: MATH1131 or MATH1141
Note/s: Excluded COMP1811.


Computer Science and Engineering Level II

COMP2011
Data Organisation
Staff Contact: Dr G Whale
CP15 S1 or S2 L3 T2
Prerequisite: COMP1021 or COMP1821
Note/s: Excluded COMP9008.

Data types and data structures: abstractions and representations; dictionaries, priority queues and graphs; AVL trees, splay trees, B-trees, Heaps. File Structures: storage device characteristics, keys, indexes, hashing. Memory management. Lab: programming assignments including group project.

COMP2021
Digital System Structures
Staff Contact: Dr A Heiser
CP15 S1 or S2 L3 T2
Prerequisite: COMP1021 or COMP1821
Note/s: Excluded ELEC2012.

Digital systems: switches and gates, boolean algebra, minimisation techniques, combinational and sequential design, timing analysis, finite state machines; analysis, design and realisation of modest digital subsystems, understanding major subsystems in a model computer. Assembly language programming: translation of higher level programming abstractions and data structures to a real computer using an assembler as a target; study of the relationships between the programming model and the hardware model of a computer; understanding of instruction execution. Lab: take-home kits; programming assignments.

COMP2031
Concurrent Computing
Staff Contact: Dr A Sowmya
CP15 S2 L3 T2
Prerequisite: COMP1021 or COMP1821

COMP3131
Parsing and Translation
Staff Contact: Mr K Robinson
CP15 S2 L3 T2
Prerequisite: COMP2011
Note/s: Excluded COMP9102.


COMP3211
Computer Organisation and Design
Staff Contact: Prof G Hellestrand
CP15 S1 L3 T2
Prerequisite: COMP2021 or ELEC2021
Note/s: Excluded COMP9211.

Combinational and sequential circuit design; synchronisation, communication and arbitration; register transfer specification (modal). Arithmetic design strategies. Memory Organisation: physical and virtual address space; operating system and compiler support; memory mapping and caching. Communications Organisation: shared memory, memory mapping; network systems. Processor design: the instruction pipeline; hardwired and micro-programmed control; instruction sets; RISC and object-based processor organisation. Error Detection/Correction and Fault Tolerance; coding theory. Lab: major design project.

COMP3221
Microprocessors and Interfacing
Staff Contact: Dr S Matheson
CP15 S2 L3 T2
Prerequisite: COMP2021
Note/s: Excluded ELEC2041, COMP9221, ELEC3020.

The concept of a microprocessor system, busses, address spaces, memory devices, bus timing, bus standards, the VME bus, I/O device interfacing, polling, interrupts, DMA interfaces, the 68000 processor family, the C programming language, device drivers, the device driver software environment, other microprocessors, advanced topics. Laboratory work involves interfacing to and programming MC68000-series microprocessor-based systems. Lab: experimental work involving hardware and software.

COMP3321
Operating Systems for Engineers
Staff Contact: Dr Jayasooriah
CP15 S1 or S2 L3 T2
Prerequisite: COMP2011 or COMP2031 or ELEC3020
Note/s: Excluded COMP9201.


COMP3311
Database Systems
Staff Contact: Dr A A Nguy
CP15 S2 L3 T2
Prerequisite: COMP2011
Note/s: Excluded COMP9311.

The relational database model, object-orientated databases, 4GL query languages, optimization, database design principles are realised through a major project involving both design and implementation of a database application using a sophisticated DBMS system. Lab: programming assignments.

COMP3321 Business Systems Organisation
Staff Contact: School Office
CP15 SS L3 T2
Prerequisite: COMP2011
Note/s: Not offered in 1997.

Review of the organisation of accounting systems: in journals, accruals, merchandising. The structure, design, development, and integration of various business systems selected from the following: general ledger; financial reporting; debtors; creditors; stock control; invoicing; purchasing and receiving; fixed assets; payroll. Systems for generating application systems and packages. User interfaces. File specifications and B-tree index files. Distributed commercial systems. The partial implementation of a business system is undertaken as a group project.

COMP3331
Computer Networks and Applications
Staff Contact: Dr J Zic
CP15 SS L3 T2
Prerequisite: COMP2011
Note/s: Excluded COMP9331.

Networking technology and protocol overview. Local Area Networks: architecture; media; generalised Medium Access Control methods. IEEE802 LAN standards. Datalink layer: design principles and protocols such as stop and wait, sliding windows, and Automatic Repeat Request schemes. Network Layer: design principles; addressing; message routing; congestion and traffic control. Internetworking: issues; bridges and routers. The Internet Protocol (IP) and the Internet. Internet Routing via exterior and interior router level protocols such as EGP, RIP, OGPSF and HELO. Internet Transport Control Protocol (TCP), RCP and Session control. Network management using SNMP, The Domain Name System (DNS), Mail Systems. File transfer protocols. Encryption and Security. A view to the future of networking.

COMP3411
Artificial Intelligence
Staff Contact: Dr C Sammut
CP15 S1 L3 T2
Prerequisite: COMP2011
Note/s: Excluded COMP9414.

Philosophical and psychological issues. Lab: logic programming assignments.

COMP3421
Computer Graphics
Staff Contact: Dr T Lambert
CP15 S2 L3 T2
Prerequisite: COMP2011
Note/s: Excluded COMP9415.


COMP3511
Human Computer Interaction
Staff Contact: Dr C Quinn
CP15 S1 L3 T2
Prerequisite: COMP2011
Note/s: Excluded COMP9511.

Introduces analysis and design of user-system interactions. A cognitive approach focuses on user goals and enabling technologies, progressing from principles to process. Topics: human information processing system, interaction devices and components, communication models, the design cycle, and evaluation. Lab: User interface design; group project.

Computer Science and Engineering Level IV

COMP4914/COMP4913
Computer Science 4
Staff Contact: Dr T Lambert
CP120 F
Prerequisite: Completion of program 0600 including Level III subjects totalling 90 Credit Points.

The Honours year consists of advanced coursework electives and a thesis. General Education requirements are satisfied by the completion of the subject COMP9015 Issues in Computing which is taken as part of the Honours subject.

Economics

Economics Level I

ECON1101
Microeconomics 1
Staff Contact: Dr N Warren
CP15 S1 or S2 HPW3
Prerequisites: HSC minimum mark required: Contemporary English 60, 2 unit English (General) 60, or 2 unit English 53, or 3 unit English 1
Note/s: Restricted to programs 0600, 1000, 1006, 1060, 1061, 1066, 1067, 1400, 6810.


ECON1102
Macroeconomics 1
Staff Contact: Dr T Stegman
CP15 S1 or S2 HPW3
Prerequisite: ECON1101
Note/s: Restricted to programs 0600, 1000, 1006, 1060, 1061, 1066, 1067, 1400, 6810.

Introduction to the analysis of aggregate output, employment and economic growth and their relationship to the policy issues of unemployment, inflation and the balance of payments. Social accounting and aggregate income and expenditure analysis. Introduction to macroeconomic models of income determination; consumption and investment functions. Role of money and financial institutions; interactions between goods and money markets in equilibrium and disequilibrium situations. Analysis of recent Australian macroeconomic experience.

ECOH1301
Australia in the International Economy in the 20th Century
Staff Contact: Dr B Dyster
CP15 S1 HPW3
Prerequisites: HSC minimum mark required: Contemporary English 60, 2 unit English (General) 60, or 2 unit English 53, or 3 unit English 1
Note/s: Restricted to programs 0600, 1000, 1006, 1060, 1061, 1066, 1067, 6810.

The international economy at the end of the 19th century: trade, factor flows, and payments arrangements. Problems of the international economy between the wars. The impact of World War II and the international economy in the postwar era. Australian economic development and its relationship with the international economy; economic fluctuations; problems of the interwar period; growth of manufacturing; government policy and action; the importance of the mining industry; economic development and the distribution of income and wealth.

Economics Level II

ECON2103
Business and Government
Staff Contact: A/Prof R Conlon
CP15 S2 HPW3
Prerequisite: ECON1102 or ECON1103
Note/s: Restricted 0600, 1000, 1006, 1060,1066, 1400, 6810.

This subject examines how government affects the business environment at the microeconomic level. The case for intervention and the benefits of deregulation and privatisation are analysed, with reference to particular industries. The effects on business of government instrumentalities such as the Industries Commission, Prices Surveillance Authority, Trade Practices Commission and Foreign Investment Review Board are examined. Issues relating to microeconomic reform, economic rationalism, market failure and government business enterprises are explored.
ECON2104
Australian Macroeconomic Policy
Staff Contact: A/Prof G Kingston
CP15 S1 HPW3
Prerequisite: ECON1102 or ECON1104
Note/s: Restricted 0600, 1000, 1006, 1400, 6810.
This subject examines economic growth and fluctuations and the effect this has on the business environment and the community. Explains the main macroeconomic tools and techniques used by governments and the Reserve Bank to implement fiscal, monetary and income policies. The implications for inflation, unemployment, interest rates and exchange rates, and foreign debt are discussed.

Environmental Science

ENVS1011
Environmental Science 1
Staff Contact: A/Prof B Fox
CP15 S1 HPW6
Note/s: Restricted to the Environmental Science Programs.
An overview of some of the many problems encountered by Environmental Scientists: climatic change, disturbance events (such as logging, fire and mining), management and conservation of marine and terrestrial resources, water management and pollution are considered. These problems are placed in perspective with regional case studies to highlight specific issues using seminars, workshops, field excursions and group projects. Special emphasis is placed on the political aspects and values inherent in environmental issues.

Electrical Engineering

ELEC1011
Electrical Engineering 1
Staff Contact: Dr EH Fooks
S1 or S2 L3 T3
Corequisite: PHYS1969 or equivalent

ELEC2030
Circuit Theory
Staff Contact: Dr KC Daly
S1 L2 T1.5
Prerequisites: ELEC1011, MATH1032 or MATH1231
Corequisite: MATH2620 or MATH2520
Note/s: Excluded ELEC2010. Restricted to Program 0600.
Dynamic response of linear circuits: 1st and 2nd order circuits with DC sources, introduction to higher order circuits. Sinusoidal steady state operation: phasors, impedance and admittance; dynamic response of circuits driven by sinusoidal sources; linearity, network theorems; resonance, bandwidth, and quality factor. Two-port network: parameters, circuits as filters. Power in steady-state circuits; average and reactive power, power factor, power factor correction. Operational amplifiers and ideal transformers. The use of a computer aided circuit analysis package. Laboratory Technique.

ELEC2011
Systems Theory
Note/s: Restricted to program 0176.
For details see Engineering Handbook

ELEC3004
Signal Processing 1
Note/s: Restricted to program 0176.
For details see Engineering Handbook

ELEC3013
Communication Systems 1
Note/s: Restricted to program 0176.
For details see Engineering Handbook

ELEC3016
Electronics 3
Note/s: Restricted to program 0176.
For details see Engineering Handbook

ELEC4010
Introduction to Management for Electrical Engineers
Note/s: Restricted to program 0176.
For details see Engineering Handbook

Environmental Science Level I
Environmental Science Level II

ENVS2010
Population Analysis and Environment
Staff Contact: A/Prof B Fox or A/Prof I Burnley
CP7.5 S2 HPW3
Prerequisite: ENVS1011

The impact of human population growth on all aspects of resource management in the environment. Limiting resources, time lags, survivorship and the relation to their effects on demographic processes in human populations. The impact of the world population on global-scale environmental problems in terms of different cultures and developmental levels is compared to the Australian situation.

ENVS2020
The Urban Environment
Staff Contact: A/Prof B Fox or Dr B Parolin
CP7.5 S2 HPW3
Prerequisite: ENVS1011

Consideration of the special impacts which urbanisation has on the environment and of the urban public as a component of the environment. The impacts of industrial and residential activities, conflicts between these, and government regulatory mechanisms.

ENVS2801
Aspects of Environmental Policy and Law
Staff Contact: A/Prof B Fox
CP15 S2 HPW4
Prerequisite: ENVS1011

This subject examines the legal issues likely to be encountered by an environmental scientist and addresses the question: Is the adversary system the most appropriate method of dealing with conflict in determining the appropriate method of dealing with conflict in determining the appropriate use of resources? The difficulties encountered with the multiplicity of authorities and interactions between local government regulations, state and federal laws and international law are considered. Case studies examined at each of these levels are used to provide a brief overview of current environmental law in Australia and the World, with examples.

Environmental Science Level IV

Three types of honours projects (A, B or C) may be taken in stage 4 of the Environmental Science Course 3976. These are set out for each of the streams:

ENVS4104
Environmental Science 4 Biology B (Honours)
ENVS4204
Environmental Science 4 Marine B (Honours)
ENVS4304
Environmental Science 4 Microbiology B (Honours)
ENVS4404
Environmental Science 4 Chemistry B (Honours)
ENVS4504
Environmental Science 4 Geography B (Honours)
ENVS4604
Environmental Science 4 Geology B (Honours)

ENVS4704
Environmental Science 4 Mathematics B (Honours)
Staff contact: A/Prof B Fox
CP60 S1, S2, or S3
Prerequisite: Completion of 360CP (with credit average) of appropriate program (6861 to 6869).
Half year research project and thesis.

ENVS4108/(ENVS4109 if P/T)
Environmental Science 4 Biology A (Honours)
ENVS4208/(ENVS4209 if P/T)
Environmental Science 4 Marine A (Honours)
ENVS4308/(ENVS4309 if P/T)
Environmental Science 4 Microbiology A (Honours)
ENVS4408/(ENVS4409 if P/T)
Environmental Science 4 Chemistry A (Honours)
ENVS4508/(ENVS4509 if P/T)
Environmental Science 4 Geography A (Honours)
ENVS4608/(ENVS4609 if P/T)
Environmental Science 4 Geology A (Honours)
Staff contact: A/Prof B Fox
CP120 F (or 60CPP/T)
Prerequisite: Superior performance in 360CP of appropriate program (6861 to 6868), including all core requirements except for honours project.
Full year research project and thesis.

ENVS4118
Environmental Science 4 Biology C (Honours)
ENVS4218
Environmental Science 4 Marine C (Honours)
ENVS4318
Environmental Science 4 Microbiology C (Honours)
ENVS4418
Environmental Science 4 Chemistry C (Honours)
ENVS4518
Environmental Science 4 Geography C (Honours)
ENVS4618
Environmental Science 4 Geology C (Honours)
Staff contact: A/Prof B Fox
CP120 C (or 60CPP/T)
Prerequisite: Completion of 360CP (with credit average) of appropriate program (6861 to 6868).
Combination of research project and thesis with course work approved by Program Adviser.

Geography

Geography Level I

GEOG1064
Global Development, Economy and Environment in Australia
Staff contact: A/Prof I Burnley, Dr M Sant, Mr K Dunn
CP15 S1 L4 T2
Note/s: Students will incur personal costs.
Progressive integration of Australia into global capitalism, and developmental and environmental consequences of this process in Australia and adjacent territories. Colonial and dependent development in Australia, and resource
use; applications of recent development theory as applied to core-periphery relationships between world financial centres and Australia, and between Australia and adjacent territories; transnational organisations and technology transfer and investment in Australia, and relationships amongst changing trade patterns, production and development in Australia. Impacts of specific economic imperatives population growth and patterns of production and consumption on resources, land degradation and flora and fauna in Australia. Role of political factors and management quality in sustainable development and environmental protection.

GEOG1073
Environmental Processes and Analysis
Staff Contact: Mr D Edwards
CP15 S2 L3 T3
Note/s: Excluded: GEOG1031 Environmental Processes.

The subject is an introduction to physical geography outlining the processes and history of physical and biological components of the environment. This knowledge is then used to improve our understanding of global environmental problems. Aspects of the environment considered include the Earth's energy balance, atmospheric systems, ecosystems, soils and erosion processes. GEOG1073 involves a 1 hour laboratory introductory methods of analysis of climates, soils, hydrology, landforms and vegetation.

Geography Level II

GEOG2013
Geographical Data Analysis
Staff Contact: Mr S Filan
CP15 S1 L1 T3
Prerequisite: GEOG1073

Inferential statistics and hypothesis testing in the analysis of spatial data. Methods of sampling, comparing populations and of identifying relationships through correlation, association, regression, time series and classification. Topics covered are applicable to physical and economic geography.

GEOG2021
Introduction to Remote Sensing
Staff Contact: Mr A Evans
CP15 S2 L2 T2
Prerequisite: Successful completion of a Year 1 program in Applied Science, Science or Arts or equivalent as approved by the Head of School

Principles and technical aspects of remote sensing. Forms of available imagery, their utility and facilities for interpretation. Basic aerial photograph interpretation techniques relevant to environmental assessment. Introduction to principles of the electromagnetic spectrum, photometry and radiometry. Sensor types, image formation and end products associated with selected satellite programs, including Landsat, Land-cover and land-use interpretation procedures in visual image analysis. Basic procedures in machine-assisted image enhancement.

GEOG2025
Biogeography
Staff Contact: A/Prof M Fox
CP15 S2 L2 T2
Prerequisite: GEOG1073 and both BIOS1101 and BIOS1201


GEOG2051
Soils and Landforms
Staff Contact: Dr W Erskine, Mr J Sammut
CP15 S1 L2 T2
Prerequisite: GEOG1073

An introduction to soil classification schemes with particular emphasis on the soils and landforms of floodplains and the Riverine Plain, NSW. Long term development of landscapes with emphasis on the evolution of mountain ranges. Arid zone and coastal landforms emphasising current processes and Quaternary history.

GEOG2092
Australian Social and Economic Landscapes
Staff Contact: A/Prof I Burnley, Ms B Scott, Mr K Dunn
CP15 S1 L2 T2
Prerequisite: GEOG1064

Analysis of the principal factors and forces shaping the contemporary social and economic landscapes of Australia and the problems arising. Themes include Australia's changing population profile and distribution, the changing face of Australian cities, regional disparities in social and economic well-being, changing patterns of employment and industrial location, and the declining fortunes of rural Australia. Planning and policy responses to the problems of spatial change and reorganisation are emphasised and future scenarios addressed.

Geography Level III

GEOG3011
Pedology
Staff Contact: A/Prof M Melville
CP15 S1 L2 T2
Prerequisites: GEOG1073 and one of CHEM1101 or CHEM1401 or both GEOYL1101 and GEOYL201 or both BIOS1101 and BIOS1201

Methodology of pedogenic studies and the application of these studies to the understanding of soil and form relationships. Soil physical and chemical properties and their interrelationships, emphasising clay mineral structure and behaviour, soil solution chemistry, soil water movement and the application of these properties to elements of soil mechanics. Soil properties in natural, rural and urban landscapes, including assessment of soil fertility,
swelling characteristics, dispersibility, erodibility and aggregate stability. Laboratory analysis of soil physical and chemical characteristics with emphasis on properties associated with land capability assessment. Statistical analysis of soil data and its application to mapping. The use of soil micromorphological and mineralogical studies in pedology.

GEOG3025
Geomorphology
Staff Contact: Dr W Erskine
CP15 S2 L2 T2
Prerequisite: GEOG2051

Drainage basin processes including: weathering, the production of runoff and sediment, sediment tracing, sediment budgets and denudation histories. The processes of river channel changes including sediment transport, hydraulics, hydrology, hydraulic geometry and channel patterns. There will be an emphasis on the application of geomorphic principles to land management.

GEOG3032
Remote Sensing Applications
Staff Contact: Mr A Evans
CP15 S1 L2 T2
Prerequisite: GEOG2021 or GMAT8711

Spectral characteristics of natural phenomena and image formation. Ground truthing, collection and calibration. Introduction to computer classification procedures. Multitemporal sampling procedures, image to image registration and map to image registration. Major applications of remote sensing in the investigation of renewable and non-renewable resources to include: soils, geology, hydrology, vegetation, agriculture, rangelands, urban analysis, regional planning, transportation and route location and hazard monitoring.

GEOG3042
Environmental Impact Assessment
Staff Contact: Dr W Erskine, Prof B Garner, A/Prof M Fox
CP15 S1 L2 T2
Prerequisite: GEOG1073

Rationale and basic objectives; history and legislative framework: standardised types of environmental impact assessment EIA, including matrix approach, adopted methods of EIA in Australia. Techniques of impact evaluation in terms of socio-economic criteria. Environmental decision making and planning under conditions of uncertainty. Case studies exemplifying procedures, techniques and issues. Trends, changes and possible future developments in EIA. Practical exercises representing components of typical EIAs.

GEOG3062
Environmental Change
Staff Contact: To be advised
CP15 S1 L2 T2
Prerequisite: Successful completion of a Year 2 Program in Applied Science, Science, or Arts or equivalent as approved by the Head of School


Quaternary climatic change and modelling. Human impact on the atmosphere and climatic consequences.

GEOG 3122
Geographic Information Systems
Staff Contact: Prof BJ Garner, Mr S Filan
CP15 S2 L2 T2
Prerequisite: Successful completion of at least one year of course 2700.0600 Computer Science or course 2700.1400 Information systems, or by permission from the Head of School.

Enrolments in this subject are constrained by availability of laboratory facilities. All enrolments must be approved by the Head, School of Geography, or her representative.

An introduction to geographic information systems with special reference to computer-based systems for resource evaluation. Case study evaluation, application of the MAP and other GIS software.

GEOG3123
Applied Geographic Information Systems
Staff Contact: Prof BJ Garner, Mr S Filan
CP15 S2 L2 T2
Prerequisite: successful completion of at least three subjects offered by the School of Geography; or special permission from the Head of the School of Geography or her representative.

An introduction to information systems of particular relevance for geographers with special reference to computer-based systems for resource evaluation. Case study evaluation, application of the MAP and other GIS software.

GEOG3142
Geographic Information Systems Applications
Staff Contact: Dr Q Zhou
CP15 S2 L2 T2
Prerequisite: GEOG3122 or GEOG3123

Examples of applications of geographical information systems in resources and environmental management and urban and regional analysis. Case studies include the monitoring of land degradation, management of biological and physical resources, environmental conflict resolution, administration of land records, provision of health services, transport and land use planning, marketing and territory assignment. Visits to inspect facilities and activities of key government agencies are included.

GEOG3161
Computer Mapping and Data Display
Staff Contact: Prof BJ Garner
CP15 S1 L1 T3
Prerequisite: Successful completion of a Year 1 program in Science or Arts or equivalent as approved by Head of School

Introduction to theoretical and practical problems in displaying data graphically and constructing thematic maps by computer using the Map info desktop mapping package. The emphasis is on developing skills in automated cartography through hands-on experience culminating in the preparation of a folio of maps of selected census data. No previous computing expertise is required.
GEOG3172
Spatial Population Analysis
Staff Contact: A/Prof I Burnley
CP15 S2 L2 T2
Prerequisite: GEOG2092
Population growth and structure in an international urban and regional context. The components and processes of population change; fertility, mortality and migration set within the framework of demographic transition and development theory. Theories of migration and mobility and of optimal populations. Demographic and social indicators for urban and regional analysis and their implications for inequalities in living conditions, at local, regional, and international scales. The adjustment of immigrant and migrant populations to the urban environment.

GEOG3181
Urban Activity Systems
Staff Contact: Dr B Parolin
CP15 S1 L2 T2
Prerequisite: GEOG2092
Focus is on trip making, movement, and activity patterns in urban areas. Topics include: the activity concept, travel behaviour and urban spatial structure; constraints to individual travel behaviour and activity pattern linkages; the urban transport disadvantaged; public transport problems and issues in Australian capital cities; travel and activity consequences of transport infrastructure developments.

GEOG3192
Urban and Regional Development
Staff Contact: Dr M Sant
CP15 S2 L2 T2
Focus is on the growing importance of recreation and tourism in urban and regional systems. Emphasis is on problems of land use and resource allocation and implications for planning in Australia. Theoretical and practical studies of leisure environments, open space provision, recreational demand, methods of forecasting, management of supply, resort development, economic and environmental impact assessment.

GEOG3211
Australian Environment and Natural Resources
Staff Contact: A/Prof M Fox, Mr J Sammut
CP15 S1 L2 T2
Prerequisite: GEOG1073
The characteristics of Australia's physical and biotic environment: geology, climate, geomorphology, soils, vegetation and fauna. The problems of exploiting Australia's water and land resources including the degradation of land by erosion, salinisation and soil fertility decline; and habitat loss and fragmentation.

GEOG3333
Special Topic
Staff Contact: Dr B Parolin
CP15 F T4
Admission by permission to suitable students with good passes in at least four subjects at Upper Level. Individually supervised reading and assignments as an approved topic in Geography not otherwise offered.

Geography Level IV
GEOG4100/GEOG4050
Honours Geography
Staff Contact: Dr A Skidmore
CP120/60 F
Prerequisites: Completion of program 2700, 2527 or 6851 including GEOG2013 and Level III subjects totalling 120 Credit Points.
Details of Honours Geography for Science students are available from the School of Geography office. Students are required to undertake an original piece of work extending throughout the year and to submit a thesis based upon it; and to participate in seminars and fieldwork as notified by the School.
The General Education requirements are met through compulsory coursework during the Honours program.

GEOG4300
Vegetation management
Staff Contact: A/Prof M Fox and Dr A Skidmore
CP15 S1 L2 T2
Prerequisites: Completion of Stage 3 of a 4 year degree program and by permission of Head of School
Note/s: Contact hours include some fieldwork which forms a compulsory part of this subject. Students will incur some personal costs for fieldwork.
The subject provides a background in theory and practice in vegetation management, particularly under Australian conditions. It covers the description and measurement of vegetation, vegetation dynamics, vegetation response to perturbation and human impacts, theories, and modelling of vegetation change. A third of the subject is devoted to management strategies of selected vegetation types.

GEOG4310
River management
Staff Contact: Dr W Erksine
CP15 S2 L2 T2
Prerequisites: Completion of Stage 3 of a 4 year degree program and by permission of Head of School
Note/s: Contact hours include some fieldwork which forms a compulsory part of this subject. Students will incur some personal costs for fieldwork.
The principles of river management including total or integrated catchment management, environmental impact assessment, in-stream uses and hydrogeomorphic behaviour. Issues covered include regulated rivers, inter-basin diversions, extractive industries, urbanisation, river engineering, legislative controls and institutional responsibilities. The course develops an understanding of how and why rivers respond to human activities and ways of ameliorating negative impacts. Field work is an essential part of the subject and the Nepean River will be used as a case study of management problems.

GEOG4320
Soil Degradation and Conservation
Staff Contact: A/Prof M Melville and Dr W Erksine
CP15 S2 L2 T2
Prerequisites: Completion of Stage 3 of a 4 year degree program and by permission of Head of School
Note/s: Contact hours include some fieldwork which forms a compulsory part of this subject. Students will incur some personal costs for fieldwork.
Identification, assessment and analysis of the main processes of soil degradation, including the role of climate, vegetation, geomorphology and pedology in controlling the processes. Discussions of appropriate management strategies for reducing degradation and for reclaiming degraded landscapes. Topics include: surface wash, gully erosion, wind erosion, soil acidification, soil structure decline, salinisation, accumulation of toxins and desertification.

Applied Geology

Field tutorials are an essential part of these subjects, and are held during weekends and/or recesses. Dates and costs are available during the first week of the subject. Attendance is compulsory.

Applied Geology Level I

GEOL1101
Geological Processes
Staff Contact: Dr MD Buck
CP15 S1 L3 T2
Prerequisites: HSC Mark Range Required – 2 unit Mathematics 60-100, or 3 unit Mathematics 1-50, or 4 unit Mathematics 1-100, and 2 unit Science (Physics) 53-100, or 2 unit Science (Chemistry) 53-100, or 2 unit Science (Geology) 53-100, or 2 unit Science (Biology) 53-100, or 4 unit Science 1-50, or 3 unit Science 90-150
Note/s: Up to 2 days of fieldwork is a compulsory part of this subject. Students will incur personal costs. Details will be provided during the first week of the subject.


GEOL1201
Geological Environments
Staff Contact: Dr MD Buck
CP15 S2 L3 T2
Prerequisite: GEOL1101 (except for program 6866)
Note/s: Up to 4 days of fieldwork is a compulsory part of this subject. Students will incur personal costs. Details will be provided during the first week of the subject.


Applied Geology Level II

GEOL2011
Mineralogy and Igneous Petrology
Staff Contact: Dr PC Rickwood, A/Prof BJ Hensen
CP15 S1 L2 T3
Prerequisite: GEOL1201
Note/s: Fieldwork of up to 4 days is a compulsory part of this subject and may be held in the last week of the Mid year Recess. Students will incur personal costs. Details will be provided in the first week of the subject.


GEOL2022
Petrology and Structural Geology
Staff Contact: A/Prof BJ Hensen, Dr PG Lennox, A/Prof CR Ward
CP15 S2 L3 T2
Prerequisite: GEOL2011
Excluded: GEOL7233, GEOL8201
Note/s: Fieldwork of up to 4 days is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the subject.


GEOL2031
Sedimentology and Palaeontology
Staff Contact: Dr M D Buck, A/Prof AD Albani
CP15 S1 L3 T2 Field 1
Prerequisite: GEOL1201
Excluded: GEOL6201, GEOL7233, GEOL7321, GEOL8220
Note/s: Fieldwork of up to 5 days is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the subject.

GEOL2041
Geological Computing
Staff Contact: Dr DR Cohen
CP7.5 S1 L2 T1
Prerequisite: GEOL1101

Introduction to the use of PC's and networking, with emphasis on geological software. Introduction to programming with statistical applications pertinent to geoscience. Introduction to statistical theory.

GEOL2042
Geological Statistics
Staff Contact: Dr DR Cohen
CP7.5 S2 L2 T1
Prerequisite: GEOL2041

Introduction to geostatistics, population characterisation and splitting. ANOVA methods, regression analysis, EDA, Markov chains, analysis of oriented data and processing of spatial geological data.

GEOL2051
Introductory Geophysics
Staff Contact: Mr D Palmer
CP15 S1 L2 T1
Prerequisite: GEOL1101

Note/s: Field work of up to 5 days is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the subject.

Principles of gravity, geomagnetism, palaeomagnetism, geothermy and seismology and their relation to shape, internal constitution and dynamic processes of the earth. Introduction to radiometric, gravity and magnetic exploration methods.

GEOL2062
Geological Mapping
Staff Contact: A/Prof AD Albani, Mr G McNally
CP15 S2 L2 T1
Prerequisite: GEOL1101 or GEOL1201
Excluded: GEOL8380

Note/s: Field work of up to 5 days is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the subject.


GEOL2072
Environmental Geology
Staff Contact: Dr J Jankowski, Mr G McNally, A/Prof AD Albani
CP7.5 S2 L2 T1


GEOL2092
Geochemistry
Staff Contact: Dr DR Cohen
CP7.5 S2 L2 T1
Prerequisite: GEOL1201
Exclusion: GEOL6331, GEOL7323


GEOL6201
Marine Geology 1
Staff Contact: A/Prof AD Albani, Dr PC Rickwood, Dr MD Buck
CP15 F L1 T2
Prerequisites: GEOL1101 and GEOL1201
Excluded: GEOL2031, GEOL7233, GEOL7321, GEOL8220

Note/s: Field work of five days in a compulsory part of the subject. Students will incur personal costs. Details will be provided in the first week of the subject.

Sedimentology. Flow regimes and bedding forms, sedimentary structures. Modern and ancient sedimentary environments of deposition, alluvial, nearshore, shelf and deep sea, in both terrigenous clastic and carbonate/evaporite domains. The facies concept: lateral and vertical relationships between depositional environments and associated lithofacies within developing sediment wedges. Use of the polarising microscope. Mineralogy and Petrology of igneous and sedimentary rock types of the ocean floor and their significance.

Sedimentary Petrology. The influence of transportation deposition and diagenesis on the composition texture and structure of detrital sedimentary rocks. The non clastic sedimentary rocks including phosphates, evaporites, ferruginous and siliceous deposits.
Principles of gravity, geomagnetism, palaeomagnetism, geothermy and seismology and their relation to shape, internal constitution and dynamic processes of the earth. Introduction to radiometric, gravity and magnetic exploration methods.

**GEOL7223**

*Surficial Constituents*

*Staff Contact: Dr PC Rickwood, A/Prof CR Ward*

*CP15 F L2 T1*

*Prerequisite:* GEOL1101 or GEOL1201

*Excluded:* GEOL2011, GEOL2022, GEOL3102, GEOL8201


**GEOL7233**

*Processes in Environmental Geology*

*Staff Contact: A/Prof AD Albani*

*CP15 F L2 T1*

*Prerequisite:* GEOL1101 or GEOL1201

*Excluded:* GEOL2031, GEOL2072, GEOL6201, GEOL7321, GEOL8220

*Note/s:* Fieldwork of up to 5 days is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the subject.

Sedimentology. Flow regimes and bedding forms, sedimentary structures. Modern and ancient sedimentary environments of deposition, alluvial, nearshore, shelf and deep sea, in both terrigenous clastic and carbonate/en evaporite domains. The facies concept: lateral and vertical relationships between depositional environments and associated lithofacies within developing sediment wedges.


**GEOL8201**

*Sedimentary and Metamorphic Petrology*

*Staff Contact: A/Prof CR Ward, A/Prof BJ Hensen*

*CP15 S2 L4 T2*

*Prerequisite:* GEOL2011

*Excluded:* GEOL2022, GEOL7223, GEOL3102, GEOL6311

The influence of transportation, deposition and diagenesis on the composition, texture and structure of detrital sedimentary rocks. The nonclastic sedimentary rocks including phosphates, evaporites: ferruginous and siliceous deposits. The structure and properties of the clay mineral groups including the kaolinites, illites, smectites, chlorites, mixed layered and fibrous clay minerals. Origin and classification of metamorphic rocks as an aid in understanding common mineral assemblages.

Petrographic studies of common metamorphic rocks.

**GEOL8220**

*Sedimentology*

*Staff Contact: Dr MD Buck*

*CP7.5 S1 L1 T1*

*Prerequisite:* GEOL1201

*Note/s:* Excluded GEOL2031, GEOL6201, GEOL7233, GEOL7321. Field work of up to 5 days in a compulsory part of the subject. Students will incur personal costs. Details will be provided in the first week of the subject.

As for Sedimentology in GEOL2031 Sedimentology and Palaeontology.

**GEOL8221**

*Introductory Structural Geology*

*Staff Contact: A/Prof CR Ward, Dr P G Lennox, A/Prof BJ Hensen*

*CP7.5 S2 L1 T1*

*Prerequisite:* GEOL1201

*Note/s:* Excluded GEOL2022. Field work of up to 4 days in a compulsory part of the subject. Students will incur personal costs. Details will be provided in the first week of the subject.

Origin and classification of metamorphic rocks as an aid in understanding common mineral assemblages. Petrographic studies of common metamorphic rocks.

Structural Geology. Origin, classification and description of structural elements and analysis of simple fracture systems. Tectonics and tectonic analysis.

**Applied Geology Level II/III**

**GEOL6231**

*Coastal Monitoring Techniques*

*Staff Contact: A/Prof AD Albani*

*CP15 S1 L1 T2*

*Note/s:* Field work of up to 4 days is a compulsory part of this subject. Students will incur personal costs.

and determination of tidal planes. Soundings and bathymetric surveys. Shallow water investigations for seabed and bedrock morphologies. Through its intensive practical approach, the course is designed to give each student an understanding of coastal surveying applicable to a large variety of small scale investigations, from beach to estuarine monitoring.

Applied Geology Level III

GEOL3011
Mineralogical Techniques
Staff Contact: Dr PC Rickwood
CP7.5 S1 L2 T1
Prerequisite: GEOL1201
Excluded: GEOL7323

GEOL3021
Igneous and Metamorphic Processes
Staff Contact: A/Prof BJ Hansen
CP15 S1 L2 T1.5
Prerequisite: GEOL2011 and GEOL2022
Note/s: Fieldwork of up to 3 days is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the subject.


GEOL3031
Stratigraphy and Basin Analysis
Staff Contact: Prof J Roberts
CP22.5 S1 L2 T2
Prerequisite: GEOL1201
Note/s: Field work of up to 8 days is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the subject.


GEOL3052
Exploration Geophysics
Staff Contact: Mr D Palmer
CP15 S2 L2 T1
Prerequisite: GEOL1201
Note/s: Field work of up to 3 days is a compulsory part of this subject. Students will incur personal costs.

An introduction to the theory and application of geophysical methods to mineral, petroleum, coal, groundwater, and geotechnical studies. The methods covered include gravity, magnetic, seismic refraction, shallow seismic reflection, DC electrical resistivity, induced polarization, electromagnetic, transient electromagnetic, radar, and geophysical well logging. Each method is described in terms of the fundamental physical principles, data acquisition and field techniques, data processing and presentation, and quantitative interpretation.

GEOL3072
Engineering Geology
Staff Contact: Mr GH McNally
CP7.5 S2 L2 T1
Note/s: Fieldwork of up to 2 days is a compulsory part of this subject. Students will incur personal costs.

Intact rock, discontinuities and rock masses; weathering engineering properties and testing of soils; soil and rock mechanics fundamentals; soil and rock construction materials applications of geology in the investigation and design of roads, dams, tunnels and mines.

GEOL3082
Structural Geology
Staff Contact: Dr PG Lennox
CP15 S2 L2 T2 Field 1
Prerequisite: GEOL2022
Note/s: Field work of up to 5 days is a compulsory part of this subject. Students will incur personal costs.

Structural Geology. Structural analysis at the microscopic, mesoscopic and macroscopic scales. Structural analysis using Bermagui, Cooma and Broken Hill Terrains. Folds, faults and foliation development. Strain analysis, deformation mechanisms and the relationship between deformation and metamorphism.

GEOL3092
Exploration Geochemistry
Staff Contact: Dr AC Dunlop, Prof GJS Govett
CP7.5 S2 L2
Prerequisites: GEOL2092 and GEOL3101
Principles and techniques of soil drainage and rock geochemistry as applied to mineral exploration.

GEOL3101
Ore Deposits
Staff Contact: Dr AC Dunlop
CP15 S1 L3 T2 Field 1
Prerequisite: GEOL2022 and GEOL2092
Note/s: Field work of up to 4 days is a compulsory part of this subject and will be held in the last week of the Mid year Recess. Students will incur personal costs.
Geological setting, characteristics and genesis of the major categories of ore deposits. Laboratory study of specimens, thin sections and polished sections from these ore deposit categories.

**GEOL3102**

**Fossil Fuels and Nonmetallic Resources**

*Staff Contact: A/Prof CR Ward*

CP15 S2 L3 T2 Field 1

*Prerequisite: GEOL1201*

*Excluded: GEOL6311, GEOL7221, GEOL8201*

*Note/s: Fieldwork of up to 3 days is a compulsory part of this subject. Students will incur personal costs.*


**GEOL6311**

**Marine Geology 2**

*Staff Contact: A/Prof AD Albani*

CP15 S2 L1 T2

*Prerequisite: GEOL6201*

*Excluded: GEOL2072, GEOL3102, GEOL8201*

Structure and properties of the clay mineral groups including the kaolinites, illites, smectites, chlorites, mixed layered and fibrous clay minerals. Techniques for identification of the clay minerals.


**GEOL6321**

**Coastal Environmental Assessment**

*Staff Contact: A/Prof AD Albani*

CP15 S2 L1 T2

*Note/s: Field work of up to 3 days is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the subject.*

The interaction of water masses, bottom sediments and benthic organisms. Sampling techniques, analytical methodology and statistical data evaluation. Environmental assessment of Australia and overseas areas. An important aspect of the course is its practical approach: from data gathering, data evaluation and environmental assessment report writing. Practical work in the course involves each student as an active member of a project team.

**GEOL6330**

**Exploration Geophysics**

*Staff Contact: Mr D Palmer*

CP15 S2 L2 T1

*Prerequisite: GEOL1201*

*Excluded: GEOL3052*

*Note/s: Field work of up to 3 days is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the subject.*

An introduction to the theory and application of geophysical methods to mineral, petroleum, coal, groundwater, and geotechnical studies. The methods covered include gravity, magnetic, seismic refraction, shallow seismic reflection, DC electrical resistivity, induced polarization, electromagnetic, transient electromagnetic, radar, and geophysical well logging. Each method is described in terms of the fundamental physical principles, data acquisition and field techniques, data processing and presentation, and quantitative interpretation.

**GEOL6331**

**Geochemistry**

*Staff Contact: Dr D Cohen*

CP7.5 S2 L2

*Prerequisite: GEOL1201*

*Note/s: Excluded programs 2500, 2503, GEOL2092, GEOL7323.*

As for GEOL2092

**GEOL7323**

**Environmental Techniques**

*Staff Contact: Dr PC Rickwood, Dr DR Cohen*

CP15 F L2 T1

*Prerequisite: GEOL7223*

*Note/s: Excluded GEOL2092, GEOL3011, GEOL6331.*

GEOL7333
Environmental Statistical Methods
Staff Contact: Dr DR Cohen
CP7.5 F L2 T1
Prerequisite: GEOL1101 or GEOL1201
Note/s: Excluded GEOL2041, GEOL2042.
Introduction to the use of PC’s, networking with emphasis on geological software. Introduction to programming with statistical applications pertinent to geoscience. Sampling of geological materials; stochastic geological processes. Introduction to geostatistics, population characterisation and splitting, ANOVA methods, regression analysis, EDA, Markov chains. Analysis of oriented data and processing of spatial geological data.

GEOL8320
Gravity and Magnetic Methods
Staff Contact: Mr D Palmer
CP7.5 S1 L2 T1
Prerequisites: PHYS1002, MATH1032 or MATH1231.
Note/s: Excluded program 2500. Restricted to program 2503. It is desirable that students taking this subject have a background to geology. Field work of one day is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the subject.
Fundamental principles. Field procedures and instruments. Reduction of field data. Regional and residual effects of sources of simple geometrical shapes and generalised two and three dimensional distributions.

GEOL8330
Seismic Methods
Staff Contact: Mr D Palmer
CP7.5 S1 L2 T1
Prerequisites: PHYS1002, MATH1032 or MATH1231.
Note/s: Excluded program 2500. Restricted to program 2503. It is desirable that students taking this subject have a background in geology. Field work of one day is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the subject.

GEOL8340
Electrical Methods
Staff Contact: Mr D Palmer
CP7.5 S1 L2 T1
Prerequisites: PHYS1002, MATH1032 or MATH1231.
Note/s: Excluded program 2500. Restricted to program 2503. It is desirable that students taking this subject have a background in geology. Field work of one day is a compulsory part of the subject. Students will incur personal costs. Details will be provided in the first week of the subject.

GEOL8350
Geological Applications
Staff Contact: Dr MB Katz
CP7.5 S1 L1 T1
Prerequisite: GEOL1201
Note/s: Excluded program 2500. Restricted to program 2503. Field work of one day is a compulsory part of the subject. Students will incur personal costs. Details will be provided in the first week of the subject. A subject of ten weeks duration.

GEOL8360
Geophysical and Geological Applications
Staff Contact: Mr D Palmer, Dr MB Katz
CP7.5 S2 L1 T2
Prerequisite: GEOL1201
Note/s: Excluded program 2500, GEOL6330. Restricted to program 2503.

GEOL8370
Water Geochemistry
Staff Contact: Dr J Jankowski
CP7.5 S1 L2T1
Prerequisites: GEOL2072
Excluded: GEOL9110, GEOL9120
Note/s: Fieldwork of up to 2 days is a compulsory part of this subject. Students will incur personal costs.

GEOL8380
Practical Mapping
Staff Contact: A/Prof AD Albani
CP7.5 S1 L2
Excluded: GEOL2062
Note/s: Fieldwork of up to 5 days is a compulsory part of this subject. Students will incur personal costs.
Principles of surveying. Use of surveying instruments for geological mapping both on land and on water. Position fixing by GPS. Accuracy and precision of the locations of sample sites. The production of a geological map is a major part of this subject.
Applied Geology Level IV

GEOL4303
Geology Honours
Staff Contact: Dr PG Lennox
CP120 F
Prerequisite: Completion of program 2500 or 2503, including Level III subjects totalling 120 Credit Points.
Note/s: An extensive field project is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the subject.

Students with a double major in geology will follow the program set for Year 4 students in the Faculty of Applied Science Course 3000 Applied Geology. Students with a single major will follow a course of advanced study that includes geological topics subject to approval of the Head of Department.

GEOL4313
Earth and Environmental Science (Honours)
Staff Contact: A/Prof AD Albani
CP120 F
Prerequisite: Completion of program 2527 including Level III subjects totalling 120 Credit Points
Note/s: An extensive field project is a compulsory part of this subject. Students will incur personal costs.

GEOL4333
Earth and Environmental Science Honours P/T
Staff Contact: Applied Geology Office
CP60 F
Prerequisite: Completion of Program 2527 including Level III subjects totalling 120 Credit Points.
Note/s: Extensive field work is a compulsory part of this subject and students will incur personal expenses. Details will be provided in the first week of the subject.

Students will follow a course of advanced study which extends over 4 sessions and includes geological subjects that are approved by the Head of Department.

GEOL4343
Geology Honours P/T
Staff Contact: Applied Geology Office
CP60
Prerequisite: Completion of Programs 2500 or 2503 including Level III subjects totalling 120 Credit Points.
Note/s: Extensive field work is a compulsory part of this subject and students will incur personal expenses. Details will be provided in the first week of the subject.

Students with a double major in geology will follow the program set for Year 4 students in the Faculty of Applied Science Course 3000 Applied Geology but over 4 sessions in a prescribed sequence. Students with a single major in geology will follow a course of advanced study which extends over 4 sessions and includes geological subjects that are approved by the Head of Department.

GEOL7401
Earth Environments Honours by research
Staff Contact: A/Prof AD Albani
CP120 F
Prerequisite: Completion of three years of Program 6866 including Level III subjects totalling 90 Credit Points.
Note/s: Field work is a compulsory part of this subject and students will incur personal expenses. Details will be provided in the first week of the subject.

Students will undertake a project, that is approved by the Program advisor. It extends over 2 sessions and involves the writing of a thesis.

GEOL7402
Earth Environments Honours by research (P/T)
Staff Contact: A/Prof AD Albani
CP60 F
Prerequisite: Completion of three years of Program 6866 including Level III subjects totalling 90 Credit Points.
Note/s: Field work is a compulsory part of this subject and students will incur personal expenses. Details will be provided in the first week of the subject.

Students will undertake a project, that is approved by the Program advisor. It extends over 4 sessions and involves the writing of a thesis.

GEOL7403
Earth Environments Honours
Staff Contact: A/Prof AD Albani
CP120 F
Prerequisite: Completion of three years of Program 6866 including Level III subjects totalling 90 Credit Points.
Note/s: Field work is a compulsory part of this subject and students will incur personal expenses. Details will be provided in the first week of the subject.

Students will follow a course of advanced study that has to be approved by the Program advisor. It extends over 2 sessions and includes both geological subjects and a project that involves the writing of a thesis.

GEOL7404
Earth and Environments Thesis
Staff Contact: A/Prof AD Albani
CP60 S1 or S2
Prerequisite: Completion of three years of Program 6866 including Level III subjects totalling 90 Credit Points.
Note/s: Field work is a compulsory part of this subject and students will incur personal expenses. Details will be provided in the first week of the subject.

Subject to the approval by the Program advisor, students will undertake a project that involves writing of a thesis.
Industrial Relations and Organisational Behaviour

IROB2721
Managing People
Note/s: restricted to students in course 3980 programs 2002 and 2003.
This subject focuses on managing in a rapidly changing environment. Topics include: leadership, decision-making and innovation; power, legitimacy, and the socialisation process; the structure and design of organisations, organisation and domination, the evolution of ethical awareness; intergroup conflict and conflict resolution; skills of managing - communication, negotiation, coaching and objectives setting; organisational culture and transformation.

IROB2727
Industrial Relations for the Airline Industry
Note/s: restricted to students in course 3980 programs 2002 and 2003.
The subject is concerned with major features of Australia's unique system of industrial relations to provide a basis for understanding developments within the Aviation Industry.
The subject will examine different approaches to the study of industrial relations, industrial conflict and strikes, unions, the constitutional basis of Australian industrial relations, the role of the state, industrial tribunal, wage determination the accord and enterprise bargaining.

Information Systems

Information Systems Level II

INFS1602
Computer Information Systems 1
Staff Contact: School Office
CP15 S1 or S2 L2 T1
Note/s: Restricted to programs 0600, 1000, 1006, 1060, 1061, 1066, 1067, 1400, 6810 and Course 3971.
An understanding of the content of Information Systems, the types of Information Systems and the position of Information Systems in Society; Information Systems at an organisational level, typical commercial applications, the systems lifecycle, design concepts, data analysis and models and an introduction to data communications.

INFS1603
Business Data Management
Staff Contact: School Office
CP15 S1 or S2 L2 T1
Note/s: Restricted to programs 0600, 1000, 1006, 1060, 1061, 1066, 1067, 1400, 6810 and Course 3971.
Provides students with the required knowledge and practical skills to model data including the use of entity/relationship models and object models. Students will be able to design simple databases in an organisational environment and understand the role of data in business and the quality assurance issues in collecting, storing and using data.

INFS2603
Systems Analysis and Design
Staff Contact: School Office
CP15 S2 L2 T1
Prerequisites: INFS1603
Note/s: Restricted to programs 0600, 1000, 1006, 1060, 1061, 1066, 1067, 1400, 6810 and Course 3971.
This subject examines system analysis and design: requirements analysis and specification, logical and physical design of business systems; students compare design methodologies such as structures and object oriented.

INFS2607
Business Data Networks
Staff Contact: School Office
CP15 S2 L2 T1
Prerequisite: INFS1602
Note/s: Excluded INFS3607. Restricted to programs 0600, 1000, 1006, 1060, 1061, 1066, 1067, 1400, 6810 and Course 3971.
Data communication concepts, computer networks, reference to international standards and common industry communications software packages; local/metropolitan/wide area networks; network management; telecom services and other options; data security.

INFS2609
Commercial Programming
Staff Contact: School Office
CP15 S1 L2 T1
Prerequisites: INFS1602, INFS1603
Note/s: Restricted to programs 0600, 1000, 1006, 1060, 1061, 1066, 1067, 1400, 6810, and Course 3971.

Information Systems Level II/III

INFS2691
Industrial Training 1
Staff Contact: School Office
CP15 S1 HPW1
Prerequisites: INFS1602, INFS1603
Note/s: Available only to BIT students. Restricted to Course 3971.
A practical treatment of the characteristics of commercial information systems. Topics include analysis of an existing information system; development of overview documentation of the system; evaluation of the interface design; consideration of the role of security and control mechanisms.
Information Systems Level III

INFS3603
Executive Support Systems
Staff Contact: School Office
CP15 S1 L2 Lab1
Prerequisites: INFS1602, INFS1603

The process of decision making and work group activity by professional and managerial people; the tools and techniques available in information technology to support these processes; the cultural and organisational issues involved in formalising support; management issues related to support.

INFS3604
Information Function Management
Staff Contact: School Office
CP15 S2 L2 Lab 1
Prerequisites: INFS2603

Introduces the strategic and operational management issues involving information systems and software. Considers both qualitative and quantitative management techniques, including practical applications of tools and concepts for software project management, as well as material on software metrics and software quality. Covers techniques for strategic planning of information systems and ensuring business contribution.

INFS3605
Software Engineering
Staff Contact: School Office
CP15 S1 L1 T2
Prerequisite: INFS2609
Note/s: Restricted to programs 0600, 1400, 6810 and Course 3971.

Students are supervised implementing an information systems project in a commercial programming language. Topics include: advanced program design and structured techniques, computer aided software engineering techniques, interface with systems software at application implementation level, the comparison of a range of programming languages, test data specification, implementation procedures.

INFS3606
Advanced Data Networks
Staff Contact: School Office
CP15 S2 L2 T1
Prerequisite: INFS2607


INFS3608
Advanced Database Systems
Staff Contact: School Office
CP15 S1 L2 T1
Prerequisites: INFS1602, INFS1603
Note/s: Restricted to programs 0600, 1400, 6810 and Course 3971.

Advanced data analysis and modelling techniques; database management system architectures including hierarchical, network and relational approaches; database reliability, security and integrity issues; data description and manipulation languages.

INFS3611
Advanced Analysis and Design
Staff Contact: School Office
CP15 S2 L2 T1
Prerequisite: INFS2603
Note/s: Restricted to programs 0600, 6810, 1400 and Course 3971.

Consists of a real-life systems development project, augmented by lectures and project team management. It provides practical experience in application of object oriented methods for the specification and design of commercial business systems. Requirements definitions, systems specifications and logical designs are developed to professional standard (using automated tools), with an emphasis on requirements engineering and user interface analysis.

INFS3616
Commercial Programming Principles
Staff Contact: School Office
CP15 S2 L2 T1
Prerequisite: INFS3605
Corequisite: INFS3692
Note/s: Available only to BIT students. Restricted to Course 3971.

An advanced treatment of the practice of implementing commercial systems. Topics include: the use of library code, program design for performance, project control and reporting practice, programming standards, human machine interface, software testing, CASE tools, documentation, security and control, maintenance.

INFS3692
Industrial Training 2
Staff Contact: School Office
CP15 S2 HPW1
Prerequisite: INFS2609 or INFS3605
Corequisite: INFS3616
Note/s: Available only to BIT students. Restricted to Course 3971.

An in-depth practical exposure to information systems development. Topics include the structure and management of the implementation teams; the roles of users and information staff in implementation; scheduling and control during implementation.

INFS4693
Industrial Training 3
Staff Contact: School Office
CP15 S1 HPW1
Corequisite: INFS3611
Note/s: Available only to BIT students. Restricted to programs Course 3971.

In depth practical work in information systems analysis and design. Topics include the structure and management of analysis and design teams; the roles of users and Information Systems staff in analysis and design; scheduling and control during analysis and design.
Information Systems Level IV

INFS4003/INFS4004 Information Systems (Honours) Thesis
Staff Contact: School Office
CP120 F
Prerequisite: Completion of program 1400 including Level III subjects totalling 90 Credit Points.

INFS4774 Information Systems Security
Staff Contact: School Office
CP15 S1 L3
Prerequisites: INFS1603, INFS2607, and admission to BCom course at honours level majoring in Information Systems plus approval of Head of School of Information Systems.

Reviews concepts, theory, methodologies and techniques discussed in IS security literature and practice. Includes: information systems security management, risk analysis and management, physical and logical security, database and telecommunications security, confidentiality, computer abuse, internet and electronic commerce, legal and social issues. Case studies will provide students with an understanding of computerised security techniques in practice.

INFS4794 Thesis (Information Systems)
Staff Contact: School Office
Note/s: Available only to Year 4 (Honours) students.

INFS4805 Information Systems Auditing
Staff Contact: School Office
S2 L3
Prerequisite: INFS1602 and admission to BCom course at honours level majoring in Information Systems plus approval of the Head of School of Information Systems
Note/s: Available only to Year 4 (Honours) students. Not offered in 1997.

Management of information systems audit and the evaluation of IT management. Analysis and review of internal controls in contemporary computer installations and applications. Use of basic and advanced information systems audit techniques and methodologies, including audit software, integrated test facility, and concurrent auditing techniques. Technology audit reviews of the audit requirements for such technologies as LANs, EDI, and expert systems. Legal and professional requirements, and computer abuse/fraud auditing. Review of future IS audit techniques, methodologies, research and social implications.

INFS4810 Advanced Data Management
Staff Contact: School Office
CP15 S1 L3
Prerequisite: Admission to BCom course at honours level majoring in Information Systems and approval of Head of School of Information Systems.

The principle and practice of data administration in a large organisation. Design, redesign and tuning of database. Distributed databases and database management systems. Reliability, security and integrity of the database.

INFS4811 Knowledge Based Information Systems
Staff Contact: School Office
CP15 S2 L3
Prerequisite: Admission to BCom course at honours level majoring in Information Systems and approval of Head of School of Information Systems.

Reviews concepts, theory, methodologies and techniques discussed in KBS literature and reviews current practice. Topics include an historical perspective of AI, expert systems and knowledge based systems, KBS tools and techniques, Knowledge acquisition and representation, development methods, and evaluation, as well as considering KBS applications and the organisation. Students design and develop a knowledge based system and present their design to the class.

INFS4812 Software Engineering Management
Staff Contact: School Office
CP15 S1 L2 T1
Prerequisite: Admission to BCom course at honours level majoring in Information Systems and approval of Head of School of Information Systems.

Software engineering management and measurement of complex systems, software development maturity, project planning and management, estimation models and techniques, project scheduling, software quality, reliability, assurance, software productivity models.

INFS4825 Object Oriented Information Systems
Staff Contact: School Office
CP15 S2 L2 T1
Prerequisite: INFS3605, and admission to BCom course at honours level majoring in Information Systems plus approval of Head of School of Information Systems.

Systems development methodologies based on the object-oriented approach. Techniques of analysis and design (concepts and notation). Information systems implementation using at least one specific object-oriented language; and including concepts of objects, classes, abstract data types, inheritance, polymorphism, dynamic binding and software reusability.

INFS4848 Information Systems Project Management
Staff Contact: School Office
CP15 S2 L2 T1
Prerequisite: Admission to BCom course at honours level majoring in Information Systems and approval of Head of School of Information Systems.

An introduction to the central concepts and issues of project management and the practical benefits of project planning and management together with resource management. Practical sessions in project planning and the use of a computer based management tool. Additional topics include customer focus, lifecycle customization, work packages, progress monitoring, risk evaluation, quality management, vision and change control, people skills, and training.
INFS4853
Information Systems Management
Staff Contact: School Office
CP15 S2 L3
Prerequisites: Admission to BCom course at honours level majoring in Information Systems and approval of Head of School of Information Systems.

This course aims to assist students to develop their knowledge and understanding of important issues involved in the management of information systems in organisations and their ability to critically analyse these issues. Management of information systems will be considered at strategic, tactical and operational levels. Particular emphasis will be given to the management of enterprise-wide and inter-organisational systems and planning for their strategic use. Students without knowledge of and experience in management or the use of IS in organisations may wish to take the subject INFS4848.

INFS4857
Information and Decision Technology
Staff Contact: School Office
CP15 S1 L3
Prerequisite: Admission to BCom course at honours level majoring in Information Systems and approval of Head of School of Information Systems.

The role of information and models in managerial decision making and prediction. The role of information systems in decision making. Assessing the value of information systems and the contribution of information in decision making under uncertainty. The role of information in managerial prediction and forecasting. The development of computer based models to support tactical management. An understanding of the way in which people make decisions, with and without computer support.

INFS4886
Research Topics in Information Systems 1
Staff Contact: School Office
S1 L3
Prerequisite: Admission to BCom course at honours level majoring in Information Systems

The development of science. Alternative social science research methodologies-case study, normative, laboratory, field studies and field tests. The research process. Judgement in research. Statistical analysis of research data and interpretation of results. Writing the research report.

INFS4887
Research Topics in Information Systems 2
Staff Contact: School Office
S2 L3
Prerequisite: Admission to BCom course at honours level majoring in Information Systems

The objective of this subject is to enable the students of information systems research to carry out data analysis using statistical tools for empirical research. It examines both the theoretical aspects of scientific data and statistical analysis and introduces the student to a statistical data analysis package.

INFS4891
Decision Support Systems
Staff Contact: School Office
S1 L2 LAB1
Prerequisite: Admission to BCom course at honours level majoring in Information Systems and approval of Head of School of Information Systems.

Information used for decision making and the application of information technology to assist or support the decision making process. Topics include decision making models, the impact of different management styles, the use of decision tools and the development of decision support systems including issues of model management and interface design. Practical examples of decision support systems are examined as are executive information systems and computer mediated communications within an organisation.

INFS4893
Special Topic in Information Systems
Staff Contact: School Office
S1 or S2 L3
Prerequisites: Admission to BCom course at honours level majoring in Information Systems and approval of Head of School of Information Systems.

A specially assigned project, program or set of readings relating to information systems research.

INFS4898
Project Seminar
Staff Contact: School Office

Japanese and Korean Studies

In addition to its core language program, the School of Asian Business and Language Studies offers a range of Japanese and Korean language and non-language area studies as elective subjects to students studying in the Faculty of Arts and Social Sciences, including courses in Japanese and Korean cultural studies, business and management and technical language.

Subjects in Japanese and Korean languages are offered both for students without prior knowledge of the languages and for those with HSC or other Japanese and Korean language studies. Students enrolling in Japanese or Korean with no previous knowledge of the languages should enrol in JAPN1000 Japanese Communication 1A and JAN1001 Japanese Communication 1B or KORE1000 Korean 1A and KORE1001 Korean 1B. For students with HSC or other Japanese and Korean language studies, a multipoint entry system operates and, subject to an individual placement test, students will be allocated to the most suitable subject level.

Note: For students admitted in their first year of studies to JAPN2000 or KORE2000 or higher on the grounds of ability and/or previous study, such subjects will be counted as Level I subjects in terms of degree regulations. A student will be permitted to enrol in subjects carrying more than 12 upper level credit points in any School/area of studies under this provision.

All Japanese subjects are restricted to Programs 0600, 1400, and Courses 3971, 3978, 3979 and Advanced Science students in Mathematics Programs.
JAPN1000
Japanese Communication 1A
Staff Contact: Mr K Teruya
CP15 S1 HPW5
Prerequisite: Nil
Introduction to modern Japanese interactive skills, ie. listening, speaking, reading, writing, rules of communication, and socio-cultural knowledge of present-day Japan and local Japanese community, essential to basic survival interaction with Japanese. Emphasis on conversational skills. Hiragana, Katakana and approximately 50 Kanji are introduced.

JAPN1001
Japanese Communication 1B
Staff Contact: Mr K Teruya
CP15 S2 HPW5
Prerequisite: JAPN1000
Further acquisition of interactive skills in basic Japanese, regarding everyday non-technical topics. Introduction of approximately 100 new Kanji.

JAPN2000
Japanese Communication 2A
Staff Contact: Ms Y Hashimoto
CP15 S1 HPW5
Prerequisite: JAPN1001
Further development of beginner's Japanese interactive skills. Prepares students to become competent in anticipated Australia-Japan contact situations and basic survival situations in Japan. Continued emphasis on oral-aural skill acquisition. Approximately 100 new Kanji are introduced.

JAPN2001
Japanese Communication 2B
Staff Contact: Ms Y Hashimoto
CP15 S2 HPW5
Prerequisite: JAPN2000
Consolidation of oral-aural skills up to intermediate level. Development of reading and writing skills, with another 150 Kanji introduced.

JAPN2400
Japanese Business and Management
Staff Contact: A/Prof W Purcell
CP15 S2 HPW3
Prerequisite: JAPN1001 or ECON1101
Study of Japanese business and management practice, including corporate structure and enterprise groupings; 'shitauke' subcontracting system; 'kanban' just-in-time industry system; 'kaizen' best workplace practice; 'ringi' decision-making; negotiating strategies and techniques; Japanese multinational operations; and government-business relations.

JAPN2500
Japanese Studies
Staff Contact: A/Prof W Purcell
CP15 S1 HPW3
Prerequisite: JAPN1001
An introduction to Japanese society, history, culture, politics and economy. Topics include social stratification, the role of women, demographic change, the education system, electoral politics, interest-group representation, Japan's economic growth, agriculture and industrial development, the role of the state, Japan's underworld Yakuza and traditional Kabuki theatre.

JAPN2600
Hospitality Japanese
Staff Contact: Ms Fusako Osho
CP15 S2 HPW3
Prerequisite: JAPN2000
Note/s: Excluded JAPN4000 or above
This subject aims to develop interactive competence in spoken Japanese for the hospitality industry, particularly in professional situations relating to tourism and leisure. Includes finance and banking, hotel advertising, restaurant and other work situations. Emphasises comparative cultural aspects, covering honorifics and etiquette as well as non-linguistic aspects of interaction between hospitality personnel and tourists.

JAPN3000
Japanese Communication 3A
Staff Contact: Dr C Kinoshita Thomson
CP15 S1 HPW5
Prerequisite: JAPN2001
Equips students with solid linguistic skills at intermediate level, with increasing emphasis on reading and writing. Introduction to a variety of local Australia-Japan contact situations and expanding practical usage of students' interactive skills. Approximately 150 new kanji are introduced.

JAPN3001
Japanese Communication 3B
Staff Contact: Dr C Kinoshita Thomson
CP15 S2 HPW5
Prerequisite: JAPN3000
Further development of communicative skills and competence attained in JAPN3000. Students use Japanese in a wider context, thereby increasing vocabulary and knowledge of grammatical structures. Another 150 Kanji are introduced.

JAPN3500
Business Japanese
Staff Contact: Ms K Okamoto
CP15 S2 HPW3
Prerequisite: JAPN3000
Note/s: Excluded JAPN4100 or above
Concentrates on interactive skills for business situations, including reading and writing. Introduction to technical language of accounting, finance, economics and marketing and develops skills needed in typical formal and informal business contact situations, such as business introductions and meetings, business conversation, written channels of communication and business etiquette.

JAPN4000
Japanese Communication 4A
Staff Contact: Ms H Masumi-So
CP15 S1 HPW5
Prerequisite: JAPN3001
Concentrates on acquisition of late-intermediate to early-advanced interactive skills in Japanese with continued emphasis on reading and writing. Introduction to
basic linguistic features of advanced level Japanese and provides opportunities to practise skills needed in typical formal and informal Australia-Japan contact situations. Approximately 150 Kanji are introduced.

JAPN4001
Japanese Communication 4B
Staff Contact: Ms H Masumi-So
CP15 S2 HPW5
Prerequisite: JAPN4000
Prepares students in acquisition of well-rounded linguistic and communicative competence necessary for advanced learners. Further extension and systematic practice of interactive skills. Another 150 Kanji are introduced.

JAPN4100
Japanese Communication 5A
Staff Contact: Ms S lida
CP15 S1 HPW5
Prerequisite: JAPN4001
Focuses on mid-advanced Japanese interactive skills. Increasing emphasis is placed upon further development of reading and writing abilities. Autonomous learning is encouraged and assisted in acquisition of more advanced interactive skills. Students are given opportunities to improve on competence in professional and business settings. Approximately 250 new Kanji are introduced.

JAPN4101
Japanese Communication 5B
Staff Contact: Ms S lida
CP15 S2 HPW5
Prerequisite: JAPN4100
Honoring of reading and writing skills attained in JAPN4100. Continued instruction in more advanced conversational and grammatical structures and useful vocabulary for the purpose of business and related areas of communication. A further 250 Kanji are introduced.

JAPN4200
Japanese Communication 6A
Staff Contact: Dr C Kinoshita Thomson
CP15 S1 HPW5
Prerequisite: JAPN4101
Concentrates on further acquisition of interactive skills required in a wider variety of Australia-Japan contact situations. Continued emphasis on autonomous learning and self-monitoring of problem areas in interactive skills. Approximately 250 new Kanji are introduced.

JAPN4201
Japanese Communication 6B
Staff Contact: Dr C Kinoshita Thomson
CP15 S2 HPW5
Prerequisite: JAPN4200
Refining of linguistic and communicative skills acquired in JAPN4200. Another 250 Kanji are introduced, ie. the remaining JooYoo Kanji.

JAPN4300
Advanced Reading in Japanese
Staff Contact: Dr C Kinoshita Thomson
CP15 S1 HPW5
Prerequisite: JAPN4201 or permission from Head of School
Provides opportunity for advanced learners of Japanese with intensive and extensive reading in the language on the selected topic(s). Accumulation of Kanji, vocabulary and idiomatic expressions is emphasised.

JAPN4301
Advanced Reading in Japanese B
Staff Contact: Dr C Kinoshita Thomson
CP15 S2 HPW5
Prerequisite: JAPN4300 or permission from Head of School
Learners are required to continue reading on the selected topic(s) from JAPN4300, prepare a paper and give a formal oral presentation to a group of native Japanese speakers.

JAPN4400
Special Topics in Advanced Japanese
Staff Contact: Ms H Masumi-So
CP15 S2 HPW3
Prerequisite: JAPN4000
Provides students with a framework for analysing problems in the field of Japanese Studies, including a theoretical framework and types and sources of problems. Where possible, students carry out empirical data collection and are guided through the analysis of and search for possible solutions to these problems.

Korean Studies
Korean subjects are restricted to Programs 0600, 1400, and Course 3971 and Advanced Science students in Mathematics Programs.

KORE1000
Korean 1A
Staff Contact: Mr S-C Shin
CP15 S1 HPW5
Prerequisite: Nil
Designed to provide beginners with practical language skills for effective communication. Emphasis is on use of the language in basic survival situations. Communicative methods are used to develop in students the four language skills: listening, speaking, reading and writing, within a cultural context. The Korean script, Han-gul, is taught progressively.

KORE1001
Korean 1B
Staff Contact: Mr S-C Shin
CP15 S2 HPW5
Prerequisite: KORE1000 or equivalent
Further development of communicative skills in introductory Korean, with emphasis on a variety of ‘real life’ situations. New communicative functions, vocabulary and grammatical structures are progressively added to knowledge and skills acquired in KORE1000.
KORE2000
Korean 2A
Staff Contact: Mr S-C Shin
CP15 S1 HPW5
Prerequisite: KORE1001 or equivalent

Further development of communicative skills on the groundwork covered in introductory-level Korean. Allows students to build upon their spoken and written language skills, enabling them to interact in a wider range of communicative situations.

KORE2001
Korean 2B
Staff Contact: Mr S-C Shin
CP15 S2 HPW5
Prerequisite: KORE2000 or equivalent

Consolidates and further expands on knowledge and skills developed in the previous subjects as well as laying the foundation for students who wish to proceed to a third year program. A number of selected Hanja, Sino-Korean, characters, is introduced to further enhance the students' skills to read and comprehend modern Korean mixed script.

KORE2500
Korean Economy and Business
Staff Contact: Mr S-C Shin
C15 S2 HPW3
Prerequisite: 90 Arts credit points or the equivalent in the Faculties of Law or Commerce and Economics

An introduction to Korean economy and business practice. Topics include Korea's economic development and growth, economic policies, government-business relations, corporate structure and enterprise groupings, Chaebol, industry system, workplace practices, decision making procedures, business negotiations and socio-cultural elements in business and management.

KORE3000
Korean 3A
Staff Contact: Mr S-C Shin
C15 S1 HPW5
Prerequisite: KORE2001 or equivalent

Consolidation of students' communicative skills in both spoken and written Korean at intermediate level, with increasing emphasis on reading and writing. It introduces a wider range of communicative topics, vocabulary and grammatical structures and further expands practical usage of students' knowledge and interactive skills. Approximately 100 new Hanja are also introduced.

KORE3001
Korean 3B
Staff Contact: Mr S-C Shin
C15 S2 HPW5
Prerequisite: KORE3000 or equivalent

Further development of communicative skills attained in KORE3000 and a new orientation to specific needs in everyday business situations. It equips students with a variety of practical language skills and background information necessary not only for everyday conversation but also for Korean-Australian business situation. Includes systematic practice of communicative skills in the classroom and some field work at the 'real-life' situations in the Sydney Korean business community. Another 150 Hanja are introduced.

Business Law and Taxation Level I

LEGT7711
Legal Environment of Commerce
Staff Contact: School Office
CP15 S1 or S2 L2 T1
Prerequisites: HSC minimum mark required – Contemporary English 60, or 2 unit English (General) 60 or 2 unit English 53 or 3 unit English 1
Note/s: Restricted to programs 1400, 6810 and Courses 3971 and 3979.

The Australian legal system and areas of substantive law relevant to commerce including contract, business organisation, employment, commercial arbitration, advertising, trade regulation, civil compensation, discrimination.

Business Law and Taxation Subjects

LEGT7711
Legal Environment of Commerce
Staff Contact: School Office

The entire fabric of commerce is woven from a complex legal regime, judicial and statutory, which regulates all commercial activity. This subject deals with the Australian legal system; Commonwealth/State relations; Parliament and statute law; the court and case law; the executive and administrative law; the legal process and its alternatives. This subject also introduces areas of substantive law relevant to commerce with particular reference to property law (with particular reference to intellectual property), torts law (with particular reference to negligence), contract law, criminal law, commercial entities and transactions, competition and consumer protection.

LEGT7721
Business Transactions
Staff Contact: School Office
CP15 S1 or S2 L2 T1
Prerequisite: LEGT7711
Note/s: Restricted to program 1400 and Courses 3971 and 3979.

Contract law forms the basis of all important commercial transactions and is essential to a proper understanding of the more specialised areas of commercial law. This subject examines the general principles of contract law and how they are developed and expanded in relation to specialised commercial transactions including agency, contracts for the sales of goods, guarantees, bankruptcy, negotiable instruments, securities and insurance law. Relevant areas of consumer protection and competition law are also discussed. The common contractual themes in which these areas are grounded will be highlighted, along with the different requirements attaching to the rights and obligations of parties to transaction in such areas.

LEGT7731
Marketing and Distribution Law
Staff Contact: School Office
CP15 S1 or S2 L2 T1
Note/s: Restricted to program 1400 and Courses 3971 and 3979.

The marketing and distribution of goods and services operates within a comprehensive regulatory framework.
This subject examines that framework. Topics include restrictive trade practices implications of distribution with special reference to collusive activity, exclusive dealing, resale price maintenance and abuse of market power; consumer protection and fair trading implications of sales promotion with particular reference to misleading or deceptive conduct and other unfair practices; advertising self-regulation; product liability; protection of intellectual property; franchising, licensing and character merchandising.

LEGT7741
Business Entities
Staff Contact: School Office
CP15 S2 L2 T1
Prerequisite: LEGT7711
Note/s: Restricted to programs 1400 and Courses 3971 and 3979.

The law relating to the legal structures available for business including partnerships, joint ventures, trusts and companies. The primary focus is on the modern company and its operation under the Corporations Law. Topics include the nature of the corporate entity; establishing the company and fundraising; shares and dividends; the rights and duties of directors; the position of management; shareholders' rights and remedies for their enforcement; insolvency and liquidation.

LEGT7751
Business Taxation
Staff Contact: School Office
CP15 S1 L2 T1
Prerequisite: LEGT7711
Note/s: Restricted to program 1400 and Courses 3971 and 3979.

The complexity and comprehensiveness of the Australian taxation system mean that tax considerations must be taken into account in most business decisions. An understanding of the structure of the Australian taxation system and of the policy factors that guide legislators is essential to professional business advisors. This subject concentrates on income taxation in Australia. Topics include: concepts of income; allowable deductions; tax accounting; taxation of partnerships, trusts and corporations; anti-avoidance provisions; tax administration; capital gains tax; and fringe benefits.

LEGT7761
Law of Finance and Securities
Staff Contact: School Office
S1 L2 T1
Prerequisite: Nil

This subject examines the legal environment of banking and relevant financial institutions with particular reference to the law regulating business transactions and structures. Topics include legal concepts underlying the Bank-Customer relationship; legal regulation of financial instruments; laws relating to various types of securities; bankruptcy and alternative arrangements; company insolvency; legal regulation of banking and financial institutions.

LEGT7771
Information Technology Law
Staff Contact: School Office
CP15 S2 L2 T1
Prerequisite: LEGT7711 or INFS1602
Note/s: Restricted to program 1400 and Courses 3971 and 3979.

The laws governing information technology. The topics examined include intellectual property law - patents, copyright and confidential information; licensing; technology contracts; tortious liability; product liability; computer crimes; data protection and privacy issues; and current issues.

Marine Science

Note: Some subjects that appear in this section may be restricted to students for whom the subject comprises a compulsory part of their program.

Marine Science Level II

MSCI2001
Introductory Marine Science
Staff Contact: Dr P Dixon
CP15 S1 or S2 HPW4
Note/s: Fieldwork in Mid year Recess.
Ocean basins, sediments, properties of seawater, ocean circulation, coasts and coastal processes. Marine biology and ecology, primary and secondary productivity.
Personal expenses will be incurred.

MSCI2051
Coral Reefs: Environment and Ecology
Staff Contact: Dr P Dixon
Basic oceanographic processes and how these apply in the Great Barrier Reef, the characteristics of the waters of the Great Barrier Reef; the types and development of reefs, corals and reef communities, environmental damage to corals and exploitation of the reef, management by Great Barrier Reef Marine Park Authority. Laboratory classes include a study of the reef flat, its inhabitants, their distributions and interactions, the reef environment and its measurement.
Personal expenses will be incurred.

Marine Science Level III

MSCI3001
Physical Oceanography
Staff Contact: Dr P Dixon
CP15 S2 HPW4
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Laboratory and fieldwork.
The physical properties and motions of the oceans, and their measurement, oceanographic instrumentation. The design of small and large scale ocean experiments.
Marine Science Level IV
MSC14003/MSCI4009
Marine Science 4 (Honours)
Staff Contact: Dr P Dixon
CP120 F
Prerequisite: Completion of program 6831, 6832, 6833 or 6834 including Level III subjects totalling 90 Credit Points.
The General Education requirements are met within the Honours program by seminars, an essay and participation in discussion groups.

Mathematics

1. Many subjects in the School of Mathematics are offered at two levels. The higher level caters for students with superior mathematical ability. Where both levels are offered, the proportion of Distinction and High Distinction grades is lower in the ordinary level. The proportion is lower in the General Mathematics subjects.
2. Students proceeding to Year 4 (Honours) in a Mathematics program in the Advanced Science Course may be required to take some of their Mathematics subjects at the higher level. However, students should not think that the higher level subjects are intended only for those in Honours programs. Any student with the ability to undertake higher subjects benefits from so doing.
3. Where a subject is mentioned at the ordinary level, the equivalent subject at the higher level (if any) may be substituted.

Mathematics Level I

Students whose course or program require them to take Mathematics subjects in later years must take the standard first year subjects MATH1131 Mathematics 1A and MATH1231 Mathematics 1B or their higher equivalents MATH1141 Higher Mathematics 1A and MATH1241 Higher Mathematics 1B. The higher versions cover all of the material in MATH1131 and MATH1231, often at greater depth, and are intended for students who have obtained very high marks in the 3 or 4 unit Mathematics courses of the Higher School Certificate.

Students who do not intend studying Mathematics beyond Year 1 may instead take the subjects MATH1011 General Mathematics 1B and MATH1021 General Mathematics 1C. However, students who select these subjects should weigh seriously the implications of their choice because no further Mathematics subjects are normally available. (See also the note above on grades awarded.) A student with meritorious performance in MATH1021 may be permitted to proceed to a certain limited number of Year 2 subjects intended for biologists and chemical engineers. The single subject MATH1011 is also available to students seeking an alternate prerequisite for MATH1131 in cases where they do not meet the normal HSC prerequisites. Students should note, however, that only one of MATH1011 and MATH1131 can be counted in their degree.

The subject MATH1081 Discrete Mathematics is an additional Level I subject which is compulsory for students in Computer Science and most Mathematics programs. For students in Advanced Science Mathematics programs (except program 6810), it is taken in Stage 1, while for Science students it is taken in one of Stages 1 or 2 depending on the mathematical background of the student.

The subjects MATH1051 Mathematics 1F, MATH1079 Mathematics for Aviation and MATH1090 Discrete Mathematics for Electrical Engineers are restricted to students in the Optometry, Aviation and Electrical Engineering courses respectively.

MATH1011
General Mathematics 1B
Staff Contact: School of Mathematics First Year Office
CP15 S1 HPW6
Prerequisites: HSC mark range required: 2 unit Mathematics (60-100) or 2 and 3 unit Mathematics (1-150) or 3 and 4 unit Mathematics (1-200) (these ranges may vary from year to year). 2 unit Mathematics in this instance refers to the 2 unit Mathematics subject which is related to the 3 unit Mathematics subject. It does not refer to the subjects Mathematics in Society or Mathematics in Practice.
Note/s: Excluded MATH1032, MATH1042, MATH1131, MATH1141, ECON2200, ECON2201, ECON2202, ECON1202, ECON2290, ECON2291.
Functions (and their inverses), limits, asymptotes, continuity; differentiation and applications; integration, the definite integral and applications; inverse trigonometric functions; the logarithmic and exponential functions and applications; sequences and series; mathematical induction; the binomial theorem and applications; introduction to probability theory; introduction to 3-dimensional geometry; introduction to linear algebra.

MATH1021
General Mathematics 1C
Staff Contact: School of Mathematics First Year Office
CP15 S2 HPW6
Prerequisite: MATH1011 or MATH1131 or MATH1141
Note/s: Excluded MATH1032, MATH1042, MATH1231, MATH1241, ECON2200, ECON2201, ECON2202, ECON1202, ECON2290, ECON2291.
Techniques for integration, improper integrals; Taylor's theorem; first order differential equations and applications; introduction to multivariable calculus; conics; finite sets; probability; vectors, matrices and linear equations.

MATH1032
Mathematics 1
Note/s: No longer offered. Replaced by the two subjects MATH1131 Mathematics 1A and MATH1231 Mathematics 1B.

MATH1042
Higher Mathematics 1
Note/s: No longer offered. Replaced by the two subjects MATH1141 Higher Mathematics 1A and MATH1241 Higher Mathematics 1B.

MATH1131
Mathematics 1A
Staff Contact: School of Mathematics First Year Office
CP15 S1 or S2 HPW6
Prerequisites: HSC mark range required: 2 unit Mathematics (90-100), or 2 and 3 unit Mathematics (100-
150) or 3 and 4 unit Mathematics (100-200) or MATH1011 (these ranges may vary from year to year). 2 unit Mathematics in this instance refers to the 2 unit Mathematics subject which is related to the 3 unit Mathematics subject. It does not refer to the subjects Mathematics in Society or Mathematics in Practice. 

**Note/s:**

Mathematics in Society or Mathematics in Practice.

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**MATH1061**

*Introductory Applied Computing*

*Staff Contact: School of Mathematics First Year Office*

*CP15 HPW6*

*Prerequisites:* As for MATH1011

*Corequisite:* MATH1021 or MATH1032 or MATH1131 or MATH1042 or MATH1141

*Note/s:* Excluded any subject offered by the School of Computer Science and Engineering. Not currently offered.

The major components of a computer, software vs hardware. The role of computers, history, range of available hardware and software, computing issues and standards. The operating systems DOS and UNIX, files and text editors, networks and communications. An overview of spreadsheets, databases, graphics and other software packages. Structured programming in the high level language C, covering a variety of data types, efficiency, language standards, and libraries of functions and subprograms. Mathematical applications from a wide variety of areas.

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**MATH1079**

*Mathematics for Aviation*

*Staff Contact: School of Mathematics First Year Office*

*CP25 S1 HPW6 S2(7 WK5) HPW8*

*Prerequisites:* as for MATH1131

*Note/s:* Excluded MATH1011, MATH1021, MATH1032, MATH1042, MATH1131, MATH1141, MATH1231, MATH1241. Restricted to course 3980.


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**MATH1081**

*Discrete Mathematics*

*Staff Contact: School of Mathematics First Year Office*

*CP15 S1 or S2 HPW6*

*Prerequisites:* As for MATH1131

*Corequisite:* MATH1032 or MATH1131 or MATH1042 or MATH1141

*Note/s:* Excluded MATH1090.


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**MATH1090**

*Discrete Mathematics for Electrical Engineers*

*Staff Contact: School of Mathematics First Year Office*

*CP7.5 S2 HPW3*

*Corequisite:* MATH1032 or MATH1131 or MATH1042 or MATH1141

*Note/s:* Excluded MATH1081. Restricted in Science course to Combined degree course 3725.
The role of proof in mathematics, logical reasoning and implication, different types of proofs. Sets, algebra of sets, operations on sets, mathematical logic, truth tables, syntax, induction. Recursion, recursive logic, recurrence relations.

Mathematics Level II

The subjects MATH2009 Engineering Mathematics 2 and MATH2019 Engineering Mathematics 2CE are servicing subjects for some Engineering and Applied Science courses and are not available for students in the Science course. The subject MATH2079 is only available in the Aviation Course. The subject MATH2021 is available for students in the Science course who wish to take only one Level II Mathematics subject. It may be followed only by the Level III subject MATH3021 Mathematics 3.

MATH2011

Several Variable Calculus

Staff Contact: School Office
CP15 S1 HPW4
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Excluded MATH2100, MATH2110, MATH2510, MATH2610.

Functions of several variables, limits and continuity, differentiability, gradients, surfaces, maxima and minima, Taylor series, Lagrange multipliers, chain rules, inverse function theorem, Jacobian derivatives, double and triple integrals, iterated integrals, Riemann sums, cylindrical and spherical coordinates, change of variables, centre of mass, curves in space, line integrals, parametrised surfaces, surface integrals, del, divergence and curl, Stokes' theorem, Green's theorem in the plane, applications to fluid dynamics and electrodynamics, orthogonal curvilinear coordinates, arc length and volume elements, gradient, divergence and curl in curvilinear coordinates.

MATH2009

Engineering Mathematics 2

Staff Contact: School Office
CP20 F HPW4
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Restricted in Science course to combined degree course 3681.

Differential equations, use of Laplace transforms, solutions by series; partial differential equations and their solution for selected physical problems, use of Fourier series; multiple integrals, matrices and their application to theory of linear equations, eigenvalues; introduction to numerical methods.

MATH2079

Mathematical Methods for Aviation

Staff Contact: School Office
CP15 S1 (6 WKS) HPW8
Prerequisite: MATH1079
Note/s: Restricted to course 3980.


Applied Mathematics Level II

MATH2100

Vector Calculus

Staff Contact: School Office
CP7.5 S2 HPW2.5
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Excluded MATH2011, MATH2110.

Properties of vectors and vector fields; divergence, gradient, curl of a vector; line, surface, and volume integrals. Gauss and Stokes' theorems. Curvilinear coordinates.

MATH2110

Higher Vector Analysis

Staff Contact: School Office
CP7.5 S1 HPW2.5
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241, each with a mark of at least 70
Note/s: Excluded MATH2011, MATH2100.

As for MATH2100 but in greater depth.

MATH2120

Mathematical Methods for Differential Equations

Staff Contact: School Office
CP7.5 S1 or S2 HPW2.5
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Excluded MATH2130.
Introduction to qualitative and quantitative methods for ordinary and partial differential equations. The following topics are treated by example. Ordinary differential equations: linear with constant coefficients, first-order systems, singularities, boundary-value problems, eigenfunctions, Fourier series. Bessel’s equation and Legendre’s equation. Partial differential equations: characteristics, classification, wave equation, heat equation, Laplace’s equation, separation of variables methods, applications of Bessel functions and Legendre polynomials.

MATH2130
Higher Mathematical Methods for Differential Equations
Staff Contact: School Office
CP7.5 S2 HPW2.5
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241, each with a mark of at least 70
Note/s: Excluded MATH2120.
As for MATH2120 but in greater depth.

MATH2160
Linear Programming
Staff Contact: School Office
CP7.5 S1 HPW2
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241 or MATH1079
Corequisite: MATH2501 or MATH2601.
A first course in mathematical modelling and solution techniques for linear problems. The revised simplex and dual simplex methods, theory and application of sensitivity analysis, duality theory. Networks, transportation and assignment problems. Examples, applications and computing methods are prominent features.

MATH2180
Operations Research
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH2160
Modelling and solution techniques for optimization problems of interest to business and industry. Topics are selected from linear programming, integer programming, (discrete) dynamic programming, project scheduling, game theory, queueing theory, inventory theory and simulation. Software packages are used to solve realistic problems.

MATH2200
Discrete Dynamical Systems
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Corequisite: MATH2501 or MATH2601
The study of dynamical systems whose states change at discrete points in time. Difference equations, general properties. Linear systems, stability, oscillations, Z-transforms. Nonlinear systems, critical points, periodic cycles, chaotic behaviour. Applications selected from engineering, biological, social and economic contexts.

MATH2220
Continuous Dynamical Systems
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
The study of continuous dynamical systems. One-dimensional systems, kinematic waves, applications include traffic flow and waves in fluids. An introduction to the modelling of physical, biological and ecological systems, stability, oscillations and resonance.

MATH2240
Atmosphere-Ocean Dynamics A
Staff Contact: School Office
CP7.5 S1 HPW2
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
An introduction to mathematical models for the circulation of the atmosphere and oceans. The equations of motion are exploited so as to provide simplified models for phenomena including: waves, the effects of the Earth’s rotation, the geostrophic wind, upwelling, storm surges. Feedback mechanisms are also modelled: the land/sea breeze, tornadoes, tropical cyclones. Models for large-scale phenomena including El Nino and the East Australian Current will be discussed as well as the role of the atmosphere-ocean system in climate change.

MATH2301
Mathematical Computing A
Staff Contact: School Office
CP15 S1 HPW4
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
An introduction to mathematical computing, programming and visualization using Matlab, with a focus on mathematical modelling and simulation. Introduction to Matlab, floating point arithmetic, difference equations, nonlinear equations, numerical differentiation and integration, initial value problems.

Pure Mathematics Level II

MATH2400
Finite Mathematics
Staff Contact: School Office
CP7.5 S1 HPW2
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: MATH106: Discrete Mathematics is recommended.
Positional number systems, floating-point arithmetic, rational arithmetic, congruences. Euclid’s algorithm, continued fractions, Chinese remainder theorem, Fermat’s theorem, applications to computer arithmetic. Polynomial arithmetic, division algorithm, factorization, interpolation, finite field. Codes, error correcting codes, public-key cryptography.
MATH2410
Automata and Algorithms
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: MATH1081 Discrete Mathematics is recommended.

Finite automata, regular languages and Kleene’s theorem. Analysis of fast algorithms for matrix, integer and polynomial manipulation, sorting etc. Discrete and Fast Fourier Transform and applications.

MATH2501
Linear Algebra
Staff Contact: School Office
CP15 S1 or S2 HPW5 or F HPW2.5
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Excluded MATH2601.


MATH2510
Real Analysis
Staff Contact: School Office
CP7.5 S1 or S2 HPW2.5
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Excluded MATH2011, MATH2610.

Multiple integrals, partial differentiation. Analysis of real valued functions of one and several variables.

MATH2520
Complex Analysis
Staff Contact: School Office
CP7.5 S1 or S2 HPW2.5
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Excluded MATH2620.

Analytic functions, Taylor and Laurent series, integrals. Cauchy’s theorem, residues, evaluation of certain real integrals.

MATH2601
Higher Linear Algebra
Staff Contact: School Office
CP15 S1 HPW5
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241, each with a mark of at least 70
Note/s: Excluded MATH2501.

As for MATH2501, but in greater depth, and with additional material on unitary, self-adjoint and normal transformations.

MATH2610
Higher Real Analysis
Staff Contact: School Office
CP7.5 S1 HPW2.5
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241, each with a mark of at least 70
Note/s: Excluded MATH2011, MATH2510.

As for MATH2510 but in greater depth.

MATH2620
Higher Complex Analysis
Staff Contact: School Office
CP7.5 S2 HPW2.5
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241, each with a mark of at least 70
Note/s: Excluded MATH2520.

As for MATH2520 but in greater depth.

Statistics Level II

The subjects MATH2819, MATH2829, MATH2839, MATH2849 and MATH2869 are not available to Science students unless specified as part of a program. The subject MATH2841 Statistics SS is available for Science students who wish to take only one Level II Statistics subject. It can only be followed by the Level III Statistics subjects MATH3050 and MATH3060.

Note/s: There was a major revision of Level II Statistics subjects in 1996 which has been followed by a major revision of Level III Statistics subjects in 1997. Any student who has taken Level II Statistics subjects before 1996 and wishes to take further Level II Statistics subjects should consult the Head of Department.

MATH2801
Theory of Statistics
Staff Contact: School Office
CP15 S1 HPW4
Prerequisite: MATH1021(CR) or MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Excluded MATH2819, MATH2821, MATH2921, MATH2841, MATH2901, BIOS2041.

Probability, random variables, standard distributions, bivariate distributions, transformations, central limit theorem, sampling distributions, point estimation, interval estimation, hypothesis testing.

MATH2810
Computing for Statistics
Staff Contact: School Office
CP7.5 S1 HPW2
Prerequisite: MATH1021(CR) or MATH1032 or MATH1231 or MATH1042 or MATH1241
Corequisite: MATH2801
Note/s: Excluded MATH2910.

Exploratory and graphical data analysis using various statistical packages; e.g. Minitab, Xlisp-stat, Splus. Visualisation of data. Dynamic graphics. Macro programming in statistical packages. Introduction to simulation of stochastic processes.
MATH2819
Statistics SA
Staff Contact: School Office
CP10 F HPW2
Prerequisite: MATH1021 or MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Restricted in Science course to combined degree course 3950.

Probability, random variables, independence. Binomial, Poisson and normal distributions, transformations to normality, estimation of mean and variance, confidence intervals, tests of hypotheses, contingency tables, two sample tests of location, simple and multiple linear regression, analysis of variance for simple models.

MATH2829
Statistics SU
Staff Contact: School Office
CP7.5 S1 HPW3
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Not available to Science students.

Introduction to probability theory, random variables and distribution functions, sampling distributions, including those of chi-square, t and F. Estimation procedures, including confidence interval estimation with an emphasis on least squares and surveying problems, and computer based exercises.

MATH2831
Linear Models
Staff Contact: School Office
CP15 S2 HPW4
Prerequisite: MATH2801, MATH2810 (except course 3996)
Note/s: Excluded MATH2931, MATH3811, MATH3911, BIOS2041, MATH3870 (before 1997), MATH3050.


MATH2839
Statistics SM
Staff Contact: School Office
CP7.5 S1 HPW3
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Excluded MATH2841, MATH2801, MATH2821, MATH2901, MATH291, MATH2819, BIOS2041. Statistics MATH2841 is included for students desiring to attempt only one Level II Statistics subject. If other Level II Statistics subjects are taken, MATH2841 is not counted.

An introduction to the theory of probability, with finite, discrete and continuous sample spaces. The standard univariate distributions: binomial, Poisson and normal, an introduction to multivariate distributions. Standard sampling distributions, including those of chi-square, t and F. Estimation by moments and maximum likelihood (including sampling variance formulae, and regression); confidence interval estimation. The standard tests of significance based on the above distributions, with a discussion of power where appropriate. An introduction to experimental design: fixed, random effect models.

MATH2849
Statistics EE
Staff Contact: School Office
CP9 S2 HPW3
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Excluded MATH2841, MATH2801, MATH2901. Restricted in Science course to combined degree courses 3725 and 3726.


MATH2869
Applied Statistics SC
Staff Contact: School Office
CP5 S1 HPW2
Prerequisite: MATH1032 or MATH1231 or MATH1042 or MATH1241
Note/s: Restricted in Science course to combined degree course 3730.

Graphical data analysis, review of probability, random variables and their properties. The normal and binomial distributions, the central limit theorem, applications to
quality control. Functions of random variables and their simulation using computers. One and two sample inference methods. Experimental designs for comparing two groups. Simple and multiple linear regression. Relevant applications from fields of engineering will be investigated in computer workshops.

**MATH2901**  
Higher Theory of Statistics  
*Staff Contact: School Office*  
CP15 S1 HPW4  
*Prerequisite:* MATH1032 or MATH1231 or MATH1042 or MATH1241  
*Note/s:* Excluded MATH2819, MATH2821, MATH2921, MATH2841, MATH2801, BIOS2041.  
As for MATH2801 but in greater depth.

**MATH2902**  
Higher Computing for Statistics  
*Staff Contact: School Office*  
CP7.5 S2 HPW4  
*Prerequisites:* MATH2901, MATH2910 (except course 3996)  
*Note/s:* Excluded MATH2831, MATH3811, MATH3911, BIOS2041, MATH3870 (before 1997), MATH3050.  
As for MATH2831 but in greater depth.

**MATH2910**  
Higher Models  
*Staff Contact: School Office*  
CP15 S1 HPW4  
*Prerequisites:* MATH1032 or MATH1231 or MATH1042 or MATH1241  
*Corequisite:* MATH2901  
*Note/s:* Excluded MATH2801.  
As for MATH2801 but in greater depth.

**MATH2921**  
Mathematics 3  
*Staff Contact: School Office*  
CP15 F HPW2  
*Prerequisite:* MATH2021 or approved equivalent  
*Note/s:* Excluded any other Level III subject in Pure Mathematics or Applied Mathematics except for MATH3261. Taught by the Keller Plan self-paced learning method.  
Vector calculus; special functions; convolution theorem and applications; complex variable theory; Fourier integrals; Laplace transforms with application to ordinary and partial differential equations.

**Mathematics Level III**

Students in Advanced Science proceeding to Year 4 (Honours) in one of the Mathematics programs should consult with the relevant Department before making a final choice of Level III subjects.

The subject MATH3021 Mathematics 3 is the only Level III Mathematics subject available for Science students who have previously taken MATH2902.

**MATH3000**  
Mathematics/Statistics Project  
*Staff Contact: School Office*  
CP7.5 S1 or S2 HPW2 or F HPW1  
*Prerequisite:* At least 30 Credit Points of Level II Mathematics.  
*Note/s:* Enrolment is subject to approval by the Head of School.

Under supervision of an academic staff member of the School of Mathematics a student will undertake a course in reading and/or research on a topic in mathematics or statistics or on applications of mathematics or statistics to other disciplines such as physical, biological or social sciences, economics, finance, computing, etc. The student is expected to write an essay summarizing the results of their project.

**MATH3001**  
Mathematics/Statistics Project  
*Staff Contact: School Office*  
CP15 S1 or S2 HPW4 or F HPW2  
*Prerequisite:* At least 30 Credit Points of Level II Mathematics.  
*Note/s:* Enrolment is subject to approval by the Head of School.

Under supervision of an academic staff member of the School of Mathematics a student will undertake a course in reading and/or research on a topic in mathematics or statistics or on applications of mathematics or statistics to other disciplines such as physical, biological or social sciences, economics, finance, computing, etc. The student is expected to write an essay summarizing the results of their project.

**MATH3002**  
Mathematics/Statistics Project  
*Staff Contact: School Office*  
CP30 S1 or S2 HPW8 or F HPW4  
*Prerequisite:* At least 30 Credit Points of Level II Mathematics.  
*Note/s:* Enrolment is subject to approval by the Head of School.

Under supervision of an academic staff member of the School of Mathematics a student will undertake a course in reading and/or research on a topic in mathematics or statistics or on applications of mathematics or statistics to other disciplines such as physical, biological or social sciences, economics, finance, computing, etc. The student is expected to write an essay of approximately 12,000 words summarizing the results of their project.

**MATH3003**  
Mathematics 3, Part 1  
*Staff Contact: School Office*  
CP15 F HPW2  
*Prerequisite:* MATH2021 or approved equivalent  
*Note/s:* Excluded any other Level III subject in Pure Mathematics or Applied Mathematics except for MATH3261. Taught by the Keller Plan self-paced learning method.  
Vector calculus; special functions; convolution theorem and applications; complex variable theory; Fourier integrals; Laplace transforms with application to ordinary and partial differential equations.
grade of EC (enrolment continuing) for this subject, which will eventually be replaced by a mark when MATH3040 is completed.

MATH3040
Mathematics 3, Part 2
Staff Contact: School Office
CP7.5 S1 HPW2
Prerequisite: MATH3030
Note/s: Excluded: MATH3021. This subject is the second half of MATH3021. The student must have been enrolled in MATH3030 previously and have a grade of EC in that subject. On completion of MATH3040 a grade will be returned for both MATH3030 and MATH3040.

Applied Mathematics Level III

Before attempting any Level III Applied Mathematics subject a student must have completed at least 30 Credit Points of Level II Mathematics including the prerequisites specified below.

Skill in practical numerical computing is highly recommended for students majoring in Applied Mathematics, and hence students are encouraged to take MATH2301, or an equivalent subject, if they have not already done so.

The subject MATH3141 is not available to Science students.

Usually only one of the advanced subjects MATH3110, MATH3130, MATH3170 and MATH3250 are offered in one year.

MATH3101
Numerical Analysis
Staff Contact: School Office
CP15 S1 HPW4
Prerequisite: MATH2301
Note/s: Excluded MATH3141. This subject includes a substantial computing component.

Analysis of some common numerical methods: Approximation of functions using polynomials and splines, solution of initial value problems for ordinary differential equations, solution of linear algebraic systems via LU and other factorizations, boundary value problems.

MATH3110
Advanced Numerical Analysis
Staff Contact: School Office
CP7.5 HPW2
Prerequisite: A weighted average mark of at least 70 in 30 Credit Points of Level II Mathematics
Note/s: It is highly recommended that MATH3101 be taken concurrently. Not offered in 1997.

Development and analysis of numerical methods for the computational solutions of mathematical problems. One or more topics selected from: computational methods for partial differential equations including finite element methods, finite difference methods, spectral methods, multi-grid methods; computational methods for matrix problems including iterative methods and preconditioners, least squares problems and singular value decomposition; orthogonality for matrix and polynomial problems, algorithms for parallel computers.

MATH3121
Mathematical Methods
Staff Contact: School Office
CP15 S1 HPW4
Prerequisites: MATH2120, MATH2520
Note/s: Excluded MATH3141, MATH3150.


MATH3130
Advanced Mathematical Methods
Staff Contact: School Office
CP7.5 S1 HPW2
Prerequisites: A weighted average mark of at least 70 in MATH2120, MATH2520 and in a further 15 Credit Points of Level II Mathematics
Note/s: It is highly recommended that MATH3121 be taken concurrently.

Fundamental methods for solution of problems in applied mathematics, physics and engineering. One or more topics selected from: asymptotic and perturbation techniques, singularity analysis, nonlinear waves, solitons, bifurcation theory, chaotic dynamics.

MATH3141
Mathematical Methods EE
Staff Contact: School Office
CP15 S2 HPW4
Prerequisites: MATH2501 and one of MATH2100 or MATH2510 or MATH2101
Note/s: Excluded MATH2120, MATH2130, MATH3101. Restricted in Science course to combined degree courses 3725 and 3726.


MATH3150
Transform Methods
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH2520

MATH3161
Optimization Methods
Staff Contact: School Office
CP15 S1 HPW4
Prerequisites: MATH2501, and one of MATH2011 or MATH2100 or MATH2510
Development, analysis and application of methods for optimization problems. Theory of multivariable optimization; including necessary and sufficient optimality conditions, stationary points, Lagrange multipliers, Kuhn-Tucker conditions, convexity and duality. Numerical methods for one dimensional minimization, unconstrained multivariable minimization (including steepest descent, Newton, quasi-Newton and conjugate gradient methods) and constrained multi-variable minimization (including linear programming and quadratic programming).

MATH3170
Advanced Optimization
Staff Contact: School Office
CP7.5 HPW2
Prerequisites: A weighted average mark of at least 70 in MATH2501 and in a further 15 Credit Points of Level II Mathematics including MATH2011 or MATH2100 or MATH2510
Note/s: It is highly recommended that MATH3161 be taken concurrently. Not offered in 1997.
Development, analysis and application of methods for optimization problems. One or more topics from: combinatorial optimization, network flows, complexity, convex programming, non-smooth optimization, duality, complementarity problems, minimax theory, game theory, stochastic optimization, new approaches to linear programming.

MATH3181
Optimal Control
Staff Contact: School Office
CP15 S2 HPW4
Prerequisite: MATH2011 or MATH2100 or MATH2510
An introduction to the optimal control of dynamical systems. Mathematical descriptions of dynamical systems. Stability, controllability, and observability. Optimal control. Calculus of variations. Dynamic programming. Examples and applications are selected from biological, economical and physical systems.

MATH3201
Dynamical Systems and Chaos
Staff Contact: School Office
CP15 S2 HPW4
Prerequisite: MATH2120 or MATH3540 or MATH3541
Regular and irregular behaviour of nonlinear dynamical systems. A selection from topics developing the theory of nonlinear differential and difference equations, with applications to physical, biological and ecological systems. Topics from: stability and bifurcation theory, Floquet theory, perturbation methods, Hamiltonian dynamics, resonant oscillations, chaotic systems, Lyapunov exponents, Poincare maps, homoclinic tangles.

MATH3241
Fluid Dynamics
Staff Contact: School Office
CP15 S1 HPW4
Prerequisites: MATH2011 or MATH2100, MATH2120
The mathematical modelling and theory of problems arising in the flow of fluids. Cartesian tensors, kinematics, mass conservation, vorticity, Navier-Stokes equation. Topics from inviscid and viscous fluid flow, gas dynamics, sound waves, water waves.

MATH3250
Advanced Fluid Dynamics
Staff Contact: School Office
CP7.5 HPW2
Prerequisites: A weighted average mark of at least 70 in MATH2011 or MATH2100, MATH2120 and total of 30 Credit Points of Level II Mathematics
Note/s: It is highly recommended that MATH3241 be taken concurrently. Not offered in 1997.
The mathematical modelling and theory of problems arising in the flow of fluids. One or more topics from atmosphere-ocean dynamics, climate modelling, hydrodynamic stability, turbulence, environmental fluid dynamics, computational methods.

MATH3261
Atmosphere-Ocean Dynamics B
Staff Contact: School Office
CP15 S2 HPW4
Prerequisites: MATH2011 or MATH2100, MATH2120
The dynamics underlying the circulation of the atmosphere and oceans are detailed using key concepts such as geostrophy, the deformation radius and the conservation of potential vorticity. The role of Rossby waves, shelf waves, turbulent boundary layers and stratification is discussed. The atmosphere-ocean system as a global heat engine for climate variability is examined using models for buoyant forcing, quasi-geostrophy and baroclinic instability.

MATH3270
Dynamical Meterology
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisites: MATH2011 or MATH2100, MATH2120
It is highly recommended that MATH3261 be taken
Note/s: Restricted to course 3980
The equations of dynamical meterology, continuity, thermodynamics and their consequences, scalar analysis, vorticity, turbulence, boundary layer processes, atmospheric wave motions, instability, major synapic motions, numerical prediction, energy cycles.

MATH3301
Mathematical Computing B
Staff Contact: School Office
CP15 S2 HPW4
Prerequisites: MATH2120, MATH2301
The design and use of computer programs to solve practical mathematical problems. Introduction to Fortran90, partial differential equations, heat equation, iterative methods for linear systems, sparse matrix techniques, mathematical software libraries, code optimization and high performance computing.
Pure Mathematics Level III

Before attempting any Level III Pure Mathematics subject students must have completed at least 30 Credit Points of Level II Mathematics including the prerequisites specified below. For higher subjects the average performance in the above 30 Credit Points should be at distinction level. Subject to the approval of the Head of Department, this may be relaxed.

Students wishing to enrol in Level III Higher Pure Mathematics subjects should consult with the Pure Mathematics Department before enrolling. The subjects MATH3680, MATH3740 and MATH3780 normally are offered only in even numbered years and the subjects MATH3670, MATH3730 and MATH3770 only in odd numbered years.

Note/s: For each of the following pairs of subjects, although the subjects are no longer offered, students who have completed one of the subjects in the pair may be permitted to enrol in the other subject of the pair with the permission of the Head of Department: MATH3500 and MATH3510, MATH3530 and MATH3580, MATH3540 and MATH3550, MATH3640 and MATH3650. These pairs of subjects have been replaced by MATH3511, MATH3531, MATH3541, MATH3641 respectively.

MATH3400
Logic and Computability
Staff Contact: School Office
CP7.5 S1 HPW2
The propositional calculus, its completeness and consistency; Turing machines; unsolvable problems; computability and Church's thesis; Godel's incompleteness theorems.

MATH3411
Information, Codes and Ciphers
Staff Contact: School Office
CP15 S2 HPW4
Note/s: Excluded MATH3420.
Discrete communication channels: information theory, compression and error control coding, cryptography.

MATH3430
Symbolic Computing
Staff Contact: School Office
CP7.5 S2 HPW2
Note/s: MATH2400 Finite Mathematics is recommended.
Principles of, uses of and algorithms underlying symbolic computing systems. Applications in pure and applied mathematics using a variety of symbolic computing systems.

MATH3500
Group Theory
Note/s: No longer offered, see note above.

MATH3510
Geometry
Note/s: No longer offered, see note above.

MATH3511
Transformations, Groups and Geometry
Staff Contact: School Office
CP15 S2 HPW4
Note/s: Excluded MATH3710, MATH3780, MATH3500, MATH3510.
Euclidean geometry, geometry of triangles, transformations, groups, symmetries, projective geometry.

MATH3521
Algebraic Techniques in Number Theory
Staff Contact: School Office
CP15 S1 HPW4
Note/s: Excluded MATH3710, MATH3740, MATH3520.
The integers, residue class arithmetic, theorems of Lagrange, Fermat and Euler, groups of units, Chinese remainder theorem, primitive roots, Gaussian integers, division algorithm and principal ideals in Z[[]], quadratic residues, algebraic number fields, extensions, Eisenstein's theorem, ruler and compass constructions.

MATH3530
Combinatorial Topology
Note/s: No longer offered, see note above.

MATH3531
Topology and Differential Geometry
Staff Contact: School Office
CP15 S2 HPW4
Prerequisite: MATH2011 or MATH2510
Note/s: Excluded MATH3760, MATH3530, MATH3580.
Elementary combinatorial topology of surfaces, classification of surfaces, Euler characteristic, curves and surfaces in space, Gaussian curvature, Gauss theorem, Gauss-Bonnet theorem.

MATH3540
Ordinary Differential Equations
Note/s: No longer offered, see note above.

MATH3541
Differential Equations
Staff Contact: School Office
CP15 S1 HPW4
Prerequisites: MATH2501, MATH2520
Note/s: Excluded MATH3540, MATH3550, MATH3640, MATH3650, MATH3641.
Initial value problems, linear systems, variation of parameters, applications to physical and biological systems, autonomous nonlinear systems, Lyapunov's method, linear approximations, plane autonomous systems, cycles and bifurcations, the Poincare-Bendixson theorem, introduction to first order PDE's, classification and normal forms for second order equations, the Cauchy-Kowalewski Theorem, Dirichlet and Neumann problems associated with the Laplace operator in two variables.

MATH3550
Partial Differential Equations
Note/s: No longer offered, see note above.
MATH3560  
History of Mathematics  
Staff Contact: School Office  
CP7.5 S2 HPW2  
Topics from the history of mathematics, with emphasis on the development of those ideas and techniques used in undergraduate courses. Students are expected to read widely and to present written material based on their readings.

MATH3570  
Foundations of Calculus  
Staff Contact: School Office  
CP7.5 S1 HPW2  
Note/s: Excluded MATH3610.  
Properties of the real numbers, convergence of sequences and series, properties of continuous and differentiable functions of a real variable.

MATH3580  
Differential Geometry  
Note/s: No longer offered, see note above.

MATH3610  
Higher Real Analysis  
Staff Contact: School Office  
CP7.5 S1 HPW2  
Prerequisite: MATH2610 or MATH2011(CR) or MATH2510(CR)  
Note/s: Excluded MATH3570.  
The limit processes of analysis, metric spaces, uniform convergence, Arzela-Ascoli theorem, Stone-Weierstrass theorem, Riemann integral.

MATH3620  
Higher Functional Analysis  
Staff Contact: School Office  
CP7.5 S2 HPW2  
Prerequisites: MATH3610, MATH2601 or MATH2011(CR) or MATH2510(CR)  
Note/s: Excluded MATH3570.  

MATH3630  
Higher Integration and Mathematical Probability  
Staff Contact: School Office  
CP7.5 S2 HPW2  
Prerequisite: MATH3610  

MATH3640  
Higher Ordinary Differential Equations  
Note/s: No longer offered, see note above.

MATH3641  
Higher Differential Equations  
Staff Contact: School Office  
CP15 S1 HPW4  
Prerequisites: MATH2501(CR) or MATH2601, MATH2520 (CR) or MATH2620  
Note/s: Excluded MATH3540, MATH3550, MATH3541, MATH3640, MATH3650.  
As for MATH3541 but in greater depth.

MATH3650  
Higher Partial Differential Equations  
Note/s: No longer offered, see note above.

MATH3670  
Higher Set Theory and Topology  
Staff Contact: School Office  
CP7.5 S1 HPW2  
Corequisite: MATH3610  
Note/s: This subject is offered in odd numbered years only.  
Set theory, axiom of choice, ordinals and cardinals, topological spaces, compactness, quotient topologies.

MATH3680  
Higher Complex Analysis  
Staff Contact: School Office  
CP7.5 S1 HPW2  
Prerequisite: MATH2620 or MATH2520 (CR)  
Note/s: MATH3610 is recommended. This subject is offered in even numbered years only.  
Topics in advanced complex function theory from: conformal mappings, analytic continuation, entire and meromorphic functions, elliptic functions, asymptotic methods, integral formulae, harmonic functions, Riemann surfaces.

MATH3710  
Higher Algebra I  
Staff Contact: School Office  
CP7.5 S1 HPW2  
Prerequisite: MATH2601 or MATH2501(CR)  
Note/s: Excluded MATH3500, MATH3511, MATH3521.  
Groups, sub-groups, factor groups, matrix groups, Sylow theorems, isomorphism theorems, rings, ideals, factor rings, fields, algebraic and transcendental extensions, constructability, finite fields.

MATH3720  
Higher Algebra II  
Staff Contact: School Office  
CP7.5 S2 HPW2  
Prerequisite: MATH3710  
Galois theory, additional group theory, representations and characters of finite groups.

MATH3730  
Higher Advanced Algebra  
Staff Contact: School Office  
CP7.5 S2 HPW2  
Prerequisite: MATH3710  
Note/s: This subject offered in odd numbered years only.  
Topics from: rings, commutative rings, factorisation theory, modules, associative and Lie algebras, Wedderburn theory, category theory.
MATH3740
Higher Number Theory
Staff Contact: School Office
CP7.5 S2 HPW2
Note/s: Excluded MATH3520, MATH3521. This subject offered in even numbered years only.
Topics from: elementary number theory, prime numbers, number theoretic functions, Dirichlet series, prime number theorem, continued fractions, Diophantine approximation, quadratic reciprocity, algebraic number theory, class number theorem.

MATH3760
Higher Topology and Differential Geometry of Surfaces
Staff Contact: School Office
CP7.5 S1 HPW2
Prerequisites: MATH2601 or MATH2501(CR), MATH2610 or MATH2011(CR) or MATH2510(CR)
Note/s: Excluded MATH3530, MATH3531, MATH3580.
Classification of surfaces: homotopy, homology, Euler characteristic. Embedded surfaces: differential geometry, Gauss-Bonnet and de Rham theorems.

MATH3770
Higher Calculus on Manifolds
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH3760
Note/s: This subject offered in odd numbered years only.
Manifolds, vector fields, flows, introduction to Morse theory, differential forms, Stokes theorem, de Rham cohomology.

MATH3780
Higher Geometry
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisites: MATH2601 or MATH2501(CR), MATH3710 or MATH3500(CR)
Note/s: Excluded MATH3510, MATH3511. This subject offered in even numbered years only.
Axiomatic geometry, affine geometry, Desargues theorem, projective geometry, spherical and hyperbolic geometry.

Statistics Level III
Note: There has been a major revision of all Level III Statistics subjects for 1997. Any student who has taken Level II Statistics subjects before 1996 or Level III Statistics subjects before 1997 and wishes to take Level III Statistics subjects from 1997 should consult the Head of Department.

Note: The two subjects listed before 1997 as MATH3870 Regression Analysis and Experimental Design and MATH3880 Applied Stochastic Processes have been renumbered from 1997 as MATH3050 Regression Analysis and Experimental Design and MATH3060 Applied Stochastic Processes. They are available for students who have previously taken MATH2821 or MATH2841 and who wish to take at most 15 Credit Points of Statistics at Level III.

MATH3050
Regression Analysis and Experimental Design
Staff Contact: School Office
CP7.5 S1 HPW2
Prerequisite: MATH2801 (from 1996) or MATH2821 or MATH2841 or approved equivalent
Note/s: Excluded MATH2831, MATH2831, MATH3811, MATH3830, MATH3911, MATH3930, MATH3870 (before 1997).

MATH3060
Applied Stochastic Processes
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH2841 or MATH2801 or approved equivalent
Note/s: Excluded MATH3801, MATH3901.
An introduction to processes in discrete and continuous time Markov chains and Markov processes, branching processes, time series with moving average models.

MATH3080
Stochastic Processes
Staff Contact: School Office
CP15 S1 HPW4
Prerequisites: MATH2501, MATH2011 or MATH2510, MATH2801
Note/s: Excluded MATH3060, MATH3880 (before 1997), MATH3901.

MATH3000
Statistical Computation I
Staff Contact: School Office
CP7.5 S1 HPW2
Prerequisites: MATH2831, MATH2810
Notes: Excluded MATH3861
Use of major statistical packages e.g. SAS, Minitab, Splus, GENSTAT, Xlisp-stat. Data organisation for package use. Extending packages using subroutine libraries. Applications to multiple regression analysis. Simulation of random variables.

MATH3861
Statistical Computation 2
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisites: MATH2831, MATH2810
Notes: Excluded MATH3861
Principles of simulation in statistical inference. Computationally intensive statistical methods such as resampling or the bootstrap. Nonparametric curve and density estimation methods. Optimization methods in statistics. Splus and other specialist software will be used.
MATH3820
Time Series and Spatial Analysis
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH3801
Note/s: Excluded MATH3920 (from 1997).
Stationary and nonstationary time series models, autocorrelation, linear time series modelling, forecasting. Models for spatial correlation and variability. Use of Minitab, SAS and Splus statistical packages. Finite population sampling theory illustrated by mean estimation; simple random, stratified, cluster, systematic, multistage and ratio sampling, sampling proportional to size.

MATH3830
Design and Analysis of Experiments
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisites: MATH2831 or MATH3811
Note/s: Excluded MATH3050, MATH3870 (before 1997), MATH3930.

MATH3840
Statistical Inference
Staff Contact: School Office
CP7.5 S1 HPW2
Prerequisites: MATH2831 or MATH2821
Note/s: Excluded MATH3940.
Uniformly minimum variance unbiased estimation. Cramer-Rao inequality, Lehman-Scheffe theorem. Monotone likelihood ratio distributions and uniformly most powerful unbiased tests. Generalized likelihood ratio tests, exact tests and large samples tests. Bayesian point estimation, interval estimation and hypothesis testing.

MATH3850
Nonparametric Methods
Staff Contact: School Office
CP7.5 S1 HPW2
Prerequisites: MATH2801 (from 1996) or both MATH2821 and MATH2830
Note/s: Excluded MATH3950.

MATH3860
Nonlinear Regression Modelling
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH2831
Notes: Excluded MATH3960.

MATH3870
Multivariate Analysis
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH2831
Note/s: Excluded MATH3970.

MATH3880
Theory of Probability
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH2801
Note/s: Excluded MATH3971, MATH3980.
Probability spaces, convergence of random variables, Borel-Cantelli lemma, laws of large numbers, martingales, central limit theorem, Domains of attraction, applications to large sample statistical inference and to financial modelling.

MATH3890
Special Topic in Statistics
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH2801, MATH2831
New developments in statistical science theory and methods.

MATH3901
Higher Stochastic Processes
Staff Contact: School Office
CP7.5 S1 HPW4.5
Prerequisites: MATH2501, MATH2011 or MATH2510, MATH2901
Note/s: Excluded MATH3801, MATH3880 (before 1997), MATH3060.
As for MATH3801 but in greater depth.

MATH3920
Higher Time Series and Spatial Analysis
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH2901 (from 1996) or MATH2921
Note/s: Excluded MATH3820 (from 1997).
As for MATH3820 but in greater depth.

MATH3930
Higher Design and Analysis of Experiments
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisites: MATH2901 (from 1996) or MATH2921, MATH3931 or MATH3911
Note/s: Excluded MATH3830, MATH3870 (before 1997), MATH3050.
As for MATH3830 but in greater depth.

MATH3940
Higher Statistical Inference
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH2901 (from 1996) or MATH2921
Note/s: Excluded MATH3840.
As for MATH3840 but in greater depth.
MATH3950
Higher Nonparametric Methods
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisites: MATH2901 (from 1996) or both MATH2921 and MATH2930
Note/s: Excluded MATH3850.
As for MATH3850 but in greater depth.

MATH3960
Higher Non-linear Regression Modelling
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH2931
Notes: Excluded MATH3860.
As for MATH3860 but in greater depth.

MATH3970
Higher Multivariate Analysis
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH2931
Notes: Excluded MATH3870.
As for MATH3870 but in greater depth.

MATH3971
Higher Theory of Probability
Staff Contact: School Office
CP7.5 S2 HPW2
Prerequisite: MATH2901
Note/s: Excluded MATH3871, MATH3880.
As for MATH3880 but in greater depth.

Mathematics Level IV

To enter Level IV (Honours) Mathematics, students must be in the Advanced Science course and have completed the first three years of one of the programs 0600, 1000, 1006, 1060, 1061, 1066, 1067 or 6810 with an appropriate set of Level III subjects (or the equivalent in a double degree Course) and received permission from the Head of the appropriate Department.

Normally a credit average in the Level III Mathematics subjects specified in the program is required and some evidence of the ability to undertake independent study. In special cases other subjects may be substituted for the Mathematics subjects. Students should discuss their Level III selection of subjects with the Head of the appropriate Department. For Honours Pure Mathematics some higher level Mathematics subjects should normally be included at Levels II and III.

MATH4003/MATH4004
Mathematics and Computer Science Honours
Staff Contact: School Office
CP120 F
Prerequisites: Completion of 3 years of Advanced Science programs 0600, 1060 or 1066 including 45 Credit Points of Level III Computer Science subjects and 45 Credit Points of Level III Mathematics subjects. Approval from the Head of School.
Note/s: See the preamble for Mathematics Level IV.
Undergraduate thesis in Applied Mathematics or Pure Mathematics together with advanced lectures on topics chosen half from MATH4103 or MATH4603, and half from Computer Science.

The General Education requirement is met by the 56 hour subject The Role of Mathematics in Society which is part of the Honours program.

MATH4103/MATH4104
Applied Mathematics 4 (Honours)
CP120 F
Prerequisite: Completion of 3 years of any Advanced Science Mathematics program including 90 Credit Points of Level III subjects as specified in the program. Approval from the Head of Department.
Note/s: See the preamble for Mathematics Level IV.

Skill in practical numerical computing is highly recommended for students taking this subject. Those students who have not already taken a suitable computing subject may be required to take a short bridging course.

Undergraduate thesis together with advanced lectures on topics chosen from the following fields: advanced mathematical methods for applied mathematics, advanced optimization, numerical analysis, theory of linear and non linear dynamical systems, optimal control, operations research, functional analysis and applications, mathematics of economic models and of economic prediction, fluid mechanics, oceanography, microhydrodynamics, and analytical and numerical solution of partial differential equations. May also include advanced lectures given by other Departments or Schools.

The General Education requirement is met by the 56 hour subject The Role of Mathematics in Society which is part of the Honours program.

MATH4603/MATH4604
Pure Mathematics 4 (Honours)
CP120 F
Prerequisite: Completion of 3 years of any Advanced Science Mathematics program including 90 Credit Points of Level III subjects as specified in the program. Approval from the Head of Department.
Note/s: See the preamble for Mathematics Level IV.
Undergraduate thesis together with advanced lectures on topics chosen from the fields of current interest in Pure Mathematics. May also include advanced lectures given by other Departments or Schools.

The General Education requirement is met by the 56 hour subject The Role of Mathematics in Society which is part of the Honours program.

MATH4903/MATH4904
Theory of Statistics 4 (Honours)
CP120 F
Prerequisite: Completion of 3 years of any Advanced Science Mathematics program including 90 Credit Points of Level III subjects as specified in the program including 60 Credit Points of Level III Statistics subjects including MATH3000 or MATH3001. Approval from the Head of Department.
Note/s: See the preamble for Mathematics Level IV.
Undergraduate thesis together with advanced lectures on topics chosen from the following fields: mathematical basis, experimental design, response surfaces, stochastic processes, theories of inference, sequential analysis, nonparametric methods, multivariate analysis,
mathematical programming, information theory, discrete distributions. May also include advanced lectures given by other Departments or Schools.

The General Education requirement is met by the 56 hour subject The Role of Mathematics in Society which is part of the Honours program.

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**Materials Science and Engineering**

**Materials Science and Engineering Level II**

**MATS1002**  
**Microstructural Analysis**  
*Staff Contact: Dr P Krauklis*  
CP7.5 S2 L1 T2  
**Note/s:** Restricted to Combined degree course 3681.


**MATS1072**  
**Physics of Materials**  
*Staff Contact: Dr B Gleeson*  
CP7.5 S1 L2 T1  
**Prerequisite:** PHYS1002  
**Note/s:** Restricted to Combined degree course 3681.

Interatomic bonding in solid materials. Types of interatomic bonds, metallic, covalent, ionic. Introductory quantum mechanics in one dimension, free electron theory, effects of periodic potential, density of states curves. Effect of electron to atom ratio on conductivity and crystal structure; semiconductors; intrinsic, extrinsic. Exchange energy; ferromagnetism, antiferromagnetism. Elementary perturbation theory, covalent bond; crystal structures, properties. Ionic bond, force models, properties.

**MATS1273**  
**Ferrous Physical Metallurgy A**  
*Staff Contact: Dr P Krauklis*  
CP10 S2 L2 T2


**MATS1112**  
**Phase Equilibria**  
*Staff Contact: Dr AG Crosky*  
CP5 S1 L1 T1  
**Note/s:** Restricted to Combined degree course 3681.

Phase rule. **Two-component systems:** free energy-composition and temperature composition diagrams, solubility limits; compound formation, invariants. **Three-component systems:** isothermal sections and liquidus projections. Solidification and crystallization; cooling curves, crystallization paths.

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**Materials Science and Engineering Level III**

**MATS2213**  
**Diffusion**  
*Staff Contact: Prof D J Young*  
CP5 S1 L1 T1

Fick's first and second laws. Solutions for short and long times by analytical and numerical methods Boundary conditions for solid-fluid and solid-solid interfaces. Diffusion couples. Atomic level diffusion theory.

**MATS4363**  
**Metallurgy and Phase Equilibria Laboratory**  
*Staff Contact: Dr AG Crosky*  
CP7.5 S1 T3


**MATS9520**  
**Engineering Materials**  
*Staff Contact: Dr AG Crosky*  
CP7.5 S1 L2 T1  
**Note/s:** Restricted to Combined degree course 3681.

Microstructure and structure-property relationships of the main types of engineering materials (metals, polymers, ceramics and composites). Micromechanisms of elastic and plastic deformation. Fracture mechanisms for ductile, brittle, creep, fatigue modes of failure in service; corrosion. Metal forming by casting and wrought processes. Phase equilibria of alloys; microstructural control by thermo-mechanical processing and application to commercial engineering materials. Laboratory and tutorial work includes experiments on cast and recrystallised structures, ferrous and non-ferrous microstructures and fracture and failure analysis.
conditions for solid-fluid and solid-solid interfaces. Diffusion couples. Atomic level diffusion theory.

MATS2223
Phase transformations
Staff Contact: Dr B Gleeson
CP7.5 S2 L2 T1
Note/s: Restricted to Combined degree course 3681.

MATS4513
Deformation of Metals
Staff Contact: Dr P Munroe
CP5 S1 L2
Atomic and molecular description of deformation. Introduction to dislocation theory and its application to mechanical properties.

MATS4523
Strengthening Mechanisms in Metals
Staff Contact: Dr B Gleeson
CP5 S2 L1 T1
Strengthening mechanisms, creep, fracture, grain size dependence of strength. Introduction to generation of deformation and recrystallization textures. Measurements of age-hardening, activation energy of strain ageing.

MATS4533
Metal Forming Processes
Staff Contact: Dr AG Crosky
CP5 S1 L2

MATS4543
Fractographic Analysis
Staff Contact: Dr AG Crosky
CP7.5 S2 L1 T2
Classification of macroscopic and microscopic fracture mechanisms. Initiation and propagation of ductile, brittle, fatigue, stress corrosion, and corrosion fatigue fractures. Effect of material defects, design deficiencies and incorrect processing on the origin and cause of fracture. Analysis of various modes of fracture using fractographic techniques involving optical microscopy and scanning and transmission electron microscopy.

Mechanical and Manufacturing Engineering

Mechanical and Manufacturing Engineering
Level I

AVEN1300
Basic Mechanics
Staff Contact: Dr K Zarrabi
F HPW2
Note/s: Restricted to course 3980.

AVEN1500
Computing for Aviation
Staff Contact: A/Prof DW Kelly
S1 HPW2
Note/s: Restricted to course 3980.
Operating systems, hardware configurations, languages including C, Basic and Fortran. Packages for word processing and data analysis. Graphic and interactive display. Interaction with external devices including actuators and sensors. Application of computers in aviation.

AVEN1900
Introduction to Aircraft Engineering
Staff Contact: Mr JR Page
F HPW1
Note/s: Restricted to course 3980.
Organisation of the aviation industry, concepts and nomenclature used in aviation. Introduction to the theory of flight, aircraft configuration, systems and operation.

MANF1100
Workshop Technology
Staff Contact: Dr P Mathew
CP7.5 S1 HPW3
Note/s: Protective equipment (eg safety glasses, safety boots etc) is required in order to comply with the Occupational Health and Safety Act. Students must already possess or purchase these items before commencing the course. The price of the items is approximately $100. Students who have done Industrial Arts for the HSC have an appropriate trade or certificate qualification, or are suitably employed, may qualify for exemption from this subject.
The implementation of design and its interaction with manufacturing equipment and processes. Manufacturing capabilities and tolerancing. Approximately 36 hours of practical training which includes welding, fitting and machining.
MANF1110
Manufacturing Technology
Staff Contact: Dr LE Farmer
CP7.5 S2 HPW3
Corequisites: MECH1100, MECH1300, MECH1400

MECH1100
Mechanical Engineering Design 1
Staff Contact: Dr RA Platfoot
CP7.5 S1 HPW1 S2 HPW2
Corequisite: MECH1000
Introduction to hardware. Studies of a range of engineering components, considering: what they do, how they do it, how they were made, the range of possible forms for each item, why each item has its particular form. Systematic design techniques from conceptual through embodiment to the detail stage. Problem breakdown, search for solution concepts and decision techniques. Issues for sizing and form of designs, integration with manufacture and assembly. Investment decisions and cost analysis. Specification requirements and group projects.

MECH1110
Graphical Analysis and Communications
Staff Contact: Mr AJ Barratt
CP7.5 S2 L1 T2
Note/s: Excluded MECH0130.
Freehand sketching of machine components, standard drawing methods, orthogonal projections and sections for analysis and communication, dimensions, tolerances and conventional symbols. Computer graphics modelling of components, assembly and production of detail drawings.

MECH1300
Engineering Mechanics 1
Staff Contact: A/Prof RAJ Ford
CP10 S1 or S2 L2 T2
Prerequisite: HSC Mark Range Required: 2 unit Science (Physics) 53-100, or 3 unit Science 90-150, or 4 unit Science multistrand 1-50, or 2 unit Industrial Arts (Engineering Science) 53-100, or 3 unit Industrial Arts (Engineering Science) 1-50
Note/s: Excluded MECH0330. Restricted to combined degree course 3681. Students can make up for the lack of the prerequisite by work taken in Physics in the first half of Year 1.

MECH1400
Mechanics of Solids 1
Staff Contact: A/Prof R Randall
CP7.5 S1 or S2 L2 T1
Corequisites: MECH1300 or MECH0330 or MECH0440
Note/s: Excluded MECH0430.
Resultants and equilibrium in three-dimensions; stress and strain; internal forces; stresses, deformation and strain energy due to axial loading, bending and torsion; helical springs.

MECH1500
Computing 1M
Staff Contact: Dr MJ Tordon
CP7.5 S2 HPW3
Note/s: Restricted to Combined degree course 3681.
Introduction: history, applications, hardware, software, a model of a computer system, editors, operating systems. Program design and development: programming objectives, data structures, algorithms, symbolic names, translation of algorithms, steps in programming, programming style, syntax charts, errors and debugging. Data: data types, declarations, input, output, file control. Programming constructs: arithmetic expressions, assignment, relational and logical expressions, selection, iteration, intrinsic functions, statement functions, subprograms, common communication. Applications using existing programs: sorting, word processing, graphics and plotting, simultaneous linear algebraic equations. The computer language employed in this subject is FORTRAN.

Mechanical and Manufacturing Engineering Level II
AVEN2200
Aviation Engineering Experimentation 1
Staff Contact: A/Prof DW Kelly
F HPW2
Note/s: Restricted to course 3980.
A selection of experiments from airframes analysis, flight mechanics, aircraft propulsion, aircraft systems and aerodynamics to supplement formal lecture program.

AVEN2210
Aircraft Systems 1
Staff Contact: Mr JR Page
F HPW1.5
Note/s: Restricted to course 3980.
Hydraulics, main power transmissions pneumatics driving control surfaces. Electric power generators, distribution, emergency procedures. Electronics navigation, cabin control.

AVEN2400
Airframe Analysis and Maintenance 1
Staff Contact: A/Prof DW Kelly
S2 HPW3
Prerequisite: AVEN1300
Note/s: Restricted to course 3980.
AVEN2600
Aerodynamics for Aviation 1
Staff Contact: Dr NA Ahmed
S2 HPW3
Note/s: Restricted to course 3980.

Fluids in motion and the physical forces exerted by these flows on aircraft. Introduction to fundamental principles and equations of aerodynamics such as dimensional analysis, flow similarity, continuity momentum and energy equations, circulation, vorticity, stream functions and theoretical solutions for low speed, flow over airfoils and finite wings.

AVEN2700
Aviation Propulsion 1
Staff Contact: Prof BE Milton
S2 HPW3
Note/s: Restricted to course 3980.


AVEN2900
Aircraft Performance
Staff Contact: Mr JR Page
F HPW1.5
Prerequisite: AVEN1300
Note/s: Restricted to course 3980.

Flight environment aircraft classifications, operational requirements, payload-range, economics, break even point airfield requirements. Accelerated and unaccelerated flight manoeuvring and gust envelope, energy height, power and wing loading.

MECH2300
Engineering Mechanics 2A
Staff Contact: Prof KP Byrne
CP7.5 S1 or S2 L2 T1
Prerequisites: MATH1032 or MATH1231 or MATH1042 or MATH1241, MECH1300 or MECH0360
Note/s: Excluded MECH0430. Restricted to Combined degree course 3681.

Kinetics of systems of particles; steady mass flow. Plane kinematics and kinetics of rigid bodies: moment of inertia; motion relative to translating and rotating frames of reference, equations of motion; work and energy, impulse and momentum. Virtual work for static and dynamic systems. Engineering applications.

MECH2310
Engineering Mechanics 2B
Staff Contact: Prof KP Byrne
CP5 S1 or S2 HPW2
Prerequisite: MECH2300
Note/s: Restricted to Combined degree course 3681.

Mechanical and Manufacturing Engineering
Level III

AVEN3200
Aviation Engineering Experimentation 2
Staff Contact: Dr NEA Ahmed
F HPW2
Note/s: Restricted to course 3980.
A selection of experiments from airframes analysis, flight mechanics, aircraft propulsion, aircraft systems and aerodynamics to supplement formal lecture program.

AVEN3210
Aircraft Systems 2
Staff Contact: Mr JR Page
F HPW2
Note/s: Restricted to course 3980.
Computation and fly by wire. Communication: internal (ARINC 429) and external (VHF, UHF etc). Control loops servo systems, feedback.

AVEN3400
Airframe Analysis and Maintenance 2
Staff Contact: A/Prof DW Kelly
S2 HPW2
Note/s: Restricted to course 3980.
Analysis of wing and fuselage structures, stress concentration, fracture mechanics, damage tolerance, fatigue, corrosion, nondestructive inspection, maintenance and repair, aspects of aeroelasticity, introduction to computational modelling.

AVEN3600
Aerodynamics for Aviation 2
Staff Contact: Dr NEA Ahmed
S2 HPW2
Note/s: Restricted to course 3980.
Wings in compressible flow. Expansion waves, normal and oblique shock waves, method of characteristics, supersonic linearised theory; shock stall, critical Mach number, transonic drag. Introduction to hypersonic flow. Aspects of wing design and flow control.

AVEN3700
Aviation Propulsion 2
Staff Contact: Dr RT Casey
F HPW2.5
Note/s: Restricted to course 3980.
Propellor noise, stall, gyroscopic effects and slipstreams. Elements of gas turbine engines, gas turbine engine classification, gas turbine engine cycles, performance and operation, gas turbine engine high altitude operating characteristics, gas turbine engine condition monitoring, surge, engine re-starting.

AVEN3900
Stability, Control and Operation of Aircraft
Staff Contact: Mr JR Page
F HPW2
Prerequisite: AVEN2900.
Note/s: Restricted to course 3980.
Operational: take off and landing performance, range and endurance, under-carriage types, take-off surface effects, sea planes.

Stability and Control: reference axis, longitudinal stability (static, dynamic, origins of), lateral stability (static, dynamic, origins of derivatives), balancing and harmonising controls, flying control systems, enhanced stability.

AVEN3920
Aircraft Evaluation
Staff Contact: Mr JR Page
Prerequisites: AVEN2900, AVEN2600, AVEN2210
Corequisites: AVEN3600, AVEN3210
Note/s: Restricted to Course 3980 program 2001
Evaluation of fitness for purpose; route matching, range load graphs, environmental constraints, initial and operating costs, maintenance requirements, fleet capacity, crew requirements, safety and reliability.

Medicine

MDCN8001
Principles of Medicine for Optometry Students
Staff Contact: A/Prof L Simons (St Vincent's Hospital)
CP5 F HPW1
Note/s: Students normally take the subject in Year 4 of course 3950. Restricted to course 3950.
An overview of historical, epidemiological, pathophysiological, diagnostic, therapeutic and public health aspects of disease in man and the various clinical categories of practice.

Microbiology and Immunology

Note: Some subjects that appear in this section may be restricted to students for whom the subject comprises a compulsory part of their program.

Microbiology and Immunology Level II Subjects

MICR2201
Introductory Microbiology
Staff Contact: Dr I Coopenwhite
CP15 S1 HPW6
This introduction to microbiology is offered as a single elective. However, the subject is mandatory for students wishing to major in program 4400 Microbiology and Immunology. Students with no previous knowledge of biology can do this subject.

MICR2011
Microbiology 1
Staff Contact: Dr P March
CP15 S2 HPW6
Prerequisites: BIOS1101, BIOS1201, MICR2201
Corequisites: BIOC2201 and BIOS2201
This subject is for students majoring in microbiology and who wish to enlarge their knowledge and skills in
Philosophy

Philosophy is a wide-ranging discipline, catering for a great diversity of interests, for instance, in science, reasoning, persons, and social issues, and encouraging critical and imaginative thought about the foundations of other subjects and disciplines. Apart from providing considerable choices for students majoring in Philosophy, the diversity of Upper Level subjects makes it possible for students majoring in other disciplines to select subjects complementing their main interest.

Philosophy Level I

First Enrolment in Philosophy
There are four Level I subjects:
Each of these has a 15 Credit Point value. They can be taken separately, and students can gain Upper Level status in Philosophy (qualify to enrol in Upper Level subjects) by passing in only one. However, students enrolling in one will normally enrol in two, and students wishing to major in Philosophy must complete any two of the four.

PHIL1006
Reasoning, Values and Persons
Staff Contact: Phillip Staines, Convenor
CP15 C6 S1 HPW3
Note/s: Excluded 52.103.
A team-taught introduction to philosophical thought and issues through study of traditional and contemporary discussions of four topic areas: philosophical reasoning, ethics and political philosophy, minds, bodies and persons, logic and analysis.

PHIL1007
Ways of Knowing the Nature of Knowledge
Staff Contact: Bill Tarrant, Convenor
CP15 C6 S2 HPW3
Note/s: Excluded 52.104.
This subject is independent from Introductory Philosophy A, but structured in the same way. Students may enrol in both subjects or in either subject without the other. This subject is a further team-taught introduction to philosophy. The topic areas will include science and religion, knowledge and evidence, metaphysics.

PHIL1008
Ethics and Society
Staff Contact: Karen Lai, Convenor
CP15 S1 HPW3
This is political philosophy and moral philosophy at the intersection of the political with the personal. When we make decisions in important areas like euthanasia, reproductive freedom and reproductive technology, the allocations of health resources, the suppression of smoking and other drugs, censorship, the environment, penal reform and capital punishment, we must balance the rights and duties of the individual with the demands and obligations of society. In this team-taught subject, we consider current debate about the above questions in the light of philosophical theories about – what is ethics, individual morality and duties (the notion of duties to oneself and to others, the fundamental value of respect for persons); public morality and goals (judging actions, laws and policies according to their consequences); and individuals and their rights in the state (theories about rights, justice, and the limits of the state).

PHIL1009
Points of View: Science, Objectivity and Subjectivity
Staff Contact: Neil Harpley, Convenor
CP15 S2 HPW3
Is the world the way it seems to be? Is there a real world out there or is it all 'in the mind'? This team-taught subject introduces philosophy by examining these questions in relation to science and its claim to objectivity. Does science really provide objective knowledge? Is objective knowledge the same thing as 'value free' knowledge?
Along with scientific sorts of knowledge, are there other sorts of knowledge which are more subjective, more a feature of our individual perspectives. Is there such a thing as common everyday knowledge?, as ethical knowledge?, as self-knowledge? More systematically, the subject will deal with the following questions: How do hypotheses, observations and evidence function in scientific arguments? What is induction, and what is its place in scientific method? Is there a difference between science and non-science?
Are all our observations affected by our personal backgrounds, beliefs and prejudices? If so, does that mean that observation is never objective?
What is the relationship between science and ethics? Does evolutionary science teach us what is morally right and wrong? Is the environment intrinsically valuable or should we study it merely so that we can subjugate and manipulate it to our ends?

Value of Upper Level Subjects in Philosophy
All Upper Level subjects are 15 Credit Points.

Specialisation in Philosophy
Students specialising in Philosophy must complete any two of the School's Level I subjects (30 Credit Points): PHIL1006 (Reasoning, Values and Persons), PHIL1007 (Ways of Knowing), PHIL1008 (Ethics and Society), PHIL1009 (Points of View). In addition, students must complete 6 Upper Level (II/III) subjects (90 Credit Points). Of these, subjects totalling at least 60 Credit Points must be chosen from List A, which includes subjects in Logic, Philosophy of Mind, Philosophy of Science, and areas of History of Philosophy relevant to those subject areas. Students normally take two Level II/III subjects in Year 2, and four Level II/III subjects in Year 3. Subject to the approval of the School, which considers the individual subjects nominated by a student and the student's overall program in Philosophy, a student may be permitted to count subjects totalling up to 15 Credit Points offered outside the School toward specialisation in Philosophy.
List A

PHIL2106 Logic
PHIL2107 Advanced Philosophy of Science
PHIL2108 Ways of Reasoning
PHIL2116 Scientific Method
PHIL2117 Philosophical Logic
PHIL2118 Philosophy and Biology
PHIL2206 Contemporary Philosophy of Mind
PHIL2207 Issues in the Philosophy of Psychology
PHIL2217 Personal Identity
PHIL2218 Philosophical Foundations of Artificial Intelligence
PHIL2219 Topics in Philosophy of Language
PHIL2226 Twentieth Century Analytic Philosophy
PHIL2228 Themes in Seventeenth Century Philosophy
PHIL2229 Themes in Eighteenth Century Philosophy
PHIL2417 Relativism: Cognitive and Moral
PHIL2518 Greek Philosophy: Issues in Ethics and Epistemology
PHIL3106 Pre Honours Seminar

The remaining 30 Credit Points are to be chosen from other Upper Level Philosophy subjects.

Level II/III

Some Upper Level subjects deal with particular philosophical topics; others can be taken in sequence to give more sustained treatments of larger areas. Students may select freely among these, subject to stipulations regarding prerequisites. They are welcome to seek advice and further information from the School.

In certain circumstances the prerequisites specified for subjects may be waived; for example, in the case of students who have already studied similar material, or who wish to take isolated subjects relevant to another discipline. Students who feel they have a case for a concession of this kind should consult the School.

Honours Entry Requirements

Students intending to proceed to the award of an Honours degree in Philosophy must normally complete years 13 of programs 5200 (Philosophy) or 5262 (Philosophy of Science) with an average of at least 70% in their Philosophy subjects, including at least one Distinction result; plus PHIL3106 (Pre-Honours Seminar). Subject to the approval of the School, which considers the individual subjects nominated by a student and the student's overall program in Philosophy, a student may be permitted to count subjects totalling up to 15 Credit Points offered outside the School toward satisfying the Honours entry requirements. Students contemplating Honours are urged to seek advice from the School early in their course.

Philosophy Level II/III

Notes: Level II Status in Philosophy consists in being in second or later year of university study, and also having passed at least one Level I Philosophy subject. The prerequisite may be waived in certain cases by the School.

Level III Status in Philosophy consists of having an overall standard of credit or higher in Philosophy subjects totalling 120 Credit Points.

PHIL2106 Logic

Staff Contact: Stephen Hetherington
CP15 S1 HPW3
Prerequisite: Any Level I subject
Note/s: Excluded 52.2030 and 52.2031, 52.220, MATH3400.

This subject is about deductive logic (in particular, propositional logic and predicate logic). Aims to construct and to understand - a precise, unambiguous, formal language. Many important parts of English are translatable into it, hence many arguments of English are translated into it too. It is a language with which we can better understand the concept of deductive proof.

PHIL2107

Advanced Philosophy of Science

Staff Contact: Michaelis Michael
CP15 S2 HPW3
Prerequisite: Upper Level status in Philosophy, or contact School

Explores some current issues in the philosophy of the sciences and includes discussion of the role of experiment in science; the cognitive status of theories; explanation; intertheoretical reduction; reductionism; models and metaphors; the issues of scientific realism and anti-realisms.

PHIL2108

Ways of Reasoning

Staff Contact: Bill Tarrant
CP15 S1 HPW3
Prerequisite: Upper level status in Philosophy
Note/s: Excluded 52.233, 52.2010.

Material for this subject is drawn from everyday sources, such as newspapers, books and advertisements, and including television. Deals with the nature of argument, fallacies, reasoning and the role of reasoning. From studying the structure of arguments students will be able to improve their critical skills and the presentation of their own arguments.

PHIL2109

Metaphysics (Realisms)

Staff Contact: Stephen Hetherington
CP15 HPW3
Prerequisite: Upper Level status in Philosophy
Note/s: Not offered in 1997.

Examines several classic metaphysical questions, each of which concerns some kind of realism. (i) Realism in general (ii) Realism about universals (iii) Modal realism; (iv) Realism about persons. We will think about truth, about the relation between the general and the particular, about whether this is the only possible world, about whether individuals have essences - and even about whether there are non-existent objects.
PHIL2116
Scientific Method
Staff Contact: Michaelis Michael
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy, or contact School

Science has a serious claim to being the major cultural force shaping our world-view. The aim of this subject is to enable us to understand better our own view about science by tracing their historical development. Examines, in some depth, the conceptions of science to be found in the writings of Aristotle, Descartes, various Positivists, and some more recent philosophers, with a view to understanding how their conceptions of science and their conceptions of which questions philosophers should ask about science differ from each other and from our own.

PHIL2117
Philosophical Logic
Staff Contact: Michaelis Michael
CP15 S2 HPW3
Prerequisite: PHIL2106 or equivalent, or contact School

Follows on from PHIL2106 Logic and is intended to introduce students to the ways various logics have been deployed within philosophy, with a view to illuminating such topics as linguistics meaning, content of thought, modalities, necessity and possibility, contrary-to-fact conditionals, laws of nature, action value, deducibility and fiction.

PHIL2118
Philosophy and Biology
Staff Contact: Michaelis Michael
CP15 S1 HPW3
Prerequisite: Upper Level Status in Philosophy or 12 credit points in History and Philosophy of Science and Technology (HPST), or BIOS1101 or BIOS1201

Aims to bring out some of the key theoretical and philosophical issues thrown up by modern biology. These include but are not exhausted by the nature and scientific status of evolutionary theory; the debates over classification of higher taxa; the issue of reduction of biology to more "basic" sciences; and the ethical implications of biology. The subject is designed to be of interest to students of the humanities and to students of the biological sciences.

PHIL2206
Contemporary Philosophy of Mind
Staff Contact: Philip Cam
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy
Note/s: Excluded 52.2002, 52.250.

An introduction to some major issues in the field. There are three topics: (1) On relating the Mental to the Physical; (2) Alternative Approaches to the Psychology of Belief and Desire; and (3) The Psychology of Experience and Consciousness.

PHIL2207
Issues in the Philosophy of Psychology
Staff Contact: Philip Cam
CP15 S2 HPW3
Prerequisite: Upper Level in Philosophy or PSYC1002
Note/s: Excluded 52.2003, 52.251.

Philosophical issues in theoretical psychology, drawn from philosophical and psychological writings on personal identity, consciousness and self-knowledge, perceptual illusions, processing systems, psychology and brain science.

PHIL2208
Epistemology (Scepticisms)
Staff Contact: Stephen Hetherington
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy

All of us acknowledge that there are things we do not know. But such humility can turn into perplexity when we encounter epistemological sceptics. A sceptic typically denies us either vast amounts of knowledge or justification of some select, but extremely everyday, sorts of apparent knowledge or justification. In short, sceptics argue for surprising denials of knowledge or justification. Examines some historically prominent sceptical ways of thinking, which attack knowledge of, or justified belief in, such areas as: the external world, the unobserved, linguistic meaning, everything.

PHIL2209
Epistemology (Knowledge and Justification)
Staff Contact: Stephen Hetherington
CP15 S2 HPW3
Prerequisite: Upper Level status in Philosophy
Note/s: Not offered in 1997.

Epistemology is officially the Theory of Knowledge. One of its most important questions is therefore 'What is knowledge?' Answering this generally leads to another question: 'What is justified belief?' (For most epistemologists think knowledge is a sort of justified belief.) This subject is built around these questions. We will consider various attempts that epistemologists have made to answer them. Topics include: perception, false belief, defeated evidence, causality, reliability, cognitive responsibility, perspectives.

PHIL2215
The Struggle for Human Nature
CP15 HPW3
Prerequisite: Upper Level status in Philosophy
Note/s: Not offered in 1997.

Theories about human nature often figure as fundamental, though often implicit, assumptions in views about rationality, about knowledge bases, about equality or justice, and in fields as diverse as politics, anthropology, economics and sociobiology. Explores the work that invoking the concept of human nature does in various areas of debate. Topics include: the traditional philosophical debates about innateness, recent discussions of knowledge of language, assumptions about human nature implicit in some economic theories and sociobiological accounts of human nature.
PHIL2217
Personal Identity
Staff Contact: Neil Harpley
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy
Note/s: Excluded 52.2190, 52.232.

Controversy about the nature of persons and the criteria for personal identity has usually centred on the questions of whether persons are bodies or are minds and whether the criteria for their identity are physical or psychological. Philosophers have frequently ignored the social dimensions of personhood or, at best, given it only a peripheral place in the discussion. The notion that people are socially constructed will be given due weight and an attempt made to integrate the differing approaches to what it is to be a person.

PHIL2218
Philosophical Foundations of Artificial Intelligence
Staff Contact: Phillip Staines
CP15 S2 HPW3
Prerequisite: Upper Level status in Philosophy

Artificial Intelligence: an examination of its assumptions, history, goals, achievements and prospects.

PHIL2219
Topics in the Philosophy of Language
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy
Note/s: Not offered in 1997.

The subject is divided into two parts. Part I focuses on the relation between words and the world. Here the central topic is theories of truth: the coherence theory, the correspondence theory, the redundancy theory, etc. An important and related topic is theories of reference. Readings include selections from Aristotle, William James, Russell, Kripke and others. Part II focuses on the relation between language and the people that use it. The central concept here is meaning. We investigate such issues as the relation between language and thought, the nature of convention, nature of communication, what sort of knowledge is involved in knowing a language. Readings include fragments from Locke, Descartes, Grice, Austin, Wittgenstein, Lewis, Quine and others.

PHIL2226
Twentieth Century Analytic Philosophy
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy

As well as asking how modern Anglo-American philosophy is different from its predecessors, we also look at ways in which its ideas and concerns are continuous with those of other epochs and traditions. Readings include selections from Frege, Russell, Wittgenstein, Quine, Kripke, Putnam. Themes include: the rejection of Hegelian idealism, atomism and holism, the influence of empiricism, the revival of Platonism through philosophy of mathematics, ideas about existence and ontology, the revival of Aristotelian essentialism, the return to a sort of idealism. No prior familiarity with these writers will be assumed. Moreover, we steer clear of papers that make heavy use of formal logic.

PHIL2228
Themes in Seventeenth Century Philosophy
Staff Contact: Michaelis Michael
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy

This subject will study a range of topics drawn from the writings of the seventeenth century philosophers John Locke, Rene Descartes, Benedict de Spinoza and Gottfried Leibniz. Topics will be selected from the following: substance, minds and bodies, freedom, contingency, possibility and necessity, time and space.

PHIL2229
Themes in Eighteenth Century Philosophy
Staff Contact: Genevieve Lloyd
CP15 S2 HPW3
Prerequisite: Upper level status in Philosophy

This subject will study a range of topics drawn from the writings of the eighteenth century philosophers George Berkeley, David Hume, Gottfried Leibniz and Jean-Jacques Rousseau. Topics will be selected from the following: causality, idealism, reason and the passions, human nature and the self.

PHIL2309
The Heritage of Hegel: The Concept of Experience
Staff Contact: Lisabeth During
CP15 S2 HPW3
Prerequisite: Upper Level status in Philosophy
Note/s: Excluded 52.221, 52.3025 in 1988.

Hegel is one of the towering presences in contemporary philosophy. Long recognised as an influence on European philosophy from Marx to Lacan, Derrida to Kristeva, the Hegelian philosophy of identity, difference, subjectivity and desire, is essential to anyone who wants to understand current directions in critical theory.

This subject will cover a close reading of the Phenomenology of Spirit, together with selections from Hegel's lectures and Logic. The second half of the course looks at important readings of Hegel by Derrida, Habermas, Irigaray, etc.

PHIL2316
Philosophy of Religion
Staff Contact: Karyn Lai
CP15 S2 HPW3
Prerequisite: Upper Level status in Philosophy

A discussion of some main topics in the philosophy of religion (the question of God, religious language, the problem of evil, mysticism and faith) which are considered via two influential approaches: that of analytic philosophy and phenomenology/hermeneutics.

PHIL2407
Contemporary European Philosophy: Intensities
CP15 S1 HPW3
Prerequisite: Upper Level status is Philosophy
Note/s: Excluded 60.014, EURO2400. Not offered in 1997.

An introduction to the 'philosophy' of some influential contemporary thinkers whose relation to philosophy is contested. Readings are drawn from the work of Freud, Kristeva, Benjamin, Breston, Lyotard, Adorno, Bataille, Derrida, Artaud, and Deleuze. Discussion focuses on ideas of rationality, civilisation, experience, and violence.
PHIL2409
Speaking through the Body: Feminism, Psychoanalysis, Literature
Staff Contact: Lisabeth During
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy

How natural is sex anyway? Do we act the parts of masculine and feminine or do they act us? The language of the body is symbolic; even sexual difference is nothing without its codes. Thus the search for a body that speaks takes us to culture. Explores the idea of sexual polarity or ambivalence; alternatives to heterosexuality; relations between femininity and language. Readings will be taken from the work of Freud, Virginia Woolf, Oscar Wilde, Rousseau, Deleuze and Guattari, Shakespeare, and contemporary feminism.

PHIL2416
Power, Knowledge and Freedom
Staff Contact: Lisabeth During
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy
Excluded: EURO2400

In Nietzsche and Foucault we find a powerful critique of philosophical conceptions of knowledge, subjectivity, morality, truth, desire and power. The Nietzschean project, seminal to Foucault, is continued by such maverick figures in contemporary philosophy as Bataille, Artaud and Deleuze, who imagine the relations between body, freedom and transgression in startling ways.

PHIL2417
Relativism: Cognitive and Moral
CP15 HPW3
Prerequisite: Upper Level status in Philosophy, or contact School
Note/s: Not offered in 1997.

Do people in alien cultures see the same world as we do? If knowledge is socially constructed can there be a sense in which world views clash? Is there a difference between what is subjective and what is relative? Could there be one true morality? Is there such a thing as reason or rationality? Even if there is, could such a thing be other than specific to our culture? Are there other, non-rational, ways of understanding the world? These and a host of other questions introduce the notion of relativism. Aims to clarify and examine some of the various questions and issues that arise from the issue of relativism. Topics may include: moral relativism, cognitive relativism, the absolute conception of the world, truth, conceptual schemes, and semantic relativism.

PHIL2418
Ethical Issues
Staff Contact: Karyn Lai
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy.

An examination of a range of current ethical issues involved in topics such as abortion, surrogacy, foetal tissue research, euthanasia, AIDS.

PHIL2419
Ethics, Differences and Embodiment
Staff Contact: Rosalyn Diprose
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy

Explores an approach to ethics originating in ancient Greek thought and developed by 20th century existential phenomenologists (such as Sartre, de Beauvoir, Merleau-Ponty and Levinas). Topics covered include how an embodied 'ethos' (e.g., an habitual way of life) is socially constituted; what is the basis of our social relations with others; and possible applications of these ideas to analyses of the ethics of sexual difference, cultural difference and some issues in medical ethics.

PHIL2506
Classical Political Philosophy
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy

Examination of the work of some central figures in the history of political philosophy, with regard to the basis of political society, its various functions, and its relation to the individuals in it. Through an investigation of works by Hobbes, Locke, Rousseau, and J.S. Mill, topics include the idea of a state of nature, theory of a social contract, the establishment of political rights and obligations, and the relation of moral and political concerns within a political society.

PHIL2508
Theories in Moral Philosophy
Staff Contact: To be advised
CP15 S1 HPW3
Prerequisite: Upper Level status in Philosophy
Note/s: Excluded 52.523, 52.2230, 52.2432, 52.243. Might not be offered in 1996 - Consult School

Examination of three moral theories central in the history and development of moral philosophy. David Hume, Immanuel Kant, and John Stuart Mill present different kinds of moral theories, differing approaches to arriving at a moral theory, and specific theories which are markedly different from each other. Each moral theory is investigated in itself and in comparison with the other two.

PHIL2509
Philosophy of Law
Staff Contact: Stephen Cohen
CP15 S2 HPW3
Prerequisite: Upper Level status in Philosophy

Selected conceptual and normative issues in the philosophy of law, centering around the broad areas of law (e.g., its nature, validity, bindingness, and relation to morality), liberty, justice, responsibility (including strict, vicarious, and collective liability), and punishment.

PHIL2517
Philosophy and Gender
Staff Contact: Rosalyn Diprose
CP15 S2 HPW3
Prerequisite: Upper Level status in Philosophy
Considers the nature of sexuality and ideas about the role of sexual difference in the constitution of the bodily subject. The social significance of the connection between gender and such distinctions as culture/nature, reason/passion and public/private is examined in the light of feminist critiques. Also raises questions about philosophy and feminism with respect to issues of argument, advocacy and style.

**PHIL2518**  
**Greek Philosophy: Issues in Ethics and Epistemology**  
*Staff Contact: Genevieve Lloyd, Stephen Cohen*  
CP15 S2 HPW3  
**Prerequisite:** Upper Level status in Philosophy  
**Note/s:** Excluded 52.2040, 52.2220, PHIL2507. Not offered in 1997.  

Covers themes in Plato and Aristotle which have had a continuing influence in Western philosophy. Discussion centres on concepts of virtue and knowledge in relation to ideals of wisdom and contemplation.

**PHIL2519**  
**Introduction to Chinese Philosophy**  
*Staff Contact: Karyn Lai*  
CP15 S2 HPW3  
**Prerequisite:** Upper Level Status—students must be in Year 2 or later of university study.  

Aims to introduce the philosophical concepts and theories of traditional China and to introduce recent Western discussion on the subject of Chinese philosophy. Deals with the major philosophical debates of ancient China and with some issues from later periods. In passing, the subject also deals with the 'Chinese worldview' and attempts to clarify popular notions like 'Confucianism', 'the Tao' or 'the philosophy of the Book of Changes'. It represents Chinese philosophy as a complex discipline which has tackled similar issues to those tackled in the West, and has developed comparable means of analysis and argument.

**PHIL2606**  
**Aesthetics**  
*Staff Contact: Rosalyn Diprose*  
CP15 S2 HPW3  
**Prerequisite:** Upper Level status in Philosophy  
**Note/s:** Excluded 52.273, 52.2260.  

Emphasis is placed on the visual arts, although the subject also deals with literature and film. Topics include: realism and representation; the dialectics of tradition and innovation; the idea of aesthetic experience; the sexuality of art and the observer.  

Assessment: To be decided in consultation with the class.

**PHIL2706**  
**Seminar A**  
CP15 S1 HPW3  
**Note/s:** Might not be offered in 1997 – Consult School.  

The seminar is offered occasionally to suit particular student and staff needs and interests. Admission by permission, based on a student's performance in Upper Level subjects. Topics vary and are influenced by student requests. Students are invited to approach any member of staff about the possibility of particular seminar topics.

**PHIL2707**  
**Seminar B**  
CP15 S2 HPW3  
**Note/s:** Might not be offered in 1996 – Consult School.  

The seminar is offered occasionally to suit particular student and staff needs and interests. Admission by permission, based on a student's performance in Upper Level subjects. Topics vary and are influenced by student requests. Students are invited to approach any member of staff about the possibility of particular seminar topics.

**PHIL2708**  
**Reading Option**  
CP15 S1 or S2 HPW3  

Students wishing to do work in an area not covered by an existing subject or seminar may apply to the School to take a reading option. Not more than one such subject may be counted towards a degree. Approval of a program for a reading option depends on its suitability and on the availability of a member of staff to undertake supervision.

**Philosophy Level III**  

**Notes:** Level III Status in Philosophy consists of having an overall standard of credit or higher in Philosophy subjects totalling at least 90 Credit Points.

**PHIL3106**  
**Pre-Honours Seminar**  
*Staff Contact: Phillip Cam/Neil Harpley*  
CP15 S2 HPW3  
**Prerequisite:** 30 credit points in Philosophy with overall standard of Credit or higher  

A team-taught subject for students who are considering proceeding to Honours in Philosophy; designed to form skills in philosophical research and writing through seminar discussion of readings illustrating a range of philosophical approaches, styles and techniques.

**Philosophy Level IV**

**PHIL4000/PHIL4050**  
**Philosophy Honours (Research)**  
*Staff Contact: Michaelis Michael and Rosalyn Diprose, Coordinators*  
CP120 F  
**Prerequisite:** Completion of program 5200, 5262 or 5206 including Level II/III subjects totalling 105 Credit Points, including PHIL3106  

The Honours Year consists of writing a research thesis under supervision and two seminar courses.

**PHIL4050**  
**Philosophy Honours (Research) P/T**  
*Staff Contact: Michaelis Michael and Rosalyn Diprose, Coordinators*  
CP120 F  
**Prerequisite:** Completion of program 5200, 5262 or 5206 including Level II/III subjects totalling 105 Credit Points, including PHIL3106
PHIL4500
Combined Philosophy Honours (Research) F/T
Staff Contact: Michaelis Michael and Rosalyn Diprose, Coordinators
CP120 F
Prerequisite: Completion of program 5200, 5262 or 5206 including Level II/III subjects totalling 105 Credit Points, including PHIL3106

PHIL4550
Combined Philosophy Honours (Research) P/T
Staff Contact: Michaelis Michael and Rosalyn Diprose, Coordinators
CP120 F
Prerequisite: Completion of program 5200, 5262 or 5206 including Level II/III subjects totalling 105 Credit Points, including PHIL3106

Students contemplating Honours are urged to seek advice from the School on their program early in their course.

The General Education requirements will be met within the Honours Program by seminars and a statement.

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Physics

Physics Level I Subjects

Notes: Where mathematics subjects are specified as prerequisites or as corequisites, the higher levels of such subjects are acceptable and preferable. The total value of the combination of PHYS1022 and PHYS1002 is 45 Credit Points.

PHYS1002
Physics 1
Staff Contact: First Year Director
CP30 F HPW6
Prerequisites: HSC Exam Score Range Required: 2 unit Mathematics (90-100), or 2 and 3 unit Mathematics (100-150), or 3 and 4 unit Mathematics (100-200) or (for PHYS1002 only) MATH1011, and 2 unit Science (Physics) 65-100, or 2 unit Science (Chemistry) 75-100, or 3 unit Science 100-150, or 4 unit Science 1-50 or PHYS1022 (2 unit Mathematics in this instance refers to the 2 unit Mathematics subject which is related to the 3 unit Mathematics subject, and does not refer to the subjects Mathematics in Society or Mathematics in Practice). Corequisite: MATH1021 or MATH1032 or MATH1131 and MATH1231.

Motion of particles under the influence of mechanical, electrical, magnetic and gravitational forces. Force, inertial mass, energy, momentum, charge, potential, fields. Conservation principles applied to problems involving charge, energy and momentum. Application of Kirchhoff's laws to AC and DC circuits. Uniform circular motion, Kepler's laws and rotational mechanics. Properties of matter: solids, liquids, gases. Application of wave theories to optical and acoustical phenomena such as interference, diffraction and polarisation.

Mid-year Start

Students who fail Session 1 of PHYS1002 are strongly advised to discontinue the subject and enrol in Session 2 in PHYS1011 Physics I (FT1). This subject covers the Session 1 material of PHYS1002 during Session 2. Then PHYS1021 covers the rest of the syllabus over the Summer Session.

Note: The Session 2 syllabus of PHYS1002 is not repeated in Session 1 of the next year.

PHYS1011
Physics 1 (FT1)
Staff contact: First Year Director
CP15 S2 HPW6
Prerequisites, corequisites and syllabus: identical to PHYS1002, S1.

PHYS1021
Physics 1 (FT2)
Staff contact: First Year Director
CP15 Summer Session HPW9
Prerequisite: PHYS1011
Syllabus identical to PHYS1002, S2

Elective Syllabus for PHYS1002, S2

Those students enrolled in a physics program in the Science Course, and who have achieved a satisfactory performance in Session 1, may elect to take the following option for Session 2. (This option is not repeated in Summer Session).

QUANTUM AND LASER PHYSICS
Waves in elastic media; sound waves; early quantum physics; the laser, operation and applications, interference, diffraction and polarisation.

AC CIRCUIT THEORY
Addition of alternating quantities; series circuits, impedance, power, resonance, parallel circuits; ideal transformer.

SOLAR SYSTEM ASTROPHYSICS
Celestial dynamics: orbits; shape and rotation of planets, planetary rings; energy generation in sun; thermal physics; planetary atmospheres.

PHYS1022
Physics 1 For Health and Life Scientists
Staff Contact: First Year Director
CP30 F HPW6
Corequisites: MATH1021 or MATH1032 or MATH1131 and MATH1231.

Principally for students majoring in the life and health sciences disciplines. Topics at an introductory level.

The methods of physics, describing motion, the dynamics of a particle, conservation of energy, kinetic theory of gases, properties of liquids, vibrations and waves, electricity and conduction in solids, ions and ionic conduction, magnetism and electromagnetic induction, alternating current, atomic nature of matter, X-rays, the nucleus and radio-activity, geometrical optics, optical instruments, wave optics, microscopes and their uses.
PHYS1159
Environmental Acoustics (Aviation)
Staff Contact Dr J Dunlop
S2 HPW4
Corequisite: PHYS1889
Note/s: Restricted to Course 3980


Speech. Sources of noise, aerodynamic, engines, panels. Noise criteria.

PHYS1601
Computer Applications in Experimental Science 1
Staff Contact: First Year Director
CP15 S1 or S2 HPW6
Corequisites: PHYS1002 or PHYS1022, MATH1032 or MATH1131
Note/s: Excluded PHYS1611.

An introduction to the internal structure, operating and interfacing of computers. Binary and digital electronic logic; logic control devices; bus communication structures; instruction execution in a processor; machine language code and instruction sets; interfaces and interaction schemes between processor and the outside world.

PHYS1611
Laboratory Computers in Physical Science
Staff Contact: First Year Director
CP15 HPW6
Corequisites: MATH1021 or MATH1032 or MATH1131 and PHYS1002 or PHYS1022
Note/s: Excluded PHYS1611.

PHYS1889
Physics 1 (Aviation)
Staff Contact: Dr M Box
CP22.5 F HPW6
Note/s: Restricted to course 3980.


PHYS1999
Physics I (Optometry)
Staff Contact: First Year Director
CP15 S1 HPW6
Note/s: Restricted to course 3950.


Physics Level II Subjects

Notes: Where mathematics subjects are specified as prerequisites or as corequisites, the higher levels of such subjects are acceptable and preferable. Students are also advised that other subjects may be acceptable equivalent prerequisites or corequisites to those listed, eg PHYS2949 of course 3640 may be acceptable in place of PHYS2021. Enquiry should be made to the Executive Assistant.

PHYS2001
Mechanics, and Computational Physics
Staff Contact: Executive Assistant
CP15 S1 HPW4
Prerequisites: PHYS1002, MATH1032 or MATH1231.
Corequisites: MATH2011 or MATH2110
Note/s: Excluded PHYS2999.

Harmonic motion, systems of particles, central force problems, Lagrange's equations, coupled oscillations, travelling waves, pulses, energy and momentum transfer, computer operating systems, introduction to FORTRAN, libraries and software packages, use of computers to solve problems in physics.

PHYS2011
Electromagnetism and Thermal Physics
Staff Contact: Executive Assistant
CP15 S2 HPW4
Prerequisites: PHYS1002, MATH1032 or MATH1231
Corequisites: MATH2011 or MATH2110
Note/s: Excluded PHYS2999.

Electric field strength and potential, Gauss' law, Poisson's and Laplace's equations, capacitance, dielectrics and polarisation, magnetism, electro-magnetic induction, Maxwell's equations, electromagnetic waves. Laws of thermodynamics, kinetic theory, microscopic processes, entropy, solid state defects, Helmholtz and Gibbs functions, Maxwell's relations, phase diagrams, chemical and electrochemical potential.

PHYS2021
Quantum Physics and Relativity
Staff Contact: Executive Assistant
CP15 F HPW2
Prerequisites: PHYS1002, MATH1032 or MATH1231
Note/s: Excluded PHYS2999, PHYS2949.


PHYS2031
Laboratory
Staff Contact: Executive Assistant
CP15 F HPW3
Prerequisites: PHYS1002, MATH1032 or MATH1231
Note/s: Excluded PHYS2920.

Experimental investigations in a range of areas: x-ray diffraction, work function, semiconductor bandgap, Hall effect, carrier lifetimes, nuclear magnetic resonance, magnetic properties and electrostatics. Electronics bench experiments and tutorials on diodes, transistors, operational amplifiers, power supplies and digital electronics.
PHYS2030
Laboratory A
Staff Contact: Executive Assistant
CP7.5 S1 HPW3
Prerequisites: PHYS1002, MATH1032 or MATH1231
Note/s: Excluded PHYS2031.
Experimental investigations in a range of areas: x-ray diffraction, work function, semiconductor bandgap, Hall effect, carrier lifetimes, nuclear magnetic resonance, magnetic properties and electrostatics.

PHYS2160
Astronomy
Staff Contact: Executive Assistant
CP7.5 S2 HPW2
Prerequisite: PHYS1002
Galaxies, the distance scale, large structure of the universe, galaxy evolution, the very early universe.

PHYS2410
Introductory Biophysics
Staff Contact: Executive Assistant
CP7.5 S2 HPW2
Prerequisite: PHYS1002 or PHYS1022.

PHYS2500
Methods in Mathematical Physics
CP7.5 HPW2
Prerequisites: PHYS1002, MATH1032 or MATH1231, MATH2101, MATH2120, MATH2510
Note/s: Not offered in 1997.

PHYS2601
Computer Applications in Experimental Science 2
Staff Contact: Executive Assistant
CP15 S1 HPW5
Prerequisite: PHYS1601
Technical aspects of computer hardware, peripherals and systems. Bus logic devices; simple interface design; use of a general purpose interface for communication, data collection and control. Speed and capacity limitations of conventional peripherals; techniques to improve performance beyond the computer's capabilities.

PHYS2630
Electronics
Staff contact: Executive Assistant
CP7.5 S2 HPW3
Prerequisite: PHYS1002 or PHYS1022
Exclusions: PHYS2920, PHYS2031
Electronic bench experiments and tutorials on diodes, transistors, operational amplifiers, power supplies and digital electronics.

PHYS2810
Introductory Atmospheric Science
Staff Contact: Executive Assistant
CP7.5 S1 HPW2
Prerequisites: PHYS1002 or PHYS2022, MATH1032 or MATH1231, CHEM1101
Introduction to the properties and problems of the atmosphere: composition and structure, thermodynamics and stability, chemical cycles, air pollution, aerosols, general circulation, solar and terrestrial radiation, ozone layer, physical basis of climate and climate change.

PHYS2819
Atmospheric Science (Aviation)
Staff Contact: Dr M Box
CP7.5 S1 HPW4
Prerequisites: PHYS1889, MATH1079
Note/s: Restricted to course 3980.
Atmospheric composition, structure and stability, solar and terrestrial radiation, ozone layer, physical basis of climate and climate change, impact of aircraft operations, hazards to aircraft.

PHYS2869
Physics of Measurement (Aviation)
Staff Contact: Executive Assistant
CP5.5 SI HPW3
Prerequisites: PHYS 1889 or PHYS1022
Note/s: Restricted to Course 3980.
Mechanical design of apparatus. Optical instruments: application to telescopes, resolving power, optical fibres, polarisation. Properties of electromagnetic waves in the atmosphere and ionosphere.

PHYS2991
Mechanics and Thermal Physics
Staff Contact: Executive Assistant
CP15 F HPW2
Prerequisites: MATH1032 or MATH1231 or MATH1042 or MATH1241, PHYS1002
Corequisite: MATH2100
Particle mechanics, harmonic motion, central force problems, systems of particles, Lagrange's equations with applications, coupled oscillations, wave equation. Thermodynamic laws, entropy, kinetic theory, M-B distribution, microscopic processes, Maxwell's relations, chemical potential, phase diagrams, multicomponent systems, electrochemical potential, statistics of defects in solids.

Physics Level III Subjects
Note: See notes for Physics Level II subjects.

PHYS3010
Higher Quantum Mechanics
Staff Contact: Executive Assistant
CP7.5 S1 HPW2
Prerequisite: PHYS2021
Corequisite: MATH2120
Note/s: Excluded PHYS3210. Not available in courses 3970, 3400, 3930 and 4075 without a mark of 65 or greater in PHYS2021.
Fundamental principles and matrix formulation, spherically symmetric systems, angular momentum theory, perturbation theory and semiclassical radiation theory, variational methods, identical particles.

**PHYS3021**
**Statistical Mechanics and Solid State Physics**
*Staff Contact: Executive Assistant*
CP7.5 S1 HPW4
*Prerequisites: MATH2120, PHYS2011, PHYS2021*
Canonical distribution, paramagnetism, Einstein solid, ideal gas, equipartition, grand canonical ensemble, chemical potential, phase equilibria, Fermi and Bose statistics, Bose condensation, blackbody radiation. Crystal structure, bonding, lattice dynamics, phonons, free-electron models of metals, band theory, point defects, dislocations.

**PHYS3030**
**Higher Electromagnetism**
*Staff Contact: Executive Assistant*
CP7.5 S1 HPW2
*Prerequisites: PHYS2011, MATH2011, MATH2120, MATH2520*
*Note/s:* Excluded PHYS3230. Not available in courses 3970, 3400, 3930 and 4075 without a mark of 65 or greater in PHYS2011.
Electromagnetic fields; Maxwell’s equations, Poynting theorem, electromagnetic potentials. Plane and spherical waves. Reflection and transmission, fields in dispersive media, models and applications, emission of radiation from accelerated charges, covariant formulation of electromagnetism.

**PHYS3041**
**Experimental Physics A**
*Staff Contact: Executive Assistant*
CP15 F HPW4
*Prerequisite: PHYS2031*
Basic experimental techniques and analysis of results in the following areas: electricity, magnetism, diffraction optics including X-ray and electron diffraction, solid state physics, nuclear physics, atomic physics and spectroscopy, vacuum systems.

**PHYS3050**
**Nuclear Physics**
*Staff Contact: Executive Assistant*
CP7.5 S2 HPW2
*Prerequisite: PHYS3010 or PHYS3210 with a mark of 65 or greater*
Nuclear shell model; theory of beta decay; the deuteron, nucleon-nucleon scattering; theories of nuclear reactions, resonances; mesons and strange particles, elementary particle properties and interactions; symmetries and quark models; strong and weak interactions.

**PHYS3060**
**Advanced Optics**
*Staff Contact: Executive Assistant*
CP7.5 S2 HPW2
*Prerequisite: PHYS1002*
*Corequisite: MATH2120*
Review of geometrical optics, including ray tracing, aberrations and optical instruments: physical optics, including Fresnel and Fraunhofer diffraction, transfer functions, coherence, and auto and cross correlation: applications of optics, including fibre optics, lasers and holography.

**PHYS3110**
**Experimental Physics B1**
*Staff Contact: Executive Assistant*
CP7.5 S1 HPW4
*Prerequisite: PHYS2031*
Selected experiments and projects. Advanced experimental techniques and open ended projects in the areas covered in PHYS3041 Experimental Physics A together with projects involving electron and nuclear magnetic resonances, low temperature physics and super-conductivity. Fourier optics, holography.

**PHYS3120**
**Experimental Physics B2**
*Staff Contact: Executive Assistant*
CP7.5 S2 HPW2
*Prerequisite: PHYS2031*
As for PHYS3110 Experimental Physics B1.

**PHYS3160**
**Astrophysics**
*Staff Contact: Executive Assistant*
CP7.5 S2 HPW2
*Prerequisite: PHYS2021*

**PHYS3210**
**Applied Quantum Mechanics**
*Staff Contact: Executive Assistant*
CP7.5 S1 HPW2
*Prerequisite: PHYS2021*
*Corequisite: MATH2120*
*Excluded: PHYS3010*
*Note/s:* Not available to Advanced Science students in programs 0100, 0121 and 0161
Principles of wave mechanics and its applications including harmonic oscillator, spherically symmetric systems, angular momentum, perturbation theory and semi classical radiation theory identical particles and the theory of atoms, solid state devices and quantum wells.

**PHYS3220**
**Applied Electromagnetism**
*Staff Contact: Executive Assistant*
CP7.5 S1 HPW2
*Prerequisites: PHYS2011, MATH2011, MATH2120*
*Excluded: PHYS3030*
*Note/s:* Not available to Advanced Science students in programs 0100, 0121 and 0161
Review of Maxwell’s equations in integral and differential form, boundary conditions, applications to plane electromagnetic waves in vacuum and material media, dispersion, reflection and transmission, waves in waveguides, fibres and cavaties, dipoles and antenna systems.
PHYS3310
Physics of Solid State Devices
Staff Contact: Executive Assistant
CP7.5 S2 HPW2
Corequisite: PHYS3021
Review of electronic structure in semiconductors; p-n junctions; bipolar and field effect transistors including formation, characteristics and electrical breakdown. Optical devices including light emitting diodes and junction lasers. Integrated circuit structures.

PHYS3320
Topics in Condensed Matter Physics
Staff Contact: Executive Assistant
CP7.5 S2 HPW2
Corequisite: PHYS3021
Superconductivity, Meissner-Ochsenfeld effect, entropy, thermodynamics and relevant theories, Josephson junctions. Amorphous materials, preparation, magnetic properties, bandgaps, dangling bonds and ESR, mobility edge, solar cells. Polymers, structure, bonding, relaxation phenomena, electrical breakdown, liquid crystals.

PHYS3410
Biophysics
Staff Contact: Executive Assistant
CP7.5 S2 HPW2
Prerequisites: PHYS2011, PHYS2410

PHYS3510
Advanced Mechanics, Fields and Chaos
Staff Contact: Executive Assistant
CP7.5 S1 HPW2
Prerequisites: PHYS2001, MATH2011
Lagrange's equations and applications, variational principles, dissipative systems, Hamiltonian formulation, canonical transformations, Poisson brackets, Hamilton-Jacobi equation, continuous systems and fields, stability and chaos.

PHYS3520
Relativity and Electrodynamics
Staff Contact: Executive Assistant
CP7.5 S2 HPW2
Prerequisites: PHYS2021, MATH2510, PHYS3030 or PHYS3230 with a mark of 65 or greater
Notes: PHYS3560 excluded.
Electric and magnetic fields of a moving charged particle. Radiation from an accelerated charged particle. 4-D spacetime (covariant) formulation of (Einsteinian) relativistic mechanics. 4-D spacetime (covariant) formulation of Maxwellian electrodynamics.

PHYS3530
Advanced Quantum Mechanics
Staff Contact: Executive Assistant
CP7.5 S2 HPW2
Corequisite: PHYS3010
Note/s: Not offered in 1997.
Formal structure, Hilbert space, Dirac notation, matrix diagonalization. Equations of motion, Schroedinger, Heisenberg and interaction pictures. Relativistic quantum mechanics, Klein-Gordon and Dirac equation, antiparticles. Introduction to group theory, representations, Lie algebras, rotation group, SU(2) and SU(3), quarks.

PHYS3550
General Relativity
Staff Contact: Executive Assistant
CP7.5 S2 HPW2
Prerequisites: PHYS2021, MATH2011
Relativistic kinematics and dynamics, tensors and tensor operations, Christoffel symbols, formulation of general relativity, curvature of space, geodesics, gravitational field equations, Schwarzschild solution, tests of the theory, astrophysical and cosmological implications.

PHYS3601
Computer Applications in Instrumentation
Staff Contact: Executive Assistant
CP15 S2 HPW5
Prerequisite: PHYS2601
Developments in computer architecture and hardware such as digital signal processors, parallel computing architectures, neural networks etc; computers and microcontrollers in instrumentation and control applications. Seminars on architecture, instrumentation and control. Projects on peripheral and standalone systems.

PHYS3610
Computational Physics
Staff Contact: Executive Assistant
CP7.5 S2 HPW2
Prerequisites: PHYS2001, PHYS2021, MATH2120
Use of computers in solving and visualising physical problems, including applications of least squares techniques, quantum mechanical eigenvalues and boundary value problems (Woods Saxon potential, Poisson's equation, heat conduction) and simulation techniques (phase transitions, molecular dynamics, chaos and stability).

PHYS3620
Computer Based Signal Processing
Staff Contact: Executive Assistant
CP7.5 S2 HPW3
Prerequisites: PHYS2031, MATH2120
Note/s: Excluded ELEC4042.
Measurement and sampling; noise power spectra; signal to noise improvement using digital techniques: digital filters, auto- and cross- correlation, methods based on Fourier transformation; system response including transfer functions, convolution, image enhancement.
PHYS3630  
Electronics  
Staff Contact: Executive Assistant  
CP7.5 S1 HPW3  
Prerequisite: PHYS2031


PHYS3710  
Lasers and Applications  
Staff Contact: Executive Assistant  
CP7.5 S1 HPW2  
Note/s: Offered in odd-numbered years only.

Interaction between light and matter, fundamental properties of laser amplifiers and oscillators, giant pulse generation, mode locking and Q switching, specific laser systems including gas lasers and semiconductor lasers, applications of lasers.

PHYS3720  
Optoelectronics  
Staff Contact: Executive Assistant  
CP7.5 S1 HPW2  
Note/s: Offered in even-numbered years only.

Introduction to non-linear optics, second harmonic generation, parametric amplification, phase matching, optical bistability, modulation of light, types of optical detectors including thermal detectors, photomultipliers and semiconductor detectors.

PHYS3760  
Laser and Optoelectronics Laboratory  
Staff Contact: Executive Assistant  
CP7.5 S2 HPW4  

Techniques employed in laser technology and components used in laser applications. Construction, operation and characterisation of several types of lasers. Applications of lasers such as holography, acousto-optics, fibre optics, optical spectroscopy, safety aspects of lasers.

PHYS3789  
Fundamentals of Instrumentation (Aviation)  
Staff Contact: Dr M Box  
CP5.5 S1 HPW3  
Prerequisite: PHYS1889  
Note/s: Restricted to course 3980.


PHYS3810  
Applications of Radiation  
Staff Contact: Executive Assistant  
CP7.5 S2 HPW2  
Corequisite: PHYS3030 or PHYS3230

Radiation laws, equation of transfer, absorption, emission and scattering of light by molecules and particles, multiple scattering, solution of multiple scattering problems, thermal transfer, band models, applications to planetary atmospheres, remote sensing, climate.

Physics Level IV

PHYS4103/PHYS4113  
Physics 4 (Honours)  
Staff Contact: A/Prof J Cadogan  
CP120 F  
Prerequisite: Completion of program 0100 including Level III subjects totalling 105 Credit Points, or 0161 including Level III subjects totalling 90 Credit Points  
Note/s: For the combined Physics/Geology honours see entry under Board of Studies in Science and Mathematics.

Honours programs consist of advanced lecture subjects and project work. Students normally undertake two separate projects during the year, in different research areas. All students take subjects in quantum mechanics, statistical mechanics and solid state physics. Additional subjects totalling 60 Credit Points are chosen from topics such as astronomy, atomic and molecular spectroscopy, condensed matter physics, experimental methods, biophysics, quantum field theory and quantum theory of solids.

Admission to the honours program is at the invitation of the Head of School and normally requires at least a credit average in Year 3.

PHYS4411  
Medical Physics  
Staff Contact: Dr P Elliston  
CP15 F HPW2  
Prerequisite: PHYS2021

Radiotherapy: radiation sources, interactions of radiation with the body, radiation detection and measurement. Dosimetry and radiotherapy planning. Radioisotopes, brachytherapy.

Nuclear Medicine: Radioisotope production. Radiopharmaceuticals. Basic instrumentation. Gamma camera. SPECT and PET.


PHYS4413  
Medical Physics Projects  
Staff Contact: Dr P Elliston  
CP45 F HPW9  
Note/s: Restricted to Course 3973 Medical Physics.

These projects for final year Medical Physics students will be in areas such as Radiotherapy, Nuclear Medicine, Medical Imaging or Biophysics. Generally carried out in a hospital environment under the supervision of a practising medical physicist but may be carried out in the university or elsewhere, if suitable facilities available. Students required to submit a written thesis and present a seminar describing their project work.

Servicing Subjects

These are mainly subjects taught within courses offered by other faculties.
For further information regarding the following subjects see the relevant Faculty Handbooks.

**PHYS1918**
Physics 1 (Mechanical Engineering)
*Staff Contact: First Year Director*

*Note/s:* Re-run in S2.


**PHYS1936**
Physics 1 (Textile Management)
*Staff Contact: First Year Director*

*Note/s:* Not re-run in Summer Session.

Energy transfer: concepts of temperature and heat; calorimetry; gas laws; phase changes and humidity; heat transmission; refrigeration. Electrostatics and electromagnetism; electric and magnetic fields; DC circuits; electromagnetic induction. Sound: wave properties; absorption of sound. Properties of matter: atomic bond types and their relation to elasticity, plasticity and fracture; pressure in stationary and moving fluids.

**PHYS1937**
Physics (Industrial Design)
*Staff Contact: First Year Director*

*Note/s:* Not re-run in Summer Session.

Energy transfer: concepts of temperature and heat; calorimetry; gas laws; phase changes and humidity; heat transmission; refrigeration. Electrostatics and electromagnetism; electric and magnetic fields; DC circuits; electromagnetic induction. Sound: wave properties; absorption of sound. Properties of matter: atomic bond types and their relation to elasticity, plasticity and fracture; pressure in stationary and moving fluids.

**PHYS1938**
Physics 1 (Building)
*Staff Contact: First Year Director*

*Note/s:* Not re-run in Summer Session.

Energy transfer: concepts of temperature and heat; calorimetry; gas laws; phase changes and humidity; heat transmission; refrigeration. Electrostatics and electromagnetism, electric and magnetic fields; DC circuits. Properties of matter: atomic bond types and their relation to elasticity, plasticity and fracture; pressure in stationary and moving fluids.

**PHYS1969**
Physics 1 (Electrical Engineering)
*Staff Contact: First Year Director*

Electrostatics, magnetostatics in vacuum, ferromagnetism, electromagnetic induction. Vectors, kinematics, particle dynamics, work and energy, the conservation of energy, conservation of linear momentum, rotational kinematics and dynamics, simple harmonic motion, gravitation. Temperature, heat and the first law of thermodynamics, kinetic theory of gases. Waves in elastic media, sound waves, interference, diffraction, grating and spectra, polarisation. Relativity, quantum physics, wave nature of matter.

**Mid-Year Start**

Students who fail Session 1 of PHYS1969 are strongly advised to discontinue the subject and enrol in Session 2.

**PHYS1949**
Physics 1 (EE, FT1)
*Staff contact: First Year Director*
CP15 S2 HPW6

*Prerequisites, corequisites and syllabus: identical to PHYS1969, S1*

**PHYS1959**
Physics 1 (EE, FT2)
*Staff contact: First Year Director*
CP15 Summer Session HPW9

*Prerequisite: PHYS1949*

Syllabus identical to PHYS1969, S2.

**PHYS1979**
Physics 1 (Civil Engineering)
*Staff Contact: First Year Director*

*Note/s:* Re-run in S2.

Mechanics; elastic waves; electromagnetism; DC and AC circuits; introduction to electric measurement systems; instrumentation; digital electronic information processing systems; mechanical properties of matter; atomic structure; elasticity of solids; surface tension and viscosity of fluids; non-destructive testing; wave phenomena and acoustic techniques.

**PHYS1998**
Physics 1 (Geomatic Engineering)
*Staff Contact: First Year Director*


**PHYS2920**
Electronics (Applied Science)
*Staff Contact: Executive Assistant*
CP7.5 S1 HPW3

*Prerequisite: PHYS1022 or PHYS1002*

*Note/s:* Excluded PHYS2031, PHYS2630.

The application of electronics to other disciplines. Includes principles of circuit theory; amplifiers, their specification and application, transducers; electronic instrumentation; industrial data acquisition.
PHYS2959
Introductory Semiconductor Physics (Computer Engineering)
Staff Contact: Executive Assistant
Semiconductor crystals and electrical conduction; elementary quantum theory; energy bands; band properties of semiconductor and applications, optical properties and applications, new developments, materials and techniques.

PHYS2969
Physics of Measurement (Geomatic Engineering)
Staff Contact: Executive Assistant
Resolution, accuracy and sensitivity of instruments. Errors of observation; transducers; mechanical design of apparatus; optical instruments, optical fibres; photometry; analogue-to-digital conversion and digital instruments. Measurements of very large and very small quantities.

PHYS2994
Physics 2 (Electrical Engineering)
Staff Contact: Executive Assistant

PHYS2999
Mechanics and Thermal Physics (Electrical Engineering)
Staff Contact: Executive Assistant
Particle mechanics, harmonic motion, central force problems, systems of particles, Lagrange's equations with applications, coupled oscillations, wave equation. Thermodynamic laws, entropy, kinetic theory, M-B distribution, microscopic processes, Maxwell's relations, chemical potential, phase diagrams, multicomponent systems, electrochemical potential, statistics of defects in solids.

Physiology and Pharmacology

Physiology and Pharmacology Level II

Notes: Normal prerequisites for the courses in Physiology may be waived by the Head of School for students with a good academic record.

Note/s: Students intending to major in Physiology and/or Pharmacology should note Level III Physiology prerequisites. Student numbers in Physiology 1 may be limited and entry to the course may be allocated on academic merit. Students who take BIOC2181 and BIOC2291 are advised that a grade of credit is normally required for progression to Level III Physiology subjects. Students who do not obtain a credit in these subjects may be enrolled at the discretion of the Head of School.

Introduces fundamental physiological principles, from basic cellular function in terms of chemical and physical principles, to the operation of the various specialised systems in the body, eg, the cardiovascular system, the respiratory system, the gastrointestinal system, the endocrine system, the nervous system. Includes a substantial series of practical class experiments on these different areas of physiology. This subject is taken by students enrolled in any of the Physiology programs.

PHPH2122
Principles of Physiology (Optometry)
Staff Contact: Dr JW Morley
CP30 F HPW6
Note/s: Restricted to course 3950.
Covers the same general areas of physiology as Physiology 1. Principles of Physiology is taken only by students enrolled in the BOptom degree course.

Physiology and Pharmacology Level III

PHPH3121
Membrane and Cellular Physiology
Staff Contact: Prof PH Barry
CP15 S1 HPW6
Prerequisites: PHPH2112 and both BIOC2101 and BIOC2201 or BIOC2181 and BIOC2291
Note/s: Student numbers in this subject may be limited and entry to the course may be allocated on academic merit. Students who take BIOC2181 and BIOC2291 are advised that a grade of credit is normally required for progression to Level III Physiology subjects. Students who do not obtain a credit in these subjects may be enrolled at the discretion of the Head of School.

The properties of cell membranes, generation of potentials, permeation of ions, solutes and water across membranes, single channel measurements, unstirred layer effects, generation of electrical signals in nerve and muscle cells produced by ion movements, transmission of information between cells and the mechanisms underlying muscle contraction. Stress on modern research techniques, underlying principles of molecular physiology and on a critical examination of appropriate classical papers.

PHPH3131
Neurophysiology
Staff Contact: Prof MJ Rowe
CP15 S1 HPW6
Prerequisites: As for PHPH3121
Note/s: Student numbers in this subject are limited and entry to the course is allocated on academic merit.

The neural mechanisms in sensation and the control of posture and movement. Includes segments on neural control of cardiorespiratory function; transmitters and neuromodulators; neural mechanisms in certain higher
functions, eg language and memory; nervous system plasticity; computer applications in neuroscience. Experimental work introduces the student to electrophysiological and other neuroscience research techniques.

**PHPH3152 Pharmacology**
*Staff Contact: A/Prof G Graham*
*CP30 F HPW6*
*Prerequisite: As for PHPH3121*

Includes a study of the absorption, distribution and metabolism of drugs, plus a study of the pharmacology of the autonomic nervous system, the cardiovascular system, the central nervous system, the kidney, the endocrine system and also a study of pharmacokinetics. Practical classes complement the lecture program by demonstrating a variety of basic pharmacological techniques.

**PHPH3211 Cardio-respiratory and Exercise Physiology**
*Staff Contact: A/Prof MA Perry*
*CP15 S2 HPW6*
*Prerequisites: As for PHPH3121*

An advanced course which emphasises function and control of the cardiovascular system; gas exchange in the lung and blood gas carriage in the respiratory system and work capacity, preventive medicine and laboratory testing in exercise physiology. Extensive practical components involve mammalian preparations and human subjects.

**PHPH3221 Endocrine, Reproductive and Developmental Physiology**
*Staff Contact: Prof ER Lumbers*
*CP15 S2 HPW6*
*Prerequisites: As for PHPH3121*

There are three major components to this subject, which consists of lectures, practical classes, tutorial and case studies. The first component of the course is a study of neuroendocrinology, molecular and systematic endocrinology, and of the endocrinology of exercise and disease. The second component of the course deals with female and male reproductive physiology. The third component of the course details the physiology of pregnancy, and that of the fetus and the newborn.

**Professional Studies Level I**

**PROF0101 Aviation Studies: International Societies**
*Staff Contact: Dr C Desmarchelier*
*CP11.3 S1 HPW3*
*Note/s: Restricted to course 3980.*

The historical and sociological perspectives are used to illustrate many world cultures, including the impact of migration. In depth analysis of selected countries indicates how the major social institutions, such as the family, and religion illustrate differences in ethnic and cultural identity. Understanding cultural diversity increases rapport within the aviation industry.

**PROF0102 Crew Resource Management 1**
*Staff Contact: Capt J Faulkner*
*CP7.5 S1 HPW2*
*Note/s: Restricted to course 3980.*

This subject deals with the effective use of all resources in the decision making process with focus on the mechanism of communication within the hierarchy of the cockpit and the cabin. Evaluation of communication will focus on the impact of modern technology, changes in methods of communication, and the reduction in crew numbers.

**PROF0103 Language of Management**
*Staff Contact: Dr C Desmarchelier*
*CP9.4 S2 HPW2.5*
*Note/s: Restricted to course 3980.*

Effective communications is the key to effective cabin resource management. This process involves interpersonal relations, management through effective spoken English; variations of space and intonation; use of standard English pronunciations; de-coding management jargon and persuasive communication in the field of management.
PROF1002
Instructional/Education Techniques 1
Staff Contact: Mr B Buckley
CP7.5 S2 HPW2
Note/s: Restricted to course 3980.
This subject introduces students to current theory and practice in instruction and instruction design. The role of the flight instructor is examined in the light of psychological and educational theory. Practice in instructional techniques is provided in a micro-teaching centre in which video records of students are used as the basis of effective feedback. Students are introduced to instruction based on competency development and assessment.

Professional Studies Level II

PROF0202
Crew Resource Management 2
Staff Contact: Capt J Faulkner
CP12.8 S1 HPW4
Prerequisite: PROF0102
Note/s: Restricted to course 3980.
The interrelationships between Captain and crew will be used to illustrate the principles of the hierarchy of command. Effective teamwork will be developed through negotiation of the principles of communication and effective decision management.

PROF0203
Economics of Management
Staff Contact: Dr C Desmarchelier, Mr R Robertson
CP6.4 S2 HPW1.7
Note/s: Restricted to course 3980.
This subject covers a broad range of the management decisions faced by the airlines. The subject introduces the aviation environment within which the airline management functions and makes economic decisions. Revenue issues are studied with demand analysis, and an airlines ability to manage price and to predict loads. The key elements of supply and costs are analysed by reference to available airline data. The final aspect studied is the combination of the demand and supply issues.

PROF0204
International Negotiation
Staff Contact: Dr C Desmarchelier
CP6.5 S2 HPW1.7
Note/s: Restricted to course 3980.
This subject teaches students the process of conflict resolution through detailed analysis of conflict psychology and negotiation. Emphasis will be given to cockpit and intercollegiate negotiation from an international perspective.

PROF0201
Flight Safety I
Staff Contact: Dr C Desmarchelier
CP5.6 S1 HPW1.5
Note/s: Restricted to students in course 3980 programs 2002 and 2003.
This subject acts as an introduction to the study of flight safety and its application to aircraft operations.

Subjects covered include the use of quick access recorders for fleet performance monitoring, corporate structures for safety departments and accident/incident analysis.

Safety auditing, emergency planning and in-flight security will be studied.

PROF2002
Instructional/Education Techniques 2
Staff Contact: Mr B Buckley
CP7.5 S1 HPW2
Note/s: Restricted to students in course 3980 programs 2002 and 2003.
This subject provides students with models of effective Flight Instruction emphasising principles of effective communication. Aspects of adult learning theory and practices, communication, human motivation, attention, perception and memory are incorporated in students' planning, delivery and evaluation of instruction sessions.

Training sessions in the Instructional Micro Laboratory emphasises the process of effective communication and exchange of information. Individual self evaluation is based on video recordings of each students instructional sessions.

Professional Studies Level III

PROF0301
Aviation Studies: Researching Societies
Staff Contact: Dr C Desmarchelier
CP11.3 S1 HPW3
Note/s: Restricted to course 3980.
Frameworks for comparing and contrasting the culture of societies and regions; library research reports will be contrasted in focus countries and regions of the world. Identifying major historical and cultural themes and their impact on contemporary social life.

PROF0302
Human Factors In Aviation
Staff Contact: Dr B Wilson, Dr C Desmarchelier
CP7.5 S2 HPW2
Note/s: Restricted to course 3980.
Cockpit management requires aptitude and interpersonal skills. The ability to analyse and dissect personal interactions; understand health requirements as affected by altitude; personality differences and maturational differences in personnel; the psychology of management; consumer liaison and other science based influences on aviation.

PROF0303
Management Communication Skills
Staff Contact: Dr C Desmarchelier
CP11.3 S2 HPW3
Note/s: Restricted to course 3980.
Mastery of written and oral communication, management modes of communication including report writing; interactive negotiation within an organisational hierarchy.
PROF0304  
Stress Management  
Staff Contact: Dr B Wilson, Dr C Desmarchelier  
CP7.5 S2 HPW2  
Note/s: restricted to students in course 3980 programs 2002 and 2003.

Identification and management of levels of stress within a business hierarchy, developing physical and mental competencies to deal with known stressors, leisure activities that compliment work engendered stress in aviation.

PROF3001  
Flight Safety II  
Staff Contact: Dr C Desmarchelier  
CP5.6 S1 HPW1.5  
Prerequisite: PROF2001  
Note/s: restricted to students in course 3980 programs 2002 and 2003.

The emphasis will be on the holistic aspects of flight safety from an operations management perspective, with specific reference to technical and human factors and corporate philosophies which incorporate aspects of flight safety.

Psychiatry

Psychiatry Level II

PSCY2201  
Human Behaviour  
Staff Contact: Dr P Ward  
CP15 F HPW3  
Note/s: Restricted to Combined degree course 3821.

Objectives: To provide students with key concepts in the five main topic areas and demonstrate the practical application of these concepts in medical practice. The five main topic areas are: research methods in behavioural sciences, psychology in relation to medicine, sociology in relation to medicine, bioethics and human sexuality. Students are thus encouraged to develop an understanding of human behaviour as the result of the complex interaction of a number of factors so that they are more likely to appreciate and respect their patients and colleagues as persons. Taught in both sessions. Didactic material and some case material is presented in lectures and the tutorial program is structured to consolidate this information, frequently using discussion of specific case examples. Emphasis is placed on developing skills in clear professional communication, with feedback on written assignments, tutorial presentations, and encouragement to use visual aids in presentations. Specific topics covered include: risk behaviours; anxiety; stigma; social class and health; the sexual response and how it changes across the lifespan; and a range of bioethical topics including human and animal experimentation, euthanasia, the doctor and the state.

A handbook for the course is produced each session and may be borrowed from the Biomedical Library Closed Reserve or purchased from the School of Psychiatry.

Assessment: In Session 1, assessment consists of two written examinations, a tutorial assignment, and a tutorial presentation. In Session 2, students are required to write a major essay on Bioethics, present a tutorial paper and sit a final written examination.

Psychology

Psychology Level I Subject

PSYC1002  
Psychology 1  
Staff Contact: Dr A Adams  
CP30 F HPW5  
Note/s: A high proficiency in English is necessary to pass this subject. Excluded GENB4001, GENB4002, GENS4620, GENS5050.

Introduces the content and methods of psychology as a basic science, with emphasis on the biological and social bases of behaviour, relationship to the environment, and individual differences. Training in the methods of psychological enquiry, and in the use of elementary statistical procedures.

Credit is given for participating in various School-approved research studies for up to six hours during the year. An alternative is available.

Psychology Level II Subjects

PSYC2001  
Research Methods 2  
Staff Contact: Ms M Gleitzman  
CP15 S1 HPW4  
Prerequisite: PSYC1002 Advanced Pass (a mark of 55 or greater)

General introduction to the analysis of data by means of inferential statistics (z, t and chi square). Issues in the use of statistics (power, robustness). General features of research methodology. Laboratory and statistical traditions affecting design and control procedures. The implications of the use of inferential statistics for research methodology generally. Ethics of research and interpretation of data.

PSYC2011  
Psychological Measurement and Assessment  
Staff Contact: Dr S McDonald  
CP15 S2 HPW4  
Prerequisite: PSYC2001

Principles and techniques of psychological measurement. Types of tests and issues relevant to their construction, administration and interpretation in decisions about selection and classification. Professional responsibilities in use of tests in decision making.
PSYC2061
Social and Developmental Psychology
Staff Contact: Prof J Forges
CP15 S1 HPW4
Prerequisite: PSYC1002 Advanced Pass (a mark of 55 or greater)
Note/s: Excluded PSYC2031, PSYC2116, PSYC3111

Two strands:
1. Social – The basic principles of research and theory in social psychology, with a special emphasis on understanding how people relate to each other. Issues such as the nature of human sociability, the perception and interpretation of social behaviour, ambiguities of interpretation of interpersonal behaviour, verbal and nonverbal communication processes, impression formation and impression management and related topics will be covered.

2. Developmental – The age at which certain abilities or dispositions develop or are learned, and the processes by which developmental changes occur. Issues such as nature and nurture, continuity vs discontinuity, nomothetic vs ideographic approaches and the methods and ethics of developmental research will be covered from various perspectives – psychodynamic, biological/ethological, environmental/learning, and cognitive – developmental.

PSYC2071
Perception and Cognition
Staff Contact: A/Prof S Andrews
CP15 S2 HPW4
Prerequisite: PSYC1002 Advanced Pass (a mark of 55 or greater)
Note/s: Excluded PSYC2021, PSYC3021

Introduces the fundamental principles underlying human perception and cognition such as sensory coding, perceptual organisation, perception of spatial layout, perceptual learning, object recognition, attention, memory storage and retrieval, problem solving and decision making. The practical program will provide an introduction to the use of psychophysical methods, experimental approaches to the study of cognitive processes, and the application of findings in society.

PSYC2081
Learning and Physiological Psychology
Staff Contact: Dr J Cranney
CP15 S1 HPW4
Prerequisite: PSYC1002 Advanced Pass (a mark of 55 or greater)
Note/s: Excluded PSYC3031

An examination of brain and behaviour relationships with emphasis on learning, memory and motivation. Topics may include habituation, sensitisation, classical/operant conditioning, basic motivations, hunger, sex aggression, neuropsychology of amnesia and normal memory.

PSYC2091
Psychology 2A
Staff Contact: Prof B Gillam
CP15 S2 HPW4
Prerequisite: PSYC1002 Advanced Pass (a mark of 55 or greater)
Note/s: Excluded PSYC2042. Restricted to course 3431.

The approach of psychology to issues arising in the management of human affairs and to the remediation of human problems. Topics include psychology as a scientific discipline, an overview of areas such as clinical psychology, neuropsychology and developmental disabilities in which psychological knowledge is applied to help individuals to change or to function optimally, and specific areas of public concern where psychology has a major contribution to make such as education, selection, training in industry, traffic and aircraft safety, and the law. The practical program will aim to teach survey research skills and will focus also on the professional and social responsibilities of psychologists.

Psychology Level III Subjects
Notes: Students may not complete more than six Level III Psychology subjects (90 Credit Points) unless PSYC3001 Research Methods 3A has been passed.

Students may not enrol in more than seven Level III Psychology subjects (105 Credit Points).
Not all Level III Psychology subjects will necessarily be offered in each year.

PSYC3001
Research Methods 3A
Staff Contact: Dr K Bird
CP15 S1 HPW4
Prerequisite: PSYC2001

Analysis of variance for single factor and multifactor designs. MANOVA model analyses of repeated measures data. Simultaneous inference procedures for contrasts defined on parameters of ANOVA and MANOVA models. General principles of experimental design. Analysing experimental data with the PSY program.

PSYC3011
Research Methods 3B
Staff Contact: Dr K Bird
CP15 S2 HPW4
Prerequisite: PSYC3001

Multiple regression and its application to prediction, analysis of designed experiments and construction of structural models. Principal components analysis and factor analysis. Data analysis using SPSS.

PSYC3021
Perception
Staff Contact: Prof B Gillam
CP15 S1 HPW4
Prerequisites: PSYC2001 and either PSYC2021 or PSYC2031
Note/s: Excluded PSYC2071.

The study of the sensory basis of perception; the study of perception as an adaptive process by which individuals are able to correctly apprehend the external environment and
localise themselves within it; the study of perceptual development in infants and young children.

**PSYC3031**  
**Behavioural Neuroscience**  
*Staff Contact: Dr J Cranney*  
*CP15 S2 HPW4*  
*Prerequisites: PSYC2001 and either PSYC2021 or PSYC2031*  
*Note/s: Excluded PSYC2081.*  
An examination of brain-behaviour relationships with emphasis on contemporary models of the neural bases of learning, memory and motivation. Topics may include classical and operant conditioning, neuropharmacology, the neural basis of feeding and its disorders, invertebrate and vertebrate models of learning, amnesias and theories of normal memory.

**PSYC3051**  
**Physiological Psychology**  
*Staff Contact: Prof G Paxinos*  
*CP15 S2 HPW4*  
*Prerequisites: PSYC2001 and either PSYC2081 or PSYC3031*  
The neural control of behaviour with special emphasis on cerebral localisation of function in humans. Clinical conditions will be considered to the extent they illuminate mechanisms and theory of brain function, and the professional issues raised by different theories will be canvassed.

**PSYC3121**  
**Social Psychology**  
*Staff Contact: Prof J Forgas*  
*CP15 S2 HPW4*  
*Prerequisites: PSYC2001 and either PSYC2031 or PSYC2061*  
*Note/s: Excluded PSYC3131.*  
A review of the history, principles and methods, and ethics of social psychology at an advanced level. Substantive research areas such as the nature of affiliation and attraction, interpersonal relationships, the study of beliefs, values and attitudes, persuasion and processes of attitude change, social influence processes, and group behaviour, among others, will be covered.

**PSYC3141**  
**Behaviour in Organisations**  
*Staff Contact: Dr S Schneider*  
*CP15 S1 HPW4*  
*Prerequisites: PSYC2001 and either PSYC2031 or PSYC2061*  
The application of general psychological theories and principles to contemporary management problems. It will acquaint students with research in employee motivation, satisfaction, selection, training, evaluation, and teamwork as well as other topics in industrial and organisational psychology, including the role of the professional in organisations and in dealing with other professionals.

**PSYC3151**  
**Cognition and Skill**  
*Staff Contact: A/Prof J Taplin*  
*CP15 S1 HPW4*  
*Prerequisites: PSYC2001 and either PSYC2021 or PSYC2071*  
Considers the cognitive processes underlying the development of skill in a variety of domains ranging from general skills such as reading and recognising objects to specialised skills such as solving algebra problems and air-traffic control. The differences between novice and expert performance are discussed to illustrate theories of expertise and demonstrate the contribution of individual and environmental factors to skill acquisition. Implications for training and assessing skilled performance are considered.

**PSYC3161**  
**Language and its Development**  
*Staff Contact: A/Prof M Taft*  
*CP15 S2 HPW4*  
*Prerequisites: PSYC2001 and either PSYC2021 or PSYC2071*  
Describes the structure of language and how it is acquired and used in reading, writing, speech comprehension and speech production. All levels of language are examined: phonemes and graphemes, morphemes, words, sentences and text. Bilingualism and language dysfunction are also given consideration.

**PSYC3201**  
**Psychopathology**  
*Staff Contact: Dr P Birrell*  
*CP15 S1 HPW4*  
*Prerequisites: PSYC2001 and PSYC2081*  
*Note/s: Excluded PSYC3071, PSYC3081.*  
An introduction to the scientific analysis of behaviour and mental disorders. The major syndromes, focussing upon current models and theories of causation and the empirically-based evaluation of these aetiological models and theories described. Treatment of the disorders will be outlined, especially where modern treatment developments throw light on fundamental causal mechanisms. Professional and ethical aspects of various treatments will be considered.

**PSYC3211**  
**Cognitive Science**  
*Staff Contact: Dr P Atkins*  
*CP15 HPW4*  
*Prerequisites: PSYC2001 and PSYC2071*  
*Note/s: Subject not offered in 1997.*  
Considers a variety of different approaches adopted in the study of mental processes. In particular the underlying assumptions of cognitive models are highlighted and critically appraised. Includes topics such as computer models of learning and memory, artificial intelligence, consciousness, cognitive representations and the association between mind and body. The professional implications of these topics will be discussed.
PSYC3221
Vision and Brain
Staff Contact: Prof B Gillam
CP15 HPW4
Prerequisites: PSYC2001 and PSYC2071

Seeing is an amazing achievement, taking up 40% of the visual cortex. This subject will consider how we see and how this reveals and is related to principles of brain functioning. Topics will include stereo (3-D vision), the coding of brightness and colour, perceiving motion and self-motion, brain damage and the question of specialised visual systems, visual imagery, visual attention, and vision and art.

PSYC3231
Child Development: Perception and Cognition
Staff Contact: A/Prof D Burnham
CP15 S1 HPW4
Prerequisites: PSYC2001, PSYC2061 and PSYC2071
Note/s: 1. Excluded PSYC3111.

The development of infants' and children's auditory and visual abilities will be considered in relation to their adaptive search for perceptual, cognitive and social invariance in their environment. Cognitive development will be considered from three different theoretical perspectives: Piagetian theory, changes in information processing capabilities, and the formation of domain-specific knowledge and beliefs from infancy to adulthood.

PSYC3241
Psychobiology of Memory and Motivation
Staff Contact: Dr R Richardson
CP15 HPW4
Prerequisites: PSYC2001 and PSYC2081
Note/s: Not offered in 1997.

Research and theory in memory and motivation as they underpin adaptive behaviour. Primary consideration will be given to general-purpose and specialised forms of learning. Implications for the origin and treatment of clinical disorders will be described.

PSYC3251
Animal Cognition
Staff Contact: A/Prof RF Westbrook
CP15 S2 HPW4
Prerequisites: PSYC2001 and either PSYC2081 or PSYC3031
Note/s: Excluded PSYC3041.

Key topics include how animals represent space, time, and number, their capacity to solve problems and to reason, to learn about relations including causal ones, and the means by which they communicate. Questions about animal intentionality and consciousness will also be dealt with, as will issues concerning interpretation of data obtained from animal research.

PSYC3261
Current Topics In Behavioural Neuroscience
Staff Contact: Prof EJ Kehoe
CP15 HPW4
Prerequisites: PSYC2001 and PSYC2081
Note/s: Not offered in 1997.

An occasional elective dealing with recent developments in behavioural neuroscience.

PSYC3271
Personality and Individual Differences
Staff Contact: Dr G Huon
CP15 S2 HPW4
Prerequisites: PSYC2011 and either PSYC2031 or PSYC2061
Note/s: Excluded PSYC3101.

The study of persons from two separate, but related perspectives. The psychology of personality involves the study of the structure and the processes involved in the organised functioning of individuals, their traits, cognitions and motives. The expression and measurement of the differences in those psychological characteristics between individuals and groups, and the theories or explanations that account for them, is what is involved in a psychology of individual differences.

PSYC3281
Interpersonal Behaviour
Staff Contact: Prof J Forgas
CP15 HPW4
Prerequisites: PSYC2001 and PSYC2061
Note/s: Not offered in 1997.

A critical, evaluative perspective, dealing with selected topic areas of contemporary research on social behaviour, such as the development of social understanding, emotional development, the role of affect in social behaviour, social cognition, social interaction processes, and group dynamics. The range of topics will reflect the changing emphasis in contemporary research on interpersonal behaviour.

PSYC3291
Psychology 3A
Staff Contact: Prof K McConkey
CP15 HPW4
Prerequisites: PSYC2091

A range of seminar topics aimed at assisting students to develop a position on key questions or issues in psychology as scientific discipline and how to argue that position in a logical and coherent way. There will be an emphasis on placing theoretical and scientific knowledge in a social context and on using that knowledge in professionally responsible ways.

Psychology Level IV Subjects

PSYC4003
Psychology 4 (Thesis/Course 3431)
Staff Contact: Dr P Lovibond
CP120 F
Prerequisites: PSYC2001, PSYC2011, PSYC2061, PSYC2071, PSYC2081, PSYC2091 and Level III Psychology subjects totalling 120 Credit Points (consisting of PSYC3001, PSYC3011, PSYC3201, PSYC321, 1 subject selected from PSYC3151, PSYC3161, PSYC3211, PSYC3221 and PSYC3231, 1 subject selected from PSYC3051, PSYC3241, PSYC3251 and PSYC3261, 1 subject selected from PSYC3121, PSYC3141, PSYC3271 and PSYC3281 and 1 other)
Psychology 4 in the BSc(Psychol) degree course. A supervised research thesis and course work to be determined in consultation with the Head of School.

PSYC4013
Psychology 4 (Course 3431)
Staff Contact: Dr P Lovibond
CP120 F
Prerequisites: PSYC2001, PSYC2011, PSYC2061, PSYC2071, PSYC2081, PSYC2091 and Level III Psychology subjects totalling 120 Credit Points (consisting of PSYC3001, PSYC3011, PSYC3201, PSYC3291, 1 subject selected from PSYC3151, PSYC3161, PSYC3211 and PSYC3231, 1 subject selected from PSYC3051, PSYC3241, PSYC3251 and PSYC3261, 1 subject selected from PSYC3121, PSYC3141, PSYC3271 and PSYC3281 and 1 other) with an average of at least 70%.

Psychology 4 in the BSc(Psychol) degree course. A supervised research project to be determined in consultation with the Head of School and course work.

PSYC4023
Psychology 4 (Thesis) Honours
Staff Contact: Dr P Lovibond
CP120 F
Prerequisites: Completion of Stages 1 - 3 of Advanced Science programs 1200 or 1206 or 7312 with an average of at least 70% across Level II and Level III Psychology subjects.

A supervised research thesis and course work to be determined in consultation with the Head of School.

PSYC4033
Psychology 4 Honours
Staff Contact: Dr P Lovibond
CP120 F
Prerequisites: Completion of Stages 1 - 3 of Advanced Science programs 1200 or 1206 or 7312.

A supervised research project to be determined in consultation with the Head of School and course work.

Servicing Subjects
These are subjects taught within courses offered by other faculties.

PSYC2116
Human Development (Optometry)
Staff Contact: A/Prof D Burnham
CP7.5 S1 HPW3
Note/s: Restricted to Course 3950. Excluded PSYC2051, PSYC2061, PSYC3111.

Historical background and schools of psychology; current approaches to psychology; introduction to statistics and statistical inference; human development, including introduction to issues and methods in developmental psychology, and investigation of the physical, perceptual, cognitive, and psychosocial development of the human through the life span.

PSYC3506
Psychology for Optometrical Practice
Staff Contact: Dr P Birrell
CP7.5 S2 HPW3
Prerequisite: PSYC2116
Note/s: Restricted to Course 3950.

Areas of psychology relevant to optometrical practice. Abnormal psychology: concepts of normality and abnormality, symptoms of various mental disorder, eye movement dysfunctions, referral; psychological testing: standardisation, norms, types of test, validity, reliability, selection/diagnosis; neuropsychology: general deficits due to brain damage and those with visual implications, referral; developmental disability: diagnosis, assessment, prevalence and distribution, association with other disabilities, e.g. visual; reading difficulties: causes, assessment and treatment approaches.

Science and Technology Studies

The School of Science and Technology Studies (STS) offers subjects in two streams: History and Philosophy of Science and Technology; and Science, Technology, and Society. The subjects in the two streams are designated by two different subject codes (HPST and SCTS). However, any combination of HPST or SCTS subjects is permissible, subject to the relevant prerequisites or corequisites. Entrance to most Level II/III subjects is possible without having studied Level I HPST or SCTS subjects.

Science and Technology Studies Level I

Students undertaking subjects in Science and Technology Studies supplement class contact hours by study in the Library. Only two Level I subjects may be counted towards course 3970.

HPST1106
Myth, Megalith, and Cosmos
Staff Contact: Tony Coronas
CP15 S1 HPW3

A general introduction to the history and philosophy of science. Provides a background to HPST1107, From the Closed World to the Infinite Universe, but is a self-contained subject in its own right. Examines the evidence for scientific knowledge in prehistoric cultures, the astronomy and
cosmology of the ancient Near East civilisations, and the development of earlier Greek scientific thought.

Assessment: 2 short essays, 2 tests, tutorials.

**HPST1107**

**From the Closed World to the Infinite Universe**  
Staff Contact: Guy Freeland  
CP15 S2 HPW3

A general introduction to the history and philosophy of science. Follows on from HPST1106, Myth, Megalith, and Cosmos, but constitutes a self-contained subject in its own right without prerequisites. Examines the momentous transition from the ancient/medieval model of a closed world to modern cosmological theory.

Assessment: 2 short essays, 2 tests, tutorials.

**HPST1108**  
Science: Good, Bad, and Bogus: An Introduction to the Philosophy of Science  
Staff Contact: Peter Slezak  
CP15 S2 HPW3

What is science? What are its distinctive characteristics as a form of inquiry? Why are astrology and ‘creationism’ widely considered to be pseudosciences? A critical consideration of the claims of astrology, psychoanalysis, parapsychology, and creation science provides a vehicle for raising central questions concerning the nature of science.

Assessment: Essay, tutorials, class tests.

**SCTS1106**  
Science, Technology, and Social Change  
Staff Contact: David Miller  
CP15 S1 HPW3

Relations between science, technology, and society in the 20th century. Theories of technological design and change. Examination of controversies including: pollution protection; nuclear energy; and genetic engineering. The control of technology. Technology assessment. The nature of public involvement in decisions about scientific and technological development.

Assessment: Essay, tutorials, class tests.

**SCTS1107**  
Understanding Technological Controversy  
Staff Contact: David Miller  
CP15 S2 HPW3  
Prerequisite: SCTS1106 or 62.101

The lecture series examines scientific and technical controversies in general; how they arise, how they are conducted, how and why they are resolved or remain unresolved. The tutorials are devoted to supervised group work on issues of concern to students in the areas of the environment, energy, genetic engineering, and communication technologies.

Assessment: Essay, test, individual tutorial and group work.

**Science and Technology Studies Level II/III**

**HPST2106**  
The Scientific Theory  
Staff Contact: Guy Freeland  
CP15 S1 HPW3  
Prerequisite: Completion of Level I Science subjects totalling at least 60 Credit Points

A critical examination of the scientific theory, its origins, nature and nurture, with particular reference to selected historical examples chosen from both the physical and biological sciences. Topics include the structure of scientific revolutions; scientific explanation; relationships between theory and observation; the function of models; the principles of theory establishment and rejection.

Assessment: One essay, two tests, tutorials.

**HPST2107**  
The Darwinian Revolution Reconsidered  
Staff Contact: Randall Albury  
CP15 S1 HPW3  
Prerequisite: As for HPST2106

The background to Darwin's theory of evolution, and its impact on 19th century science and society. Was there a 'Darwinian Revolution'? The effect of the development of genetics on the retrospective evaluation of Darwin and of other biological theorists. Shaping of social, political and religious thinking by Darwinian and non-Darwinian ideas in the 20th century.

Assessment: One essay, two tests, tutorials.

**HPST2108**  
Introduction to the History of Medicine  
Staff Contact: Randall Albury  
CP15 S1 HPW3  
Prerequisite: As for HPST2106

Note/s: Excluded GENS5522, GENT0902, HPST2128.

Development of theory and practice in Western medicine from Hippocratic times to the 20th century. 'Bedside' medicine from antiquity to the French Revolution; 'Hospital' medicine in the early 19th century; 'Laboratory' medicine in the late 19th century; 'Technological' medicine in the 20th century, with particular emphasis on the social role of modern medicine.

**HPST2109**  
Computers, Brains, and Minds: Foundations of Cognitive Science  
Staff Contact: Peter Slezak  
CP15 S2 HPW3  
Prerequisite: As for HPST2106

Note/s: Excluded GENS5525.

Introduction to contemporary discussions of the mind, thought, intelligence, and consciousness. Stress on the recent revolutionary developments in the computer simulation of thought or 'artificial intelligence' and linguistics. Can computers think? Is the brain a machine? Exploration of theories, methods, and philosophical issues.

Assessment: Essay, class tests, tutorials.
HPST2116
History of the Philosophy and Methodology of Science
Staff Contact: Tony Corones
CP15 S2 HPW3
Prerequisite: As for HPST2106
Note/s: Not recommended for students without some background in philosophy or HPST. Not offered in 1997.
A survey of the history of ideas about the nature and method of science, considering such issues as Aristotelianism, rationalism and empiricism, Kantianism, positivism, pragmatism, conventionalism, falsificationism, realism, and instrumentalism.
Assessment: Essays, tutorials.

HPST2117
Production, Power, and People: The Social History of Technology in the 18th and 19th Centuries
Staff Contact: Nessy Allen
CP15 S2 HPW3
Prerequisite: As for HPST2106
Note/s: Excluded GENT0908.
The history of technology in its social and cultural context, with special emphasis on the Industrial Revolution. Technology and its effects on human beings; the professionalisation of engineering; the spread of industrialisation and the Second Industrial Revolution. Emphasis on the social and economic effects of the interactions of technology and society.
Assessment: Essay, tutorials, two tests.

HPST2118
Body, Mind, and Soul: The History and Philosophy of Psychology
Staff Contact: Peter Slezak
CP15 S1 HPW3
Prerequisite: As for HPST2106.
The development of ideas concerning the nature of mind and its relation to the body. Topics include the immortality of the soul; division of mind and body; the dispute over innate ideas; behaviourism; psychoanalysis; experimental psychology and the 'cognitive revolution'; minds as machines and the question of whether computers can think.
Assessment: Essay, tutorial assessment, tests.

HPST2119
Philosophy of the Social Sciences: Issues and Topics
Staff Contact: Peter Slezak
CP15 S1 HPW3
Prerequisite: As for HPST2106
Note/s: Not offered in 1997.
Can human behaviour be understood and explained scientifically? Are social behaviour and meaningful action to be explained by causal laws, as in the natural sciences, or are there special methods which are uniquely appropriate to human behaviour? Examines the long-standing controversy about the radically contrasting ways to understand human beings and their social existence. The course examines this debate through considering laws, explanations, causes, and theories in the natural sciences, in contrast with the empathic or intuitive understanding of the meaningfulness of human actions.
Assessment: Essay, class tests, tutorials.

HPST2126
God, Life, the Universe & Everything: Science and the Search for Ultimate Meaning
Staff Contact: Peter Slezak
CP15 S1 HPW3
Prerequisite: As for HPST2106
‘Ultimate’ questions about God, the meaning of life and the point of it all, have traditionally been the business of religion. Can science provide an answer to these questions, or is there always a realm of understanding which is beyond scientific knowledge? This subject examines philosophical issues in epistemology, metaphysics and philosophy of science. Topics will include arguments for the existence of God and the underlying questions of evidence and explanation in science.

HPST2127
Discrediting Science? – Postmodernism and the Crisis of Legitimation
Staff Contact: Anthony Corones
CP15 S2 HPW3
Prerequisite: As for HPST2106
This subject examines the perception that postmodernism discredits science. Discussion is focused on postmodernist ‘incredulity towards metanarratives’, and the way in which this provokes the crisis of legitimation. Topics and debates covered include constructivism, relativism, realism and anti-realism, the naturalistic turn in epistemology, rationality, hermeneutics, and the politics of knowledge.

HPST2128
Australian Medical History: A Comparative Study
Staff Contact: Susan Hardy
CP15 S2 HPW3
Prerequisite: As for HPST2106
Note/s: Excluded GENS5522, GENT0902, HPST2108, HPST3119.
Examines how the European version of medicine evolved in and was adapted to the Australian environment from 1788 to the mid-twentieth century – how the landscape, climate and social, political and economic structures affected the way medical care and medical personnel were viewed. Consideration is also given to the development of medicine on the North American continent, noting similarities and differences between the situation there and in Australia.

HPST2129
The Predecessors of Pythagoras: Origins of the Harmonic Cosmology
Staff Contact: Graham Pont
CP15 S2 HPW3
Prerequisite: As for HPST2106
Examines the origins of cosmological ideas usually associated with early Greek thinkers. The principal topics are the ‘analogy of macrocosm and microcosm’, and the ‘harmony of the spheres’. Estimates the extent to which the Pythagoreans, and Plato, synthesised ideas of older cultures, particularly Egypt, Babylon, China and India.
What is Technology? How does it shape our form of life? Can we do anything about it? These issues are approached through the philosophy of technology. Issues considered include technology and the life-world, technological determinism, technology and values, and the relations between philosophy of technology and philosophy of science.

SCTS2106
Scientific Knowledge and Political Power
Staff Contact: George Bindon
CP15 S1 HPW3
Prerequisite: As for HPST2106
Note/s: Not offered in 1997.

An introduction to the political dimensions of 20th-century science. Topics include growth of expenditure on science in the twentieth century; science and politics; science and economic growth; the science-technology relationship; approaches to science policy; critiques of the role of science in contemporary society.

SCTS2107
The Sociology of Science and Technology
Staff Contact: David Miller
CP15 S2 HPW3
Prerequisite: As for HPST2106

An examination of the communal nature of scientific and technological activities which will include: an historical survey of the development of scientific and engineering professions; the internal working of scientific communities; scientific communication; the reward system; fraud; disciplines and specialities in science and engineering.

Assessment: Essays, tutorials.

SCTS2108
Information Technology, Politics and Policies
Staff Contact: John Merson
CP15 S1 HPW3
Prerequisite: As for SCTS1106 or completion of Level I science subjects totalling at least 60 Credit Points.
Note/s: Not offered in 1997.

Key issues for 'info-tech' society, including social policies and the future of work and education; mass media and telecommunications in the electronic age; commercialisation and shifting patterns of trade in the world economy; deregulation and the role of 'info-tech' in global restructuring.

SCTS2109
The New Biotechnologies and their Social Context
Staff Contact: David Miller
CP15 S1 HPW3
Prerequisite: SCTS1106, or by permission of the Head of School
Note/s: Not offered in 1997.

The social implications of the new technologies, including recombinant DNA techniques, genetic manipulation of animals, and test-tube babies. The present achievements and likely future developments of the new genetic and reproductive technologies, together with detailed discussions of the social, ethical, and political implications of these developments.
SCTS2116
Technological Change and Economic Development
Staff Contact: George Bindon
CP15 S2 HPW3
Prerequisite: Completion of Level I science subjects totalling at least 60 Credit Points including SCTS1106; or permission of Head of School
Ideas about technological change and its relationships to economic development. Rise of the industrial estate; emergence of the 'post-modern'/'post-industrial' state; Reich's 'global web'; metropolitan centres and the periphery; collapse of Soviet empire; emergence of 'Asia-Pacific rim' and implications of this for Australia.
Assessment: Class contributions, assignments, tests.

SCTS2117
The Challenge of Managing and Measuring Science and Technology
Staff Contact: George Bindon
CP15 S2 HPW3
Prerequisite: Completion of Level I science subjects totalling at least 60 Credit Points including SCTS1106; or permission of Head of School
Note/s: Not offered in 1997.
Assessment: Class contributions, assignments, tests.

SCTS2118
Technology, Environment, Politics
Staff Contact: Gavan McDonell
CP15 S1 HPW3
Prerequisite: As for HPST2106
Provides a theoretical background for understanding 'the social crisis of the environment'. Images of nature and science as key factors in the development of modernity. Positivism, nature science and the birth of social science. Progress, technocracy, totalitarianism in the twentieth century. Critical theory and the philosophical/political critique of science and technology since World War Two. Postmodernity, the lifeworld, trust and system feedbacks. Global markets and ecological impacts.

SCTS2119
Science, Technology and Everyday Life: History and Current Issues
Staff Contact: David Miller
CP15 S1 HPW3
Prerequisite: As for HPST2106
Note/s: Not offered in 1997.
Examines and analyses the place of science and technology in everyday existence in Australia, Britain and the United States over the last two hundred years as a way of addressing the 'public understanding' of science and technology. The history of infrastructural and domestic technologies (water, sewerage, heating and cooling, transport, communications). Contemporary community efforts to mobilise scientific and technical knowledge in pursuit of infrastructural, environmental and health objectives.

SCTS3106
Technology, Sustainable Development, and the Third World
Staff Contact: John Merson
CP15 S1 HPW3
Prerequisite: As for HPST2106
Sustainable development, along with the technological and social changes that are involved in achieving it, both at a national and global level. The course is divided into three parts: (1) the historical causes of the present global environmental and economic crisis; (2) possible solutions to problems of food production, environmental degradation, industrialisation, energy use, and population growth; (3) ideas for a New World Economic Order and the economic and technological changes required to bridge the ever increasing gap between rich and poor nations.
Assessment: Essay, tutorials.

SCTS3107
Women and Science
Staff Contact: Nessy Allen
CP15 S1 HPW3
Prerequisite: As for HPST2106
A series of seminars on: the constraints and opportunities facing women scientists; an historical survey of women scientists, including some eminent Australians; the philosophical issues and implications for social policy raised by women's participation in science.
Assessment: Seminar presentations, essays, class participation.

SCTS3108
Technological Development in 20th-Century Australia
Staff Contact: George Bindon
CP15 S2 HPW3
Prerequisite: As for SCTS1106
Note/s: Not offered in 1997.
The historical development of technology in Australia during the 20th century, with focus on three key dimensions: linkage between scientific research, industrial development, and economic growth; technological change and its impact on Australian society; the distinctive feature of Australia's geopolitical situation.

SCTS3109
Society, Technological Hazards, and Environmental Management
Staff Contact: Gavan McDonell
CP15 S1 HPW3
Prerequisite: SCTS1106 or completion of Level I science subjects totalling at least 60 Credit Points
Note/s: Not offered in 1997.
Concerns over risks associated with technological and environmental hazards. The present anxieties over social control and the relations between ethics and politics. Institutional and global aspects of environmental management in relation to hazards such as toxic wastes, genetic engineering, ozone hole; international negotiation.
SCCTS3116
The Political Economy of Energy and Sustainable Development
Staff Contact: Gavan McDonnell
CP15 S2 HPW3
Prerequisite: As for SCTS3109
Note/s: Not offered in 1997.

Energy, force, work, and power; social construction of energy use; the 'energy' crisis; energy use and climate change; introduction to environmental economics; institutional power and market arrangements for energy; environmental management. International relations and issues in energy use and control.
Assessment: Essays, tests, tutorials.

SCST3117
Technology, Globalization, and the Role of the State
Staff Contact: George Bindon
CP15 S2 HPW3
Prerequisite: Completion of SCTS subjects totalling at least 30 Credit Points
Note/s: Not offered in 1997.

An analysis of the interaction between technology, economic growth, and the internationalism of industry; the growing pressure on the State to adopt an increasingly interventionist role.

SCTS3119
Reading Option in Science and Technology Studies
Staff Contact: David Miller
CP15 S1 or S2 HPW3
Prerequisite: As for HPST2106 and permission of Head of School

Students wishing to work in an area not covered by an existing subject may apply to the School to take a reading option. Approval of a program for a reading option will depend on its suitability, and the availability of a staff member to undertake supervision.

SCTS3126
Society and Environmental Process: Botany Bay in the Sydney Region
Staff Contact: Gavan McDonnell
CP15 S2 HPW3
Prerequisite: Three subjects from the following: GEOG1051, GEOG2081, GEOG2102, GEOG3211, GEOG3062, GEOG3042, HPST3108, SCTS3106, SCTS3109, SCTS3116
Note/s: Excluded SCTS3020.

Provides an interdisciplinary framework for the interpretation of the ways in which human environments have been socially constructed. This will be done in the particular context of Botany Bay and the Sydney Region. Emerging environmental issues at the regional, national, and global levels will be identified and examined in the light of geographic, historical, sociological, economic, political, and urban change and development. Prospects and processes for intervention will be examined. Each student will complete a research project.
Assessment: Group project, assignment, seminar summaries, class participation.

Science and Technology Studies Level IV Honours Program

SCTS4106/SCTS4156
Science and Technology Studies (Honours) (FT/PT)
Staff Contact: Nessy Allen
CP120 F
Prerequisite: Completion of program 6200 including Level II/III subjects totalling 105 Credit Points with an average grade of credit or better

In the Honours Program, candidates are required to present a thesis and to complete coursework as approved by the Head of School.

Wool and Animal Science

Wool and Animal Science Level II

WOOL3803
Genetics 1
Staff Contact: A/Prof J James
CP10 S2 L4 T2
Note/s: Restricted to Program 6840.


Wool and Animal Science Level III

WOOL3901
Biostatistics 1
Staff Contact: A/Prof J James
CP10 S2 L2 T2
Prerequisite: MATH2819 or BIOS2041
Note/s: Restricted to program 6840.

Design and analysis of comparative experiments, for continuous and discrete random variables. Analysis of variance for fixed, mixed and random models. Linear regression and correlation. Multiple comparison methods.

WOOL4813
Genetics 2
Staff Contact: A/Prof J James
CP15 S2 L3 T3
Prerequisite: WOOL3803
Note/s: Restricted to program 6840.

Faculty of Biological and Behavioural Sciences

Dean: Professor WJ O’Sullivan
The Schools of the Faculty of Biological and Behavioural Sciences offer facilities for students to proceed to the award of a Graduate Diploma, the award of a Masters degree by research and the award of the degree of Doctor of Philosophy; and the award of a Masters degree by course work in Psychology (8251 and 8252), in Biotechnology (8042) and in Marine Science (8265).

Faculty of Science

Dean: Professor JF Scott
The Schools of the Faculty of Science supervise the graduate diploma courses in Computational Science (5535), Food and Drug Analysis (5510), Physical Oceanography (5530) and Physics (5515 and 5516). The Schools of the Faculty also offer facilities for students to proceed to the award of masters degrees in Chemistry (8770), Computational Science (8790), Mathematics (8740), Optometry (8760) and Statistics (8750), Masters degrees by research and to the award of Doctor of Philosophy.

Students completing undergraduate science degrees which include an appropriate mix of subjects may qualify for admission to higher degree programs in Faculties other than Biological and Behavioural Sciences and Science.

Enrolment Procedures

All students re-enrolling in 1997 or enrolling in graduate courses should contact the Postgraduate Section for enrolment details.

Faculty of Biological and Behavioural Sciences

Facilities are available in each of the Schools for research leading to the award of the degrees of Master of Science, Doctor of Philosophy and Graduate Diploma. The Department of Biotechnology (within the School of Applied Bioscience in the Faculty of Applied Science) offers a Graduate Diploma in Biotechnology and a Masters degree course in Biotechnology by formal study, and the School of Psychology offers Master of Psychology (Applied) and Master of Psychology (Clinical) degree courses.
Higher Degree Qualifying Program

Students without a BSc Honours degree wishing to register as higher degree candidates must usually complete a qualifying program, admission to which is subject to the approval of the Faculty Higher Degree Committee.

Applicants must normally have a degree or diploma in an appropriate field of study from an approved university or institution, and in the case of a diploma, appropriate professional experience.

Undergraduates of this University may be admitted to the full-time or part-time Honours undergraduate course. Other applicants may be admitted to a full-time, part-time or external qualifying program. The duration of the qualifying program is a minimum of one year for full-time and two years for part-time or external students.

Content of Qualifying Program

The qualifying program consists of the whole of the usual program for the final Honours year of the undergraduate course, the following being the prescribed Level IV subjects:

- BIOC4318 Biochemistry Honours (Full-time)
- BIOC4618 Biochemistry Honours (Part-time)
- BIOS4018 Biological Science Honours (Full-time)
- BIOS4014 Biological Science Honours (Part-time)
- BIOS4028 Botany Honours (Full-time)
- BIOS4024 Botany Honours (Part-time)
- BSSM4103 Genetics Honours (Full-time)
- BSSM4109 Genetics Honours (Part-time)
- MICR4013 Microbiology and Immunology Honours (Full-time)
- MICR4023 Microbiology and Immunology Honours (Part-time)
- PSYC4023 Psychology 4 (Thesis) Honours
- PSYC4033 Psychology 4 (Honours)
- BIOS4038 Zoology Honours (Full-time)
- BIOS4034 Zoology Honours (Part-time)

The qualifying program is graded in the usual way, and in appropriate cases the results are expressed as a grading equivalent to Honours.

Alternative Qualifying Program

Applicants who cannot attend the University regularly for the above programs may be admitted as external qualifying students to a program similar to a standard Honours year. The following are the alternative qualifying subjects:

- BIOC6308 Biochemistry
- BIOS9917 Biological Science
- BIOS9943 Botany
- MICR6043 Microbiology
- PSYC6000 Psychology
- BIOS9945 Zoology

The results in alternative qualifying subjects are graded Pass or Fail only.

Fees

Candidates enrolled in the Alternative Qualifying Program are exempt from student service fees.
Graduate Diplomas

The Graduate Diploma is designed as a one year full-time period of study and research. It is intended primarily as an advanced training program for graduates from overseas universities who wish to obtain specialised training in particular areas of biological and behavioural science. The expectation is that for suitably qualified students, the course would allow entrance to a higher degree program (MSc or PhD) provided suitable supervision and facilities were available. The course is also available to graduates of Australian universities who have not done an Honours course and who wish to pursue graduate study in a discipline other than that in which they obtained their first degree.

At the successful conclusion of the course the students would be provided with a Diploma Certificate showing their Higher Degree Qualifying status by the University and a statement of their proficiency from the relevant School.

Entrance for students for whom English is the second language would be dependent on achieving an adequate standard of written and spoken English.

The academic year for the University of New South Wales consists of two sessions, commencing in late February – early March and mid-July, respectively. It is preferred that new students arrive 2-3 weeks prior to the beginning of the Session, so that they can be oriented prior to the commencement of formal teaching.

Brief descriptions of the courses currently offered within the Schools of the Faculty of Biological and Behavioural Sciences and in the Department of Biotechnology follow.

School of Biochemistry and Molecular Genetics

5345
Biochemistry Graduate Diploma Course
Full-time
CP120
Part-time
CP60

Graduate Diploma (by Research)
GradDip

Staff Contact: Dr D Lee

The course is tailored according to the background and requirements of the individual student. In most cases it would include advanced formal undergraduate training, including lectures in general and medical biochemistry, training in the use of modern biochemical techniques, eg scintillation counting, gas liquid chromatography (GLC), high performance liquid chromatography (HPLC), molecular biology, spectrophotometry, nuclear magnetic resonance (NMR) spectroscopy, and animal and plant cell culture. The student would also carry out a research project (or projects) in the laboratory of an academic member of staff and write a report on the project.

The School of Biochemistry has a wide range of interests and can offer research projects in most areas of biochemistry. Specialised areas of research are molecular biology, marine biochemistry, parasite biochemistry and plant biochemistry.
School of Biological Science

5350
Biological Science Graduate Diploma Course
Full-time

Graduate Diploma
GradDip
Full-time
CP120
Part-time
CP60

Staff Contact: School Office

The course is designed to meet the needs and objectives of individual students building on that students' competence and experience. It includes a formal coursework component and a research project which is carried out under the supervision of a member of the academic staff. Students receive advanced formal training to provide them with background information relevant to their research project.

The School has a wide range of interests, and training and research are offered in both plant and animal sciences. Areas of biology in which facilities and appropriate supervision are available include: ecology, taxonomy, environmental physiology, marine and fisheries biology, genetics and evolution, mycology, ultrastructure, comparative physiology, mammalian studies.

School of Microbiology and Immunology

5355
Microbiology and Immunology Graduate Diploma Course
Full-time

CP120
Graduate Diploma
GradDip

Staff Contact: School Office

The structure of the course would be decided after discussions with students, taking into account their particular background, interest and career goals. Usually students would attend one or more of the advanced third year courses in either microbial genetics, environmental microbiology, immunology, medical bacteriology or animal virology. The rest of the year would be spent carrying out a research project supervised by a member of academic staff.

The School of Microbiology and Immunology has a number of research teams working on a range of well funded projects in microbiology, molecular biology and immunology. Specialised areas of research include microbial ecology, molecular genetics, environmental microbiology, marine microbiology; the pathogenesis of intestinal and gastroduodenal infection, the immunology of the intestinal tract, the allergic reaction.
School of Psychology

533
Psychology Graduate Diploma Course
Full-time

CP120
Graduate Diploma
GradDip

Staff Contact: Dr J Cranney
This one year course is adapted to suit the needs and objectives of each student, taking into account the areas of psychology in which they have already demonstrated competence. The expectation is that students who achieve an appropriate standard in the course are then admitted to a higher degree program, provided suitable supervision and facilities are available.

The course comprises formal teaching in an approved set of subjects drawn from the following areas: research methods and statistics, perception, learning, cognitive psychology, psycholinguistics, social psychology, clinical psychology, developmental psychology, personality, physiological psychology, abnormal psychology, and applied psychology. Both lectures and practical work will be given.

Students normally also carry out a research project under the supervision of a member of the academic staff of the School. Active research programs exist in experimental psychology, social psychology, clinical psychology, behavioural neuroscience and industrial/occupational psychology. Particular attention within each of these programs is paid to the interrelationship between scientific theory and the practical application of psychological knowledge.

Department of Biotechnology

5015
Biotechnology Graduate Diploma Course
Full-time or Part-time

Graduate Diploma
GradDip

Staff Contact: School Office
The graduate diploma course provides the opportunity for graduates with no previous tuition in biotechnology to undertake training in this discipline.

A degree in a science-based course is required for admission. If the degree course has not included a biology component, the candidate is required to undertake some basic biology training as a prerequisite or corequisite.

Under normal circumstances, students whose previous training has included a substantial component of biotechnology are not admitted to the course.

The course comprises study of undergraduate and graduate formal subjects, plus extensive laboratory training in biotechnology.

The diploma is awarded after one year's full-time study, consisting of an average of 18 hours per week, or two years part time study, consisting of an average of 9 hours per week. The program includes the listed obligatory subjects plus sufficient of the listed elective subjects to meet the hours of study required. The electives include subjects necessary for students without previous tuition in biochemistry and or microbiology, as well as alternatives for those with previous tuition in these disciplines. The choice of electives in each individual case is subject to approval by the Head of School.
Masters Degrees

Centre for Marine Science

Presiding Member of Management Committee: Professor JH Middleton
Director: Dr PI Dixon

8265
Master of Marine Science Degree Course (MMarSc)
CP120

The Master of Marine Science is a course work degree to be completed in one year of full time study. It is intended primarily as an advanced training program for
• Graduates from overseas universities who require specialised training in marine science but do not wish to undertake a research degree.
• Graduates, especially from overseas universities, who do not meet the requirements for entry to the MSc (Research) degree.
• Australian Science graduates who wish to update their qualifications or obtain a qualification in an area which is different from that of their initial award.

The course is multidisciplinary in approach and includes advanced treatments of all areas of marine science with provision for specialisation. It consists of lectures, tutorials, practical sessions, case history and a supervised project.

The Master of Marine Science degree course is available to graduates in science who have completed a four year degree. Others may be admitted if they have submitted evidence of such academic and/or professional attainment as may be approved by the appropriate Faculty on the recommendation of its Higher Degree Committee. Applicants with other qualifications may be admitted after completion of a qualifying program approved by the appropriate Faculty.

The program shall be of one year duration (full-time) or two years part-time.

The program is as follows:

MSC15001 Marine Environmental Monitoring & Assessment
MSC15002 Management of Marine Resources
MSC15003 Experimental Design & Analysis
MSC15004 Oceanographic Processes
MSC15005 Topics in Marine Science
MSC15006 Graduate Seminars in Marine Science
MSC15007 Marine Science Project
MSC15008 Special topic*

* If a student has previous relevant experience in one of the courses designated, a special topic may be substituted in consultation with the course director.
School of Psychology

*Head of School: Professor KM McConkey*
*Senior Administrative Officer: Mr T Clulow*

The School offers courses leading to the award of the degrees of Master of Psychology (Applied) and Master of Psychology (Clinical).

Master of Psychology (Applied) Degree Course
Full-time or Part-time
Master of Psychology (Applied)
MPsycho1(App)

This course provides graduate training for psychologists who intend to work in industry, commerce, consulting practice, service organisations, trade unions, or the public service. The program focuses on the theories, practice, and research in industrial and organisational psychology and in human factors. It is accredited as fifth and sixth years of study leading to full membership of the Australian Psychological Society and to its College of Organisational Psychologists, and registration as a psychologist in New South Wales.

The normal entrance requirement is completion of an honours Class 1 or Class 2 degree in Psychology from the University of New South Wales or a qualification considered equivalent.

The minimum period of registration before the award of the degree is four sessions for full-time students and six sessions for part-time students. Students with advanced standing may have the minimum period reduced by up to one half of the program i.e. a reduction of one session if a student has completed a PhD in an approved area of Psychology and one session if a student has completed part of the course work program.

The course consists of three components, all of which are compulsory: 1. course work (weekly lectures and seminars with associated written forms of assessment), 2. professional practice (completion of a minimum of 1,000 hours of supervised applied practice in applied field settings, weekly Applied meetings and Career Development Workshops), and 3. a research thesis. The three components total 300 credit points (135 in Stage 1 and 165 in Stage 2).

**Stage 1**
- PSYC7000 Research and Evaluation Methods
- PSYC7001 Psychological Assessment 1
- PSYC7002 Psychological Assessment 2
- PSYC7100 Psychology of Human Resources 1
- PSYC7101 Psychology of Human Resources 2
- PSYC7102 Psychological Principles of Training
- PSYC7115 Vocational Interviewing and Counselling
- PSYC7118 Professional Practice (Applied) 1
- PSYC7119 Professional Practice (Applied) 2

**Stage 2**
- PSYC7004 Professional and Ethical Issues
- PSYC7108 Research Thesis (Applied)*
- PSYC7116 Occupational Health and Stress
- PSYC7117 Advanced Topics in Applied Psychology
- PSYC7120 Professional Practice (Applied) 3
- PSYC7121 Professional Practice (Applied) 4

*Contributes approximately 25 per cent to the overall grading for the degree.

**Notes:** Part-time students normally are expected to take half the full-time program in any one session.
Master of Psychology (Clinical) Degree Course
Full-time or Part-time
Master of Psychology (Clinical)
MPsychol(Clin)

This course provides graduate training for psychologists who intend to work as clinicians in hospitals, community health and other settings where they might be engaged in health promotion and the diagnosis, assessment or treatment of people with a range of psychological problems or disabilities. It is accredited as fifth and sixth years of study leading to full membership of the Australian Psychological Society and to its College of Clinical Psychologists, and registration as a psychologist in New South Wales.

The normal entrance requirement is completion of an honours Class 1 or Class 2 degree in Psychology from the University of New South Wales or a qualification considered equivalent.

The minimum period of registration before the award of the degree is four sessions for full-time students and six sessions for part-time students. Students with advanced standing may have the minimum period reduced by up to one half of the program i.e a reduction of one session if a student has completed a PhD in an approved area of Psychology and one session if a student has completed part of the course work program.

The course consists of three components, all of which are compulsory: 1. course work (weekly lectures and seminars with associated written forms of assessment), 2. professional practice (completion of a minimum of 1,000 hours of supervised clinical practice within the School Clinic and in field clinical settings, weekly Clinical meetings and Skills Training Workshops), and 3. a research thesis. The three components total 330 credit points (165 in Stage 1 and 165 in Stage 2).

It should be noted that the course extends over two calendar years and not just four academic sessions with vacation breaks.

Stage 1
PSYC7000 Research and Evaluation Methods
PSYC7001 Psychological Assessment 1
PSYC7002 Psychological Assessment 2
PSYC7204 Child Clinical Psychology
PSYC7209 Developmental Disabilities
PSYC7210 Human Neuropsychology
PSYC7212 Experimental Clinical Psychology 1
PSYC7213 Experimental Clinical Psychology 2
PSYC7214 Experimental Clinical Psychology 3
PSYC7216 Professional Practice (Clinical) 1
PSYC7217 Professional Practice (Clinical) 2

Stage 2
PSYC7004 Professional and Ethical Issues
PSYC7206 Research Thesis (Clinical)*
PSYC7215 Experimental Clinical Psychology 4
PSYC7218 Professional Practice (Clinical) 3
PSYC7219 Professional Practice (Clinical) 4
PSYC7220 Psychology of Health and Illness

*Contributes approximately 25 per cent to the overall grading for the degree.

Notes: Part-time students normally are expected to take half the full-time program in any one session.
Department of Biotechnology

Biotechnology Degree Course

The Department also offers a formal graduate course at the Masters degree Level (Master of Applied Science in Biotechnology). The course includes advanced treatments of all areas of biotechnology. It is open to graduates with a four-year degree in biotechnology or a related discipline, or who have, in the opinion of the Higher Degree Committee, acquired equivalent qualifications or experience. Intending students are referred to Conditions for the Award of Higher Degrees set out later in this handbook.

The course consists of lectures, tutorials, practical sessions, case history studies and a supervised project. The minimum period of registration before the award of the degree is two sessions for full-time students and four sessions for part-time students.

To qualify for the degree students must satisfy the examiners in the prescribed examinations, which include the submission and assessment of a report on the specified project.

8042

Biotechnology Degree Course

Full-time or Part-time

Master of Applied Science

MAppSc

Facilities are available in each of the schools for research leading to the award of the higher degrees of Master of Science and Doctor of Philosophy.

The following formal courses leading to graduate awards are also offered:

School of Chemistry: Graduate Diploma in Food and Drug Analysis
School of Mathematics: Graduate Diploma in Physical Oceanography
School of Physics: Graduate Diploma in Physics, Graduate Diploma in Physics Research Techniques
School of Chemistry: Master of Chemistry
School of Mathematics: Master of Mathematics, Master of Statistics
School of Optometry: Master of Optometry

For admission to registration for all degrees of Master (except Master of Statistics), candidates must have completed one of the following:

1. An approved degree of Bachelor with Honours;
2. An approved three year course leading to the award of the degree of Bachelor plus an approved qualifying program. Suitable professional and or research experience may be accepted in lieu of the qualifying program
3. An approved four year course leading to the award of the degree of Bachelor.

Applicants for registration for the degree of Master of Statistics shall have been admitted to the degree of Bachelor with major studies in the field of statistics in the University of New South Wales or other approved university.

The manner of presentation and examination of reports of projects undertaken as part of formal courses shall be determined by the Head of the School.

The conditions governing these higher degrees are set out later in this handbook.

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Graduate Diplomas

School of Chemistry

5510
Food and Drug Analysis Graduate Diploma Course
Full-time or Part-time

Diploma in Food and Drug Analysis
DipFDA

Staff Contact: A/Prof P Southwell-Keely

According to demand, the course may be available on a full-time basis over one year or on a part-time basis over two years.

The course in food and drug analysis is designed to provide systematic training at an advanced level for chemists who wish to extend their acquaintance with analytical techniques, and thus is suitable for those who may wish to practice as public analysts. It is also suitable for those who wish to work in the food or pharmaceutical industry. The prime aim is to present discussions of the principles and design of analytical methods which are therefore presented on a comparative basis.

It is considered that the techniques involved in the handling of foods and drugs together with those discussed in the ancillary subjects of the course provide a firm basis of approach to many other fields of chemistry.

Intending students are referred to the conditions for the award of graduate diplomas set out elsewhere in this handbook.
School of Mathematics

5530
Physical Oceanography Graduate Diploma Course
Full-time or Part-time

Graduate Diploma
GradDip

Staff Contact: Dr John Middleton

This graduate diploma is intended to train graduates in the physical sciences or engineering in the basic techniques of physical oceanography.

It is intended to develop student skills in planning and execution of oceanographic experiments, in the theory of oceanographic fluid mechanics, the applications and limitations of oceanographic equipment and of commonly used data analysis techniques.

Recent rapid developments in marine science coupled with the relative scarcity of persons able to take up support positions demonstrate the need for skilled persons who will be able to assist oceanographic research with minimum training. This program is aimed at providing such skilled graduates.

Intending students are referred to the conditions for the award of graduate diplomas set out elsewhere in this handbook. Basic entry qualifications for this program are a degree in Engineering or in Science with major studies in mathematics or physics.

The program, requiring 140 credit points for completion, consists of a major project OCEA5115 worth 72 credit points of the total accreditation for the program, the remaining 68 being comprised as indicated below.

1. Compulsory Subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>CP</th>
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<tbody>
<tr>
<td>OCEA5115</td>
<td>72</td>
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<tr>
<td>OCEA5125</td>
<td>15</td>
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<tr>
<td>OCEA5135</td>
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<td>OCEA5145</td>
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2. Elective Subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>CP</th>
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<tbody>
<tr>
<td>GEOG9290 Image Analysis in Remote Sensing</td>
<td>12</td>
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<tr>
<td>GMAT9606 Microwave Remote Sensing</td>
<td>12</td>
</tr>
<tr>
<td>CIVL9835 Coastal Engineering</td>
<td>12</td>
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<tr>
<td>CIVL9836 Coastal Engineering</td>
<td>12</td>
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<tr>
<td>CIVL9863 Estuarine Hydraulics</td>
<td>12</td>
</tr>
<tr>
<td>GEOG9150 Remote Sensing Applications</td>
<td>12</td>
</tr>
<tr>
<td>OCEA5155 Theoretical Project</td>
<td>32</td>
</tr>
<tr>
<td>MATH5285 Ocean Modelling</td>
<td>15</td>
</tr>
</tbody>
</table>

Appropriate existing subjects within mathematics, physics or engineering chosen on the basis of individual background

The course may be taken over one year full-time or two years part time. The total number of Postgraduate Assessable Hours (PAH) is estimated to be 840 hours.
School of Physics

5515
Physics Graduate Diploma Course
Full-time or Part-time

Graduate Diploma in Physics
GradDipPhys

Staff Contact: A/Prof RJ Stening

The Graduate Diploma in Physics offers an advanced training program for graduates from overseas universities who wish to obtain specialized training in physics. The course is also available to graduates from Australian universities who have not done an Honours course and who wish to pursue postgraduate study in physics. Students qualified to enrol in the Honours course would be expected to do so rather than to enrol in the GradDipPhys. For suitably qualified students the expectation is that the course would allow entrance to a higher degree program provided suitable supervision and facilities were available.

The GradDipPhys will be offered with course work and research project requirement similar to Physics Level IV, with substitutions if required to be approved by the School Postgraduate Committee. The course involves two sessions full-time study or four sessions part-time study comprising a total of at least 140 hours of lectures, plus a single research project over the period of study or two different research projects, one in each half of the period of study. The total number of Postgraduate Assessable Hours (PAH) is estimated to be 840 hours. All students normally take courses in quantum mechanics, statistical mechanics and solid state physics. Other lecture courses and the research projects are offered in general areas of physics including astrophysics, biophysics, condensed matter physics and theoretical physics.

5516
Physics Research Techniques Graduate Diploma Course
Full-time or Part-time

Graduate Diploma in Physics
GradDipPhysResTech

Staff Contact: A/Prof RJ Stening

The Graduate Diploma in Physics Research Techniques offers an advanced training program for graduates from overseas universities who wish to obtain specialized training in research techniques in physics. The Diploma would not normally provide sufficient qualification for direct entry to a higher degree program but could do so if a special choice of study were chosen by a suitably qualified student. The course involves two sessions full-time study or four sessions part-time study comprising (for full-time enrolment) approximately 14 class contact hours per week at Level III/IV, averaged over two sessions, plus a research project and a literature review. The total number of Postgraduate Assessable Hours (PAH) is estimated to be 840 hours. All students normally take courses in quantum mechanics, statistical mechanics and solid state physics. Other lecture courses and the research projects are offered in general areas of physics including astrophysics, biophysics, condensed matter physics and theoretical physics.

Centre for Advanced Numerical Computation in Engineering and Science

Director: Professor CAJ Fletcher

The Centre for Advanced Numerical Computation in Engineering and Science is a joint initiative of the Faculties of Engineering and Science to provide a focus for the very active UNSW community of computational engineers and scientists exploiting state-of-the-art workstation clusters, vector and parallel supercomputers. The Centre contributes to graduate training through coursework and research programs, carries out both fundamental and applied research through developing and using computer codes, provides short courses for industry-based engineers and scientists and organises conferences and workshops on the
latest computational techniques. The Centre has three areas of special emphasis: a) Industrial Computational Fluids and Heat Transfer, b) Environmental Modelling, c) Finite Element Structural Analysis.

1. Core Subjects (12 credit)  CP
ANCE8001 Computational Mathematics  12
ANCE8002 Supercomputing Techniques  12
ANCE8003 Project (M Computational Sc Degree)

2. Generic Computational Subjects (12 credit)
ANCE8011 Data Analysis and Visualization  12
ANCE8012 Mesh Generation  12
ANCE8013 Fundamental Applied Computation  12
ANCE8014 Advanced Computational Algorithms  12
ANCE9015 Computational Techniques for Fluid Dynamics  12
ANCE8027 Advanced Computational Science  12
ANCE8028 Physics and Modelling of the Atmospheric Boundary Layer  12
MATH5435 Applied Algebraic Computation  12

Detailed course information is given under Computational Science.

* UNSW offers qualifications in both Computer Science and Computational Science. Computer Science provides broad training in computing, normally leading to careers in all areas of the computer industry. Computational Science provides training in computational simulation of complex scientific and engineering phenomena and lead to engineering or science based careers in industry, universities or government institutions such as CSIRO.

5535 Graduate Diploma in Computational Science

Staff Contact: Prof CAJ Fletcher

The graduate diploma will provide thorough training in modern computational techniques in the discipline-specific areas: A) Environmental Modelling; B) Computational Chemistry; C) Computational Physics, through coursework.

Admission to the Graduate Diploma program requires the student to have at least a pass degree in Science, Engineering or other mathematically-based discipline. The Graduate Diploma program can be completed in one year of full-time study.

Students are required to complete, satisfactorily, 96 credit points, as follows:
I) The two core subjects (ANCE8001, ANCE8002, above)
II) One generic computational subject (above)
III) Three discipline-specific subjects offered by the Centre or the Faculty of Science.
IV) Two elective subjects offered by the Centre or the Faculties of Science and Engineering.

Candidates may apply to upgrade to the Masters program after completing not less than 36 credits. Entry will be competitive and based on the student's record. Transfer of credit is based on the particular circumstances of the case. One credit equals one hour per week of classes for a 14 week session.
School of Chemistry

Head of School: Professor MN Paddon-Row
Director of Graduate Studies: A/Prof M Guilhaus (contactable via Chemistry Academic Office)

The School of Chemistry offers a Master of Chemistry degree course in Food and Drug Chemistry which is suitable for students wishing to obtain advanced specialised knowledge in these topics. The normal entry qualification is a good Honours degree or equivalent qualification, or lesser qualification together with significant scientific experience. Other candidates may be required to undertake a qualifying programme.

8770
Master of Chemistry (Food and Drug Chemistry)

This course involves an advanced study of the chemistry, stability, mode of action where applicable, and analysis of food constituents, food additives, and selected drugs. The program may be taken either full-time or part-time. In addition to formal, examinable lecture courses and laboratory instruction, the program involves a short research project supervised by a member of the academic staff. Entry into this program is excluded in the case of applicants who have completed the Graduate Diploma in Food and Drug Analysis (Course 5510).

Lecture/Laboratory Courses
1. Food and Drugs 1
2. Treatment of Analytical Data
3. Instrumental Techniques in Food and Drug Analysis
4. Food and Drugs 2
5. Toxicology, Occupational and Public Health
6. Introductory Microbiology or Project Work in Food and Drug Chemistry

The lecture time for the whole course is 160 hours. An additional 392 hours is spent by students in formal laboratory work.

Research project

A short research project undertaken over approximately 4 months full-time (400 hours laboratory work) is selected in relation to the combined interests of the student and the supervisor.

School of Mathematics

Head of School: Professor CE Sutherland
Director of Graduate Studies: Dr PJ Blennerhassett

The School offers graduate courses leading to the award of the degrees of Master of Mathematics (MMath) and Master of Statistics (MStats).

8740
Master of Mathematics Degree Course
Full-time or Part-time

Master of Mathematics
MMath

The Master of Mathematics degree course is intended for suitably qualified graduates in applied mathematics, pure mathematics or statistics, but others may be admitted after completing a qualifying course. The course may be completed in one year of full-time or two years of part-time study. The course may be taken as a preliminary step towards the award of a PhD in mathematics. It also provides advanced training for persons specialising in the
teaching of mathematics in tertiary institutions. In addition an appropriate program may provide training for those employed or seeking employment in the area of industrial mathematics.

The program consists of seven approved lecture courses, the duration of each being two hours per week for one session. With the approval of the Head of the School of Mathematics a student may substitute for one or more of these lecture courses a reading course supervised by a member of staff. Again with this approval a student may substitute for at most three of these courses graduate courses offered in a relevant discipline outside the School of Mathematics. Students are also required to participate in relevant departmental seminars. In addition, students are required to undertake a project supervised by a staff member. The project consists of either a critical review of the literature in a specific field of mathematics, or a short research project. It is anticipated that students spend three hours per week for two sessions on their project. Each candidate’s proposed program of study requires the approval of the Head of the School of Mathematics.

The conditions for the award of the degree are set out elsewhere in this handbook.

8750
Master of Statistics Degree Course
Full-time or Part-time

Master of Statistics
MStats

The Master of Statistics Course covers a wide range of statistical theory and practice and provides advanced training for practising statisticians. The course may be completed in two years of full-time or four years of part-time study, and it is available to graduates with a pass degree in statistics or an honours degree in a related field (commonly mathematics) with supporting studies in statistics. Honours graduates in statistics may be exempted from a maximum of half the course. The conditions for the award of the degree are set out elsewhere in this handbook.

The academic requirement for the degree is 240 Credit Points. Unless otherwise noted, all subjects listed below are 12 Credit Points each, while subjects offered by other schools vary in value.

Each candidate’s program of study must be approved by the Head of the School.

Compulsory Subjects (offered every year)

- MATH5815 Experimental Design 1
- MATH5835 Stochastic Processes
- MATH5855 Multivariate Analysis 1
- MATH5905 Statistical Inference
- MATH5925 Project (60 Credit Points)
- MATH5935 Statistical Consulting (24 Credit Points)

Elective Subjects (offered every second year)

- MATH5816 Applied Regression Analysis
- MATH5825 Experimental Design 2 (Prerequisite: MATH5815)
- MATH5845 Time Series
- MATH5865 Multivariate Analysis 2
- MATH5875 Sample Survey Design
- MATH5885 Sequential Analysis
- MATH5895 Nonparametric Methods
- MATH5915 Medical Statistics
- MATH5945 Categorical Data Analysis
- MATH5955 Statistical Quality Control
- MATH5965 Mathematics of Security Markets 1
- MATH5975 Economic Quality Control Models (Prerequisite: MATH5955)
- MATH5985 Industrial Designs (Prerequisite: MATH5815)
Up to 60 Credit Points may be taken in graduate subjects offered by other Departments or Schools within the University, subject to the approval of the Head of School. Such subjects include:

CIVL9403  Theory of Land Use/Transport Interaction
CIVL9405  Urban Transport Planning Practice
CIVL9417  Transport and Traffic Flow Theory
CMED8201  Population Genetics
CMED8202  Human Genetic Analysis
ECON3204  Econometric Model Building
MATH3161  Optimization Methods
MATH3181  Optimal Control
MNGT0331  Business Forecasting
MNGT0334  Total Quality Management
MNGT0336  Applications of Statistics in Finance and Accounting

School of Optometry

Head of School: Associate Professor DJ O'Leary

The course consists of any 4 subjects selected from the 13 electives offered. The subjects are generally independent and any 4 of them are suitable for a student seeking advanced professional training. However, before undertaking an overseas placement in OPTM8001 Advanced Clinical Optometry, students are required to have taken OPTM8009 Ocular Therapy. The course may be completed in one year of full-time study, or (to meet the needs of practising optometrists) in two or three years of part-time study. The course provides advanced training in clinical and theoretical aspects of optometry, with opportunities for specialisation in fields such as contact lenses, occupational optometry, and behavioural optometry. Conditions for admission and for the award of the degree of Master of Optometry are set out in this handbook.

8760

Master of Optometry Degree Course

Full-time or Part-time

Master of Optometry

MOptom

Four elective graduate subjects chosen from the list below

OPTM8001  Advanced Clinical Optometry
OPTM8002  Advanced Physiological Optics (Not offered in 1997)
OPTM8003  Behavioural Optometry
OPTM8004  Advanced Contact Lens Studies
OPTM8005  Advanced Contact Lens Practice (Not offered in 1997)
OPTM8006  Occupational Optometry (Not offered in 1997)
OPTM8007  Clinical Photography (Not offered in 1997)
OPTM8008  Project
OPTM8009  Ocular Therapy (Not offered in 1997)
OPTM8010  Public Health Optometry (Not offered in 1997)
OPTM8011  Advanced Studies in Ocular Disease (Not offered in 1997)
OPTM8012  Visual Neuroscience
OPTM8014  Human Visual Development (0.5 unit subject) (Not offered in 1997)
Centre for Advanced Numerical Computation in Engineering and Science

8790
Master of Computational Science

*Staff Contact: Prof CAJ Fletcher*

The Master of Computational Science degree will provide thorough training in modern computational techniques in the discipline-specific areas: A) Environmental Modelling; B) Computational Chemistry; C) Computational Physics, through coursework and a focussed project in your major field.

Admission to the Masters program requires the equivalent of a 4-year degree in Science, Engineering or other mathematically-based discipline at a satisfactory level. Candidates must have adequate higher-level language (preferably Fortran) programming skills. The Masters program can be completed in one year of full-time study.

Students are required to complete, satisfactorily, 120 credits, as follows:

I) The two core subjects (ANCE8001, ANCE8002, see Grad Dip)

II) One generic computational subject (see Grad Dip)

III) Two discipline-specific subjects offered by the Centre or the Faculties of Science and Engineering.

IV) One elective subject offered by the Centre or the Faculties of Science and Engineering.

V) Forty eight credit project supervised by academic members of the Centre and/or the Faculty of Science.
Subject Descriptions

Graduate Study

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

Anatomy

ANAT5151
Introductory Functional Anatomy
Staff Contact: Head of School

Overview of basic human anatomy and physiology with an emphasis on structures and systems which are most vulnerable to chemical and physical trauma under industrial conditions, such as the eye, ear and skin. Other systems studied include the musculo-skeletal system, central and peripheral nervous systems, circulatory, respiratory, gastrointestinal, endocrine and urogenital systems.

Biochemistry

BIOC6308
Alternative Higher Degree Qualifying Program
Staff Contact: Prof I Dawes
CP 120

Similar in content and standard to BIOC4318 Biochemistry Honours but designed specifically for students who cannot regularly attend the University.

Biological Science

BIOS3014
Ecological Studies In Arid Lands Management
Staff Contact: Dr D Croll
CP 15 S2 L2 T4

Techniques in ecological studies of animal communities. Adaptations to an arid environment, environmental and social determinants. Behaviour, diet and condition of native and feral animals. Competition between native and introduced herbivores. Strategies in the management of arid zone wildlife. Concurrent studies in relevant units in the School of Biological Science are prescribed to cover aspects of vegetation description and plant environment interactions.

BIOS9917
Alternative Higher Degree Qualifying Program
Staff Contact: A/Prof P Greenaway
Full-time CP 120
Part-time CP 60

Similar in content and standard to BIOS4018 Biological Science Honours but designed specifically for students who cannot regularly attend the University.

BIOS9943
Alternative Higher Degree Qualifying Program
Staff Contact: A/Prof P Greenaway
Full-time CP 120
Part-time CP 60

Similar in content and standard to BIOS4028 Botany Honours but designed specifically for students who cannot regularly attend the University.

BIOS9945
Alternative Higher Degree Qualifying Program
Staff Contact: A/Prof P Greenaway
Full-time CP 120
Part-time CP 60

Similar in content and standard to BIOS4038 Zoology Honours but designed specifically for students who cannot regularly attend the University.
Biomedical Engineering

BIOM9012
Biomedical Statistics
Staff Contact: Dr R Odell
CP16 S2 L3 T1

Biotechnology

BIOT3011
Biotechnology A
Staff Contact: Dr D Glenn
CP15 S1 L3 T3
Prerequisite: BIOC2101 and BIOC2201
The basic principles involved in the operation of microbial processes on an industrial scale. Includes: the selection, maintenance and improvement of microorganisms; the influence of physical and chemical factors on the microbial environment; the control of environmental factors; the effects of operational patterns on batch and continuous flow cultivation; aeration and agitation; scale-up of microbial processes; air and media sterilization; the harvesting, purification and standardization of products; the principles involved in microbial processes for chemical, pharmaceutical and food production, microbial waste treatment and environmental control. The laboratory component includes manipulation of microorganisms, laboratory-scale fermenter operation, microbial enzyme isolation, visits to industrial fermentation plants and industrial seminars.

BIOT3021
Biotechnology B
Staff Contact: Prof P Rogers
CP15 S2 L2 T4
Prerequisite: BIOT3011
Application of principles of biotechnology to the analysis and design of microbial processes of industrial relevance (antibiotics, microbial enzymes, single cell protein from carbohydrates and hydrocarbons, fermented foods and beverages, amino acids and vitamins, microbial polysaccharides, activated sludge and photosynthetic processes for waste treatment, microbial leaching of lowgrade minerals). Emphasis on quantitative approach: mass and heat balance calculations, kinetic and thermodynamic analysis, detailed equipment design and specification, process design and layout, process simulation, plant location, application of optimization techniques. The economics of microbial processes are considered and comparison made with alternative modes of production or treatment. The economics of agroindustry in Australia using microbial processes. Marketing of fermentation products, clinical trials required, legal constraints, patent rights. Technical and economic feasibility studies, and a design project.

BIOT3031
Microbial Genetics
Staff Contact: Dr D Glenn, Dr F Foong
CP15 S1 L2 T4
Prerequisites: BIOT3011, BIOS2011, BIOS2021, BIOC2101, BIOC2201 and MIRC3021
Note/s: Excluded MIRC3021.
This unit is suitable for students majoring in Microbiology, Biochemistry, Biotechnology or Genetics. It deals with major aspects of the genetics of bacteriophage, bacteria and yeast. Topics include plasmids and transposable genetic elements, gene transfer, mutagenesis and DNA repair, mutants, bacteriophage genetics, gene cloning (vectors, recombinant DNA techniques) and genetics of nitrogen fixation.

BIOT3061
Monoclonal Antibody and Genetic Techniques in Biotechnology
Staff Contact: Dr S Mahler
CP15 S2 L2 T4
Prerequisite: BIOC2101 and BIOC2201
Recent developments in biotechnology have resulted in techniques which are widely applied in industrial, clinical, veterinary, agricultural and research laboratories. Many of these techniques have resulted from the development of monoclonal antibodies and the development of gene probes. The course includes: antibody structure; production of monoclonal antibodies, cell fusion, hybridoma selection, culture techniques, purification; analytical techniques employing monoclonal antibodies (RIA, ELISA); therapeutic application of antibodies, immunotoxins; gene probes; restriction fragment length polymorphisms (RFLP); gene probes for disease detection, identification of bacteria and viruses; forensic application of DNA fingerprinting. Tutorial and practical work to complement the lectures.

BIOT5013
Practical Biotechnology
Staff Contact: Prof P Rogers
CP30 F T6
Illustration, demonstration and operation of laboratory-scale and pilot-scale equipment. Visits to appropriate industries. Experimental project or critical review.

BIOT7051
Applied Genetics
Staff Contact: Dr D Glenn
CP20 S2 L2 T3
Isolation of commercially useful microorganisms. Mutagenesis and the isolation of mutants of the following types: auxotrophs; catabolic mutants; feedback inhibition and repression resistance; constitutive; catabolite repression resistance; resistance to antimicrobial agents and to viruses; extended enzyme substrate specificity; altered enzyme properties; changes in promoter and attenuator activity.

Techniques of genetic exchange: transformation; conjugation; transduction; cell fusion; sexual and parasexual cycles. The use of these techniques in strain construction.

BIOT7061 Peptide and Protein Technology

Staff Contact: Dr F Foong
CP20 S1 L2 T3

Industrial scale production of enzymes, peptide hormones, antibodies including monoclonal antibodies, vaccines; regulation of synthesis by environmental control and genetic manipulation; recovery and down-stream processing techniques; immobilization by entrapment and binding.

Applications of proteins in medical therapy and diagnosis and as analytical tools including ELISA and affinity chromatography: applications of enzymes in the food and beverage industries.

BIOT7071 Biochemical Engineering

Staff Contact: Prof P Gray
S2 L2 T3

Design of bioreactors; range of biocatalysts from free enzymes to immobilized cells; heat and mass transfer, scale-up, economic feasibility studies as applied to bioprocesses; design of equipment and facilities for sterile operation and to meet recDNA guidelines; downstream processing, design and operation; instrumentation and control; use of computer-linked systems; mathematical simulation.


BIOT7081 Environmental Biotechnology

Staff Contact: Department Office
CP20 S2 L2 T3

Environmental Biotechnology examines the way microbes decompose chemically complex materials. Applications include the use of bacteria and fungi to detoxify wastes, converting them to usable substances. Prevention of biodeterioration of valuable materials is also an important area of study. Lectures cover biodegradation of minerals, metals, cellulosics, aromatics, hydrocarbons and waste-water treatment. Students present research reviews and conduct experimental projects.

BIOT7091 Applied Cellular Physiology

Staff Contact: Dr F Foong
CP20 S2 L2 T3

Elemental and molecular composition of cells; formulation of growth media; stoichiometry of growth processes and product formation; metabolic regulation; stringent response; mechanisms of metabolite uptake and product release; maintenance energy; thermodynamics of cellular growth and activities. Effect of mutation on cellular physiology; recombinant-DNA products. Fermentation processes: inoculum preparation, physiology of selected processes.

BIOT7100 Biological Principles

Staff Contact: Department Office
CP12 S1 L3


BIOT7110 Bioengineering Principles

Staff Contact: Prof P Rogers
CP12 S1 L3

A subject designed to provide an introductory course for students in the MAppSc Biotech program who have not previously undertaken any bioengineering studies.

Steady state and differential balances as a basis for quantification of complex real systems. Concepts in rate processes and kinetic analysis with application to biological systems. Experimental determination of rate data. Correlation of simple lumped rate processes and simultaneous distributed processes and the concepts involved in dimensionless numbers.

Lamina and turbulent flow. The structure of homogeneous and boundary layer turbulence flow in pipes and channels. Mixing theory. Process vessel reactor models.

Fluid viscosity, Newtonian and non-Newtonian fluids, convective and molecular transport processes. Heat and mass transport, film coefficients. Film, boundary layer, penetration and surface renewal theories.

Quantification of complex systems. Empirical and mechanistic models in biological systems.

BIOT7123 Biotechnology Project Minor

Staff Contact: Department Office
CP32 F T4

A small experimental or design project, or an extensive literature review and analysis of a selected topic in biotechnology.
BIOT8010
Graduate Seminars
Staff Contact: Department Office
CP8 F T2

Chemistry

Student enquiries should initially be directed to the Course Coordinator A/Prof P Southwell-Keely.

CHEM7115
Treatment of Analytical Data
F L1
Errors of measurement, the treatment, interpretation and comparison of sets of measurements, associated data and problems involving analysis of variance. Topics: description of sets of measurements, tests of significance, associated data, linear regression analysis; analysis of variance; biological assays, bacteriological counts, sampling problems.

CHEM7125
Food and Drugs 1
S1 L3 T3
This unit covers the basic chemistry of food constituents and the appropriate methods of analysis of food constituents. Materials covered include monosaccharides, oligosaccharides, polysaccharides, food gums, proteins and enzymes, oils and fats, vitamins, plant pigments and food colouring matter, essential oils and food flavouring agents, preservatives and food additives.

CHEM7225
Food and Drugs 2
F L1 T3
This unit is concerned with the chemistry and analysis of common drugs such as antibiotics, sulphonamides, analgesics, barbiturates etc. Special techniques in drug analysis are studied, e.g. affinity chromatography, immunofinity chromatography, immunoassays, radioimmunoassays, ELISA, HPLC using special phases, chiral columns, ISRP columns, hypercarb columns; capillary gas chromatography, flash chromatography. Further work on the chemistry and analysis of preservatives.

CHEM7325
Toxicology, Occupational and Public Health
F L1 T3
Important classes of toxic materials found in the environment; treatment of pesticide residues, industrial chemicals of various types, toxic gases, mould metabolites and bacterial toxins occurring in food, carcinogenic substances, toxic metals etc. Effects of these substances on living organisms, particularly people. Practical work: pesticide residue analysis, blood and urine analysis, gas sampling and analysis, trace metal determination and experiments on the animal metabolism of toxic substances.

CHEM7425
Instrumental Techniques in Food and Drug Analysis
S2 L2 T4
Principles involved in modern instrumental techniques; detailed application and interpretation of results. UV-visible spectroscopy, Raman, IR and NIR spectroscopy; phosphorescence and fluorescence methods, mass spectroscopy, high and low resolution NMR spectroscopy. Qualitative and quantitative application of instrumental analysis to foods and drugs.

CHEM7555
Project Work in Food and Drug Chemistry
Short laboratory projects and/or literature assignments in selected topics of Food, Drug and Biological Chemistry, including laboratory synthesis of drugs, analysis of drug mixtures, stability of drugs, synthesis and characterization of food additives, analysis of natural and synthetic food flavours etc. Computerized methods of searching the chemical literature, use of computer graphics to study molecular properties.

CHEM8101
Computational Chemistry
C3 SS HPW3
Contents to be advised

Computational Science

ANCE8001
Computational Mathematics
Staff Contact: CANCES
CP12 S1 HPW3
Discretization, linear algebra, ODE and PDE solvers, appropriate for contemporary computational engineering and scientific applications.

ANCE8002
Supercomputing Techniques
Staff Contact: CANCES
CP12 S1 HPW3
For understanding and efficiently using vector and parallel supercomputers for contemporary computational engineering and scientific applications.

ANCE8003
Project (MComputationalSc Degree)
Staff Contact: CANCES
CP48
Case study experience to give the student practice in applying the techniques learnt in specific subjects towards solving or computationally analyzing practical problems.

ANCE8101
Data Analysis and Visualization
CP12 SS HPW3
Statistical data analysis, error assessment, spectral analysis and data filtering, recent development in data analysis techniques, data storage, organisation of technical data and data formats, graphic analysis of real data sets, graphic packages for data visualisation.
ANCE8102
Mesh Generation
Staff Contact: CANCES
CP12 SS HPW3
Algebraic and PDE grid generation techniques for structured and unstructured grids. Exposure to techniques used in commercial packages, such as PATRAN. Relationship to pre-processing. Relationship to solution accuracy and error control.

ANCE8103
Fundamental Applied Computation
Staff Contact: CANCES
CP12 SS HPW3
Basic computational skills for candidates with limited previous training, structured to provide an appropriate foundation for the core subjects. This subject is equivalent to the FACEd program (self-contained computer-based learning modules for industry-based engineers and scientists).

ANCE8104
Advanced Computational Algorithms
Staff Contact: CANCES
CP12 SS HPW3
This is a specialized advanced subject to cover: i) special algorithms for vector supercomputing; ii) special algorithms for parallel supercomputing; iii) special computational algorithms taught by visitors or UNSW staff.

ANCE9105
Computational Techniques for Fluid Dynamics
Staff Contact: CANCES
CP12 SS HPW3
General and specific computational techniques for fluid flow behaviour occurring in industrial, geophysical and chemical processes etc.

ANCE8207
Advanced Computational Science
Staff Contact: CANCES
CP12 SS HPW3
Special topics taught by visitors or UNSW staff.

ANCE8208
Physics and Modelling of the Atmospheric Boundary Layer
CP12 SS HPW3
Theory of boundary layer flows; numerical modelling of turbulence and flow over complex terrain; boundary layer parameterisation; dispersion of pollutants and particulates.

MSCI5001
Marine Environmental Monitoring and Assessment
Staff Contact: Director, Centre for Marine Science
CP12
This unit is designed to give each student an understanding of the various techniques used in monitoring a coastal environment. Physical, chemical, biological and geological methods are applied in a field situation. Field work is involved.

MSCI5002
Management of Marine Resources
Staff Contact: Director, Centre for Marine Science
CP6
This unit covers issues concerning exploitation of renewable and non-renewable marine resources viewed from both economic and non-economic frameworks. The management of marine resources with emphasis on fisheries and minerals is the central theme of the unit.

MSCI5003
Experimental Design and Analysis
Staff Contact: Director, Centre for Marine Science
CP6
Applications of statistics to marine science data. Probability, estimation statistics and tests of hypotheses. Experimental design, ANOVA, linear and multiple regression, multivariate analysis, non-parametric methods. Emphasis is placed on the applications of computer software packages.

MSCI5004
Oceanographic Processes
Staff Contact: Director, Centre for Marine Science
CP12
The physical, biological and geological processes of the marine environment; the dynamics of ocean currents including surface waves, geostrophy, tides, upwelling, subduction, basin scale gyres, El Nino: biological processes including primary formation of particulate matter, secondary production, biological cycles; geological processes.

MSCI5005
Topics in Marine Science
Staff Contact: Director, Centre for Marine Science
CP48
Students choose 4 topics (each 4 hours per week for one session) from those listed below to make up the required contact hours per week. The topics chosen must be approved by the course co-ordinator: marine biology, aquaculture, zooplankton, marine botany, fisheries, coastal ecology, marine pollution, environmental microbiology, fluid dynamics, estuarine hydraulics, dispersion processes, instrumentation, coastal engineering, remote sensing, atmosphere-ocean dynamics, marine geology, coastal environmental assessment, aquatic chemistry, computers in chemistry, spectroscopic analysis, environmental chemistry, modern developments in chemical synthesis.
MSCI5006
Graduate Seminars in Marine Science
Staff Contact: Director, Centre for Marine Science
CP12
A series of seminars of particular relevance to the practice of marine science. Includes both specialist topics in the disciplines that contribute to the marine sciences and detailed study and evaluation of case studies and contemporary issues in marine science.

MSCI5007
Marine Science Project
Staff Contact: Director, Centre for Marine Science
CP24
A study of an aspect of marine science and submission of a project report. The project may be either experimental or theoretical in approach.

MSCI5008
Special Topic
Staff Contact: Director, Centre for Marine Science
CP12
A special reading program and seminar course to cover perceived areas of special need. This subject is designed to meet the particular needs of individual students.

Mathematics

Mathematics graduate subjects are not offered every year. Contact the School of Mathematics Office to see which subjects are offered in any particular year.

MATH5105
Numerical Analysis of Differential Equations
Staff Contact: School of Mathematics Office
CP12

MATH5110
Advanced Numerical Analysis
Staff Contact: School of Mathematics Office
CP12
Development and analysis of numerical methods for the computational solution of mathematical problems.

MATH5115
Topics in Numerical Analysis
Staff Contact: School of Mathematics Office
CP12
A selection of topics from: finite element methods, boundary element methods, approximation theory, integral equations and iterative techniques for matrix problems.

MATH5130
Advanced Mathematical Methods
Staff Contact: School of Mathematics Office
CP12
Fundamental methods for solution of problems in applied mathematics, physics and engineering.

MATH5155
Discrete Optimization
Staff Contact: School of Mathematics Office
CP12
Analysis, solution and application of optimization problems where the variables change discretely. Topics selected from: integer programming, network flows, scheduling problems, complexity theory, matroid theory, polyhedral combinations, and other areas of operations research.

MATH5165
Continuous Optimization
Staff Contact: School of Mathematics Office
CP12
Analysis, solution and application of optimization problems where the variables change continuously. Topics selected from: nonlinear programming, convex optimization, nonsmooth analysis and optimization, variational inequalities and complementarity problems, infinite dimensional optimization, stochastic optimization, and numerical optimization.

MATH5170
Advanced Optimization
Staff Contact: School of Mathematics Office
CP12
Development, analysis and application of methods for optimization problems.

MATH5175
Topics in Optimization and Optimal Control
Staff Contact: School of Mathematics Office
CP12
Special topics in the analysis, solution and application of optimization and optimal control problems.

MATH5185
Topics in Modern Applied Mathematics A
Staff Contact: School of Mathematics Office
CP12
A selection of topics from optimization, optimal control and numerical analysis not offered in other graduate subjects.

MATH5205
Nonlinear Analysis
Staff Contact: School of Mathematics Office
CP12
The mathematical theory of nonlinear differential equations, whose behaviours may range from coherence to chaos. Major topics include soliton theory covering integrable partial differential equations and their method of solution using the inverse scattering method, asymptotic methods for nonlinear differential equations covering global techniques and singularity analysis, and functional and complex analytic methods of proving qualitative results for equations of physical interest.
MATH5215
Topics in Dynamics
Staff Contact: School of Mathematics Office
CP12
A selection of topics from: bifurcation theory, Hamiltonian systems, perturbation methods, the theory of solitons and chaotic systems.

MATH5245
Topics in Fluid Mechanics
Staff Contact: School of Mathematics Office
CP12
A selection of topics from: boundary layer theory, turbulent flows, stability theory, waves, viscous flows and computational techniques.

MATH5250
Advanced Fluid Dynamics
Staff Contact: School of Mathematics Office
CP12
The mathematical modelling and theory of problems arising in the flow of fluids.

MATH5255
Waves
Staff Contact: School of Mathematics Office
CP12
Hyperbolic waves, the first-order wave equation, Burgers equation, hyperbolic systems, gas dynamics and the wave equation. Dispersive waves, linear dispersive waves, wave patterns, linear and nonlinear theories of water waves, modulated waves including the weakly nonlinear theory, stability and wave resonances.

MATH5265
Atmosphere-Ocean Dynamics
Staff Contact: School of Mathematics Office
CP12
The dynamics of large scale atmospheric and ocean circulation. Key concepts include geostrophy, potential vorticity, available potential energy and Ekman boundary layers and transport. Quasi-geostrophic models, eddies in the atmosphere and oceans and their role in the transport of heat and momentum and energy exchange. Windforced models for ocean gyres and the atmospheric circulation forced by meridional heating (including Hadley Cells). Additional topics may include tropical circulation and El Nino, air-sea exchange, climate change and the Greenhouse effect.

MATH5275
Topics in Modern Applied Mathematics B
Staff Contact: School of Mathematics Office
CP12
A selection of topics from dynamics, fluid mechanics and oceanography not offered in other graduate subjects.

MATH5285
Ocean Modelling
Staff Contact: School of Mathematics Office
CP12
Analytical and numerical modelling of ocean dynamics, and their interpretation. The course examines aspects of modelling of oceanic circulation using analytical and numerical modeling techniques. Theoretical analyses of the primitive equations will be used to identify individual physical processes such as surface Ekman layers, stratified flow over topography and wind-forced coastal currents under idealised conditions. A general numerical ocean model will be used to illustrate these results by comparison with the idealised analytical work, and by extension to more complex cases. Theoretical and practical aspects of model implementation will be considered including numerical stability, open boundary conditions, surface and convective mixed layer algorithms, as well as interpretation in the light of observations.

MATH5295
Atmospheric Modelling
Staff Contact: School of Mathematics Office
CP12
Atmospheric dynamics and their simulation using numerical models. This course combines atmospheric dynamics and numerical modelling. It covers the following topics: derivation and interpretation of the equations governing the motion of the earth's atmosphere from the surface to just above the stratopause, the important types of wave motions supported by the governing equations, the use of scaling analysis to develop several distinct kinds of atmospheric models and the application of a range of numerical techniques to solving the equations governing these models. The last section will form the major part of the course, and will examine the various numerical algorithms in terms of accuracy, stability, consistency and efficiency. The choice of lateral boundary conditions also will be discussed in detail. During the course, computer laboratory sessions will be held and course participants will put together a working numerical model of their choice, from one of those introduced in the course. This model will be 'realistic' in the sense that it will produce 24 hour predictions of the state of the atmosphere using real (observed) data as initial and boundary conditions.

MATH5305
Computational Techniques
Staff Contact: School of Mathematics Office
CP12
Topics covered are chosen from the following: stability of timestepping schemes, iterative methods for elliptic equations, including multigrid techniques, special treatment of nonlinear terms and outflow/radiation conditions. The emphasis is on finite differences, and the course involves a computer project.

MATH5315
Topics in Mathematical Computing
Staff Contact: School of Mathematics Office
CP12
The design and implementation of accurate and efficient numerical methods, typically as programs in Fortran or C. Topics could include the use of advanced computer architectures such as vector and parallel processors.
Pure Mathematics

MATH5405  
Automata and Formal Languages  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: finite automata and regular languages, pushdown automata and contextfree languages, Turing machines and phase structure languages, computational complexity, $LL(k)$ and $LR(k)$ grammars.

MATH5415  
Information and Coding  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: error detecting and correcting codes, information and entropy, coding ergodic Markov processes, Shannon's Source Coding and Channel Coding theorems, perfect codes, Hamming codes, algebraic (B.C.H. and quadratic residue) codes, associated combinatorial structures, ciphers.

MATH5425  
Fuzzy Logic and Neural Nets  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: how fuzzy logic handles imprecise and vague concepts, fuzzy control theory, artificial neural nets and their learning algorithms, approximation by neural nets, supervised and unsupervised networks.

MATH5435  
Applied Algebraic Computation  
Staff Contact: School of Mathematics Office  
CP12  
Introduction to Maple. Programming in Maple, with applications to include construction and analysis of computational algorithms. Manipulation of perturbation and Taylor series approximations to partial differential equations, manipulation of Taylor series approximations in the error analysis of discretised ordinary and partial differential equations.

MATH5505  
Topics in Algebra  
Staff Contact: School of Mathematics Office  
CP12  

MATH5515  
Topics in Analysis  
Staff Contact: School of Mathematics Office  
CP12  

MATH5525  
Topics in Geometry  
Staff Contact: School of Mathematics Office  
CP12  

MATH5535  
Topics in Number Theory  
Staff Contact: School of Mathematics Office  
CP12  

MATH5605  
Operator Theory  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: invariant subspaces, integral equations and Fredholm theory, functional calculus, decomposition theorems, Hankel and Toeplitz operators, operators on $H^p$ spaces, Ergodic theory, semigroups.

MATH5615  
Banach and Operator Algebras  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: commutative Banach algebras and Gelfand theory, spectral theory of operators on Hilbert space, introduction to $C^*$ and von Neumann algebras, relationship to group representations and ergodic theory.

MATH5625  
Distributions and Partial Differential Equations  
Staff Contact: School of Mathematics Office  
CP12  

MATH5635  
Dynamical Systems  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: automorphisms of measure spaces, recurrence, ergodicity, entropy, conjugacy and orbit equivalence, topological dynamics with applications to number theory, fractals and chaos.

MATH5645  
Number Theory  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: elementary number theory, prime numbers, number theoretic functions, Dirichlet series, prime number theorem, continued fractions, diophantine approximation, quadratic reciprocity, algebraic number theory, class number theorem.

MATH5655  
Homological Algebra  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: concept of a category, additive and abelian categories, representable functors, exact sequences, homology, derived functors, Ext and Tor, relations with algebraic topology, derived categories, homological dimension.

MATH5665  
Algebraic Topology  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: functors and natural transformations, homotopy of maps, homotopy groups, covering spaces,
simplicial and singular homology and cohomology, homological algebra.

MATH5675  
Set Theory and Topology  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: set theory, axiom of choice, ordinals and cardinals, topological spaces, compactness, quotient topologies.

MATH5685  
Complex Analysis  
Staff Contact: School of Mathematics Office  
CP12  
Topics in advanced complex function theory chosen from the following: conformal mappings, analytic continuation, entire and meromorphic functions, elliptic functions, asymptotic methods, integral formulae, harmonic functions, Riemann surfaces.

MATH5695  
Stochastic Differential Equations  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: Brownian motion, Itô calculus, Malliavin calculus, Girsanov's theorem, Clark's theorem, the Harrison-Pliska model of option pricing.

MATH5705  
Commutative Harmonic Analysis  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: Fourier series and integrals for $T^n$ and $R^n$, locally compact abelian groups, Pontrjagin duality, Plancherel Theory.

MATH5715  
Non-Commutative Harmonic Analysis  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: locally compact groups, Haar measure, homogeneous spaces, convolution algebras, representations, irreducibility, induced representations, Mackey theory, compact groups, Peter Weyl theory, nilpotent groups, Kirillov theory.

MATH5725  
Lie Groups and Algebras  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: revision of manifolds and linear algebra, topological groups, Haar measure, Lie groups, Lie algebras, substructures, classification of semi-simple complex Lie algebras, highest weight representations.

MATH5735  
Advanced Algebra  
Staff Contact: School of Mathematics Office  
CP12  
Topics from: rings, commutative rings, factorization theory, modules, associative and Lie algebras, Wedderburn theory, category theory.
MATH5816
Mathematics of Security Markets 2
Staff Contact: School of Mathematics Office
Prerequisite: MATH5965
CP12
More advanced applications of stochastic calculus to security markets.

MATH5825
Experimental Design 2
Staff Contact: School of Mathematics Office
Prerequisite: MATH5815
CP12
Extensive treatment of random and mixed models. Combinatorial structure of designs, crossover and lattice designs, response surfaces.

MATH5826
Statistical Methods in Epidemiology
Staff Contact: School of Mathematics Office
CP12
Measures and models of disease association, relative risks and odd ratios, attributable risk, interactions, Mantel-Haenszel formulae, confounding, logistic regression, survival analysis.

MATH5835
Stochastic Processes
Staff Contact: School of Mathematics Office
CP12

MATH5845
Time Series
Staff Contact: School of Mathematics Office
CP12

MATH5855
Multivariate Analysis 1
Staff Contact: School of Mathematics Office
CP12
Likelihood ratio tests for means, variances and structure. Discriminant, principal component, canonical and factor analysis. Computing will feature prominently.

MATH5865
Multivariate Analysis 2
Staff Contact: School of Mathematics Office
CP12
The general linear hypothesis and analysis of dispersion. Tests based on roots, distribution theory.

MATH5875
Sample Survey Design
Staff Contact: School of Mathematics Office
CP12
Simple, stratified and systematic random sampling. Estimation of proportions, ratios, and sample sizes. Multistage sampling.

MATH5885
Sequential Analysis
Staff Contact: School of Mathematics Office
CP12
The sequential probability ratio test OC and ASN functions. General theory of sequential tests. Sequential estimation.

MATH5895
Nonparametric Methods
Staff Contact: School of Mathematics Office
CP12

MATH5905
Statistical Inference
Staff Contact: School of Mathematics Office
CP12
Decision theory. General theory of estimation and hypothesis testing.

MATH5915
Medical Statistics
Staff Contact: School of Mathematics Office
CP12
Bioassay, generalised linear models, analysis of multivariate discrete data including loglinear model analysis of contingency tables, survival analysis, competing risks, hazard models for point processes.

MATH5925
Project
Staff Contact: School of Mathematics Office
CP60
A thorough study of a set of statistical papers or some workplace problem of the student’s choice.

MATH5935
Statistical Consultancy
Staff Contact: School of Mathematics Office
CP24
This is a practical subject which introduces students to the general framework of statistical consulting and gives students experience in solving statistical problems arising in practice.
MATH5945
Categorical Data Analysis
Staff Contact: School of Mathematics Office
CP12

MATH5955
Statistical Quality Control
Staff Contact: School of Mathematics Office
CP12

MATH5965
Mathematics of Security Markets 1
Staff Contact: School of Mathematics Office
CP12

MATH5975
Economic Quality Control Models
Staff Contact: School of Mathematics Office
CP12
Prerequisite: MATH5955
Economic design of acceptance sampling plans. Economic design of process control charts. Quality evaluation. Tolerance design and tolerancing. Taguchi's online quality control. Online process parameter design, process improvement methods and preventive maintenance.

MATH5985
Industrial Designs
Staff Contact: School of Mathematics Office
CP12
Prerequisite: MATH5815

Servicing Subjects
These are subjects taught within courses offered by other faculties.
For further information regarding the following see the Faculty of Engineering Handbook.

MATH5045
Advanced Mathematics for Electrical Engineers
Staff Contact: School of Mathematics Office
CP12
Boundary value problems in partial differential equations. Selected topics from complex variable analysis, integral transforms, and orthogonal functions and polynomials.

Medicine

CMED8201
Population Genetics
Staff Contact: Dr A Stark
CP2 S1 HPW5
Prerequisite: One unit of statistical methods, or theory, as approved by the Head of School
The genetic structure of populations: genetic relationships, mating systems (random and assortative mating, inbreeding, sexual selection), finite populations, systematic forces (selection, mutation, migration), genetic distance between populations, genetic load, stable populations, molecular population genetics, evolutionary trees; computer methods.

CMED8202
Human Genetic Analysis
Staff Contact: Dr A Stark
CP2 S2 HPW5
Prerequisites: One unit of genetics and one unit of statistical methods, or theory, as approved by the Head of School
Principles and methods of human genetics: design of surveys; estimation and applications of genic and genotypic frequencies, selective values, mutation and migration rates, coefficients of kinship, inbreeding and assortative mating, recombination fractions and heritabilities; segregation analysis; risks of recurrence of disease; consequences of human intervention; computer methods.

Microbiology and Immunology

MICR6043
Alternative Higher Degree Qualifying Program
Staff Contact: Prof A Lee
CP120
Similar in standard to MICR4013 Microbiology Honours, but designed for students who cannot regularly attend the University.

Oceanography

Administered by the School of Mathematics. Please contact Dr John Middleton.

OCEA5115
Experimental Project in Physical Oceanography
CP72
A report of an experimental project, including recording, preparation, analysis and interpretation of field or laboratory data.
OCEA5125
Geophysical Fluid Dynamics
CP15
Aspects of the physical features of the oceans. Includes ocean waves rotational and gravitational, tides, large scale wind driven ocean circulation, coastal dynamics, thermohaline circulations and mixing processes.

OCEA5135
Instrumentation
CP6
Laboratory, moored, shipborne, airborne and space instrumentation commonly used in oceanographic experiments; their applications and limitations.

OCEA5145
Applied Time Series Analysis
CP15
Classification of random processes, sampling for discrete analysis, Fourier analysis, spectra, filtering, Crossspectra, estimation and hypothesis testing, confidence limits, application to experiment planning. Emphasis on computer analysis of actual data.

OCEA5155
Theoretical Project in Physical Oceanography
CP32
A theoretical project aimed at developing the prediction of oceanographical phenomena, tailored to meet individual student background but taken only by those students with a strong theoretical background.

Optometry

Initial contact for these subjects should be directly with the School of Optometry. All units are full year course.

OPTM8001
Advanced Clinical Optometry
CP30
Clinical work on selected patients, with special emphasis on advanced techniques and new developments. Optometric examination procedures, including: external and internal examination of the eyes; visual functions; tonometry; objective optometry; evaluation of binocular functions; aniseikonia; sub-normal vision; geriatric and pediatric optometry; the clinical application of electrophysiological techniques. Assessment of new instruments, methods and treatment.

This subject is offered as either a domestic option at the University of New South Wales, or as an overseas option at the Pennsylvania College of Optometry in Philadelphia, USA. The overseas option involves a 4 week period at the PCO; travel and accommodation costs are to be met by the candidate.

OPTM8002
Physiological Optics
CP30
Notes: Subject not offered in 1997.

OPTM8003
Behavioural Optometry
CP30
An integrated subject, in which binocular vision and pleroptics are studies from theoretical and clinical viewpoints. Clinical experience is provided by selected patients. Includes: the nature and control of eye movements and role in maintaining the perception of a stable visual world. Binocular and monocular subjective visual directions. The neurophysiological substrate of binocular vision and its phenomena. Stereopsis and its measurement. Accommodation, convergence, and oculo-motor imbalance. Laboratory and clinical methods of measuring eye position and visual directions. The aetiologies, measurements and treatment of strabismus, anomalous correspondence, eccentric fixation amblyopia.

OPTM8004
Advanced Contact Lens Studies
CP30
Current concepts in anatomy and physiology of the cornea and tear film, and microbiology and pathophysiology in relation to contact lens wear. New developments in contact lens materials, design and lens care systems. Optics and fitting of contact lenses in relation to optics of the eye, corneal topography, and eyelid characteristics. Lens manufacturing techniques, patient screening, predictive testing, and advanced lens fitting techniques. Managing symptoms and adverse eye effects. Dealing with lens dehydration. Managing therapeutic and post-surgical cases. Contact lens interactions with medications and environmental agents. Special applications of contact lenses in research and industry. Future trends in industry R & D and marketing for contact lenses and associated products. Refractive surgery and alternative forms of vision correction.

OPTM8005
Advanced Contact Lens Practice
CP30
Notes: Subject not offered in 1997.
New instrumentation for ocular evaluation and measurement. Anterior segment photography. Clinical comparison of contact lens and care system products. Bifocal, toric, and extended wear lens evaluation. Design, manufacture, verification, and modification of lenses, from
the manufacturer's perspective. Lens fitting for sports vision, specialty cases, keratoconus, and cosmetic applications. AIDS management in contact lens practice. Patient instruction and management. Contact lens practice in the health care industry. Practice management, staffing, economics, inventory control, marketing. Application of quality and customer service concepts to contact lens practice.

OPTM8006 Occupational Optometry
CP30
Notes: Subject not offered in 1997.

OPTM8007 Clinical Photography
CP30
Notes: Subject not offered in 1997.
Introduction to clinical photography, cameras and lens systems, colour films, black-and-white films and filters, apparatus and accessories. Patient preparation and lighting. Copying, slide making, macrophotography. Computer hardware and software available for slide production for lecture presentation. Dark room techniques, anterior eye photography, and fundus photography with hydriatic and non-mydriatic equipment. Image analysis and its application to fundus interpretation, photo-refraction and corneal modelling systems and including medical imaging techniques such as CAT scans, NMI and PET. Video equipment, ophthalmic applications, editing and production of videotapes. The subject matter will comprise of subject matter at a higher level than in the undergraduate course. Emphasis will be placed upon the development of practical skills and the application of the attained information to patient management.

OPTM8008 Project
CP30
An investigation into some aspect of Optometry or Visual Science.

OPTM8009 Ocular Therapy
CP30
Notes: Subject not offered in 1997.
Pharmacology and clinical pharmacy, anterior segment disease, glaucoma systemic/medical considerations in eye care CPR in emergencies, advanced diagnostic techniques.

OPTM8010 Public Health Optometry
CP30
Notes: Subject not offered in 1997.

OPTM8011 Advanced Studies in Ocular Disease
CP30
Notes: Subject not offered in 1997.
Ocular diseases, systemic diseases and their ocular manifestations, tutorials and seminars in which the students will prepare and present detailed information on aetiology, epidemiology, signs, symptoms, clinical manifestations, pathology, mechanisms and management of ocular conditions.

OPTM8012 Visual Neuroscience
CP30

OPTM8014 Human Visual Development
CP30
Notes: Subject not offered in 1997.
Physics

Not all graduate subjects are necessarily offered in any one year. Initial contact should be made with A/Prof RJ Stening.

PHYS7611
Computational Physics
Staff Contact: School Office
SS HPW3

Contents to be advised.

PHYS9183
Methods of Theoretical Physics
Notes: For PhD degree, MSc and GradDip students.
Response functions and Green's functions. Symmetry and group theory. Many particle systems. Tensor calculus and variational techniques.

PHYS9283
Methods of Experimental Physics
Notes: For PhD degree, MSc and GradDip students.

Servicing Subjects

These are subjects taught within courses offered by other faculties.

For further information regarding the following subject see the Faculty of Architecture handbook.

PHYS7159
Acoustic Theory
Sources of acoustic radiation; simple, dipole, quadrupole, plane, impulsive source, random source, aerodynamic sources. Free field propagation in fluids, interference and diffraction, absorption, shock waves. Boundary effects: reflection and transmission at fluid/fluid and fluid/solid interfaces, fluid waveguides, solid waveguides. Reception and analysis; transducers. Fourier analysis, statistical methods, impulse measurement.

Psychology

PSYC6000
Alternative Higher Degree Qualifying Program
Staff Contact: Dr J Cranney
CP120F

Refer to the School of Psychology for details.

PSYC7000
Research and Evaluation Methods
Staff Contact: Dr K Bird
CP15 S1 HPW2

Problems of experimental design in clinical and applied fields; measurement and scaling; analysis of change, including sequential analysis, and the application of the experimental methods to the individual cases. Design and evaluation of programs.

PSYC7001
Psychological Assessment 1
Staff Contact: Dr S McDonald
CP15 S1 HPW3

A theoretical basis, background information and practical skills in methods of assessment typically used in clinical and industrial psychology. Theory and research on interviewing, introduction to DSM III-R, assessment interviewing, assessment of intellectual functioning, test access and use and computerised testing, neuropsychological and organicity assessment, personality assessment and its use, assessment and goal attainment scaling, and ethical, legal and professional issues.

PSYC7002
Psychological Assessment 2
Staff Contact: Dr K Bird
CP15 S2 HPW2
Prerequisite: PSYC7001

The application of the principles of experimental psychology to problems of behavioural assessment in a wide variety of situations, eg organisational behaviour; lifestyle change; the management of behavioural disorders; institutional behavioural programs. Assessment procedures studied include: psychological tests, behavioural analysis and case history taking, psychophysiological and other objective measures.

PSYC7003
Graduate Colloquium
Staff Contact: School Office
CP15 F HPW2

Participation in the Postgraduate Student Seminar and attendance at the School Colloquium.

PSYC7004
Professional and Ethical Issues
Staff Contact: Prof K McConkey
CP15 S1 HPW2

An examination of the organisation and regulation of psychology as a profession, with particular emphasis on the ethical and legal requirements expected of a professional psychologist. Special attention given to the code of professional conduct and ethical dilemmas and issues that arise in the context of working with individuals, cultural groups, organisations, other professionals and the public at large. Topics dealing with contemporary issues explored in depth (e.g. marketing psychology, political influencing skills in large organisations, psychologists contribution to such as the environment, policing and law etc.).

PSYC7100
Psychology of Human Resources 1
Staff Contact: Dr S Schneider
CP15 S1 HPW2

General framework for understanding organisational settings and how social structures and procedures affect work motivation, job satisfaction, performance and health. Emphasis placed on the particular contribution which psychologists can make to such as job analysis and design, selection, and performance appraisal, interpersonal and intergroup relations, the socio technical
analysis of production systems, social influence, leadership style, job enrichment, and communication patterns.

**PSYC7101**  
**Psychology of Human Resources 2**  
*Staff Contact: Dr S Schneider*  
*CP15 S2 HPW2*  
*Prerequisite: PSYC7100*

An advanced examination of some topics covered in PSYC7100 Psychology of Human Resources 1 with a particular emphasis on the application of sound measurement and research principles to selection, job evaluation and work motivation. Special attention given to the application of social psychological principles to the work setting.

**PSYC7102**  
**Psychological Principles of Training**  
*Staff Contact: Dr J Bright*  
*CP15 S2 HPW2*

Relevant principles from learning theory and cognitive psychology applied to training in industry and retraining for new technology. Training for adaptability and transfer; the important role of automaticity and attitudes in training. Development of work related cognitive, motor and social skills, and the use of computerised packages. Research on the effectiveness of different methods of training.

**PSYC7105**  
**Professional Practice (Applied)**  
*Staff Contact: Dr J Bright*  
*CP90 F*

*Note/s: 680 hours (340 hours in each of years 1 and 2 of the course).*

The application of theoretical aspects covered in the course to a variety of situations. Supervised work experience in a variety of settings together with a weekly meeting to allow systematic discussion of relevant professional, ethical and legal issues.

**PSYC7108**  
**Research Thesis (Applied)**  
*Staff Contact: Dr S Schneider*  
*CP90 F*

Research thesis involving an investigation into some aspect of applied psychology.

**PSYC7115**  
**Vocational Interviewing and Counselling**  
*Staff Contact: Dr G Huon*  
*CP15 S2 HPW2*

The theory and practice of vocational interviewing and counselling, and approaches to career decision making and work adjustment throughout life. The role of occupational information and psychological tests, and the impact of work, leisure, retirement and unemployment on these areas will be considered. The specific problems of minority groups in these areas will be highlighted.

**PSYC7116**  
**Occupational Health and Stress**  
*Staff Contact: Dr J Bright*  
*CP15 S2 HPW2*

*Note/s: Excluded PSYC7220*

The impact of work on the individual. Models of stress, stress transmission and health. Health and safety legislation and interventions to promote health and safety through the design of work and of the work place.

**PSYC7117**  
**Advanced Topics in Applied Psychology**  
*Staff Contact: Dr A Adams*  
*CP15 S1 HPW2*

Advanced treatment of established and emerging areas in applied psychology.

**PSYC7118**  
**Professional Practice (Applied) 1**  
*Staff Contact: Dr J Bright*  
*CP15 S1*

*Note/s: Excluded PSYC7105*

Attendance at weekly professional practice meetings and career development workshops (2 hours) and the completion of placements to a total of 250 hours.

**PSYC7119**  
**Professional Practice (Applied) 2**  
*Staff Contact: Dr J Bright*  
*CP15 S2*

*Prerequisite: PSYC7118*

*Note/s: Excluded PSYC7105*

Attendance at weekly professional practice meetings and career development workshops (2 hours) and the completion of placements to a total of 250 hours.

**PSYC7120**  
**Professional Practice (Applied) 3**  
*Staff Contact: Dr J Bright*  
*CP15*

*Prerequisite: PSYC7119*

*Note/s: 1. Not offered in 1997. 2. Excluded PSYC7105*

Attendance at weekly professional practice meetings and career development workshops (2 hours) and the completion of placements to a total of 250 hours.

**PSYC7121**  
**Professional Practice (Applied) 4**  
*Staff Contact: Dr J Bright*  
*CP15*

*Prerequisite: PSYC7120*

*Note/s: 1. Not offered in 1997. 2. Excluded PSYC7105*

Attendance at weekly professional practice meetings and career development workshops (2 hours) and the completion of placements to a total of 250 hours.

**PSYC7204**  
**Child Clinical Psychology**  
*Staff Contact: Dr P Lovibond*  
*CP15 S1 HPW2*

Description, assessment and treatment of child and adolescent psychopathology. Role of constitutional and environmental factors in behavioural and emotional dysfunction. Theoretical bases of behavioural, cognitive,
and family treatment approaches. Integrated cognitive behavioural management programs.

**PSYC7206**  
Research Thesis (Clinical)  
*Staff Contact: Dr R Bryant*  
*CP90 F*

A research thesis involving an investigation into some aspect of clinical or community psychology.

**PSYC7209**  
Developmental Disabilities  
*Staff Contact: A/Prof J Taplin*  
*CP15 S2 HPW2*

An essentially practical subject focusing on childhood disorders, such as mental retardation, infantile autism, physical and sensory handicaps, specific learning difficulties, and hyperactivity. Methods of assessment include standardised tests of child development, behavioural checklists and interviews, and observation of present behaviour. Behavioural change procedures that may be effective in the treatment and management of the behavioural problems in question.

**PSYC7210**  
Human Neuropsychology  
*Staff Contact: Dr S McDonald*  
*CP15 S2 HPW3*

 Neural bases of human behaviour, with particular emphasis on clinical applications. Issues in assessment and rehabilitation, functional analysis of each cerebral lobe, and particular disorders such as the dementias and aphasias.

**PSYC7212**  
Experimental Clinical Psychology 1  
*Staff Contact: Dr R Bryant and Dr J Henry*  
*CP15 S1 HPW4*  
*Corequisite: PSYC7213*

 An introduction to clinical practice and covers the major anxiety and mood disorders. Topics covered include: interviewing, diagnosis, mental state examination, case formulation, and introduction to treatments.

**PSYC7213**  
Experimental Clinical Psychology 2  
*Staff Contact: Dr P Lovibond*  
*CP15 S1 HPW2*  
*Corequisite: PSYC7212*

 Models and research strategies for understanding psychopathology and clinical interventions. Specific disorders are analysed in detail to illustrate more general themes: the relationship between genetic and environmental factors in aetiology, the integration of laboratory and clinical evidence, and the status of biological, behavioural and cognitive models of dysfunction and treatment.

**PSYC7214**  
Experimental Clinical Psychology 3  
*Staff Contact: Dr R Bryant and Dr J Henry*  
*CP15 S2 HPW4*  
*Prerequisites: PSYC7212 and PSYC7213*

 A continuation of the problem-oriented approach begun in PSYC7212 and deals with a number of common psychological problems and approaches to their treatment.

Topics covered include: social skills, psychopharmacology, eating disorders, and personality disorders.

**PSYC7215**  
Experimental Clinical Psychology 4  
*Staff Contact: Dr R Bryant and Dr J Henry*  
*CP15 S1 HPW2*  
*Prerequisite: PSYC7214*

 The assessment and management of a range of disorders including schizophrenia, post-traumatic stress disorders, and dissociative disorders.

**PSYC7216**  
Professional Practice (Clinical) 1  
*Staff Contact: Dr R Bryant and Dr J Henry*  
*CP15 S1*

 Attendance at weekly clinical meetings (1 hour) and skills training workshops (2 hours).

**PSYC7217**  
Professional Practice (Clinical) 2  
*Staff Contact: Dr R Bryant and Dr J Henry*  
*CP15 S2*  
*Prerequisite: PSYC7216*

 Attendance at weekly clinical meetings (1 hour) and skills training workshops (2 hours), and supervised work with clients in the Psychology Clinic (70 hours for session).

**PSYC7218**  
Professional Practice (Clinical) 3  
*Staff Contact: Dr R Bryant and Dr J Henry*  
*CP15 S1*  
*Prerequisite: PSYC7217*  
*Note/s: 1. Across PSYC7218 and PSYC7219 students must complete three field placements, one must be at least 27 days while the other two are completed in at least 36 days (800 hours total).*

 Attendance at weekly clinical meetings (1 hour), supervised work with clients in the Psychology Clinic (70 hours for session) and field placements.

**PSYC7219**  
Professional Practice (Clinical) 4  
*Staff Contact: Dr R Bryant and Dr J Henry*  
*CP15 S2*  
*Prerequisite: PSYC7218*  
*Note/s: 1. See note under PSYC7218.*

 Attendance at weekly clinical meetings (1 hour), supervised work in the Psychology Clinic (70 hours for session) and field placements.

**PSYC7220**  
Psychology of Health and Illness  
*Staff Contact: Dr P Birrell*  
*CP15 S2 HPW2*  
*Prerequisite: PSYC7214*  
*Note/s: Excluded PSYC7116.*

 Applications of psychological principles, derived from human and animal research, to human health, including health promotion, risk factor reduction, and the psychological assessment and management of medical illnesses, with a special focus on chronic illnesses.
Conditions for the Award of Degrees

First Degrees

Rules, regulations and conditions for the award of first degrees are set out in the appropriate Faculty Handbooks.

For the full list of undergraduate courses and degrees offered see Table of Courses by Faculty (Undergraduate Study) in the Calendar.

The following is the list of higher degrees, graduate diplomas and graduate certificates of the University, together with the publication in which the conditions for the award appear.

Higher Degrees

For details of graduate degrees by research and course work, arranged in faculty order, see UNSW Courses (by faculty) in the Calendar.

<table>
<thead>
<tr>
<th>Title</th>
<th>Abbreviation</th>
<th>Calendar/Handbook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor of Science</td>
<td>DSc</td>
<td>Calendar</td>
</tr>
<tr>
<td>Doctor of Letters</td>
<td>DLitt</td>
<td>Calendar</td>
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<tr>
<td>Doctor of Laws</td>
<td>LLD</td>
<td>Calendar</td>
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<td>MA</td>
<td>Arts and Social Sciences</td>
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<td>MA(Hons)</td>
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</table>
Graduate Certificates

<table>
<thead>
<tr>
<th>Title</th>
<th>Abbreviation</th>
<th>Calendar/Handbook</th>
</tr>
</thead>
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<tr>
<td>Arts</td>
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*Faculty of Science.

†Faculty of Biological and Behavioural Sciences.

Doctor of Philosophy (PhD)

1. The degree of Doctor of Philosophy may be awarded by the Council on the recommendation of the Higher Degree Committee of the appropriate faculty or board (hereinafter referred to as the Committee) to a candidate who has made an original and significant contribution to knowledge.

Qualifications

2. (1) A candidate for the degree shall have been awarded an appropriate degree of Bachelor with Honours from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Committee.

(2) In exceptional cases an applicant who submits evidence of such other academic and professional qualifications as may be approved by the Committee may be permitted to enrol for the degree.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment as a candidate for the degree.

Enrolment

3. (1) An application to enrol as a candidate for the degree shall be lodged with the Registrar at least one month prior to the date at which enrolment is to begin.

(2) In every case before making the offer of a place the Committee shall be satisfied that initial agreement has been reached between the School* and the applicant on the topic area, supervision arrangements, provision of adequate facilities and any coursework to be prescribed and that these are in accordance with the provisions of the guidelines for promoting postgraduate study within the University.

(3) The candidate shall be enrolled either as a full-time or a part-time student.

(4) A full-time candidate will present the thesis for examination no earlier than three years and no later than five years from the date of enrolment and a part-time candidate will present the thesis for examination no earlier than four years and no later than six years from the date of enrolment, except with the approval of the Committee.

(5) The candidate may undertake the research as an internal student i.e. at a campus, teaching hospital, or other research facility with which the University is associated, or as an external student not in attendance at the University except for periods as may be prescribed by the Committee.

(6) An internal candidate will normally carry out the research on a campus or at a teaching or research facility of the University except that the Committee may permit a candidate to spend a period in the field, within another institution or elsewhere away from the University provided that the work can be supervised in a manner satisfactory to the Committee. In such instances the Committee shall be satisfied that the location and period of time away from the University are necessary to the research program.

(7) The research shall be supervised by a supervisor and where possible a co-supervisor who are members of the academic staff of the School or under other appropriate supervision...
arrangements approved by the Committee. Normally an external candidate within another organisation or institution will have a co-supervisor at that institution.

Progression

4. The progress of the candidate shall be considered by the Committee following report from the School in accordance with the procedures established within the School and previously noted by the Committee.

(i) The research proposal will be reviewed as soon as feasible after enrolment. For a full-time student this will normally be during the first year of study, or immediately following a period of prescribed coursework. This review will focus on the viability of the research proposal.

(ii) Progress in the course will be reviewed within twelve months of the first review. As a result of either review the Committee may cancel enrolment or take such other action as it considers appropriate. Thereafter, the progress of the candidate will be reviewed annually.

Thesis

5. (1) On completing the program of study a candidate shall submit a thesis embodying the results of the investigation.

(2) The candidate shall give in writing to the Registrar two months notice of intention to submit the thesis.

(3) The thesis shall comply with the following requirements:

(a) it must be an original and significant contribution to knowledge of the subject;

(b) the greater proportion of the work described must have been completed subsequent to enrolment for the degree;

(c) it must be written in English except that a candidate in the Faculty of Arts and Social Sciences may be required by the Committee to write a thesis in an appropriate foreign language;

(d) it must reach a satisfactory standard of expression and presentation;

(e) it must consist of an account of the candidate's own research but in special cases work done conjointly with other persons may be accepted provided the Committee is satisfied about the extent of the candidate's part in the joint research.

(4) The candidate may not submit as the main content of the thesis any work or material which has previously been submitted for a university degree or other similar award but may submit any work previously published whether or not such work is related to the thesis.

(5) Four copies of the thesis shall be presented in a form which complies with the requirements of the University for the preparation and submission of theses for higher degrees.

(6) It shall be understood that the University retains the four copies of the thesis submitted for examination and is free to allow the thesis to be consulted or borrowed. Subject to the provisions of the Copyright Act, 1968, the University may issue the thesis in whole or in part, in photostat or microfilm or other copying medium.

Examination

6. (1) There shall be not fewer than three examiners of the thesis, appointed by the Committee, at least two of whom shall be external to the University.

(2) At the conclusion of the examination each examiner shall submit to the Committee a concise report on the thesis and shall recommend to the Committee that one of the following:

(a) The thesis merits the award of the degree.

(b) The thesis merits the award of the degree subject to minor corrections as listed being made to the satisfaction of the head of school.

(c) The thesis requires further work on matters detailed in my report. Should performance in this further work be to the satisfaction of the higher degree Committee, the thesis would merit the award of the degree.

(d) The thesis does not merit the award of the degree in its present form and further work as described in my report is required. The revised thesis should be subject to re-examination.

(e) The thesis does not merit the award of the degree and does not demonstrate that resubmission would be likely to achieve that merit.
(3) If the performance in the further work recommended under (2)(c) above is not to the satisfaction of the Committee, the Committee may permit the candidate to submit the thesis for re-examination as determined by the Committee within a period determined by it but not exceeding eighteen months.

(4) After consideration of the examiners' reports and the results of any further examination of the thesis, the Committee may require the candidate to submit to written or oral examination before recommending whether or not the candidate be awarded the degree. If it is decided that the candidate be not awarded the degree, the Committee shall determine whether or not the candidate be permitted to resubmit the thesis after a further period of study and/or research.

Fees

7. A candidate shall pay such fees as may be determined from time to time by the Council.

"School" is used here and elsewhere in these conditions to mean any teaching unit authorised to enrol research students and includes a department where that department is not within a school, a centre given approval by the Academic Board to enrol students, and an interdisciplinary unit within a faculty and under the control of the Dean of the Faculty. Enrolment is permitted in more than one such teaching unit.

Master of Chemistry (MChem), Master of Mathematics (MMath) and Master of Physics (MPhysics)

1. The degree of Master of Chemistry or Master of Mathematics or Master of Physics by formal coursework may be awarded by the Council to a candidate who has satisfactorily completed a program or advanced study.

Qualifications

2. (1) A candidate for the degree shall have been awarded an appropriate four-year degree of Bachelor with Honours Class 2 or higher from The University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Higher Degree Committee of the Faculty of Science (hereinafter referred to as the Committee).

(2) In exceptional cases an applicant who submits evidence of such other academic and professional qualifications as may be approved by the Committee may be permitted to enrol for the degree.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment.

Enrolment and Progression

3. (1) An application to enrol as a candidate for the degree shall be made on the prescribed form which shall be lodged with the Registrar two calendar months before the commencement of the session in which enrolment is to begin.

(2) A candidate for the degree shall be required to undertake such formal subjects and pass such assessment as prescribed.

(3) The progress of a candidate shall be reviewed at least once annually by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.

(4) No candidate shall be awarded the degree until the lapse of two academic sessions from the date of enrolment in the case of a full-time candidate or four sessions in the case of a part-time candidate. The maximum period of a candidate shall be four academic sessions from the date of enrolment for a full-time candidate and eight sessions for a part-time candidate. In special cases an extension of this time may be granted by the Committee.

Fees

4. A candidate shall pay such fees as may be determined from time to time by the Council.
Master of Engineering (ME) and Master of Science (MSc)

1. The degree of Master of Engineering or Master of Science by research may be awarded by the Council on the recommendation of the Higher Degree Committee of the appropriate faculty (hereinafter referred to as the Committee) to a candidate who has demonstrated ability to undertake research by the submission of a thesis embodying the results of an original investigation.

Qualifications

2. (1) A candidate for the degree shall have been awarded an appropriate degree of Bachelor from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Committee.

(2) An applicant who submits evidence of such other academic or professional attainments as may be approved by the Committee may be permitted to enrol for the degree.

(3) When the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant, before being permitted to enrol, to undergo such examination or carry out such work as the Committee may prescribe.

Enrolment and Progression

3. (1) An application to enrol as a candidate for the degree shall be made on the prescribed form which shall be lodged with the Registrar at least one calendar month before the commencement of the session in which enrolment is to begin.

(2) In every case, before permitting a candidate to enrol, the head of the school in which the candidate intends to enrol shall be satisfied that adequate supervision and facilities are available.

(3) An approved candidate shall be enrolled in one of the following categories.

(a) full-time attendance at the University;

(b) part-time attendance at the University;

(c) external not in regular attendance at the University and using research facilities external to the University.

(4) A candidate shall be required to undertake an original investigation on an approved topic. The candidate may also be required to undergo such examination and perform such other work as may be prescribed by the Committee.

(5) The work shall be carried out under the direction of a supervisor appointed from the full-time members of the University staff.

(6) The progress of a candidate shall be reviewed annually by the Committee following a report by the candidate, the supervisor and the head of the school in which the candidate is enrolled and as a result of such review the Committee may cancel enrolment or take such other action as it considers appropriate.

(7) No candidate shall be granted the degree until the lapse of three academic sessions in the case of a full-time candidate or four academic sessions in the case of a part-time or external candidate from the date of enrolment. In the case of a candidate who has been awarded the degree of Bachelor with Honours or who has had previous research experience the Committee may approve remission of up to one session for a full-time candidate and two sessions for a part-time or external candidate.

(8) A full-time candidate for the degree shall present for examination not later than six academic sessions from the date of enrolment. A part-time or external candidate for the degree shall present for examination not later than ten academic sessions from the date of enrolment. In special cases an extension of these times may be granted by the Committee.

Thesis

4. (1) On completing the program of study a candidate shall submit a thesis embodying the results of the original investigation.

(2) The candidate shall give in writing two months notice of intention to submit the thesis.
(3) The thesis shall present an account of the candidate's own research. In special cases work done conjointly with other persons may be accepted, provided the Committee is satisfied about the extent of the candidate's part in the joint research.

(4) The candidate may also submit any work previously published whether or not such work is related to the thesis.

(5) Three copies of the thesis shall be presented in a form which complies with the requirements of the University for the preparation and submission of higher degree theses.

(6) It shall be understood that the University retains the three copies of the thesis submitted for examination and is free to allow the thesis to be consulted or borrowed. Subject to the provisions of the Copyright Act, 1968, the University may issue the thesis in whole or in part, in photostat or microfilm or other copying medium.

Examination

5. (1) There shall be not fewer than two examiners of the thesis, appointed by the Committee, at least one of whom shall be external to the University unless the Committee is satisfied that this is not practicable.

(2) At the conclusion of the examination each examiner shall submit to the Committee a concise report on the merits of the thesis and shall recommend to the Committee that:

(a) the candidate be awarded the degree without further examination; or

(b) the candidate be awarded the degree without further examination subject to minor corrections as listed being made to the satisfaction of the head of the school; or

(c) the candidate be awarded the degree subject to a further examination on questions posed in the report, performance in this further examination being to the satisfaction of the Committee; or

(d) the candidate be not awarded the degree but be permitted to resubmit the thesis in a revised form after a further period of study and/or research; or

(e) the candidate be not awarded the degree and be not permitted to resubmit the thesis.

(3) If the performance at the further examination recommended under (2)(c) above is not to the satisfaction of the Committee, the Committee may permit the candidate to represent the same thesis and submit to a further oral, practical or written examination within a period specified by it but not exceeding eighteen months.

(4) The Committee shall, after consideration of the examiners' reports and the reports of any oral or written or practical examination, recommend whether or not the candidate may be awarded the degree. If it is decided that the candidate be not awarded the degree the Committee shall determine whether or not the candidate may resubmit the thesis after a further period of study and/or research.

Fees

6. A candidate shall pay such fees as may be determined from time to time by the Council.

Master of Engineering (ME), Master of Science (MSc) and Master of Surveying (MSurv) without supervision

1. The degree of Master of Engineering or Master of Science or Master of Surveying without supervision may be awarded by the Council on the recommendation of the Higher Degree Committee of the appropriate faculty (hereinafter referred to as the Committee) to a candidate who has demonstrated ability to undertake research by the submission of a thesis embodying the results of an original investigation.

Qualifications

2. A candidate for the degree shall have been awarded an appropriate degree of Bachelor from the University of New South Wales with at least three years relevant standing in the case of Honours graduates and four years relevant standing in the case of Pass graduates, and at a level acceptable to the Committee.
Enrolment

3. An application to enrol as a candidate for the degree without supervision shall be made on the prescribed form which shall be lodged with the Registrar not less than six months before the intended date of submission of the thesis. A graduate who intends to apply in this way should, in his or her own interest, seek at an early year the advice of the appropriate head of school* with regard to the adequacy of the subject matter and its presentation for the degree. A synopsis of the work should be available.

Thesis

4. (1) A candidate shall submit a thesis embodying the results of the investigation.

(2) The candidate shall give in writing to the Registrar two months notice of intention to submit the thesis.

(3) The thesis shall present an account on the candidate’s own research. In special cases work done conjointly with other persons may be accepted, provided the Committee is satisfied about the extent of the candidate’s part in the joint research.

(4) The candidate may also submit any work previously published whether or not such work is related to the thesis.

(5) Three copies of the thesis shall be presented in a form which complies with the requirements of the University for the preparation and submission of theses for higher degrees.

(6) It shall be understood that the University retains the three copies of the thesis submitted for examination and is free to allow the thesis to be consulted or borrowed. Subject to the provisions of the Copyright Act, 1968, the University may issue the thesis in whole or in part, in photostat or microfilm or other copying medium.

Examination

5. (1) There shall be not fewer than two examiners of the thesis, appointed by the Committee, at least one of whom shall be external to the University unless the Committee is satisfied that this is not practicable.

(2) Before the thesis is submitted to the examiners the head of the school in which the candidate is enrolled shall certify that it is prima facie worthy of examination.

(3) At the conclusion of the examination each examiner shall submit to the Committee a concise report on the thesis and shall recommend to the Committee that:

(a) the candidate be awarded the degree without further examination; or

(b) the candidate be awarded the degree without further examination subject to minor corrections as listed being made to the satisfaction of the head of the school; or

(c) the candidate be awarded the degree subject to a further examination on questions posed in the report, performance in this further examination being to the satisfaction of the Committee; or

(d) the candidate be not awarded the degree but be permitted to resubmit the thesis in a revised form after a further period of study and/or research; or

(e) the candidate be not awarded the degree and be not permitted to resubmit the thesis.

(4) If the performance at the further examination recommended under (3)(c) above is not to the satisfaction of the Committee, the Committee may permit the candidate to represent the same thesis and submit to further examination as determined by the Committee within a period specified by it but not exceeding eighteen months.

(5) The Committee shall, after consideration of the examiners’ reports and the results of any further examination, recommend whether or not the candidate may be awarded the degree. If it is decided that the candidate be not awarded the degree the Committee shall determine whether or not the candidate may resubmit the thesis after a further period of study and/or research.

Fees

6. A candidate shall pay such fees as may be determined from time to time by the Council.
Master of Mathematics (MMath) Master of Physics (MPhysics)

See Master of Chemistry above for these degrees

Master of Optometry (MOptom)

1. The degree of Master of Optometry or Master of Physics by formal coursework may be awarded by the Council to a candidate who has satisfactorily completed a program or advanced study.

Qualifications

2.(1) A candidate for the degree shall have been awarded an appropriate degree of Bachelor of four full-time year's duration (or the part-time equivalent) from The University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Higher Degree Committee of the Faculty of Science (hereinafter referred to as the Committee).

(2) In exceptional cases an applicant who submits evidence of such other academic and professional qualifications as may be approved by the Committee may be permitted to enrol for the degree.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undertake such assessment or carry out such work as the Committee may prescribe, before permitting enrolment.

Enrolment and Progression

3. (1) An application to enrol as a candidate for the degree shall be made on the prescribed form which shall be lodged with the Registrar two calendar months before the commencement of the session in which enrolment is to begin.

(2) A candidate for the degree shall be required to undertake such formal subjects and pass such assessment as prescribed.

(3) The progress of a candidate shall be reviewed at least once annually by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.

(4) No candidate shall be awarded the degree until the lapse of two academic sessions from the date of enrolment in the case of a full-time candidate or four sessions in the case of a part-time candidate. The maximum period for a candidate and eight sessions for a part-time candidate. In special cases an extension of this time may be granted by the Committee.

Fees

4. A candidate shall pay such fees as may be determined from time to time by the Council.

Master of Psychology (Applied) (MPsychol(Applied)) and Master of Psychology (Clinical) (MPsychol(Clinical))

1. The degree of Master of Psychology (Applied) or Master of Psychology (Clinical) by formal coursework and thesis may be awarded by the Council to a candidate who has satisfactorily completed a program of advanced study. The degree shall be awarded at the Pass level or with the grade of Honours Class 1 or with the grade of Honours Class 2 (two divisions).

Qualifications

2. (1) A candidate for the degree shall have been awarded an appropriate degree of Bachelor with Honours in Psychology from the University of New South Wales or a qualification
considered equivalent from another university or tertiary institution, at a level acceptable to
the Higher Degree Committee of the Faculty of Biological and Behavioural Sciences
(hereinafter referred to as the Committee).

(2) In exceptional cases an applicant who submits evidence of such other academic and
professional qualifications as may be approved by the Committee may be permitted to enrol
for the degree.

(3) If the Committee is not satisfied with the qualifications submitted by an applicant the
Committee may require the applicant to undergo such assessment or carry out such work as
the Committee may prescribe, before permitting enrolment.

Enrolment and Progression

3. (1) An application to enrol as a candidate for the degree shall be made on the prescribed
form which shall be lodged with the Registrar by 1 November of the year before the year in
which enrolment is to begin.

(2) A candidate for the degree shall be required to undertake such formal subjects and pass
such assessment as prescribed.

(3) The progress of a candidate shall be reviewed at least once annually by the Committee
and as a result of its review the Committee may cancel enrolment or take such other action
as it considers appropriate.

(4) No candidate shall be awarded the degree until the lapse of four academic sessions from
the date of enrolment in the case of a full-time candidate or six sessions in the case of a
part-time candidate. The maximum period of candidature shall be six academic sessions from
the date of enrolment for a full-time candidate and ten sessions for a part-time candidate. In
special cases a variation of these times may be granted by the Committee.

Fees

4. A candidate shall pay such fees as may be determined from time to time by the Council.

Master of Science (MSc), Master of Science (MSc) without supervision

See Master of Engineering above for these degrees.

Master of Statistics (MStats)

1. The degree of Master of Statistics by formal coursework may be awarded by the Council
to a candidate who has satisfactorily completed a program of advanced study.

Qualifications

2. (1) A candidate for the degree shall have been awarded a degree of Bachelor with major
studies in statistics from the University of New South Wales or a qualification considered
equivalent from another university or tertiary institution at a level acceptable to the Higher
Degree Committee of the Faculty of Science (hereinafter referred to as the Committee).

(2) In exceptional cases an applicant who submits evidence of such other academic and
professional qualifications as may be approved by the Committee may be permitted to enrol
for the degree.

(3) If the Committee is not satisfied with qualifications submitted by an applicant the Committee
may require the applicant to undergo such assessment or carry out such work as the
Committee may prescribe, before permitting enrolment.
Enrolment and Progression

3. (1) An application to enrol as a candidate for the degree shall be made on the prescribed form which shall be lodged with the Registrar at least two calendar months before the commencement of the session in which enrolment is to begin.
(2) A candidate for the degree shall be required to undertake such formal subjects and pass such assessment as prescribed.
(3) The progress of a candidate shall be reviewed at least once annually by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.
(4) No candidate shall be awarded the degree until the lapse of four academic sessions from the date of enrolment in the case of a full-time candidate or eight sessions in the case of a part-time candidate. In the case of a candidate who has been awarded a degree of Bachelor with Honours in statistics the Committee may approve remissions of up to two sessions for a full-time candidate and four sessions for a part-time candidate. The maximum period of candidature shall be six academic sessions from the date of enrolment for a full-time candidate and ten sessions for a part-time candidate. In special cases an extension of these times may be granted by the Committee.

Fees

4. A candidate shall pay such fees as may be determined from time to time by the Council.

Graduate Diploma (GradDip or DipFDA)

1. A Graduate Diploma may be awarded by the Council to a candidate who has satisfactorily completed a program of advanced study.

Qualifications

2. (1) A candidate for the diploma shall have been awarded an appropriate degree of Bachelor from the University of New South Wales or a qualification considered equivalent from another university or tertiary institution at a level acceptable to the Higher Degree Committee of the appropriate faculty (hereinafter referred to as the Committee).
(2) An applicant who submits evidence of such other academic or professional attainments as may be approved by the Committee may be permitted to enrol for the diploma.
(3) If the Committee is not satisfied with the qualifications submitted by an applicant the Committee may require the applicant to undergo such assessment or carry out such work as the Committee may prescribe, before permitting enrolment.

Enrolment and Progression

3. (1) An application to enrol as a candidate for diploma shall be made on the prescribed form which shall be lodged with the Registrar at least two calendar months before the commencement of the session in which enrolment is to begin.
(2) A candidate for the diploma shall be required to undertake such formal subjects and pass such assessment as prescribed.
(3) The progress of a candidate shall be reviewed at least once annually by the Committee and as a result of its review the Committee may cancel enrolment or take such other action as it considers appropriate.
(4) No candidate shall be awarded the diploma until the lapse of two academic sessions from the date of enrolment in the case of a full-time candidate or four sessions in the case of a part-time candidate. The maximum period of candidature shall be four academic sessions from the date of enrolment for a full-time candidate and six sessions for a part-time candidate. In special cases an extension of these times may be granted by the Committee.

Fees

4. A candidate shall pay such fees as may be determined from time to time by the Council.
The scholarships listed below are available to students whose courses are listed in this book. Each faculty handbook contains in its scholarships section the scholarships available for study in that faculty. Travel scholarships are shown separately. Applicants should note that the scholarships and their conditions are subject to review and the closing dates for awards may vary from year to year.

Scholarship information is regularly included in the University publication 'Uniken/Focus'. Students investigating study opportunities overseas should also consult Study Abroad which is published by UNESCO and is available in the University library. The British Council (02 9326 2365) may be of assistance for information about study in Britain. The Australian-American Education Foundation (06 247 9331) can provide information about study in America. Information may also be obtained from the embassy or consulate of the country in which the study is proposed and from the proposed overseas institution. Details of overseas awards and exchanges administered by the Department of Employment, Education, Training and Youth Affairs (DEETYA) can be obtained from the Awards and Exchanges Section, DEETYA, PO Box 826, Woden, ACT 2606.

KEY

L Students with Australian Citizenship or Permanent Resident status can apply.
I International students can apply.

Postgraduate scholarships for research or coursework are identified with the following codes:

R Available for study by research (normally Masters by Research or PhD).
C Available for study by coursework (normally Masters by Coursework or Graduate Diploma).

The scholarship information is normally provided in the following format:
• Amount
• Duration
• Conditions

Unless otherwise stated, application forms are available from the Scholarships Unit, c/- the Student Centre (Lower Ground Floor, Chancellery). Applications normally become available four to six weeks before the closing date.
Undergraduate Scholarships

Following are details of scholarships available to undergraduate students at UNSW.

The scholarships are listed according to the year of study for which the scholarship is available (ie scholarships for first year students; scholarships for second or later year students; scholarships for Honours year students) or whether they are available to undertake travel, and then also by Faculty and course (eg scholarships in Science or Engineering). If a scholarship is available to all students it will be listed in the General Scholarships section.

For further information contact:
The Scholarships Unit
The University of New South Wales
Sydney 2052 Australia
Tel (02) 9385 3100/3101/1462
Fax (02) 9662 1049
Email: R.Plain@unsw.edu.au

Scholarships for students entering the first year of an undergraduate course

General

The Alumni Association Scholarships (I,L)
- Up to $1,500 pa
- 1 year with the possibility of renewal
The scholarships are available to students enrolled in any year of a full-time undergraduate course. Candidates must be the children or grandchildren of alumni of the University of New South Wales. Applications close mid-January.

The Australian Development Co-operation Scholarship (ADCOS) (I)
- Tuition fees. Some students may be eligible for airfares and a stipend
- Determined by normal course duration
This award is for international students from selected countries only. Information and application forms should be obtained from the Australian Education Centre or Diplomatic Post in the home country. The award conditions and entitlements vary depending on the home country. The closing date is normally early in the year before the year of study.

The Australian Vietnam Veterans Trust Education Assistance Scheme (L)
- $3,500 pa for the duration of the course
Applicants must be a child of a Vietnam veteran and under the age of 25 at the time of application. The award is subject to the same income test as AUSTUDY. Applicants can be undertaking any year of a Bachelors course. Applications and further information are available from the Australian Vietnam War Veterans Trust National Office, PO Box K978, Haymarket NSW 2000 (02 9281 7077). Applications close 31 October.

The Ben Lexcen Sports Scholarships (I,L)
- $2,000 pa
- 1 year with possibility of renewal
The scholarships are available to students who are accepted into a course of at least two years duration. Prospective applicants should have an outstanding ability in a particular sport and are expected to be an active member of a UNSW Sports Club. Apply directly to the Manager, Sports Association, UNSW, Sydney 2052 Australia. Tel (02) 9385 6022, Fax (02) 9385 6180.

The UNSW Co-Op Program (L)
- $10,400 pa and between 9 and 20 months industry training
- The duration of the course subject to satisfactory progress
The scholarships are offered by industry groups through the University in the three faculties of Applied Science, Commerce and Economics and Engineering. Scholars are selected by interview with emphasis placed on achievements in community and extra-curricular activities as well as communication and leadership skills. A minimum TER of around 90 is expected. The Co-Op Application Form is available from school Careers Advisers or the Co-op Office on (02) 9385 5116. Applications close September 30 with interviews held at the end of November and beginning of December.

The Girls Realm Guild Scholarships (L)
- Up to $1,500 pa
- 1 year with the prospect of renewal subject to satisfactory progress and continued demonstration of need
The scholarships are available to female students under 35 years of age who are enrolling in any year of a full-time
undergraduate course. Selection is based on academic merit and financial need. Applications close 25 March.

**The John Niland Scholarships (L)**
- $5,000
- 1 year

The scholarship provides assistance to enhance the opportunity of students from country high schools in Australia to enrol in an undergraduate program of study at UNSW. Applicants will be students who complete the HSC (or its counterpart matriculation requirement) in the top five percent of their state-wide cohort, having been enrolled at a country high school in Australia. Selection will be based on academic merit, potential to contribute to the wider life of the University and consideration of social and/or economic circumstances which might otherwise hinder successful transition to UNSW. Applications close 30 October.

**The National Health and Medical Research Council (NH&MRC) Aboriginal Health Research Scholarships (L)**
- $22,250
- Up to 3 years

Applicants may be undertaking an undergraduate degree in order to pursue research relevant to Aboriginal health. Applications close mid-July.

**The Ngunnagan Club Scholarship (L)**
- Up to $2,000
- 1 year

The scholarship is available to students enrolled at an Australian country high school who complete the HSC (or its counterpart matriculation requirement) in the top five percent of their state cohort. Applicants should complete an official application form by 31 October in the year prior to their intended enrolment at UNSW. Final performance in the HSC (or its counterpart matriculation) examination should be reported to the Scholarships Unit once known.

**The W.S. and L.B. Robinson Scholarship (L)**
- Up to $6,500 pa
- 1 year renewable for the duration of the course subject to satisfactory progress

Applicants must have completed their schooling in Broken Hill or have parents who reside in Broken Hill. Applicants should be undertaking a course related to the mining industry, for example courses in Mining Engineering, Geology, Electrical and Mechanical Engineering, Metallurgical Process Engineering, Chemical Engineering or Science. A letter of application should be sent to Pasminco Mining, PO Box 460, Broken Hill, NSW 2880. Applications close 30 September each year.

**Faculty of Science**

**The Faculty Scholarships (L)**
- Up to $3,000 pa
- 1 year renewable for the duration of the course subject to satisfactory progress.

Up to six scholarships are available and carry the title of Faculty Scholar. The scholarships are available to full-time students enrolled in one of the disciplines of the Faculty of Science. Students undertaking the combined Bachelor of Science/Bachelor of Arts course may also apply. Application forms are available from the Faculty Office or the Scholarships Unit. Applications normally close mid-February.

**The School Scholarships (Chemistry, Mathematics and Physics) (L)**
- Up to $2,000 pa
- 1 year renewable for the duration of the course, subject to satisfactory progress.

The scholarships are available to full-time students enrolled in the Schools of Chemistry, Mathematics or Physics. Application forms are available from the Faculty Office or the Scholarships Unit. Applications normally close mid-February.

**Chemistry**

**The John Ragnar Anderson Memorial Scholarships (L)**
- Up to $1,000 pa
- Up to three years subject to satisfactory progress

Two scholarships are available to assist students in their first year of full-time undergraduate study in the School of Chemistry. They will be awarded on the basis of academic merit. Applications close 31 March.
Scholarships for students in their second or later years of study

General

The Alumni Association Scholarships (I,L)
- Up to $1,500 pa
- 1 year with the possibility of renewal

The scholarships are available to students enrolled in any year of a full-time undergraduate course. Candidates must be the children or grandchildren of alumni of the University of New South Wales. Applications close early January.

The Australian Vietnam Veterans Trust Education Assistance Scheme (L)
- $3,500 pa for the duration of the course

Applicants must be a child of a Vietnam veteran and under the age of 25 at the time of application. The award is subject to the same income test as AUSTUDY. Applicants can be undertaking any year of a Bachelor's course. Applications and further information are available from the Australian Vietnam War Veterans Trust National Office, PO Box K978, Haymarket NSW 2000 (tel 02 9281 7077). Applications close 31 October.

The Ben Lexcen Sports Scholarships (I,L)
- $2,000 pa
- 1 year with possibility of renewal

The scholarships are available to students who are accepted into a course of at least two years duration. Prospective applicants should have an outstanding ability in a particular sport and are expected to be an active member of a UNSW Sports Club. Apply directly to the Manager, Sports Association, UNSW, Sydney 2052. Tel (02) 9385 6022, Fax (02) 9385 6180.

The Girls Realm Guild Scholarship (L)
- Up to $1,500 pa
- 1 year with the prospect of renewal subject to satisfactory progress and continued demonstration of need

The scholarships are available only to female students under 35 years of age who are enrolling in any year of a full-time undergraduate course. Selection is based on academic merit and financial need. Applications close 25 March.

The Minproc Engineering Limited Scholarship (L)
- $6500 pa
- 1 year renewable for the duration of the course subject to satisfactory progress

The scholarship is available to a student entering either Year 3 or 4 of the Bachelor of Engineering Science course with subject content in the fields of Engineering or Mineral Chemistry, or a Bachelor of Engineering with majors in the fields of Chemical, Metallurgical or Mechanical Engineering, or related courses. Applications close early March.

The National Health and Medical Research Council (NH&MRC) Aboriginal Health Research Scholarships (L)
- $22,250
- Up to 3 years

Applicants may be undertaking an undergraduate degree in order to pursue research relevant to Aboriginal health. Applications close mid July.

The NSW Ministry for the Arts Scholarships (L, R, C)
- $5,000 - $25,000 (depending on the award)

The NSW Government offers a number of scholarships and awards to writers, artists and scholars living in NSW. Further information is available from New South Wales Ministry for the Arts, GPO Box 5341, Sydney NSW 2000. Tel (02) 9228 3533, Fax (02) 9228 4722.

The Pig Research and Development Corporation (PRDC) Undergraduate Encouragement Award (L)
- $600 lump sum

Applicants must be in the later stage of an undergraduate degree and interested in undertaking a research project related to the Australian pig industry. Applications close 3 times a year (ie 1 March, 1 July, 1 October).

The Sam Cracknell Memorial Scholarships (I,L)
- Up to $1,500 pa
- 1 year

Applicants should have already completed at least 2 years of a degree or diploma course and be enrolled in a full-time course during the year of application. Selection is based on academic merit, participation in sport both directly and administratively and financial need. Applications close 31 March.
The Telstra Education Fellowships (L)
- $7,500
- 1 year
Applicants must be in the final year of study in the disciplines of computer, electrical or electronic engineering or computer science. Applications normally close at the end of July.

The W.S. and L.B. Robinson Scholarship (L)
- Up to $6,500 pa
- 1 year renewable for the duration of the course subject to satisfactory progress
Applicants must have completed their schooling in Broken Hill or have parents who reside in Broken Hill. Applicants should be undertaking a course related to the mining industry, for example courses in Mining Engineering, Geology, Electrical and Mechanical Engineering, Metallurgical Process Engineering, Chemical Engineering and Science. A letter of application should be sent to Pasminco Mining, PO Box 460, Broken Hill, NSW 2880. Applications close 30 September.

Honours Year Scholarships

General

The Alumni Association Scholarships (L,L)
- Up to $1,500 pa
- 1 year with the possibility of renewal
The scholarships are available to students enrolled in any year of a full-time undergraduate course. Candidates must be the children or grandchildren of alumni of the university of new south wales. Applications close 13 January.

The Apex Foundation for Research into Intellectual Disability Studentships (L,L)
- $1,000 paid in a lump sum
The studentships are available to students preparing a thesis related to intellectual disability. Applications should be in the form of a letter which includes a curriculum-vitae and thesis plan and must be supported by a letter from the head of school/department. Applications should be sent to the honorary secretary, apex foundation studentships, PO Box 311, Mt Evelyn Vic 3796 by 31 May.

The Australian Vietnam Veterans Trust Education Assistance Scheme (L)
- $3,500 pa for the duration of the course
Applicants must be a child of a Vietnam veteran and under the age of 25 at the time of application. The award is subject to the same income test as AUSTUDY. Applicants can be undertaking any year of a Bachelors course. Applications and further information are available from the Australian Vietnam War Veterans Trust National Office, PO Box K978, Haymarket NSW 2000 (tel 02 9281 7077). Applications close 31 October.

The Ben Lexcen Sports Scholarships (L,L)
- $2,000 pa
- 1 year with possibility of renewal
The scholarships are available to students who are accepted into a course of at least two years duration. Prospective applicants should have an outstanding ability in a particular sport and are expected to be an active member of a UNSW Sports Club. Apply directly to the Manager, Sports Association, UNSW, Sydney 2052. Tel (02) 9385 6022, Fax (02) 9385 6180.

The Girls Realm Guild Scholarships (L)
- Up to $1,500 pa
- 1 year with the prospect of renewal subject to satisfactory progress and continued demonstration of need
The scholarships are available only to female students under 35 years of age who are enrolling in any year of a full-time undergraduate course. Selection is based on academic merit and financial need. Applications close 25 March.

The Australian and New Zealand Council for the Care of Animals in Research and Teaching (ANZCCART) Student Award (L,L)
- $1,000 for attendance at the annual conference
Applicants can be Honours students from any discipline. The award provides assistance for a student to attend the annual conference. Applications are available from ANZCCART, PO Box 19 Glen Osmond, SA, 5064, (tel 08 303 7325). Applications close in July.

The Australian Vietnam Veterans Trust Education Assistance Scheme (L)
- $3,500 pa for the duration of the course
Applicants must be a child of a Vietnam veteran and under the age of 25 at the time of application. The award is subject to the same income test as AUSTUDY. Applicants can be undertaking any year of a Bachelors course. Applications and further information are available from the Australian Vietnam War Veterans Trust National Office, PO Box K978, Haymarket NSW 2000 (tel 02 9281 7077). Applications close 31 October.

The Ben Lexcen Sports Scholarships (L,L)
- $2,000 pa
- 1 year with possibility of renewal
The scholarships are available to students who are accepted into a course of at least two years duration. Prospective applicants should have an outstanding ability in a particular sport and are expected to be an active member of a UNSW Sports Club. Apply directly to the Manager, Sports Association, UNSW, Sydney 2052. Tel (02) 9385 6022, Fax (02) 9385 6180.

The Girls Realm Guild Scholarships (L)
- Up to $1,500 pa
- 1 year with the prospect of renewal subject to satisfactory progress and continued demonstration of need
The scholarships are available only to female students under 35 years of age who are enrolling in any year of a full-time undergraduate course. Selection is based on academic merit and financial need. Applications close 25 March.

The Australian and New Zealand Council for the Care of Animals in Research and Teaching (ANZCCART) Student Award (L,L)
- $1,000 for attendance at the annual conference
Applicants can be Honours students from any discipline. The award provides assistance for a student to attend the annual conference. Applications are available from ANZCCART, PO Box 19 Glen Osmond, SA, 5064, (tel 08 303 7325). Applications close in July.
The Grains Research and Development Corporation (GRDC) Undergraduate Honours Scholarship (L,L)

- $6,000 (ie $5,000 to the student and $1,000 to the host School/Department)
- 1 year

Applicants must be undertaking a full-time Honours program. Study in an area of significance to the grains industry will be viewed favourably. A letter of application, including a curriculum-vitae, academic record, letter of support from the Head of School/Department and 2 referees' supporting statements, should be sent to GRDC Undergraduate Honours Scholarship, PO Box E6, Queen Victoria Terrace, Canberra ACT 2600 (06 2725528). Applications close late November.

The Great Barrier Reef Marine Park Authority Research Support (L,L)

- $1,500

Applicants must be undertaking a full-time Honours year or PhD research project that could contribute to the planning and managing work undertaken by the Great Barrier Reef Marine Park Authority. Applications and further information may be obtained from the Executive Officer, Great Barrier Reef Marine Park Authority, PO Box 1379, Townsville QLD 4810 (tel 07 7818811). Applications close mid-December.

The Mitsui Education Foundation Scholarship (L)

A one month scholarship to Japan is available to a young Australian national to help promote goodwill between the two countries. Candidates should be full-time undergraduate students aged between 20-24 and preferably in their third or fourth year. The successful student will travel to Japan during November and December. Application forms become available in June and close mid-July.

The National Health and Medical Research Council (NH&MRC) Aboriginal Health Research Scholarships (L)

- $22,250
- Up to 3 years

Applicants may be undertaking an undergraduate degree in order to pursue research relevant to Aboriginal health. Applications close mid-July.

The NSW Ministry for the Arts Scholarships (L, R, C)

- $5,000 – $25,000 (depending on the award)

The NSW Government offers a number of scholarships and awards to writers, artists and scholars living in NSW. Further information is available from New South Wales Ministry for the Arts, GPO Box 5341, Sydney NSW 2000. Tel (02) 9228 3533, Fax (02) 9228 4722.

The Pig Research and Development Corporation (PRDC) Undergraduate Encouragement Award (L)

- $600 lump sum

Applicants must be in the later stage of an undergraduate degree and interested in undertaking a research project related to the Australian pig industry. Applications close 3 times a year (ie 1 March, 1 July, 1 October).

The River Basin Management Society Ernest Jackson Memorial Research Grants (L,L)

- Up to $2,000

The scholarship is available to assist students undertaking research in the field of River Basin Management. Applications close mid-August.

The RSPCA Alan White Scholarship (L,L)

- $2,500

Applicants should be undertaking original research to improve the understanding and welfare of animals. A letter of application should be sent to the Executive Officer, RSPCA Australia, PO Box E369, Queen Victoria Terrace, Canberra ACT 2600 (tel 06 2311437) by 31 March.

The Sam Cracknell Memorial Scholarship (L,L)

- Up to $1,500 pa
- 1 year

Applicants should have already completed at least 2 years of a degree or diploma course and be enrolled in a full-time course during the year of application. Selection is based on academic merit, participation in sport both directly and administratively and financial need. Applications close 31 March.

The University Honours Year Scholarships (L,L)

- $1,000
- 1 year

A number of scholarships will be awarded on the basis of academic merit for students entering an 'add-on' honours year, ie the honours year in a degree course which is normally a pass degree but which has the option of a further year of study at Honours level. Applications close 30 November.

The W.S. and L.B. Robinson Scholarship (L)

- Up to $6,500 pa
- 1 year renewable for the duration of the course subject to satisfactory progress

Applicants must have completed their schooling in Broken Hill or have parents who reside in Broken Hill. Applicants should be undertaking a course related to the mining industry, for example courses in Mining Engineering, Geology, Electrical and Mechanical Engineering, Metallurgical Process Engineering, Chemical Engineering and Science. A letter of application should be sent to...
Faculty of Science

Students undertaking a Bachelor of Science Honours year in the Schools of Chemistry, Mathematics, or Physics can apply for the HC & ME Porter Memorial Scholarship.

Students undertaking a Bachelor of Science Honours year with research relevant to Transport Management can apply for the RTA Transport Management Scholarships.

H.C. & M.E. Porter Memorial Scholarship (l,L)
- Up to $3,000
- 1 year
The scholarship will be held by a full-time student undertaking an Honours year in chemistry, mathematics or physics in the Faculty of Science. Applications close 20 December in the year prior to the proposed Honours year.

The RTA Transport Management Scholarships (l,L)
- Up to $3,500 to be used to cover research expenses
- 1997 only
In 1997 two scholarships will be awarded for the development of a Geographical Information System to allow for the mapping of students and staff travelling to and from UNSW’s Kensington campus and two scholarships will be awarded to enable the merging of the staff and student transport audits with the general transport map so as to provide a comprehensive picture of transport and UNSW. Expressions of interest should be directed to Leith Sharp, UNSW Environment Project Manager, tel (02) 9385 4966.

School of Mathematics

The Buchwald Award in Applied Mathematics (l,L)
- Up to $400 pa
- 1 year
One scholarship is available for a student in the final year of the Honours course in Applied Mathematics. Applications close 31 March.

The George Szekeres Award (l,L)
- $300 pa
- 1 year
The scholarship is available to students entering the final year of the honours degree course in Pure Mathematics. Applications close 31 March.

Travel Scholarships

General

The Arthur Anderson Study Abroad Scholarship (L)
- Up to $2,500
The scholarship is to provide financial assistance to students in their second or third year of full-time study who wish to study abroad for one semester at an approved Asian university. The overseas study must count towards their UNSW degree. Students must satisfy the language and literacy requirements of the approved university. Candidates will be required to complete an application form at least four months prior to the commencement of the scholarship. Further information is available from the International Student Centre. Tel (02) 9385 5333.

The Association of International Education Japan (AIEJ)
Short-Term Student Exchange Promotion Program (Inbound)
Peace and Friendship Scholarships (l,L)
- 50,000 yen (settling-in allowance), 100,000 yen per month, plus airfare
- Ten months to one year
Applicants must be accepted by a Japanese university under a student exchange program agreement with UNSW. Students must initially apply directly to a Japanese university through the International Student Centre at UNSW. The Japanese host university will recommend candidates to AIEJ and students must apply as directed by the host university. Applications close in February, May and September each year.
The Association of International Education Japan (AIEJ)

Short-Term Student Exchange Promotion Program (Inbound) Scholarships (L,L)

- 50,000 yen (settling-in allowance), 80,000 yen per month, plus airfare
- Six months to one year

Applicants must be accepted by a Japanese university under a student exchange program agreement with UNSW. Students must initially apply directly to a Japanese university through the International Student Centre at UNSW. The Japanese host university will recommend candidates to AIEJ and students must apply as directed by the host university. Applications close in February, May and September each year.

DAAD – The German Academic Exchange Service Scholarships (L)

Application forms for the following scholarships are available from the Consulate General of the Federal Republic of Germany, PO Box 204, Woollahra NSW 2025.

One-Semester German Studies Scholarships

- DM1,000 a month living allowance, travel assistance of DM2,500 and the health insurance contribution
- One semester

Applicants must be in their third year of German Studies. Applications close 1 July.

Deutschlandkundlicher Winterkurs

- DM3,500 to assist with travel and living expenses and course fees

Undergraduate and postgraduate students from all fields with at least two years University level German (with a better than B average) may apply for this scholarship. The students should be aged from 19 to 32 and proposing to undertake the 8 week (in January and February 1997) German studies course (in German) at the University of Freiburg. The course provides language instruction and concentrates on historical and cultural aspects of contemporary Germany for students with some knowledge of German and a background in German Studies. Applications close 1 August.

The International Exchange Travel Scholarships (L)

- Up to $1,500 pa
- 1 year

The scholarships were established to encourage UNSW students to participate in the University’s formal international exchange programs. Students must be undergraduates embarking on a period of study overseas which will count toward their UNSW degree. Awards will be granted on the basis of academic merit. Interested students should contact the International Student Centre, tel (02) 9385 5333.

The Mitsui Education Foundation Scholarship (L)

A one month scholarship to Japan is available to a young Australian national to help promote goodwill between the two countries. Candidates should be full-time undergraduate students aged between 20-24 and preferably in their third or fourth year. The successful student will travel to Japan during November and December. Application forms become available in June and close mid-July.

The National Asian Languages Scholarship (L)

Students who have completed two years of tertiary level language study can apply to undertake advanced language study in Asia for 6 to 12 months. Applications close 15 September.

The NSW Travelling Art Scholarship (L)

- $25,000

The scholarship is available to an emerging visual artist to undertake a course of study or training overseas for one or two years. Guidelines and applications are available from NSW Ministry for the Arts, GPO Box 5341, Sydney 2001 (02 228 5533). Applications normally close in July.

The Robert Sutton/ Jardine Matheson Scholarship (L)

- Up to $1,000

This scholarship is available to provide an Honours year student, from either the Faculty of Commerce or from the Faculty of Arts, with assistance to undertake a semester of study in Asia which would count towards their degree. Further information is available from the International Student Centre.

The Swiss Confederation Scholarships (L)

One scholarship may be available from The Swiss Confederation for art studies (for example, painting, graphic design, sculpture, music) in the 1997/1998 academic year. The scholarship will be awarded on the basis of academic merit and the possibilities for study in Switzerland. Applicants must have been born after 1 January 1962. The scholarship can only be allocated after the candidate has been accepted by a Swiss art school or conservatory. Applicants will be required to pass a language test in German or French. Applications close 1 December 1996.

The STA Travel Grant (L,L)

- Up to $3,000

Applicants must be undertaking study leading to a degree or diploma of the University and be members of the University Union. The grant is awarded on the basis of significant contribution to the community life of the University involving a leadership role in student affairs and the University Union and the relevance and merit of the proposed travel to the student’s academic program or University Union activities. Applications close 30 April each year.
Graduate Scholarships

Following are details of scholarships available to postgraduate students at UNSW.
The scholarships are listed by Faculty and course (eg scholarships in Science or Engineering) or whether they are available to undertake travel. If a scholarship is available to all students it will be listed in the General Scholarships section.

For further information contact:
The Scholarships Unit
The University of New South Wales
Sydney 2052 Australia
Tel (02) 9385 3100/3101/1462
Fax (02) 9662 1049
E-mail: R.Plain@unsw.edu.au

General Scholarships

Main programs of assistance for postgraduate study

The Australian Postgraduate Awards (APA) (L, R)
- $15,364 pa (1996 rate). Other allowances may also be paid
- Up to 2 years for a Masters, 3 years for a PhD degree. PhD students may apply for up to 6 months extension in certain circumstances.
Applicants must have graduated, or be proposing to graduate in the current academic year, with Honours 1 or equivalent. The scholarships are available to undertake a Masters by Research or PhD. Students with Permanent Resident status must have lived in Australia continuously for 12 months. Applications close in late October.

The Australian Development Co-operation Scholarship (ADCOS) (I, R, C)
- Tuition fees. Some students may be eligible for air fares and a stipend
- Determined by normal course duration
This award is for international students from selected countries only. Information should be obtained from Australian Diplomatic Posts or Australian Education Centres in the home country. Conditions and entitlements vary depending on the home country.

The Overseas Postgraduate Research Scholarships (OPRS) (I, R)
- Tuition fees and medical cover only
- 2 years for a Masters, 3 years for a PhD
Eligibility is confined to postgraduate research students who are citizens of countries other than Australia or New Zealand. Applications close in late September.

Other General Scholarships

The Arthritis Foundation Research Scholarships (L, R)
- $8,000 - $22,000 pa
- 1 year with a possible 2 year extension
Applicants must be enrolled in studies leading to a PhD or MD. Awards are offered for clinical, scientific and allied health professional research and professional education projects. Specific awards relate to studies of rheumatoid arthritis, osteoporosis, ankylosing spondylitis, lupus, scleroderma, fibromyalgia and Paget’s Disease. Applications close with the Foundation in early June.

The Australian Brewers Foundation Alcohol Related Medical Research Postgraduate Scholarships (I, L, R)
- Similar to the NH&MRC (see NH&MRC entry)
- 1 year
Similar to the NH&MRC. The scholarships are available to support research into the medical, social and public health aspects of moderate, hazardous or harmful alcohol consumption. Applications close in mid-September.

The Australian Coral Reef Society (ACRS) Inc Student Grants (L, I, R, C)
- $1,000 (plus $1,500 Walker prize for the best proposal)
The grant is open to students at any Australian University who are enrolled in a PhD or MSc involving research on coral reefs. Recipients must be a member of, or be willing to join the ACRS. Applications normally close in late November.

The Australian Federation of University Women (L, I, R, C)
Each year the Federation offers to its members a number of awards for study in Australia and overseas. Details of awards are included in a booklet available from the Australian Federation of University Women Inc, 8th Floor,
The Australian Institute of Nuclear Science and Engineering (AINSE) Postgraduate Research Awards (L, I, R)

- $7,500 supplement to an APA or equivalent scholarship (see APA entry under General), plus allowances
- Up to 3 years

Applicants must be in receipt of an APA or equivalent scholarship and have completed (or expect to complete) a Bachelor of Engineering or Bachelor of Science with Honours. At least one quarter of the period of tenure must be spent at the Institute at Lucas Heights, NSW. Applications close in early December.

The Australian and New Zealand Council for the Care of Animals in Research and Teaching (ANZCCART) Student Award (L, I, R, C)

- $1000 for attendance at the annual conference

Applications can be postgraduate students from any discipline. The award provides assistance for a student to attend the annual conference. Applications are available from ANZCCART, PO Box 19, Glen Osmond, SA, 5064 (tel 08 303 7325). Applications close in July.

The Australian Pain Relief Association and Australian Pain Society PhD Scholarship (L, R)

- $16,750 pa plus allowances
- Up to 3 years (subject to satisfactory progress)

Applicants must hold an Honours 1 degree and be proposing to undertake a PhD in the mechanism, diagnosis, treatment or epidemiological features of acute or chronic (including cancer) pain. Further information and applications are available from the Australian Pain Society Secretariat, PO Box 629, Willoughby NSW 2068 (tel 02 9439 6744). Applications close in early November.

The Australian Telecommunications and Electronics Research Board (ATERB) Postgraduate Scholarships (L, R)

- $9,000 intended as a supplement to other awards
- 1 year with the possibility of renewal

Applicants must have graduated, or be proposing to graduate in the current academic year, with Honours 1 or equivalent. Preference will be given to applicants who are aged under 30 years as at 1 January and who are undertaking research in telecommunications transmission and terminal systems, telecommunications theory and applications, switching and signalling systems, software for telecommunications systems, integrated telecommunications and networking, distributed information systems and mobile communication. Applications are available from the Secretary, ATERB, PO Box 93, North Ryde, NSW 2113 (02 9887 8221). Applications normally close in late October.

The BHP Asia Pac Scholarship at UNSW (I, C)

- $10,000
- 1 year

The scholarship is open to citizens or permanent residents of Indonesia only. Applicants must be graduates of a recognised university who are eligible to enrol in a Master's by coursework degree at UNSW. The scholarship may be restricted to a particular coursework degree, to be determined. Selection will be based on academic merit, and the reasons for the proposed course of study, and may consider financial need. Applications close 31 October.

The Community Health and Anti-Tuberculosis Association – The Harry Windsor Biomedical and Medical Research Scholarship (L, R)

- $22,250 pa (Medical postgraduates), $15,364 – $19,827 pa (Biomedical Science graduates) plus allowances
- Up to 3 years

Applicants must be proposing to undertake medical research in the areas of tuberculosis, respiratory disease (particularly community aspects) or community health. Applications close in early August.

The Cooperative Research Centre for Eye Research and Technology (CRCERT) Postgraduate Research Scholarship (L, I, R)

- $15,321 – $19,827 pa (depending on the type of research)
- 3 years

The scholarship is available for full-time PhD studies in subjects such as optometry, microbiology, biochemistry, optics, materials science, polymer chemistry and immunology. Applicants should initially contact Dr Mark Wilcox, CRCERT, University of New South Wales, Sydney 2052 (02 9385 0222) for information about application procedures.

The Clean Air Society of Australia and New Zealand Inc Postgraduate Research Award (L, I, R, C)

- $5,000 pa
- 1 year, with a possible 1 year extension

The scholarship is open to students enrolled in a Masters degree program with a significant research component connected with air quality. Applications close in early February.

The CSIRO Division of Fisheries Supplementary PhD Awards (L, R)

- $10,000 pa
- Up to 3 years

This scholarship is a supplement to any primary scholarship (eg APA) for PhD study in marine studies, environmental studies, zoology, botany, broadly-based life sciences,
SCHOLARSHIPS

economics and mathematics. Applications close in early March.

The Dairy Research and Development Corporation (DRDC) Postgraduate Education Program (L, R)

Awards to undertake full-time postgraduate research degrees are available in a wide range of disciplines including dairy manufacturing, farm research, economics and marketing, and agricultural extension. New and experienced applicants are welcome to apply. Guidelines and applications are available from the Scholarships Unit or DRDC, PO Box 8000, Glen Iris VIC 3146 (03 9889 0577). Applications close in early March.

The Energy Research and Development Corporation (ERDC) Postgraduate Awards (L, R, C)

- $21,000 pa plus $3,000 operating expenses to the institution
- Up to 3 years

ERDC awards are based on academic excellence or a proven track record of excellence in research which indicates potential to contribute to the energy industry. Projects should be relevant to ERDC's objectives for its investments. Applications close in late September.

The Garnett Passe and Rodney Williams Memorial Foundation Research Scholarships in Otolaryngology (L, I, R)

- $15,364 pa for science graduates, $22,850 pa for medical graduates, plus allowances
- 3 years

The scholarships are available to medical or science graduates for research in Otolaryngology or in related fields of biomedical science. Applicants must be enrolled in a postgraduate degree in Australia or New Zealand. Information and applications are available from the Garnett Passe and Rodney Williams Memorial Foundation, Pelham House, 165 Bouverie St, Carlton VIC 3053. Tel (03) 9349 2622, Fax (03) 9349 2615. Applications normally close in late August.

The Gerontology Foundation Grant-in-Aid (L, I, R, C)

- Up to $5,000 for a specific research project

A Grant-in-Aid is awarded to students who have not had their work published in a refereed journal and who have not won any research grants in open competition. The grant supports a proposed scientific investigation topic specified by the Foundation. Information and applications are available from The Executive Officer, Gerontology Foundation of Australia Inc, PO Box 199, Annandale NSW 2038. Applications normally close in late July.

The Gowerie Scholarship Trust Fund (L, R, C)

- $4,000 pa
- 2 years

Applicants must be members of the Forces or children (or grandchildren or lineal descendants) of members of the Forces who were on active service during the 1939-45 War. Tenable at tertiary institutions in Australia and overseas. Applications close in early October.

The Grains Research and Development Corporation (GRDC) Junior Research Fellowship (L, R)

- $21,000 pa plus up to $3,000 to the supporting institution, some conference/workshop attendance allowances
- Up to 3 years

Applicants must be undertaking full-time PhD studies in fields of high priority to the grains industry. Applications close in mid-October.

The Great Barrier Reef Marine Park Authority Research Support (L, I, R)

- $1,000

Applicants must be enrolled in a full-time PhD with a research project that could contribute to the planning and managing work undertaken by the Great Barrier Reef Marine Park Authority, and to the Reef's ecologically sustainable development. Studies may be in a variety of areas and can involve any aspect of the physical, biological, social, cultural, and economic environments of the Great Barrier Reef. Students proposing communication and extension-related studies can also apply. Applications and further information may be obtained from the Director, Research and Monitoring Section, Great Barrier Reef Marine Park Authority, PO Box 1379, Townsville QLD 4810 (07 7818811). Applications close in early December.

The Harold G. Conde Memorial Fellowship (L, R, C)

- $5,000 pa, subject to the availability of funds
- Up to 3 years

Applicants should be honours graduates. The Fellowship is a supplementary award to be held in conjunction with another scholarship and is for postgraduate study or research in a field related to the electricity industry. Applications close in early April.

The International Wool Secretariat Postgraduate Scholarships (L, I, R)

- $21,362 pa plus allowances
- Up to 3 years

The scholarships are tenable in Australian tertiary institutions or, in exceptional circumstances, overseas. The major areas of research are soils and pastures-production and utilisation, sheep breeding, sheep parasites and diseases, wool harvesting, processing and product
development, raw wool marketing, economic research and technology transfer in all of these areas. Applications close in mid-October.

**The June Opie Fellowship (L, I, R, C)**
- NZDS$10,000
- 1 year

The award is administered by the University of Auckland and is available to citizens and permanent residents of Australia, Canada and New Zealand, and is designed as an incentive for students of high academic achievement who have a severe disability. It is primarily intended for those who plan to undertake postgraduate study with a view to preparing themselves for a role in the professions, in politics or more particularly in university teaching and research and who have disability issues as a continuing interest. Applications close with the University of Auckland in early October.

**Land and Water Resources Research and Development Corporation (LWRRDC) Postgraduate Research Scholarships (L, I, R)**
- $20,000 pa plus $5,000 for operating expenses
- 2 years for Masters, 3 years for a PhD degree

General Research Scholarships are available for research that will lead to better management, sustainable use and conservation of land, water and vegetation resources in Australia. Irrigation Research Scholarships are specifically for research that will lead to better management, sustainable use and conservation of natural resources within the irrigation industries. Applications are available from the Scholarships Unit or LWRRDC, GPO Box 2182, Canberra ACT 2601 (tel 06 2573379). Applications close in early October.

**The Meat Research Corporation (MRC) Studentships and Junior Research Fellowships (L, R, C)**
- $14,961 pa for study in a Masters or Diploma, $20,000 for a PhD in Australia or $US17,500 for study overseas, plus airfares, insurance and allowances
- 2 years for Studentships (Masters or Diploma), 3 years for Junior Research Fellowships (PhD)

Applicants should be proposing to undertake research and training in "off-farm" disciplines of practical value to the Australian beef, sheep meat, goat meat and buffalo industries. Applications normally close in mid-August.

**The Menzies Research Scholarship in the Allied Health Sciences (L, R)**
- Up to $24,000 pa
- 2 years

The scholarship is awarded to stimulate research in the non-medical allied health disciplines. Applications close in mid-June.

**The Minerals Council of Australia Student Research Award (L, I, R)**
- $500, plus travel and accommodation for the Environmental Workshop

The award is open to scholars who have completed or are undertaking postgraduate studies, and is aimed at encouraging excellence in student research and communication in the field of environmental management related to mining. The award will be judged on a paper written for and presented at the Minerals Council of Australia's Environmental Workshop. Nominations usually close in early May.

**The National Drug Strategy (NDS) Postgraduate Research Scholarship (L, I, R)**
- $23,204 pa
- 1 year, with a possible 2 year extension

Scholarships are available to students undertaking PhD studies and aim to develop expertise in researching and evaluating non-biomedical approaches to the prevention and treatment of drug misuse. Selection is based on academic merit, work experience and the potential of the project. Applications close in mid-July.

**The National Health and Medical Research Council (NH&MRC) Aboriginal Health Research Scholarships (L, R)**
- $15,364 - $22,850 pa (depending on qualifications)
- Up to 3 years

Applicants must be undertaking a course which includes, or leads to, research relevant to Aboriginal health. Applications close in mid-July.

**The National Health and Medical Research Council (NH&MRC) Dora Lush Postgraduate Scholarships (L, R)**
- $15,364 pa (or $19,307 for AIDS research, $17,364 for special initiative scholars) plus allowances
- Up to 3 years

Applicants should have completed a Science degree with Honours, or equivalent, at the time of submission of the application. Students enrolled in the Honours year at the time of application are not eligible. Applications close mid-July.

**The National Health and Medical Research Council (NH&MRC) Medical and Dental Postgraduate Scholarships (L, R)**
- $22,850 pa plus allowances
- Up to 3 years

The scholarships are open to medical and dental graduates. Applications are particularly encouraged for postgraduate research in the following fields - alcohol and substance abuse, prostate cancer, nursing and allied health services, breast cancer, dementia, schizophrenia,
dentistry and dental services, injury and HIV/AIDS. Applications close in mid-June.

The National Health and Medical Research Council (NH&MRC) Public Health Postgraduate Scholarships (L, R)
- $22,000 pa (medical postgraduates), $19,500 pa (other postgraduates), plus allowances
- Up to 2 years for Masters, and up to 3 years for a PhD
The scholarship is designed to enable postgraduate students to obtain formal academic training in public health research. Applications close in mid-June.

The National Heart Foundation of Australia Postgraduate Medical and Science Research Scholarships (L, R)
- $16,364 (science), $22,250 (medical) plus $1,200 departmental allowance
- 1 year, renewable up to 3 years
The scholarship is available for research in cardiovascular function, disease or related problems. Applicants must usually reside in Australia. Medical applications close in mid-May and Science applications close in early October.

The National Tertiary Education Union (NTEU) Scholarship for the Study of Industrial Relations and Unionism in Australian Tertiary Education (L, I, R)
- $5,000 pa
- Up to 3 years
Applicants must have made or intend to make an application for candidacy for a Masters by Research or PhD in a topic which covers some aspect of industrial relations, policy issues and/or unionism related to Australian tertiary education. Applications close in early November.

The National Multiple Sclerosis Society of Australia Postgraduate Research Scholarships (L, R)
- Same as NH&MRC scholarship stipends for medical and biomedical graduates
- Up to 2 years
Scholarships are available to medical graduates (or to appropriately qualified science graduates or health professionals) enrolled in a postgraduate research degree. Applications close in mid-July.

The NSW Ministry for the Arts Scholarships (L, R, C)
- $5,000 – $25,000 (depending on the award)
The NSW Government offers a number of scholarships and awards to writers, artists and scholars living in NSW. Further information is available from New South Wales Ministry for the Arts, GPO Box 5341, Sydney NSW 2000. Tel (02) 9228 3533, Fax (02) 9228 4722.

The Pig Research and Development Corporation (PRDC) Postgraduate Research Fellowship (L, R)
- $25,000 pa plus allowances
- Up to 3 years
Applicants must be undertaking a PhD relevant to the increased competitiveness of the Australian pig industry. Applications close in mid-December.

The Pig Research and Development Corporation (PRDC) Postgraduate Top-Up Scholarships (L, R)
- Up to a maximum of $21,000 as a supplement to other scholarships, plus allowances
Applicants must be eligible for another scholarship and be undertaking research relevant to increasing the competitiveness of the Australian pig industry. Applications close in mid-December.

The Re-Entry Scholarship for Women (L, I, R, C)
- $15,364 pa (equivalent to the Australian Postgraduate Award)
- 1 year
Applicants must be women who have been out of full-time paid professional employment for a period time and who wish to take up or resume a full-time research or coursework program of postgraduate study. Priority will be given to applicants wishing to update their research skills or to those who wish to gain further experience in order to return to employment in industry, business or education. Applicants must be able to demonstrate a well-planned career path. A written application and curriculum vitae should be forwarded to the Scholarships Unit, UNSW. Applications close 31 October.

The River Basin Management Society Ernest Jackson Memorial Research Grants (L, I, R)
- Up to $2,000
The scholarship assists PhD and Masters students undertaking research in the field of river basin management. Applications usually close in May and November each year.

The Ronald Henderson Postgraduate Scholarships (L, R)
- $5,000 pa as a supplement to an APA
- Up to 2 years for Masters by Research, 3 years for a PhD
The scholarships are open to graduates who intend to commence Masters or PhD studies in social economics, and who obtain an Australian Postgraduate Award or equivalent university postgraduate awards. Applicants may be enrolled in economics, commerce or arts degrees. Information and applications are available from the Ronald Henderson Research Foundation, 5th Floor, 165 Flinders Lane, Melbourne VIC 3000. Tel:(03) 9654 8299, Fax: (03)
The RSPCA Alan White Scholarship (L, I, R)
• $2,500
Applicants should be undertaking original research to improve the understanding and welfare of animals. Applications close in mid-March.

The Rural Industries Research and Development Corporation (RIRDC) Postgraduate Scholarships (L, R)
• $21,500 pa plus $3,500 to the host institution
• Up to 3 years
The scholarships are available for postgraduate study in rural research and development in areas of interest to the Corporation. Applicants must hold an Honours 1 or 2/1 degree in an appropriate discipline. Applications from mature age students with rural industry experience are particularly encouraged. Applications close in early November.

The Shell Postgraduate Scholarship (L, R)
• $20,000 pa
• Up to 3 years
Applicants should intend to study a PhD in science, engineering, economics/commerce, computer science, or a closely related discipline. Applications close in mid-October.

The Social Policy Research Centre (SPRC) Postgraduate Research Scholarship (L, I, R)
• $15,364 pa (equivalent to the APA), plus allowances
• 3 years for a PhD
Applicants should have a Bachelors Degree with at least Honours 2/1 in any of the fields of study relevant to social policy. The successful candidate will be enrolled in a relevant School of the University but will undertake research at the Centre. Prospective applicants must contact the School in which they wish to enrol. Application packages are available from the SPRC Publications and Information Officer, Social Policy and Research Centre, UNSW (02 385 3833). Applications close late October.

The State Librarian's Metcalfe Scholarship at UNSW (L, R, C)
• To be determined
The scholarship is open to suitably qualified librarian's for a Masters degree in the areas of librarianship, marketing or technology, in relevant Faculties at UNSW. Selection will be based on academic merit, outline for the proposed area of study and demonstrated interest in Librarianship. Applications normally close 30 November.

The Sugar Research and Development Corporation (SRDC) Postgraduate Scholarships (L, R)
• $22,000 pa plus $3,000 to the host institution
• Up to 3 years
The scholarships are available to foster research in disciplines compatible with the SRDC's research priorities. Applications close in mid-September.

The Telstra Research Laboratories Postgraduate Research Fellowship (L, R)
• $11,000 pa supplement to an Australian Postgraduate Award (see APA entry under General)
• Up to 2 years for Masters by Research, up to 3 years for a PhD
Applicants must be undertaking a Masters by Research or PhD in electrical engineering, computer science or other appropriate discipline. Applicants must have completed or expect to complete an appropriate degree with Honours or the equivalent. Applications close in mid-September.

The Wenkart Foundation Grants (L, I, R)
• Up to $22,000 pa
• 2 years but may be renewed
Applicants must be undertaking full-time research in clinical, biomedical or health related clinical sciences. Applications close in mid-May.
Faculty of Science

Optometry

The Contact Lens Society of Australia Scholarship (L, I, R, C)

- $3,500 pa

The scholarship is provided to enable a graduate in optometry, medicine, or other appropriate discipline to undertake the degree of Master of Science or PhD in the School of Optometry. Enquiries to The Secretary, Contact Lens Society (tel 02 9243 3997).

Physics

The Gordon Godfrey Scholarship in Theoretical Physics (L, I, R)

- $1,500 pa
- 2 years

The scholarship is provided to enable a student to undertake a research degree in theoretical physics. The scholarship may be held concurrently with another award. Information is available from the School of Physics (tel 02 9385 4553/5649).

Travel Scholarships

General

AAUW Educational Foundation International Fellowships (L, I, R, C)

- US$15,065
- 1 year

The American Association of University Women (AAUW) offers Fellowships for full-time postgraduate study or research in the United States for one academic year. Applicants must be females who have earned the equivalent of a United States Bachelor's degree and who are not US citizens or permanent residents. Preference will be given to women who show prior commitment to the advancement of women and girls through civic, community or professional work. Members of the Australian Federation of University Women (AFUW) may also be eligible for AAUW-IFUW awards for advanced training at any overseas institution. Application packs are available from the Scholarships Unit or the AAUW Educational Foundation, 2201 N. Dodge St, Dept 67, Iowa City, IA 52243 USA. Applications close in late November.

The ACSANZ Postgraduate Awards for Canadian Studies (L, I, R)

- $3,000 towards a research trip to Canada

The Association for Canadian Studies in Australia and New Zealand will offer grants to postgraduate students wishing to undertake a short research trip to Canada. Applicants must be enrolled in Master's or Doctoral degrees at Australian or New Zealand universities, and grants will be for research into all areas of academic enquiry that have a distinctly Canadian orientation, for example in the humanities, social and political sciences and some branches of the health and environmental sciences. Enquiries and applications should be directed to the Academic and Cultural Relations Officer, Canadian High Commission, Commonwealth Avenue, Canberra, ACT 2600. Tel (06) 273 3844, Fax (06) 270 4083, E-mail: co.cnbra@cnbra01.x400.gc.ca

The Asian Studies Library Awards (ASLA) (L, R)

- $250 to $800 in a lump sum

Applicants must be undertaking a Masters by Research or PhD. The award provides a contribution towards the travel costs to centres with Asian collections to undertake library research. Further information and application forms are available from the Project Co-ordinator, Asian Studies Library Awards, Collection Management Division, Library ANU, Canberra ACT 2600. Applications close in mid June.

The Association of International Education Japan (AIEJ) Short-Term Student Exchange Promotion Program (Inbound) Scholarships (L, I, R, C)

- 50,000 yen (settling-in allowance), 80,000 yen per month, plus airfare
- Six months to one year

Applicants must be accepted by a Japanese university under a student exchange program agreement with UNSW. Students must initially apply directly to a Japanese university through the International Student Centre at UNSW. The Japanese host university will recommend candidates to AIEJ and students must apply as directed by the host university. Applications close in February, May and September each year.
The Association of International Education Japan (AIEJ) Short-Term Student Exchange Promotion Program (Inbound) Peace and Friendship Scholarships (L, I, R, C)

- 50,000 yen (settling-in allowance), 100,000 yen per month, plus airfare
- Ten months to one year

Applicants must be accepted by a Japanese university under a student exchange program agreement with UNSW. Students must initially apply directly to a Japanese university through the International Student Centre at UNSW. The Japanese host university will recommend candidates to AIEJ and students must apply as directed by the host university. Applications close in February, May and September each year.

The Australian Bicentennial Scholarships and Fellowships Scheme (L, R, C)

- 4,000 pounds sterling
- At least 3 months

Applicants must be enrolled as postgraduate students at Australian higher education institutions and usually resident in Australia. Awards are available for study in the United Kingdom in any discipline. Applications close with the Executive Director, Australian Vice-Chancellors' Committee, GPO Box 1142, Canberra ACT 2601 in late October.

The Australian Federation of University Women (AFUW) (L, I, R, C)

Each year the Federation offers to its members a number of awards for study in Australia and overseas. Details of awards are included in a booklet available from the Australian Federation of University Women Inc, 8th Floor, Dymocks Building, 428 George Street, Sydney NSW 2000 (02 9232 5629).

The British Aerospace Australia Chevening Scholarship (L, R, C)

- Tuition fees, maintenance allowance, airfare
- 1 year

The scholarship is available to undertake an approved one-year MSc course in aerospace engineering at a British university. Applicants must hold, or expect to complete before October 1996, an Honours 1 or 2/1 degree. Application forms are available from the British Council, PO Box 88, Edgecliff NSW 2027, Tel (02) 9326 2022, fax (02) 9327 4668. Applications close in October.

The Cancer Research Fellowship Programme (L, I, R)

- Travel expenses and living allowances
- 1 year

Applicants should be engaged in research in medical or allied sciences and intending to pursue a career in cancer research. The awards are tenable at the International Agency for Research on Cancer in France, or any other suitable institution abroad. Areas of research include epidemiology, biostatistics, environmental and viral carcinogenesis and mechanisms of carcinogenesis. Applications are available from the International Agency for Research on Cancer, 150 cours Albert-Thomas, 69372 Lyon Cedex 08, France, Tel 72 73 84 85, fax 72 73 85 75. Applications normally close in December.

The Commonwealth Scholarship and Fellowship Plan (CSFP) (L, R, C)

- Varies for each country. Generally covers travel, living, tuition fees, books and equipment, approved medical expenses.
- Usually 2-3 years depending on the country

CSFP provides opportunities for Commonwealth students to undertake advanced academic study in other Commonwealth countries. Candidates should be Commonwealth citizens who are graduates. Applications close at different times depending on the country in which the study is proposed.
The Coral Sea Scholarship (L, R, C)

- $3,000 per month, plus $2,500 travel entitlement
- Up to 3 months

The award is for applicants holding a tertiary qualification who are proposing study in the United States, to investigate a problem or opportunity relevant to Australian business or industry. Applicants must be Australian citizens (Permanent Residents are ineligible). Applications are available from the Program and Development Officer, Australian-American Foundation, GPO Box 1559, Canberra City ACT 2601 (06 247 9331). E-mail: lindy@aaef.anu.edu.au. Applications close 30 September.

DAAD – The German Academic Exchange Service Scholarships (L, I, R, C)

Application forms and information (including closing dates) for the following scholarships are available from the Consulate General of the Federal Republic of Germany, PO Box 204, Woollahra NSW 2025.

One-Year Scholarships

- Monthly allowance between DM1,000 and DM1,600, airfares, health and accident insurance, and tuition fees
- 1 year

Scholarships are available for graduate studies in Germany. Applicants must be aged 32 or under and hold a Bachelor's degree (or equivalent). A working knowledge of German is required of those who study arts; others may receive additional language training prior to the commencement of the scholarship. Applications normally close in September.

Research Grants

- Monthly stipend of DM1,600, health insurance contribution and travel assistance of DM2,500
- 2 to 6 months

PhD students can apply for assistance to undertake a short period of research in Germany. Applicants must be aged 32 or under.

Information Visits by Groups of Professors and Students

Groups (minimum of 10 persons, maximum of 30 persons) of professors and students can apply for assistance to visit Germany with the intention of increasing the knowledge of specific German topics. The program offers support in making travel and study arrangements and may include some financial assistance (based on the length of the stay and the number of persons undertaking the study tour). The period of stay must be between 7 and 21 days. No tours will be organised for July or August.

Deutschlandkundlicher Winterkurs

- Course fees, DM3,500 to assist with travel and living expenses, health insurance
- 8 weeks (3 January – 21 February 1997)

Undergraduate and postgraduate students from all fields with at least two years university-level German may apply for this scholarship. Applicants must be Australian or New Zealand citizens, aged from 19 to 32 and proposing to undertake German studies course (in German) at the Albert-Ludwigs University of Freiburg. The course provides language instruction and concentrates on historical and cultural aspects of contemporary Germany for students with a background in German Studies. Applications usually close in early August.

East West Center Graduate Degree Fellowship (L, I, R, C)

- Accommodation, monthly stipend of US$600, tuition fees, health insurance plus allowances
- 12 months with a possible 1 year extension

The Fellowships are available for postgraduate study at the University of Hawaii, preferably at Masters level. Citizens of countries in Asia, the Pacific and the United States are eligible to apply. Potential applicants must request an application package direct from the East West Centre, Awards Services Officer, Burns Hall 2066, 1601 East-West Road, Honolulu Hawaii 96848-1601, USA. Tel 1 808 944 7735, Fax 1 808 944 7730. Information sheets only are available from the Scholarships Unit. Applications close in early October.

Frank Knox Memorial Fellowships (L, R, C)

- US$14,500 pa plus tuition fees and health insurance
- 1 year with the possibility of renewal for a further year.

Applicants must be undertaking, or near completion, of a postgraduate qualification at an Australian university. The scholarships are tenable at one of the graduate schools of Harvard University. Applications close in early October.

The Fulbright Postgraduate Student Awards (L, I, R)

- Up to US$24,000 depending on the type of award, with the possibility of other allowances (eg return airfares and tuition fees)
- 1 year

Applicants must be enrolled in a postgraduate degree at an Australian institution and wishing to undertake research at an American institution. Students planning to undertake an American higher degree in any field can apply for the Fulbright Student Awards. Students proposing to undertake study in engineering, visual and performing arts, statistics (and related disciplines) and the links between educational institutions, workplaces and communities or Aboriginal and Torres Strait Islander people can apply for the Privately Sponsored Postgraduate Student Awards. Students proposing study in an American Master of Business Administration can apply for the David O. Anderson Scholarship sponsored by the Chase
The Golda Meir Scholarship (L, I, R, C)
- Tuition (some allowances may be paid)
- 1 year

The Golda Meir scholarships are available to graduates, with a major field of study in Jewish studies, religious studies, Israel studies or Middle East studies, who meet the relevant requirements for the Graduate Year Program at the Hebrew University's Rothberg School for Overseas Students. Application forms are available from the Australian Friends of the Hebrew University, 36 Hawthorn Road, South Caulfield VIC 3162 (tel 03 9272 5511).

The Gowrie Scholarship Trust Fund (L, R, C)
- $4000 pa
- 2 years

Applicants must be members of the Forces or children (or grandchildren or lineal descendants) of members of the Forces who were on active service during the 1939-45 War. Applications close in early October.

The Harkness Academic Fellowships (L, R, C)
- 12-21 months

The Academic Fellowships cover academic study and research. Applicants should be active in the public, business or voluntary sectors with an outstanding record of achievement. Special consideration may be given to studies in health care and related community issues. Applications are available on written request from the Harkness Fellowship, PO Box 836, Belconnen ACT 2606. Applications close in early September.

The Harkness Mid-Career Fellowships (L, R, C)
- Professional travel allowance
- 7-12 months

The Mid-career Fellowships are for study and practical experience. Applicants should be active in the public, business or voluntary sectors with an outstanding record of achievement. Special consideration may be given to studies in health care and related community issues. Applications are available on written request from the Harkness Fellowship, PO Box 836, Belconnen ACT 2606. Applications close in early September.

The Golda Meir Scholarships are for study and practical experience. Applicants should be active in the public, business or voluntary sectors with an outstanding record of achievement. Special consideration may be given to studies in health care and related community issues. Applications close in early September.

The Lady Davis Fellowship Trust (L, I, R, C)
- Monthly allowance, airfare, tuition fees plus other allowances may be payable
- Up to 2 years

The scholarships are tenable for research study at Japanese universities, in a field related to the applicants' first course of study. Applicants must be university graduates, under 35 years of age, who are willing to study the Japanese language. Applications normally close in late June.

The Kobe Steel Postgraduate Scholarship (L, R, C)
- Maintenance allowance of at least 7,000 pounds sterling plus tuition fees and travelling expenses
- Up to 2 years with the possibility of extension

The scholarship is tenable at St Catherine's College, Oxford University. The scholarship will be awarded to outstanding individuals who display qualities of leadership, excellence in sport as well as academic ability. Students should have a past or future interest in Japan. Applications close in mid-October.

The Lady Davis Fellowship Trust (L, I, R, C)
- Monthly allowance, airfare, tuition fees plus other allowances may be payable
- Up to 2 years

The scholarships are tenable in Australian tertiary institutions or, in exceptional circumstances, overseas. The major areas of research are soils and pastures- production and utilisation, sheep breeding, sheep parasites and diseases, wool harvesting, processing and product development, raw wool marketing, economic research and technology transfer in all of these areas. Applications close in mid-October.

Japanese Government (Monbusho) Research Scholarships (L, R)
- Monthly allowance, airfare, tuition fees plus other allowances may be payable
- Up to 2 years

The scholarships are tenable for research study at Japanese universities, in a field related to the applicants' first course of study. Applicants must be university graduates, under 35 years of age, who are willing to study the Japanese language. Applications normally close in late June.

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- Up to 2 years

The scholarships are tenable in Australian tertiary institutions or, in exceptional circumstances, overseas. The major areas of research are soils and pastures- production and utilisation, sheep breeding, sheep parasites and diseases, wool harvesting, processing and product development, raw wool marketing, economic research and technology transfer in all of these areas. Applications close in mid-October.
Applications must hold, or expect to complete before October, an Honours 1 or 2/1 degree. Application forms are available from the British Council, PO Box 88, Edgecliff NSW 2027. Tel (02) 9326 2022, Fax (02) 9327 4868. Applications close late October.

The Meat Research Corporation (MRC) Studentships and Junior Research Fellowships (L, R, C)

- $14,961 pa for study in a Masters or Diploma, $20,000 for a PhD in Australia or $US17,500 for study overseas, plus airfares, insurance and allowances
- 2 years for Studentships (Masters or Diploma), 3 years for Junior Research Fellowships (PhD)

Applicants should be proposing to undertake research and training in “off-farm” disciplines of practical value to the Australian beef, sheep meat, goat meat and buffalo industries. Applications close in mid-March.

The Oxford Nuffield Medical Fellowship (L, R)

- Between 27,525 and 31,945 pounds sterling pa (subject to tax), plus travel expenses
- 2 years with a possible 1 year extension

The awards are available for research in a clinical medicine or medical science department of the University of Oxford. The appointee is required to return to Australia for at least 3 years to perform work similar to that carried out in the United Kingdom during the tenure of the Nuffield fellowship. Further information is available from Australian Academy of Science, GPO Box 783, Canberra City ACT 2601. Tel (06) 247 5777, Fax (06) 257 4620. Applications close in mid-March.

The NSW Government offers a number of scholarships and awards to writers, artists and scholars living in NSW. Further information is available from New South Wales Ministry for the Arts, GPO Box 5341, Sydney NSW 2000. Tel (02) 9228 3533, Fax (02) 9228 4722.

The Robert Gordon Menzies Scholarship to Harvard (L, R, C)

- Up to $25,000 towards tuition fees, living expenses or travel costs, students who enrol in the Harvard Business School may be eligible for an additional $12,000
- 1 year

The scholarships are tenable at one of the graduate schools of Harvard University. Applicants must be postgraduates of an Australian tertiary institution who intend to return to Australia after studies at Harvard or to represent Australia overseas. The scholarships are awarded on the basis of academic excellence and personal qualities such as leadership and public duty. The successful applicant will be expected, when circumstances permit, to repay the scholarship in later years. Applications and additional information may be obtained from the Administrative Services Group, ANU, Canberra ACT 0200. Tel (06) 249 5444, E-mail: Jane.Sutton@anu.edu.au. Applications close at the end of December.

Overseas Research Students Awards Scheme (United Kingdom) (L, I, R)

- Difference in tuition fees for a ‘home’ and an ‘overseas’ student

The ORS Scheme provides partial remission of tuition fees to overseas students of outstanding merit and research potential. The awards are open to graduates who will be commencing full-time research studies at a participating institution in the United Kingdom, and who will be liable to pay tuition fees at the overseas student rate. Information and applications must be obtained directly from the Registrar or Secretary of the institution students are applying to in the United Kingdom. Applications normally close in April in the year of tenure.

The Rhodes Scholarship (L, R, C)

- Not less than 6,900 pounds sterling pa, tuition fees and assistance with travel expenses
- 2 years, with a possible 1 year extension

The scholarship is tenable at Oxford University. Applicants must be aged between 19 and 25 and have an honours degree or equivalent. Selection for the scholarship will be based on academic and personal achievements, including community spirit. Applications close in late August.

The STA Travel Grant (L, I, R, C)

- Up to $3000

Applicants must be undertaking study leading to a degree or diploma of the University and a member of the University Union. The grant is awarded on the basis of significant contribution to the community life of the University involving a leadership role in student affairs and the University Union and the relevance and merit of the proposed travel to the student’s academic program or University Union activities. Applications close in mid-April.
Yokahama Scholarship Awards (L, R, C)

- 120,000 yen per month undergraduate, 150,000 yen per month for postgraduate students, tuition fees, airfare plus allowances
- Up to 4 years (undergraduate), 1 year for Japanese language study, 2 years for a Masters, 3 years for a PhD

Applicants must have submitted their application to, or have been accepted by a Japanese university and be able to communicate in Japanese (or be willing to undertake intensive study of the Japanese language). Applicants in all disciplines are eligible except for medicine, veterinary science and dentistry. Scholarships will be granted subject to the applicant’s final acceptance by the chosen Japanese university. Original application forms only will be accepted and are available from the Scholarships Unit or from the Yokahama Scholarship Foundation, tel (07) 5588 0880, fax (07)5588 0842. Applications close with the Foundation in early October.

Faculty of Science

The Laporte Centenary Scholarship (L, R)

- Airfare, living allowance, tuition fees.
- 3 to 6 months

The scholarship is tenable for postgraduate research in the United Kingdom. Candidates should be undertaking a postgraduate qualification in a science-based discipline, preferably in the practical application of special chemicals. Applications close in mid-October.
The following information summarises prizes awarded by the University. Prizes which are not specific to any School are listed under General. All other prizes are listed under the faculty, school or department in which they are awarded. Law prizes are awarded only for students enrolled in the LLB or Jurisprudence courses.

Information regarding the establishment of new prizes may be obtained from the Student Information and Systems Office located on the Ground Floor of the Chancellery.

The scholarship information is normally provided in the following format:

• Amount
• Conditions

### Undergraduate Prizes

#### The University of New South Wales (General category for Prizes)

**School of Biochemistry and Molecular Genetics**

**The Sydney Technical College Union Award**

- $400.00 and a bronze medal

Leadership in student affairs combined with marked academic proficiency by a graduand

**The Australasian Association of Clinical Biochemists Prize**

- $100.00 and 1 year associate membership and a plaque

The best performance in BIOC3261 by a student proceeding to the degree of Bachelor of Science

**The Beckman Instruments Prize of the Biochemical Graduates Association**

- $200.00

The best performance in the examinations in level 2 Biochemistry subjects by a student proceeding to the award of the degree of Bachelor of Science

**The UNSW Human Rights Centre Essay Prize**

- $400.00

The best research essay on a Human Rights topic by a student enrolled at the University of New South Wales proceeding to the award of a Bachelor degree

**The Biotech International Prize of the Biochemical Graduates Association**

- $200.00

The best performance in the fourth year Biochemistry Honours program by a student proceeding to the award of the degree of Bachelor of Science
The Molecular Simulations Prize
• $250.00
The best performance in BIOC3111 Molecular Biology of Proteins by a student proceeding to the degree of Bachelor of Science

The Selby Scientific Instruments Prize of the Biochemical Graduates Association
• $200.00
The best performance in the examinations in level 3 Biochemistry subjects by a student proceeding to the award of the degree of Bachelor of Science

School of Chemistry

The Bosworth Prize in Physical Chemistry
• $200.00 and a bronze medal
The best performance in CHEM3011 Physical Chemistry in the Bachelor of Science degree course.

The Inglis Hudson Bequest
• $15.00
The best performance in CHEM2021 Organic Chemistry

The Jeffery Bequest
• $100.00
The best performance in CHEM2021 Organic Chemistry

The June Griffith Memorial Prize
• $60.00
The best performance in Level 1 Chemistry subjects in the Bachelor of Science degree course

The Merck Sharp & Dohme (Australia) Pty Limited Prize
• $150.00
The best performance in Level 2 Chemistry subjects in the Board of Studies in Science and Mathematics

The RACI Analytical Chemistry Group Prize
• $150.00
The best performance in CHEM3041 Analytical Chemistry and CHEM3141 Advanced Analytical Chemistry

The University of New South Wales Chemical Society Parke-Pope Prize
• $100.00
Meritorious performance in Level 3 Chemistry subjects

School of Mathematics

The Applied Mathematics Prize
• $100.00
Excellence in level 3 Applied Mathematics subjects in a Bachelor degree or Diploma course

The C H Peck Prize
• $200.00
The best performance in Year 2 Mathematics by a student proceeding to Year 3 in the School of Mathematics

The Coca-Cola Amatil Prize
• $200.00
The best performance in Theory of Statistics or Higher Theory of Statistics 3 subjects in a Bachelor degree course

The Head of School's Prize
• $100.00
Excellence in four or more Mathematics units in Year 2 in a Bachelor degree or Diploma course

The J R Holmes Prize
• $100.00
The best performance in Level 3 Pure Mathematics subjects by a student in a Bachelor degree or Diploma course

The Michael Mihailavitch Erihman Award
• $1,000.00
The best performance by a student enrolled in a Mathematics Program, in examinations conducted by the School of Mathematics in any one year

The Reuters Australia Pty Limited Prize
• $100.00
Excellence in Higher Theory of Statistics 2 subjects in a Bachelor degree course

The School of Mathematics Prize
• $100.00
The best performance in basic Level 2 Higher Mathematics units by a student in a Bachelor degree or Diploma course
The School of Mathematics Prize
• $100.00
The best performance in MATH1131 Mathematics 1A or MATH1141 Higher Mathematics 1A, and MATH1231 Mathematics 1B or MATH1241 Higher Mathematics 1B by a student in a Bachelor degree or Diploma course

The Statistical Society of Australia (NSW Branch) Prize
• $200.00
The best performance in Theory of Statistics subjects

The T P F & C Fourth Year Prize
• $200.00
The best performance in the fourth year project by a student proceeding to the degree of Bachelor of Science at Honours level within the School of Mathematics

The T P F & C Third Year Prize
• $200.00
The best performance in both MATH3610 Higher Pure Mathematics 3 – Real Analysis and MATH3620 Higher Pure Mathematics 3 – Functional Analysis or in MATH3181 Applied Mathematics 3 – Optimal Control Theory

School of Microbiology and Immunology

The Bio-Rad Prize in Immunology
• $250.00
The best performance in MICR3051 Immunology 2

The Clinical Microbiology Update Programme Prize
• $300.00
The best performance in MICR3081 Medical Bacteriology by a student proceeding to the award of the degree of Bachelor of Science at Pass or Honours level

School of Optometry

The ACBO Prize
• Textbooks or visual therapy equipment for $150.00
Strand prize for best overall performance throughout the bachelor of Optometry course in binocular and children’s vision.

The Australian Optometrical Association Prize
• $500.00
Outstanding academic performance in the Bachelor of Optometry course

The Bausch & Lomb Prize
• Ray-Ban sunglasses valued at $300.00 $200.00 and a Plaque
The best performance in Year 3 of the Bachelor of Optometry course

The Eycon Lens Laboratories Pty Limited Prize
• Keratoconus contact lens fitting set ($160.00) and a trial fitting set of contact lenses
The best overall performance throughout the bachelor of Optometry course in contact lenses

The Hoya Lens Australia Pty Limited Prize
• $250.00
The best overall performance in Ocular and Visual Science throughout the Bachelor of Optometry course

The Hydron Pty Ltd Prize
• $250.00
The best performance in OPTM4302 Clinical Optometry 4 (Year 4) in the Bachelor of Optometry degree course

The Hydron Pty Ltd Prize
• $250.00
Best overall performance in Year 4 of the Bachelor of Optometry degree course

The Martin Wells Pty Limited Prize
• $250.00
The best final year essay in the Bachelor of Optometry degree course

The Martin Wells Pty Limited Prize
• $200.00
The best performance in OPTM2208 Diagnosis and of Ocular Disease (Year 2) and OPTM3208 Diagnosis and Management of Ocular Disease (Year 3) in the Bachelor of Optometry degree course

The Martin Wells Pty Limited Prize
• $200.00
The best performance in OPTM2301 Ocular & Visual Science 2 in the Bachelor of Optometry degree course
The Optical Products Pty Ltd Prize
- $250.00
The best performance in OPTM2303 Spectacle Lens and Optical Systems

The Optometric Vision Research Foundation Prize
- $250.00
The best research project in the final year of the Bachelor of Optometry degree course

The Optometrists Association of NSW Prize
- $150.00
The best overall performance in Year 2 of the Bachelor of Optometry course.

The Safilo Australia Prize
- $150.00
The best performance in OPTM2302 Clinical Optometry 2

The Theo Kannis Prize for Clinical Optometry
- $250.00
The best overall performance in Clinical Optometry throughout the Bachelor of Optometry degree course

The Bob Dalgllish Prize
- $100.00
The best performance in a competition based on the use of microcomputers in PHYS1601 Computer Applications

The Coherent Scientific Prize for Lasers, Optoelectronics & Applications
- $250.00
The best performance in PHYS3710 Lasers and Applications or PHYS3720 Optoelectronics

The Gordon and Mabel Godfrey Award in Theoretical Physics 4
- $200.00
Excellence in PHYS4503 Theoretical Physics 4 (Honours) in the Bachelor of Science degree course at honours level

The Gordon and Mabel Godfrey Prize in Theoretical Physics 3
- $200.00
The best performance in a selection of Year 3 Theoretical Physics subjects chosen from: PHYS3510 Advanced Mechanics, Fields and Chaos PHYS3530 Advanced Quantum Physics PHYS3550 General Relativity PHYS3560 Relativistic Electrodynamics and Plasmas Physics

The Head of School's Prize in Physics
- $50.00
The best Year 4 Honours Thesis in Physics in the Bachelor of Science degree course

The Nilsen Prize in Electronics
- Electronic test equipment valued at $200.00
Excellence in PHYS3630 Electronics or PHYS3041 Experimental Physics A and PHYS3760 Laser and Optoelectronics Technology Laboratory 1

The Physics Staff Prize for Physics 1
- $100.00
The best performance in PHYS1002 Physics 1

The Physics Staff Prize for Physics 2
- $150.00
The highest aggregate in PHYS2001 Mechanics and Computational Physics PHYS2011 Electromagnetism and Thermal Physics PHYS2021 Quantum Physics and Relativity PHYS2031 Laboratory by a student in the Bachelor of Science degree course
The Physics Staff Prize for Physics Honours
• $200.00
The best performance in the Physics Honours Year by a student in the Bachelor of Science degree course

The Milon Buneta Prize
• $80.00
The best performance in Year 2 of the Bachelor of Science (Psychology) degree course

The Spex Prize for Advanced Optics
• $250.00
The best performance in PHYS3060 Advanced Optics by a student proceeding to the degree of Bachelor of Science

The Psychology Staff Prize
• $80.00
The best performance in Year 2 Psychology

School of Psychology

The Australian Psychological Society Prize
• $300.00
The best performance in Psychology 4 Honours

The Theo Kannis Prize for Advanced Clinical Optometry
• $250.00
The best performance in OPTM8001 Advanced Clinical Optometry by a student in the Master of Optometry degree course

The Istvan Tork Prize in Neuroscience
$100.00
The best performance by a fourth year Honours student who completed a thesis in the field of Neuroscience in the Schools of Psychology or Anatomy or Physiology and Pharmacology

School of Science and Technology Studies

The Ronayne Prize
• $150.00
The best First Class Honours result in the Year 4 (Honours) programme by a student proceeding to the award of the degree of Bachelor of Science or Bachelor of Arts in Science and Technology Studies at Honours level (in the case of Combined Honours, half of the prize amount will be awarded)

Undergraduate and Graduate Prizes

School of Mathematics

The J R Holmes Prize
• $100.00
Excellence in at least 4 pass-level pure Mathematics level 3 units, taken over no more than two consecutive years by a student in the Science, Arts or Education degree courses

School of Optometry

The Theo Kannis Prize for Advanced Clinical Optometry
• $250.00
The best performance in OPTM8001 Advanced Clinical Optometry by a student in the Master of Optometry degree course
The University of New South Wales • Kensington Campus

Theatres
Athol Lykke Theatre C27
Biomedical Theatres E27
Central Lecture Block E19
Chemistry Theatres
(Deaver, Melissa, Murphy, Nyholm, Smith) E12
Classroom Block (Western Grounds) H3
Fig Tree Theatre B14
Io Myres Studio D9
Keith Burrows Theatre J14
Macaulay Theatre E15
Mathews Theatres E23
Parade Theatre E3
Physics Theatre K14
Quadrangle Theatre E15
Rex Vowels Theatre F17
Science Theatre F13
Sir John Clancy Auditorium C24
Webster Theatre G15

Buildings
Applied Science F10
Architecture H14
Barker Street Gatehouse N11
Basser College (Kensington) C18
Central Store B13
Chancellery C22
Dalton (Chemistry) F12
Goldstein College (Kensington) D16
Golf House A27
Gymnasium B5
Hefton, Robert (Chemistry) E12
International House C6
John Goodsell (Commerce and Economics) F20
Kensington Colleges (Office) C17
Library (University) E21
Link B6
Main, Old K15
Maintenance Workshop B13
Mathews F23
Menzies Library E21
Morven Brown (Arts) C20
New College L6
Newton J12
NIDA D2
Parking Station H25
Parking Station N18
Pavilions E24
Philip Baxter College (Kensington) D14
Quadrangle E15
Sam Cracknell Pavilion H8
Samuels Building F25
Shalom College N9
Webster, Sir Robert G14
Universe House L5
University Regiment J2
University Union (Roundhouse) E6
University Union (Blackhouse) G6
University Union (Squarehouse) E4
Wallace Wirth School of Medicine C27
Warrane College M7

General
Aboriginal Resource & Research Centre E20
Aboriginal Student Centre A29
Accommodation (Housing Office) E15
Accounting E15
Admissions C22
Adviser for Prospective Students C22
Alumni Relations: Pindari, 76 Wentworth St, Randwick
Anatomy C27
Applied Bioscience D26
Applied Economic Research Centre F20
Applied Geology F10
Applied Science (Faculty Office) F10
Archives, University E21
Arts and Social Sciences (Faculty Office) C20
Asia Australia Institute: 45 Beach Street Coogee
Audio Visual Unit F20
Australian Graduate School of Management G27
Banking and Finance E15
Biochemistry and Molecular Genetics D26
Biological and Behavioural Sciences (Faculty Office) D26
Biomedical Engineering F25
Biomedical Library F23
Biotechnology F25
Built Environment (Faculty Office) H14
Campus Services C22
Cashier's Office C22
Centre for Membrane Science & Technology F10, K14
Chaplains E4
Chemical Engineering and Industrial Chemistry F10
Chemistry E12
Civil Engineering H20
Co-op Bookshop E15

Commerce and Economics (Faculty Office) F20
Communications Law Centre C15
Community Medicine D26
Computer Science and Engineering G17
Corneal and Contact Lens Research Unit
22-32 King St, Randwick
Economics F20
Education Studies G2
Educational Testing Centre E4
Electrical Engineering G17
Energy Research, Development & Information Centre F10
Engineering (Faculty Office) K17
English C20
Equal Employment Opportunity: 30 Botany Street
Randwick
Examinations C22
Facilities Department C22, B14A
Fees Office C22
Fibre Science and Technology G14
Food Science and Technology B8
French C20
Geography K17
Geometric Engineering K17
German and Russian Studies C20
Graduate School of the Built Environment H14
Groundwater Management and Hydrogeology F10
Health Service, University E15
Health Services Management F25
History C20
Human Resources C22
Industrial Design G14
Industrial Relations and Organizational Behaviour F20
Information, Library & Archives Studies F23
Information Systems E15
Information Technology Unit F25
International Student Centre F9
IPAC Institute F23
Japanese Economic and Management Studies E15
Landscape Architecture K15
Law (Faculty Office) F21
Law Library F21
Legal Studies & Taxation F20
Liberal and General Studies C20
Library Law D21
Lost Property C22
Marine Science D26
Marketing F20
Materials Science and Engineering E8

Mathematics F23
Mechanical and Manufacturing Engineering J17
Media Liaison C22
Medical Education C27
Medicine (Faculty Office) B27
Microbiology and Immunology D26
Michael Birt Gardens C24
Mines K15
Music and Music Education B11
News Service C22
Optometry J12
Pathology C27
Performing Arts B10
Petroleum Engineering D12
Philosophy C20
Physics K15
Physiology and Pharmacology C27
Political Science C20
Printing Section C22
Professional Development Centre E15
Professional Studies (Faculty Office) G2
Psychology F23
Publications Section C22
Remote Sensing K17
Research Office: 3A-36 Botany Street Randwick
Safety Science B11A
Science (Faculty Office) E12
Science and Technology Studies C20
Social Science and Policy C20
Social Policy Research Centre F25
Social Work G2
Sociology C20
Spanish and Latin American Studies C20
Sport and Recreation Centre B6
Squash Courts B7
Student Centre (off Library Law) C22
Student Services:
Careers, Loans, Housing etc E15
Counselling E15
Students' Guild E15
Swimming Pool B4
Textile Technology G14
Theatre and Film Studies B10
Town Planning K15
WHO Regional Training Centre C27
Wool and Animal Sciences G14
Works and Maintenance B14A
This Handbook has been specifically designed as a source of detailed reference information for first year re-enrolling undergraduate and postgraduate students.

Separate handbooks are published for:

- Applied Science
- Arts and Social Sciences
- Built Environment
- Commerce and Economics
- Engineering
- Law
- Medicine
- Professional Studies
- Science
- Australian Graduate School of Management (AGSM)
- Australian Taxation Studies Program (ATAX)
- College of Fine Arts (COFA)
- University College,
- Australian Defence Force Academy (ADFA)
- General Education

For fuller details about the University – its organisation; staff members; description of disciplines; scholarships; prizes and so on, consult the University Calendar (Summary Volume). For further information on student matters consult the UNSW Student Guide.