



**FLINDERS  
UNIVERSITY**  
ADELAIDE  
AUSTRALIA

# Volume 2

# Course

# Information

# 2000

## **Bachelor of Science**

This booklet provides information on the revised Bachelor of Science degree being offered by Flinders University from 2000

It updates information contained in Volume 2 of the Flinders University Calendar for 2000

That entry begins on page 122 of the Undergraduate Courses section

## Bachelor of Science (BSc)

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**The course rule and programs of study for the BSc have been revised for 2000**

**Continuing students who wish to complete the degree in accordance with the previous rule and programs should refer to the BSc entry in Volume 2 of the 1999 Calendar and seek advice from Program Approvers at the time of enrolment**

### Introduction

The Bachelor of Science requires three years of full time study (or the equivalent part time) and the honours program an additional year (or the equivalent part time) except where it is being taken as part of an Advanced Entry Program which is designed for Year 12 students who have demonstrated exceptional ability in mathematics and physical sciences (see separate entry below)

The course is structured around coherent sequences of study from First Year to Third Year leading to a specialisation in one or two areas of science. However, it also is possible to complete a BSc with no recognised area of specialisation. Students who elect to specialise in only one area of science may include a range of elective topics in their program or choose to undertake Flinders unique Globalisation program.

Single specialisations are offered in

Biological Sciences (streams available are  
Animal Biology Biomedical Science  
Environmental Biology Genetics Marine  
Biology Microbiology Molecular Biology and  
Plant Biology)

Chemistry

Computer Science

Earth Sciences (streams available are

The Ocean and the Atmosphere  
Hydrogeology and Geophysics and  
The Earth Environment)

Mathematics/Computational Mathematics

Physics/Physics for Engineers

Double specialisations are offered in  
Biochemistry and Chemistry  
Chemistry and Mathematics  
Chemistry and Microbiology  
Computer Science and Mathematics  
Earth Sciences and Chemistry  
Earth Sciences and Computer Science  
Earth Sciences and Mathematics  
Earth Sciences and Physics  
Physics and Chemistry  
Physics and Computer Science  
Physics and Mathematics

Multidisciplinary programs are offered in  
Earth Sciences/Archaeology  
Cognitive Science

All programs are offered by the Faculty of Science and Engineering except Cognitive Science which is offered by the Faculty of Social Sciences

Enrolment in an honours program may be offered to a student who meets certain academic criteria and subject to the school/department being able to provide appropriate resources and staff to supervise the program of study

### Course aims

The course provides students with a broad based foundation in science while allowing them to acquire specific knowledge in one or more areas of science. It also enables students to acquire a range of professional skills and experience which will equip them for future employment and further study. These include

- a capacity to understand and apply modern scientific principles
- developed skills in the retrieval and presentation of scientific information both orally and in writing to scientific and non scientific audiences
- proficiency in critical analysis of information and a capacity to solve problems
- an ability to analyse and evaluate numerical data
- competence in the practical use of relevant computer and information technology
- an ability to work effectively in a team
- an appreciation of the role of science in society
- an understanding of the ethical issues raised through the study of science
- a capacity to identify the need for further training and study in the course of a career and to engage effectively in life long learning

## Course rule

### ADMISSION REQUIREMENTS

The minimum requirements for consideration for entry to all undergraduate courses are specified in detail in the University Entry Requirements

Entry into the PE3 Physics for Engineers program is restricted to students who have passed the first three years of the Bachelor of Engineering (Electrical and Electronic) at Flinders. Students wishing to undertake this program must apply for entry to the Bachelor of Science in the normal manner through SATAC

### PROGRAMS OF STUDY

A student's program of study must be approved by a Program Approver

To qualify for the Bachelor of Science a student must complete 108 units with a grade of P or NGP or better in each topic including at least 72 units of Science topics (those offered in Biological Sciences Chemistry Computer Science Earth Sciences Physics or Mathematics and Statistics)

Students undertaking a multidisciplinary program must complete the 108 units as specified in the relevant program of study below

All other students must complete

36 units in First Year<sup>#</sup> comprising:

- 27 units from the First Year Science Topics listed below selected so that the First Year requirements of at least two specialisations are satisfied and

- 9 units of elective topics

72 units in Second and Third Year comprising either

- the topics (which may include electives) as set out below in the program of study for a specialisation or double specialisation or
- where a student does not wish to complete a recognised area of specialisation 45 units of approved Science topics (21 units in Second Year and 24 units in Third Year or 24 units in Second Year and 21 units in Third Year) and 27 units of electives

Elective topics may be chosen from any offered within the University or with approval from outside the University provided course and prerequisite requirements are met

Not all topics necessarily are available in a given year

Except with permission of the Faculty Board

no more than 45 units of First Year topics may be included in the 108 units for the degree (topics designated any year or with no year level specified are regarded as First Year topics) a student must complete 18 units of First Year topics before enrolling in any Second Year topics and 27 units of First Year topics before enrolling in any Third Year topics

**# Students receive 36 units of credit for First Year if they transfer to the BSc after successfully completing the First Year program for one of the following degrees:** Bachelor of Biotechnology (Honours) Bachelor of Education (Secondary Science) Bachelor of Engineering (Computer Systems) Bachelor of Engineering (Electrical and Electronic) Bachelor of Environmental Science Bachelor of Science/Bachelor of Engineering (Biomedical) Bachelor of Technology (Forensic and Analytical Chemistry) Bachelor of Science in Nanotechnology Bachelor of Science in Computational Modelling Bachelor of Science in Marine Biology

### First Year Science Topics

Students select 27 units from the following. The First Year requirements for each specialisation are listed in the programs of study below

|           |                                       |     |
|-----------|---------------------------------------|-----|
| BIOL 1101 | Biology IA Biological Diversity       | 4.5 |
| BIOL 1102 | Biology IB Gene Expression            | 4.5 |
| CHEM 1101 | Chemistry IA                          | 4.5 |
| CHEM 1102 | Chemistry IB                          | 4.5 |
| CHEM 1201 | Introduction to Chemistry A           | 4.5 |
| CHEM 1202 | Introduction to Chemistry B           | 4.5 |
| COMP 1101 | Information Technology I              | 4.5 |
| COMP 1102 | Computer Programming I                | 4.5 |
| EASC 1001 | Earth Sciences IA                     | 4.5 |
| EASC 1002 | Marine Science I                      | 4.5 |
| MATH 1121 | Mathematics IA                        | 4.5 |
| MATH 1122 | Mathematics IB                        | 4.5 |
| MATH 1201 | Introductory Mathematics IA           | 4.5 |
| MATH 1202 | Introductory Mathematics IB           | 4.5 |
| PHYS 1101 | Physics IA                            | 4.5 |
| PHYS 1102 | Physics IB                            | 4.5 |
| PHYS 1201 | Introduction to Physics A             | 4.5 |
| PHYS 1202 | Introduction to Physics B             | 4.5 |
| PHYS 1203 | Physics for the Life Sciences         | 4.5 |
| PHYS 1204 | Introduction to Physics and Astronomy | 4.5 |
| PSYC 1104 | Aspects of Psychology A               | 4.5 |
| PSYC 1105 | Aspects of Psychology B               | 4.5 |
| STAT 1412 | Data Analysis Laboratory              | 4.5 |

## Programs of study leading to a specialisation

### BIOLOGICAL SCIENCES

To promote choice of coherent study programs at Third Year topics have been grouped in streams. Students who complete 18 units of Third Year topics designated in a particular stream may have this annotated on their academic record. In order to undertake chosen Third Year topics it is necessary to pass the relevant prerequisite Second Year topic(s). Refer to the School of Biological Sciences Student Handbook, available from the School for the composition of available streams.

#### First Year requirements

The following topics must be selected as part of the 36 unit First Year program

|           |                                 |   |   |
|-----------|---------------------------------|---|---|
| BIOL 1101 | Biology 1A Biological Diversity | 4 | 5 |
| BIOL 1102 | Biology 1B Gene Expression      | 4 | 5 |
| CHEM 1101 | Chemistry 1A or                 |   |   |
| CHEM 1201 | Introduction to Chemistry A     | 4 | 5 |
|           | and                             |   |   |
| CHEM 1102 | Chemistry 1B or                 |   |   |
| CHEM 1202 | Introduction to Chemistry B     | 4 | 5 |

#### Second Year program B2 Biology 2

36 units comprising

|           |   |   |  |
|-----------|---|---|--|
| BIOL 2100 | Biological Experimentation 1              | 6 |  |
| BIOL 2110 | Biological Experimentation 2              | 3 |  |
|           | plus 12 units selected from the following |   |  |
| BIOL 2200 | Basic Genetics                            | 3 |  |
| BIOL 2210 | Basic Metabolism                          | 3 |  |
| BIOL 2220 | Molecular Biology                         | 3 |  |
| BIOL 2230 | Basic Microbiology                        | 3 |  |
| BIOL 2250 | Plant Anatomy Physiology and Development  | 3 |  |
| BIOL 2251 | Plant and Algal Diversity                 | 3 |  |
| BIOL 2260 | Animal Physiology                         | 3 |  |
| BIOL 2271 | Marine and Terrestrial Animal Diversity   | 3 |  |
| BIOL 2272 | Marine Biology and Ecology                | 3 |  |
| BIOL 2280 | Population Ecology                        | 3 |  |
| BIOL 2290 | Behaviour and Neurobiology                | 3 |  |

plus 15 units of elective topics

#### Third Year program B3 Biology 3

36 units comprising

24 units selected from the following \*

|           |  |   |  |
|-----------|--|---|--|
| BIOL 3111 | Biochemical Control Mechanisms           | 6 |  |
| BIOL 3121 | DNA Properties Function and Manipulation | 6 |  |
| BIOL 3141 | Microbiology or                          | 6 |  |
| BIOL 3142 | Microbiology Theory                      | 3 |  |
| BIOL 3150 | Virology                                 | 3 |  |

|           |   |   |  |
|-----------|---|---|--|
| BIOL 3171 | Molecular and Cellular Biology Laboratory | 6 |  |
| BIOL 3181 | Advanced Molecular Biology Laboratory     | 3 |  |
| BIOL 3192 | Genes Cells and Development               | 6 |  |
| BIOL 3193 | Genetics of Higher Eukaryotes             | 3 |  |
| BIOL 3194 | Prokaryotic Genetics                      | 3 |  |
| BIOL 3202 | Mol Biol/Genet Fungi and Lower Eukaryotes | 3 |  |
| BIOL 3222 | Plant Cellular and Molecular Biology      | 3 |  |
| BIOL 3224 | Plant Speciation and Evolutionary Ecology | 3 |  |
| BIOL 3240 | Ecophysiology of Plants                   | 3 |  |
| BIOL 3242 | Probing Plant Performance                 | 3 |  |
| BIOL 3260 | Community Ecology                         | 3 |  |
| BIOL 3262 | Projects in Ecology and Behaviour A       | 3 |  |
| BIOL 3263 | Projects in Ecology and Behaviour B       | 3 |  |
| BIOL 3270 | Conservation Biology                      | 3 |  |
| BIOL 3280 | Methods in Systematic Biology             | 3 |  |
| BIOL 3324 | Physiological Systems                     | 3 |  |
| BIOL 3330 | Functional Ecology of Marine Organisms    | 3 |  |
| BIOL 3340 | Marine Microbiology                       | 3 |  |
| BIOL 3362 | Field Projects in Marine Biology          | 3 |  |
| BIOL 3380 | Animal Behaviour                          | 3 |  |
| BIOL 3382 | Mechanisms of Animal Behaviour            | 3 |  |
| BIOL 3390 | Vertebrate Palaeontology                  | 3 |  |
| BIOL 3901 | Biological Investigations                 | 3 |  |
| BIOL 3911 | Marine Ecology Field Work                 | 3 |  |
| BIOL 3917 | Fisheries and Aquaculture Science         | 3 |  |
| BIOL 3931 | Vertebrate Palaeontology 2                |   |  |
|           | Alcoota NT                                | 3 |  |
| BIOL 3990 | Biology Essay A [ST]                      | 1 |  |
| BIOL 3991 | Biology Essay B [ST]                      | 1 |  |

plus 12 units of elective topics

\* Students in the Biomedical Science stream may include up to 9 units of approved topics offered by the School of Medicine and other students up to 6 units of such topics

### CHEMISTRY

#### First Year requirements

The following topics must be selected as part of the 36 unit First Year program

either

|           |                  |   |   |
|-----------|------------------|---|---|
| CHEM 1101 | Chemistry 1A and | 4 | 5 |
| CHEM 1102 | Chemistry 1B     | 4 | 5 |

or

|             |                             |     |
|-------------|-----------------------------|-----|
| CHEM 1201   | Introduction to Chemistry A | 4 5 |
|             | and                         |     |
| CHEM 1202   | Introduction to Chemistry B | 4 5 |
|             | and                         |     |
| CHEM 1102   | Chemistry IB                | 4 5 |
| plus either |                             |     |
| PHYS 1101   | Physics IA                  | 4 5 |
| or          |                             |     |
| PHYS 1102   | Physics IB                  | 4 5 |
| or          |                             |     |
| MATH 1121   | Mathematics IA              | 4 5 |
| or          |                             |     |
| MATH 1122   | Mathematics IB              | 4 5 |
| or          |                             |     |
| MATH 1201   | Introductory Mathematics IA | 4 5 |
|             | and                         |     |
| MATH 1202   | Introductory Mathematics IB | 4 5 |

**Second Year program C2 Chemistry 2**

This program is for students intending to study the three major areas of Chemistry (Inorganic Organic and Physical) at Third Year (Program C3 Chemistry 3) for the Bachelor of Science with a specialisation in Chemistry or as a prelude to further studies leading to an honours degree

|           |   |    |
|-----------|---|----|
| CHEM 2300 | Computational and Analytical Techniques | 6  |
| CHEM 2400 | Physical and Inorganic Chemistry 2      | 12 |
| CHEM 2500 | Organic Chemistry 2                     | 6  |

plus 12 units of elective topics

**Third Year program C3 Chemistry 3**

Entry to this program normally is restricted to students who have completed satisfactorily the program C2 Chemistry 2. It leads to either of the honours programs in chemistry

36 units comprising:

|           |  |   |
|-----------|--|---|
| CHEM 3011 | Structural and Analytical Techniques A | 3 |
| CHEM 3110 | Organic Chemistry 3                    | 6 |
| CHEM 3210 | Physical Chemistry 3                   | 6 |
| CHEM 3310 | Inorganic Chemistry 3                  | 6 |

plus 15 units of elective topics

While students may select electives from any area of the University the following are recommended

|           |                                       |   |
|-----------|---------------------------------------|---|
| CHEM 3405 | Chemistry Special Topics A            | 9 |
| CHEM 3420 | Chemistry Special Topics C            | 3 |
| CHEM 2600 | Environmental Chemistry               | 3 |
| CHEM 3010 | Structural and Analytical Techniques* | 6 |

\* If this topic is selected it can be used to replace the core topic CHEM 3011

**COMPUTER SCIENCE**

**First Year requirements**

The following topics must be selected as part of the 36 unit First Year program

|           |                          |     |
|-----------|--------------------------|-----|
| COMP 1101 | Information Technology 1 | 4 5 |
| COMP 1102 | Computer Programming 1   | 4 5 |

**Second Year program CS2**

36 units comprising

|           |                         |   |
|-----------|-------------------------|---|
| COMP 2001 | Computer Programming 2B | 3 |
| COMP 2004 | Computer Organisation   | 3 |
| COMP 2005 | Database Systems 1      | 3 |
| COMP 2006 | Software Engineering 1  | 6 |
| COMP 2007 | Systems Programming     | 3 |
| COMP 2008 | Computer Programming 2A | 3 |

plus 15 units of elective topics

**Third Year program CS3**

36 units comprising

24 units selected from the following

|           |                               |   |
|-----------|-------------------------------|---|
| COMP 3001 | Programming Language Concepts | 3 |
| COMP 3003 | Language Translators          | 3 |
| COMP 3004 | Computer Networks             | 3 |
| COMP 3006 | Database Systems 2            | 3 |
| COMP 3007 | Artificial Intelligence       | 3 |
| COMP 3010 | Computer Architecture 2       | 3 |
| COMP 3011 | Operating Systems             | 3 |
| COMP 3012 | Software Engineering 2        | 3 |
| COMP 3013 | Computer Science Project      | 6 |

plus 12 units of elective topics

**EARTH SCIENCES**

Students undertaking a program to specialise in Earth Sciences may elect to undertake studies towards one or more of the following streams

The Ocean and Atmosphere (see note 1)

Hydrogeology and Geophysics (see note 1)

The Earth Environment

Refer to the Earth Sciences Student Handbook for the composition of the streams

**First Year requirements**

The following topics must be selected as part of the 36 unit First Year program

|           |                   |     |
|-----------|-------------------|-----|
| EASC 1001 | Earth Sciences IA | 4 5 |
| EASC 1002 | Marine Science I  | 4 5 |

plus either

|           |                |     |
|-----------|----------------|-----|
| MATH 1121 | Mathematics IA | 4 5 |
|-----------|----------------|-----|

or

|           |                |     |
|-----------|----------------|-----|
| MATH 1122 | Mathematics IB | 4 5 |
|-----------|----------------|-----|

or

|           |            |     |
|-----------|------------|-----|
| PHYS 1101 | Physics IA | 4 5 |
|-----------|------------|-----|

or

|           |                             |     |
|-----------|-----------------------------|-----|
| PHYS 1102 | Physics IB                  | 4 5 |
| or        |                             |     |
| MATH 1201 | Introductory Mathematics IA | 4 5 |
|           | and                         |     |
| MATH 1202 | Introductory Mathematics IB | 4 5 |

### Second Year program ES2 Earth Sciences 2

36 units comprising

|   |   |   |
|---|---|---|
| EASC 2001                                 | Understanding the Earth                   | 3 |
| EASC 2002                                 | Hydrologic Environments                   | 3 |
| EASC 2003                                 | The Ocean                                 | 3 |
| EASC 2004                                 | Earth Science Laboratory                  | 3 |
| plus 12 units selected from the following |   |   |
| EASC 2005                                 | The Shelf and Coastal Zone                | 3 |
| EASC 2006                                 | The Atmosphere                            | 3 |
| EASC 2007                                 | Water Quality and Pollution               | 3 |
| EASC 2008                                 | Optical Mineralogy                        | 3 |
| EASC 2009                                 | Geologic Materials                        | 3 |
| EASC 2010                                 | Sedimentary Processes and Products        | 3 |
| EASC 2011                                 | Astronomy and Navigation                  | 3 |
| EASC 2012                                 | Earth Sciences Field Camp 1               | 3 |
| MATH 2111                                 | Vector Calculus                           | 3 |
| MATH 2121                                 | Linear Algebra and Differential Equations | 3 |

plus 12 units of elective topics

### Third Year program ES3 Earth Sciences 3

36 units comprising

21 units selected from the following

|           |                                       |   |
|-----------|---------------------------------------|---|
| EASC 3001 | Physical Oceanography                 | 3 |
| EASC 3002 | Physical Meteorology                  | 3 |
| EASC 3003 | Air and Sea Measurements              | 3 |
| EASC 3004 | Marine Geophysics and Geology         | 3 |
| EASC 3005 | Soil Plant Water Relations            | 3 |
| EASC 3006 | Groundwater Hydrology                 | 3 |
| EASC 3007 | Environmental Geology and Geophysics  | 3 |
| EASC 3008 | Data Analysis in Earth Sciences       | 3 |
| EASC 3009 | Modelling In Earth Sciences           | 3 |
| EASC 3010 | Remote Sensing and Data Visualisation | 3 |
| EASC 3011 | Natural Hazards                       | 3 |
| EASC 3012 | Earth Sciences Field Camp 2           | 3 |
| MATH 2041 | Numerical Analysis                    | 3 |
| MATH 2023 | Mathematics for the Physical Sciences | 3 |
| MATH 2070 | Scientific Computing                  | 3 |

plus 15 units of elective topics

**Note 1** For students wishing to specialise in The Ocean and Atmosphere or Hydrogeology and Geophysics it is recommended that their Second Year electives contain 6 units of Mathematics topics and their Third Year electives contain a further 6 units of Mathematics topics. This will therefore require students to have passed MATH 1121 and MATH 1122 in First Year

## MATHEMATICS

### First Year requirements

The following topics must be selected as part of the 36 unit First Year program

|           |                |     |
|-----------|----------------|-----|
| MATH 1121 | Mathematics IA | 4 5 |
| MATH 1122 | Mathematics IB | 4 5 |

### Second Year program M2 Mathematics 2

This program contains the basic core studies essential for further studies in Mathematics

36 units comprising

|           |   |   |
|-----------|---|---|
| MATH 2111 | Vector Calculus                           | 3 |
| MATH 2121 | Linear Algebra and Differential Equations | 3 |
| MATH 2014 | Principles of Analysis                    | 3 |
| STAT 2100 | Probability                               | 3 |
| STAT 2110 | Statistical Science 2                     | 3 |
| MATH 2034 | Logic and Graphs                          | 3 |

plus 6 units of Science topics

plus 12 units of elective topics

### Third Year Programs

Third Year programs are flexible and can be tailored to suit individual interests. Students should consult the course coordinator prior to enrolment.

### M3 Mathematics 3

36 units comprising

|  |                                       |   |
|--|---------------------------------------|---|
| MATH 3013  | Complex Analysis                      | 3 |
| plus 15 units selected from the following (or from alternatives approved by the course coordinator)* |                                       |   |
| MATH 2023  | Mathematics for the Physical Sciences | 3 |
| MATH 2070  | Scientific Computing                  | 3 |
| MATH 2041  | Numerical Analysis                    | 3 |
| MATH 2035  | Groups and Codes                      | 3 |
| MATH 2100  | Probability and Signal Analysis       | 3 |
| MATH 3025  | Calculus of Variations                | 3 |
| MATH 3026  | Difference and Differential Equations | 3 |
| MATH 3065  | Lagrangian and Rigid Body Mechanics   | 3 |
| MATH 4301  | Engineering Mathematics 4             | 3 |
| STAT 2302  | Statistics Computing Laboratory       | 6 |

plus 3 units of Science topics

plus 15 units of elective topics

**M3C Computational Mathematics**

This program is designed for students who wish to concentrate more on aspects of Mathematics which are related to computation and modelling

36 units comprising:

|           |   |   |
|-----------|---|---|
| MATH 2041 | Numerical Analysis                        | 3 |
| MATH 2070 | Scientific Computing                      | 3 |
| MATH 3013 | Complex Analysis                          | 3 |
| MATH 3026 | Difference and Differential Equations     | 3 |
| EASC 3008 | Data Analysis in the Earth Sciences       | 3 |
| EASC 3009 | Numerical Modelling in the Earth Sciences | 3 |

plus 3 units of Science topics

plus 15 units of elective topics

**PHYSICS****First Year requirements**

The following topics must be selected as part of the 36 unit First Year program

|           |                |     |
|-----------|----------------|-----|
| MATH 1121 | Mathematics 1A | 4.5 |
| MATH 1122 | Mathematics 1B | 4.5 |
| PHYS 1101 | Physics 1A     | 4.5 |
| PHYS 1102 | Physics 1B     | 4.5 |

**Second Year program PH2 Physics**

This program provides a broad base for further studies for the bachelor and honours degree in Physics. It is designed for the student who requires a balanced exposure to experimental and theoretical aspects of Physics and leads to the Third Year program Physics PH3

36 units comprising

|           |   |   |
|-----------|---|---|
| PHYS 2130 | Electromagnetic Fields and Waves          | 3 |
| PHYS 2115 | Quantum Phenomena                         | 3 |
| PHYS 2113 | Thermal Science                           | 3 |
| PHYS 2121 | Physics Laboratory 2                      | 3 |
| PHYS 2123 | Modern Optics                             | 3 |
| MATH 2111 | Vector Calculus                           | 3 |
| MATH 2121 | Linear Algebra and Differential Equations | 3 |
| MATH 2023 | Mathematics for the Physical Sciences     | 3 |

plus 12 units of elective topics

While students may select electives from any area of the University the following topic is strongly recommended

|           |                       |   |
|-----------|-----------------------|---|
| PHYS 2114 | Computational Methods | 3 |
|-----------|-----------------------|---|

**Third Year Physics programs****PH3 Physics**

This program is for students who have completed the Physics PH2 program and who wish to qualify for the Bachelor of Science with a specialisation in Physics and graduate membership of the Australian Institute of Physics. Students who complete this program are eligible to apply for entry into an honours program in Physics

36 units comprising

|           |                                     |   |
|-----------|-------------------------------------|---|
| PHYS 3115 | Physics Laboratory 3A               | 3 |
| PHYS 3121 | Thermal Physics                     | 3 |
| PHYS 3123 | Atomic and Nuclear Physics          | 3 |
| PHYS 3124 | Solid State Science                 | 3 |
| PHYS 3131 | Electromagnetism                    | 3 |
| MATH 3013 | Complex Analysis                    | 3 |
| MATH 3065 | Lagrangian and Rigid Body Mechanics | 3 |

plus 15 units of elective topics

While students may select electives from any area of the University recommended elective topics for the Third Year Physics program are

|           |                        |   |
|-----------|------------------------|---|
| PHYS 3111 | Quantum Mechanics 2    | 3 |
| PHYS 3113 | Medical Physics        | 3 |
| PHYS 3116 | Physics Laboratory 3B  | 3 |
| PHYS 3117 | Physics Laboratory 3C  | 3 |
| MATH 3025 | Calculus of Variations | 3 |

**PE3 Physics for Engineers**

This program is for students who have completed the Third Year of the Bachelor of Engineering (Electrical and Electronic). Successful completion of this program will lead to the award of the Bachelor of Science with a specialisation in Physics and qualifies graduates for graduate membership of the Australian Institute of Physics

Normally on completion of this program students will proceed to complete their Engineering degree. Students who complete the honours degree of Bachelor of Science or the Bachelor of Engineering (Electrical and Electronic) with honours are eligible to apply to proceed to graduate studies in Physics

36 units comprising

|           |                       |   |
|-----------|-----------------------|---|
| PHYS 3112 | Quantum Physics       | 3 |
| PHYS 3113 | Medical Physics       | 3 |
| PHYS 3115 | Physics Laboratory 3A | 3 |
| PHYS 3116 | Physics Laboratory 3B | 3 |
| PHYS 3121 | Thermal Physics       | 3 |
| PHYS 3124 | Solid State Science   | 3 |
| PHYS 3131 | Electromagnetism      | 3 |
| MATH 3013 | Complex Analysis      | 3 |

|           |  |   |
|-----------|--|---|
| MATH 3065 | Lagrangian and Rigid Body<br>Mechanics | 3 |
|-----------|--|---|

plus 9 units of elective topics

### Programs of study leading to a double specialisation

#### Biological Sciences/Chemistry double specialisations

These programs contain 18 units each of Chemistry and Biology at Second and Third Year and will be of interest to students who wish to study at the interface of Chemistry and Biology. The Biology topics are selected to conform with the appropriate Biology streams and the Chemistry topics complete a major in Chemistry sufficient for a professional qualification.

Students who complete these program sequences will be eligible to apply for entry to honours in either Biology or Chemistry and will be well placed to take on research projects at the interface between the two areas.

#### BIOCHEMISTRY AND CHEMISTRY

##### First Year requirements

The following topics must be selected as part of the 36 unit First Year program

|             |                                 |     |
|-------------|---------------------------------|-----|
| BIOL 1101   | Biology IA Biological Diversity | 4.5 |
| BIOL 1102   | Biology IB Gene Expression      | 4.5 |
| plus either |                                 |     |
| CHEM 1101   | Chemistry IA                    | 4.5 |
|             | and                             |     |
| CHEM 1102   | Chemistry IB                    | 4.5 |
| or          |                                 |     |
| CHEM 1201   | Introduction to Chemistry A     | 4.5 |
|             | and                             |     |
| CHEM 1202   | Introduction to Chemistry B     | 4.5 |
|             | and                             |     |
| CHEM 1102   | Chemistry IB                    | 4.5 |
| plus either |                                 |     |
| PHYS 1101   | Physics IA                      | 4.5 |
| or          |                                 |     |
| PHYS 1102   | Physics IB                      | 4.5 |
| or          |                                 |     |
| MATH 1121   | Mathematics IA                  | 4.5 |
| or          |                                 |     |
| MATH 1122   | Mathematics IB                  | 4.5 |
| or          |                                 |     |
| MATH 1201   | Introductory Mathematics IA     | 4.5 |
|             | and                             |     |
| MATH 1202   | Introductory Mathematics IB     | 4.5 |

#### Second Year program BCC 2 Biochemistry 2 and Chemistry 2

This is a program for students who wish to be equally qualified in Chemistry and Biochemistry. It leads in Third Year to the sequential program BCC3 (Biochemistry 3 and Chemistry 3).

The BCC2 / BCC3 program sequence leads to the Bachelor of Science and students completing this sequence may undertake further studies in Chemistry or Biology in order to qualify for an honours degree. At the completion of Second Year students may transfer from this program to the C3 (Chemistry 3) program. Transfer to the B3 (Biology 3) program also is possible provided BIOL 2110 Biological Experimentation 2 has been included and an additional 3 unit Second Year Biology topic is taken.

36 units comprising

|                                  |                              |   |
|----------------------------------|------------------------------|---|
| CHEM 2801                        | Chemistry 2A                 | 9 |
| CHEM 2802                        | Chemistry 2B                 | 9 |
| BIOL 2100                        | Biological Experimentation 1 | 6 |
| BIOL 2210                        | Basic Metabolism             | 3 |
| BIOL 2220                        | Molecular Biology            | 3 |
| Other Second Year biology topics |                              | 6 |

#### Third Year program BCC3 Biochemistry 3 and Chemistry 3

Entry to this program normally is restricted to students who have completed the program BCC2 Biochemistry and Chemistry and it leads to honours programs in Chemistry or Biochemistry.

36 units comprising

|                    |  |   |
|--------------------|--|---|
| CHEM 3110          | Organic Chemistry 3                          | 6 |
| CHEM 3310          | Inorganic Chemistry 3                        | 6 |
| plus either        |  |   |
| CHEM 3010          | Structural and Analytical<br>Techniques      | 6 |
| or                 |  |   |
| CHEM 3011          | Structural and Analytical<br>Techniques A    | 3 |
| and either         |  |   |
| CHEM 3420          | Chemistry Special Topics                     | 3 |
| or                 |  |   |
| CHEM 2600          | Environmental Chemistry                      | 3 |
| plus the following |  |   |
| BIOL 3111          | Biochemical Control<br>Mechanisms            | 6 |
| BIOL 3121          | DNA Properties Function and<br>Manipulation  | 6 |
| BIOL 3171          | Molecular and Cellular Biology<br>Laboratory | 6 |



**CHEMISTRY AND MICROBIOLOGY****First Year requirements**

The following topics must be selected as part of the 36 unit First Year program

|             |                                 |     |
|-------------|---------------------------------|-----|
| BIOL 1101   | Biology IA Biological Diversity | 4.5 |
| BIOL 1102   | Biology IB Gene Expression      | 4.5 |
| plus either |                                 |     |
| CHEM 1101   | Chemistry IA and                | 4.5 |
| CHEM 1102   | Chemistry IB                    | 4.5 |
| or          |                                 |     |
| CHEM 1201   | Introduction to Chemistry A and | 4.5 |
| CHEM 1202   | Introduction to Chemistry B and | 4.5 |
| CHEM 1102   | Chemistry IB                    | 4.5 |
| plus either |                                 |     |
| PHYS 1101   | Physics IA                      | 4.5 |
| or          |                                 |     |
| PHYS 1102   | Physics IB                      | 4.5 |
| or          |                                 |     |
| MATH 1121   | Mathematics IA                  | 4.5 |
| or          |                                 |     |
| MATH 1122   | Mathematics IB                  | 4.5 |
| or          |                                 |     |
| MATH 1201   | Introductory Mathematics IA and | 4.5 |
| MATH 1202   | Introductory Mathematics IB     | 4.5 |

**Second Year program CMB2 Chemistry 2 and Microbiology 2**

This is a program for students who wish to be equally qualified in Chemistry and Microbiology. It leads in Third Year to the program CMB3 (Chemistry 3 and Microbiology 3). The CMB2/CMB3 program sequence leads to the Bachelor of Science and students completing this program sequence may undertake further studies in Chemistry or Microbiology leading to an honours degree. At the completion of Second Year students may transfer from this program to the C3 (Chemistry 3) program. Transfer to the B3 (Biology 3) program also is possible provided that BIOL 2110 Biological Experimentation 2 has been included and an additional 3 unit Second Year Biology topic is taken.

36 units comprising

|           |                              |   |
|-----------|------------------------------|---|
| CHEM 2801 | Chemistry 2A                 | 9 |
| CHEM 2802 | Chemistry 2B                 | 9 |
| BIOL 2100 | Biological Experimentation I | 6 |
| BIOL 2230 | Basic Microbiology           | 3 |

plus at least one of

|   |                   |     |
|---|-------------------|-----|
| BIOL 2210                               | Basic Metabolism  | 3   |
| BIOL 2220                               | Molecular Biology | 3   |
| plus other Second Year Biology topic(s) |                   | 3/6 |

**Third Year program CMB3 Chemistry 3 and Microbiology 3**

Entry to this program normally is restricted to students who have completed the program CMB2 Chemistry and Microbiology program and it leads to honours programs in Chemistry or Microbiology.

36 units comprising:

|  |   |   |
|--|---|---|
| CHEM 3110                                    | Organic Chemistry 3                       | 6 |
| CHEM 3310                                    | Inorganic Chemistry 3                     | 6 |
| plus either                                  |   |   |
| CHEM 3010                                    | Structural and Analytical Techniques      | 6 |
| or   |   |   |
| CHEM 3011                                    | Structural and Analytical Techniques A    | 3 |
| and either                                   |   |   |
| CHEM 3420                                    | Chemistry Special Topics                  | 3 |
| or   |   |   |
| CHEM 2600                                    | Environmental Chemistry                   | 3 |
| plus the following:                          |   |   |
| BIOL 3141                                    | Microbiology                              | 6 |
| BIOL 3171                                    | Molecular and Cellular Biology Laboratory | 6 |
| *Biology topics from the Microbiology stream |   |   |
| 6  |   |   |

\* Refer to the Biological Sciences Student Handbook for details of topics

**CHEMISTRY AND MATHEMATICS****First Year requirements**

The following topics must be selected as part of the 36 unit First Year program

either

|                    |                                 |     |
|--------------------|---------------------------------|-----|
| CHEM 1101          | Chemistry IA and                | 4.5 |
| CHEM 1102          | Chemistry IB                    | 4.5 |
| or                 |                                 |     |
| CHEM 1201          | Introduction to Chemistry A and | 4.5 |
| CHEM 1202          | Introduction to Chemistry B and | 4.5 |
| CHEM 1102          | Chemistry IB                    | 4.5 |
| plus the following |                                 |     |
| MATH 1121          | Mathematics IA                  | 4.5 |
| MATH 1122          | Mathematics IB                  | 4.5 |

**Second Year program CM2 Chemistry 2 and Mathematics 2**

This program leads to a degree with a double specialisation in Chemistry and Mathematics

It leads in Third Year to the program CM3 (Chemistry 3 and Mathematics 3) The CM2/CM3 program sequence leads to the Bachelor of Science and students completing the CM2/CM3 program sequence may undertake further studies in Chemistry and Mathematics leading to an honours degree At the completion of Second Year students may transfer from this program to the C3 (Chemistry 3) program

36 units comprising:

|           |   |    |
|-----------|---|----|
| CHEM 2400 | Physical and Inorganic Chemistry 2        | 12 |
| CHEM 2500 | Organic Chemistry 2                       | 6  |
| MATH 2111 | Vector Calculus                           | 3  |
| MATH 2121 | Linear Algebra and Differential Equations | 3  |
| MATH 2110 | Statistical Science                       | 3  |
| MATH 2041 | Numerical Analysis                        | 3  |
| MATH 2023 | Mathematics for the Physical Sciences     | 3  |
| STAT 2100 | Probability                               | 3  |

### Third Year program CM3 Chemistry 3 and Mathematics 3

This program provides for studies in Chemistry and Mathematics and allows for subsequent entry into an honours programs in Chemistry and Mathematics

Entry to this program normally is restricted to students who have completed satisfactorily the program CM2 (Chemistry 2 and Mathematics 2)

36 units comprising

|             |                            |   |
|-------------|----------------------------|---|
| CHEM 3210   | Physical Chemistry 3       | 6 |
| CHEM 3410   | Chemistry Special Topics B | 6 |
| plus either |                            |   |
| CHEM 3110   | Organic Chemistry 3        | 6 |
| or          |                            |   |
| CHEM 3310   | Inorganic Chemistry 3      | 6 |

plus 18 units of Second or Third Year Mathematics or Statistics topics\*

\* For guidance about topics refer to the Third Year mathematics program M3

## COMPUTER SCIENCE AND MATHEMATICS

### First Year requirements

The following topics must be selected as part of the 36 unit First Year program

|           |                          |     |
|-----------|--------------------------|-----|
| COMP 1101 | Information Technology 1 | 4.5 |
| COMP 1102 | Computer Programming 1   | 4.5 |
| MATH 1121 | Mathematics 1A           | 4.5 |
| MATH 1122 | Mathematics 1B           | 4.5 |

### Second Year program CSM2 Computer Science 2 and Mathematics 2

This program leads in Third Year to the program CSM3 Computer Science 3 and Mathematics 3 The CSM program sequence leads to the Bachelor of Science with a double specialisation in Computer Science and Mathematics Students completing the CSM program sequence are eligible to apply to undertake further studies in Computer Science or Mathematics leading to an honours degree At the completion of Second Year students may transfer from this program to the CS2 Computer Science program or the M2 Mathematics program

36 units comprising

18 units selected from the following

|                             |   |   |
|-----------------------------|---|---|
| COMP 2001                   | Computer Programming 2B                   | 3 |
| COMP 2004                   | Computer Organisation                     | 3 |
| COMP 2005                   | Database Systems 1                        | 3 |
| COMP 2006                   | Software Engineering 1                    | 6 |
| COMP 2007                   | Systems Programming                       | 3 |
| COMP 2008                   | Computer Programming 2A                   | 3 |
| plus the following 18 units |   |   |
| MATH 2111                   | Vector Calculus                           | 3 |
| MATH 2121                   | Linear Algebra and Differential Equations | 3 |
| MATH 2023                   | Mathematics for the Physical Sciences     | 3 |
| MATH 2110                   | Statistical Science                       | 3 |
| MATH 2041                   | Numerical Analysis                        | 3 |
| STAT 2100                   | Probability                               | 3 |

**Note** Students are advised to consider the prerequisites of the Third Year Computer Science topics when selecting their Second Year topics

### Third Year program CSM3 Computer Science 3 and Mathematics 3

This program provides for studies in Computer Science and Mathematics Students completing the CSM program sequence are eligible to apply to undertake further studies in Computer Science or Mathematics leading to an honours degree Entry to this program normally is restricted to students who have completed the program CSM2 Computer Science 2 and Mathematics 2

36 units comprising

18 units selected from the following

|           |                               |   |
|-----------|-------------------------------|---|
| COMP 3001 | Programming Language Concepts | 3 |
| COMP 3003 | Language Translators          | 3 |
| COMP 3004 | Computer Networks             | 3 |

|  |                                       |   |
|--|---------------------------------------|---|
| COMP 3006                                | Database Systems 2                    | 3 |
| COMP 3007                                | Artificial Intelligence               | 3 |
| COMP 3010                                | Computer Architecture 2               | 3 |
| COMP 3011                                | Operating Systems                     | 3 |
| COMP 3012                                | Software Engineering 2                | 3 |
| plus all of the following                |                                       |   |
| MATH 3013                                | Complex Analysis                      | 3 |
| MATH 2070                                | Scientific Computing                  | 3 |
| MATH 2041                                | Numerical Analysis                    | 3 |
| STAT 2110                                | Statistical Science                   | 3 |
| plus 6 units selected from the following |                                       |   |
| MATH 2023                                | Mathematics for the Physical Sciences | 3 |
| MATH 2035                                | Groups and Codes                      | 3 |
| MATH 2100                                | Probability and Signal Analysis       | 3 |
| MATH 3025                                | Calculus of Variations                | 3 |
| MATH 3026                                | Difference and Differential Equations | 3 |
| MATH 3065                                | Lagrangian and Rigid Body Mechanics   | 3 |
| MATH 4301                                | Engineering Mathematics 4             | 3 |
| STAT 2110                                | Statistics Computing Laboratory 6     |   |

**EARTH SCIENCES AND CHEMISTRY**

**First Year requirements**

The following topics must be selected as part of the 36 unit First Year program

|             |                                 |     |
|-------------|---------------------------------|-----|
| EASC 1001   | Earth Sciences IA and           | 4 5 |
| EASC 1002   | Marine Science I                | 4 5 |
| plus either |                                 |     |
| CHEM 1101   | Chemistry IA and                | 4 5 |
| CHEM 1102   | Chemistry IB                    | 4 5 |
| or          |                                 |     |
| CHEM 1201   | Introduction to Chemistry A and | 4 5 |
| CHEM 1202   | Introduction to Chemistry B and | 4 5 |
| CHEM 1102   | Chemistry IB                    | 4 5 |
| plus either |                                 |     |
| MATH 1121   | Mathematics IA                  | 4 5 |
| or          |                                 |     |
| MATH 1122   | Mathematics IB                  | 4 5 |
| or          |                                 |     |
| PHYS 1101   | Physics IA                      | 4 5 |
| or          |                                 |     |
| PHYS 1102   | Physics IB                      | 4 5 |
| or          |                                 |     |
| MATH 1201   | Introductory Mathematics IA and | 4 5 |
| MATH 1202   | Introductory Mathematics IB     | 4 5 |

**Second Year program ESC2 Earth Sciences 2 and Chemistry 2**

This program leads in Third Year to the program ESC3 Earth Sciences 3 and Chemistry 3 The ESC2/ESC3 program sequence leads to the Bachelor of Science with a double specialisation in Earth Sciences and Chemistry Students completing the ESC2/ESC3 program sequence are eligible to apply to undertake further studies in Earth Sciences and Chemistry leading to an honours degree At the completion of Second Year students may transfer from this program to the ES3 Earth Sciences 3 program 36 units comprising 18 units of Earth Sciences topics with a minimum of 9 units selected from

|   |   |    |
|---|---|----|
| EASC 2001                                     | Understanding the Earth                     | 3  |
| EASC 2002                                     | Hydrologic Environments                     | 3  |
| EASC 2003                                     | The Ocean                                   | 3  |
| EASC 2004                                     | Earth Science Laboratory                    | 3  |
| and the remaining selected from the following |   |    |
| EASC 2005                                     | The Shelf and Coastal Zone                  | 3  |
| EASC 2006                                     | The Atmosphere                              | 3  |
| EASC 2007                                     | Water Quality and Pollution                 | 3  |
| EASC 2008                                     | Optical Mineralogy                          | 3  |
| EASC 2009                                     | Geologic Materials                          | 3  |
| EASC 2010                                     | Sedimentary Processes and Products          | 3  |
| EASC 2011                                     | Astronomy and Navigation                    | 3  |
| EASC 2012                                     | Earth Sciences Field Camp I                 | 3  |
| plus both of                                  |   |    |
| CHEM 2300                                     | Computational and Analytical Techniques and | 6  |
| CHEM 2400                                     | Physical and Inorganic Chemistry 2          | 12 |
| or both of                                    |   |    |
| CHEM 2801                                     | Chemistry 2A                                | 9  |
| CHEM 2802                                     | Chemistry 2B                                | 9  |

**Note** Students who select the CHEM 2801/2802 option may transfer to the C3 Chemistry 3 program

**Third Year program ESC3 Earth Sciences 3 and Chemistry 3**

This program provides for studies in Earth Sciences and Chemistry Students completing the program sequence are eligible to apply for entry into honours programs in Earth Sciences and Chemistry Entry to this program normally is restricted to students who have completed the program ESC2 Earth Sciences 2 and Chemistry 2

36 units comprising

18 units selected from the following

|                           |                                       |   |
|---------------------------|---------------------------------------|---|
| EASC 3001                 | Physical Oceanography                 | 3 |
| EASC 3002                 | Physical Meteorology                  | 3 |
| EASC 3003                 | Air and Sea Measurements              | 3 |
| EASC 3004                 | Marine Geophysics and Geology         | 3 |
| EASC 3005                 | Soil Plant Water Relations            | 3 |
| EASC 3006                 | Groundwater Hydrology                 | 3 |
| EASC 3007                 | Environmental Geology and Geophysics  | 3 |
| EASC 3008                 | Data Analysis in Earth Sciences       | 3 |
| EASC 3009                 | Modelling in Earth Sciences           | 3 |
| EASC 3010                 | Remote Sensing and Data Visualisation | 3 |
| EASC 3011                 | Natural Hazards                       | 3 |
| EASC 3012                 | Earth Sciences Field Camp 2           | 3 |
| plus all of the following |                                       |   |
| CHEM 3010                 | Structural and Analytical Techniques  | 6 |
| CHEM 3210                 | Physical Chemistry 3                  | 6 |
| CHEM 3310                 | Inorganic Chemistry 3                 | 6 |

## EARTH SCIENCES AND COMPUTER SCIENCE

### First Year requirements

The following topics must be selected as part of the 36 unit First Year program

|             |                             |         |
|-------------|-----------------------------|---------|
| EASC 1001   | Earth Sciences 1A           | 4.5     |
| EASC 1002   | Marine Science 1            | 4.5     |
| COMP 1101   | Information Technology 1    | 4.5     |
| COMP 1102   | Computer Programming 1      | 4.5     |
| plus either |                             |         |
| MATH 1121   | Mathematics 1A              | 4.5     |
| or          |                             |         |
| MATH 1122   | Mathematics 1B              | 4.5     |
| or          |                             |         |
| PHYS 1101   | Physics 1A                  | 4.5     |
| or          |                             |         |
| PHYS 1102   | Physics 1B                  | 4.5     |
| or          |                             |         |
| MATH 1201   | Introductory Mathematics 1A | 4.5 and |
| MATH 1202   | Introductory Mathematics 1B | 4.5     |

### Second Year program ESCS2 Earth Sciences 2 and Computer Science 2

This program leads in Third Year to the program ESCS3 Earth Sciences 3 and Computer Science 3. The ESCS2/ESCS3 program sequence leads to the Bachelor of Science with a double specialisation in Earth Sciences and Computer Science. Students completing the ESCS2/ESCS3 program sequence are eligible to apply to undertake further studies in

Earth Sciences and Computer Science leading to an Honours degree. At the completion of Second Year students may transfer from this program to the ES3 Earth Sciences 3 program.

36 units comprising

18 units of Earth Sciences topics with a minimum of 9 units selected from

|   |                                    |   |
|---|------------------------------------|---|
| EASC 2001                                     | Understanding the Earth            | 3 |
| EASC 2002                                     | Hydrologic Environments            | 3 |
| EASC 2003                                     | The Ocean                          | 3 |
| EASC 2004                                     | Earth Science Laboratory           | 3 |
| and the remaining selected from the following |                                    |   |
| EASC 2005                                     | The Shelf and Coastal Zone         | 3 |
| EASC 2006                                     | The Atmosphere                     | 3 |
| EASC 2007                                     | Water Quality and Pollution        | 3 |
| EASC 2008                                     | Optical Mineralogy                 | 3 |
| EASC 2009                                     | Geologic Materials                 | 3 |
| EASC 2010                                     | Sedimentary Processes and Products | 3 |
| EASC 2011                                     | Astronomy and Navigation           | 3 |
| EASC 2012                                     | Earth Sciences Field Camp 1        | 3 |

plus 18 units selected from

|           |                         |   |
|-----------|-------------------------|---|
| COMP 2001 | Computer Programming 2B | 3 |
| COMP 2004 | Computer Organisation   | 3 |
| COMP 2005 | Database Systems 1      | 3 |
| COMP 2006 | Software Engineering 1  | 6 |
| COMP 2007 | Systems Programming     | 3 |
| COMP 2008 | Computer Programming 2A | 3 |

**Note:** Students are advised to consider the prerequisites of the Third Year Computer Science topics when selecting their Second Year topics.

### Third Year program ESCS3 Earth Sciences 3 and Computer Science 3

This program provides for studies in Earth Sciences and Computer Science. Students completing the program sequence are eligible to apply for entry into honours programs in Earth Sciences and Computer science.

Entry to this program normally is restricted to students who have completed the program ESCS2 Earth Sciences 2 and Computer Science 2.

36 units comprising

18 units selected from

|           |                                      |   |
|-----------|--------------------------------------|---|
| EASC 3001 | Physical Oceanography                | 3 |
| EASC 3002 | Physical Meteorology                 | 3 |
| EASC 3003 | Air and Sea Measurements             | 3 |
| EASC 3004 | Marine Geophysics and Geology        | 3 |
| EASC 3005 | Soil Plant Water Relations           | 3 |
| EASC 3006 | Groundwater Hydrology                | 3 |
| EASC 3007 | Environmental Geology and Geophysics | 3 |

|                             |                                       |   |  |   |   |
|-----------------------------|---------------------------------------|---|--|---|---|
| EASC 3008                   | Data Analysis in Earth Sciences       | 3 | EASC 2009  | Geologic Materials                        | 3 |
| EASC 3009                   | Modelling in Earth Sciences           | 3 | EASC 2010  | Sedimentary Processes and Products        | 3 |
| EASC 3010                   | Remote Sensing and Data Visualisation | 3 | EASC 2011  | Astronomy and Navigation                  | 3 |
| EASC 3011                   | Natural Hazards                       | 3 | EASC 2012  | Earth Sciences Field Camp 1               | 3 |
| EASC 3012                   | Earth Sciences Field Camp 2           | 3 | plus all of the following  |   |   |
| plus 18 units selected from |                                       |   | MATH 2111  | Vector Calculus                           | 3 |
| COMP 3001                   | Programming Language Concepts         | 3 | MATH 2121  | Linear Algebra and Differential Equations | 3 |
| COMP 3003                   | Language Translators                  | 3 | MATH 2041  | Numerical Analysis                        | 3 |
| COMP 3004                   | Computer Networks                     | 3 | MATH 2023  | Mathematics for the Physical Sciences     | 3 |
| COMP 3006                   | Database Systems 2                    | 3 | MATH 2070  | Scientific Computing                      | 3 |
| COMP 3007                   | Artificial Intelligence               | 3 | MATH 2100  | Probability and Signal Analysis           | 3 |
| COMP 3010                   | Computer Architecture 2               | 3 | <b>Third Year program ESM3 Earth Sciences 3 and Mathematics 3</b>  |   |   |
| COMP 3011                   | Operating Systems                     | 3 | This program provides for studies in Earth Sciences and Mathematics. Students completing the program sequence are eligible to apply for entry into honours programs in Earth Sciences and Mathematics. |   |   |
| COMP 3012                   | Software Engineering 2                | 3 | Entry to this program normally is restricted to students who have completed the program ESM2 Earth Sciences 2 and Mathematics 2. 36 units comprising:  |   |   |

**EARTH SCIENCES AND MATHEMATICS**

**First Year requirements**

The following topics must be selected as part of the 36 unit First Year program

|           |                          |     |
|-----------|--------------------------|-----|
| EASC 1001 | Earth Sciences 1A        | 4.5 |
| EASC 1002 | Marine Science I         | 4.5 |
| MATH 1121 | Mathematics 1A           | 4.5 |
| MATH 1122 | Mathematics 1B           | 4.5 |
| STAT 1412 | Data Analysis Laboratory | 4.5 |

**Second Year program ESM2 Earth Sciences 2 and Mathematics 2**

This program leads in Third Year to the program ESM3 Earth Sciences 3 and Mathematics 3. The ESM2/ESM3 program sequence leads to the Bachelor of Science with a double specialisation in Earth Sciences and Mathematics. Students completing the ESM2/ESM3 program sequence are eligible to apply to undertake further studies in Earth Sciences and Mathematics leading to an honours degree. At the completion of Second Year students may transfer from this program to the ES3 Earth Sciences 3 program or to the M3 Mathematics 3 program.

36 units comprising:

18 units of Earth Sciences topics with a minimum of 9 units selected from

|                                 |                             |   |
|---------------------------------|-----------------------------|---|
| EASC 2001                       | Understanding the Earth     | 3 |
| EASC 2002                       | Hydrologic Environments     | 3 |
| EASC 2003                       | The Ocean                   | 3 |
| EASC 2004                       | Earth Science Laboratory    | 3 |
| and the remaining selected from |                             |   |
| EASC 2005                       | The Shelf and Coastal Zone  | 3 |
| EASC 2006                       | The Atmosphere              | 3 |
| EASC 2007                       | Water Quality and Pollution | 3 |
| EASC 2008                       | Optical Mineralogy          | 3 |

18 units selected from the following

|   |                                       |   |
|---|---------------------------------------|---|
| EASC 3001                                 | Physical Oceanography                 | 3 |
| EASC 3002                                 | Physical Meteorology                  | 3 |
| EASC 3003                                 | Air and Sea Measurements              | 3 |
| EASC 3004                                 | Marine Geophysics and Geology         | 3 |
| EASC 3005                                 | Soil Plant Water Relations            | 3 |
| EASC 3006                                 | Groundwater Hydrology                 | 3 |
| EASC 3007                                 | Environmental Geology and Geophysics  | 3 |
| EASC 3008                                 | Data Analysis in Earth Sciences       | 3 |
| EASC 3009                                 | Modelling in Earth Sciences           | 3 |
| EASC 3010                                 | Remote Sensing and Data Visualisation | 3 |
| EASC 3011                                 | Natural Hazards                       | 3 |
| EASC 3012                                 | Earth Sciences Field Camp 2           | 3 |
| plus                                      |                                       |   |
| MATH 3013                                 | Complex Analysis                      | 3 |
| plus 15 units selected from the following |                                       |   |
| MATH 2023                                 | Mathematics for the Physical Sciences | 3 |
| MATH 2070                                 | Scientific Computing                  | 3 |
| MATH 2041                                 | Numerical Analysis                    | 3 |
| MATH 2035                                 | Groups and Codes                      | 3 |
| MATH 2100                                 | Probability and Signal Analysis       | 3 |
| MATH 3025                                 | Calculus of Variations                | 3 |
| MATH 3026                                 | Difference and Differential Equations | 3 |

|           |                                     |   |
|-----------|-------------------------------------|---|
| MATH 3065 | Lagrangian and Rigid Body Mechanics | 3 |
| MATH 4301 | Engineering Mathematics 4           | 3 |
| STAT 2302 | Statistics Computing Laboratory 6   |   |

|           |   |   |
|-----------|---|---|
| MATH 2111 | Vector Calculus                           | 3 |
| MATH 2121 | Linear Algebra and Differential Equations | 3 |

## EARTH SCIENCES AND PHYSICS

### First Year requirements

The following topics must be selected as part of the 36 unit First Year program

|           |                   |     |
|-----------|-------------------|-----|
| EASC 1001 | Earth Sciences IA | 4.5 |
| EASC 1002 | Marine Science I  | 4.5 |
| PHYS 1101 | Physics IA        | 4.5 |
| PHYS 1102 | Physics IB        | 4.5 |
| MATH 1121 | Mathematics IA    | 4.5 |
| MATH 1122 | Mathematics IB    | 4.5 |

### Second Year program ESP2 Earth Sciences 2 and Physics 2

This program leads in Third Year to the program ESP3 Earth Sciences 3 and Physics 3. The ESP2/ESP3 program sequence leads to the Bachelor of Science with a double specialisation in Earth Sciences and Physics. Students completing the ESP2/ESP3 program sequence are eligible to apply to undertake further studies in Earth Sciences and Physics leading to an honours degree. At the completion of Second Year students may transfer from this program to the ES3 Earth Sciences 3 program.

36 units comprising

15 units of Earth Sciences topics with a minimum of 9 units selected from

|           |                          |   |
|-----------|--------------------------|---|
| EASC 2001 | Understanding the Earth  | 3 |
| EASC 2002 | Hydrologic Environments  | 3 |
| EASC 2003 | The Ocean                | 3 |
| EASC 2004 | Earth Science Laboratory | 3 |

and the remaining selected from

|           |                                    |   |
|-----------|------------------------------------|---|
| EASC 2005 | The Shelf and Coastal Zone         | 3 |
| EASC 2006 | The Atmosphere                     | 3 |
| EASC 2007 | Water Quality and Pollution        | 3 |
| EASC 2008 | Optical Mineralogy                 | 3 |
| EASC 2009 | Geologic Materials                 | 3 |
| EASC 2010 | Sedimentary Processes and Products | 3 |
| EASC 2011 | Astronomy and Navigation           | 3 |
| EASC 2012 | Earth Sciences Field Camp I        | 3 |

plus all of the following

|           |                                  |   |
|-----------|----------------------------------|---|
| PHYS 2130 | Electromagnetic Fields and Waves | 3 |
| PHYS 2113 | Thermal Science                  | 3 |
| PHYS 2112 | Quantum Phenomena                | 3 |
| PHYS 2121 | Physics Laboratory 2             | 3 |
| PHYS 2123 | Modern Optics                    | 3 |

### Third Year program ESP3 Earth Sciences 3 and Physics 3

This program provides for studies in Earth Sciences and Physics. Students completing the program sequence are eligible to apply for entry into honours programs in Earth Sciences and Physics.

Entry to this program normally is restricted to students who have completed satisfactorily the program ESP2 Earth Sciences 2 and Physics 2 36 units comprising

15 units selected from the following

|           |                                      |   |
|-----------|--------------------------------------|---|
| EASC 3001 | Physical Oceanography                | 3 |
| EASC 3002 | Physical Meteorology                 | 3 |
| EASC 3003 | Air and Sea Measurements             | 3 |
| EASC 3004 | Marine Geophysics and Geology        | 3 |
| EASC 3005 | Soil Plant Water Relations           | 3 |
| EASC 3006 | Groundwater Hydrology                | 3 |
| EASC 3007 | Environmental Geology and Geophysics | 3 |

|           |                                       |   |
|-----------|---------------------------------------|---|
| EASC 3008 | Data Analysis in Earth Sciences       | 3 |
| EASC 3009 | Modelling In Earth Sciences           | 3 |
| EASC 3010 | Remote Sensing and Data Visualisation | 3 |
| EASC 3011 | Natural Hazards                       | 3 |
| EASC 3012 | Earth Sciences Field Camp 2           | 3 |

plus all of the following

|           |                                       |   |
|-----------|---------------------------------------|---|
| PHYS 3115 | Physics Laboratory 3A                 | 3 |
| PHYS 3121 | Thermal Physics                       | 3 |
| PHYS 3123 | Atomic and Nuclear Physics            | 3 |
| PHYS 3124 | Solid State Science                   | 3 |
| PHYS 3131 | Electromagnetism                      | 3 |
| MATH 2041 | Numerical Analysis                    | 3 |
| MATH 2023 | Mathematics for the Physical Sciences | 3 |

## PHYSICS AND CHEMISTRY

### First Year requirements

The following topics must be selected as part of the 36 unit First Year program

|             |                                 |     |
|-------------|---------------------------------|-----|
| PHYS 1101   | Physics IA                      | 4.5 |
| PHYS 1102   | Physics IB                      | 4.5 |
| plus either |                                 |     |
| CHEM 1101   | Chemistry IA and                | 4.5 |
| CHEM 1102   | Chemistry IB                    | 4.5 |
| or          |                                 |     |
| CHEM 1201   | Introduction to Chemistry A and | 4.5 |

|                    |                             |     |
|--------------------|-----------------------------|-----|
| CHEM 1202          | Introduction to Chemistry B | 4.5 |
|                    | and                         |     |
| CHEM 1102          | Chemistry 1B                | 4.5 |
| plus the following |                             |     |
| MATH 1121          | Mathematics 1A              | 4.5 |
| MATH 1122          | Mathematics 1B              | 4.5 |

### Second Year program PCH2 Physics and Chemistry

This program is for students who require a balanced exposure to experimental and theoretical aspects of both Physics and Chemistry (physical and inorganic) and leads to a degree with a double specialisation in Physics and Chemistry. It leads to the Third Year programs in Physics and Chemistry (PCH3) Chemistry (C3) or subject to approval Physics (PH3).

36 units comprising

|           |   |   |
|-----------|---|---|
| CHEM 2802 | Chemistry 2B                              | 9 |
| CHEM 2803 | Chemistry 2C                              | 6 |
| PHYS 2130 | Electromagnetic Fields and Waves          | 3 |
| PHYS 2115 | Quantum Phenomena                         | 3 |
| PHYS 2113 | Thermal Science                           | 3 |
| PHYS 2123 | Modern Optics                             | 3 |
| PHYS 2121 | Physics Laboratory 2                      | 3 |
| MATH 2111 | Vector Calculus                           | 3 |
| MATH 2121 | Linear Algebra and Differential Equations | 3 |

### Third Year program PCH3 Physics and Chemistry

This program is for students who wish to qualify for the Bachelor of Science in Physics and in Physical and Inorganic Chemistry and gain graduate membership of the Royal Australian Chemical Institute and the Australian Institute of Physics. Entry to the program normally is restricted to students who have completed the program PCH2. Students who complete this program are eligible to apply for entry into an honours program in Chemical Physics.

36 units comprising

|           |                                       |   |
|-----------|---------------------------------------|---|
| CHEM 3210 | Physical Chemistry 3                  | 6 |
| CHEM 3310 | Inorganic Chemistry 3                 | 6 |
| CHEM 3420 | Chemistry Special Topics C            | 3 |
| MATH 2023 | Mathematics for the Physical Sciences | 3 |
| PHYS 2123 | Modern Optics                         | 3 |
| PHYS 3116 | Physics Laboratory 3B                 | 3 |
| PHYS 3121 | Thermal Physics                       | 3 |
| PHYS 3123 | Atomic and Nuclear Physics            | 3 |
| PHYS 3124 | Solid State Science                   | 3 |

|             |                  |   |
|-------------|------------------|---|
| plus either |                  |   |
| PHYS 3131   | Electromagnetism | 3 |
| or          |                  |   |
| MATH 2111   | Vector Calculus  | 3 |

## PHYSICS AND COMPUTER SCIENCE

### First Year requirements

The following topics must be selected as part of the 36 unit First Year program

|           |                          |     |
|-----------|--------------------------|-----|
| COMP 1101 | Information Technology 1 | 4.5 |
| COMP 1102 | Computer Programming 1   | 4.5 |
| MATH 1121 | Mathematics 1A           | 4.5 |
| MATH 1122 | Mathematics 1B           | 4.5 |
| PHYS 1101 | Physics 1A               | 4.5 |
| PHYS 1102 | Physics 1B               | 4.5 |

### Second Year program PCS2 Physics and Computer Science

This program is for students who are interested in both subject areas and who wish to qualify for the bachelors or honours degree with specialisations in Physics and Computer Science. It leads to the Third Year program PCS3 Physics and Computer Science.

36 units comprising

|           |   |   |
|-----------|---|---|
| PHYS 2130 | Electromagnetic Fields and Waves          | 3 |
| PHYS 2115 | Quantum Phenomena                         | 3 |
| PHYS 2113 | Thermal Science                           | 3 |
| PHYS 2121 | Physics Laboratory 2                      | 3 |
| PHYS 2123 | Modern Optics                             | 3 |
| MATH 2111 | Vector Calculus                           | 3 |
| MATH 2121 | Linear Algebra and Differential Equations | 3 |

plus 15 units selected from the following

|           |                         |   |
|-----------|-------------------------|---|
| COMP 2001 | Computer Programming 2B | 3 |
| COMP 2004 | Computer Organisation   | 3 |
| COMP 2005 | Database Systems 1      | 3 |
| COMP 2006 | Software Engineering 1  | 6 |
| COMP 2007 | Systems Programming     | 3 |
| COMP 2008 | Computer Programming 2A | 3 |

**Note:** Students are advised to consider the prerequisites of the Third Year Computer Science topics when selecting their Second Year Computer Science topics.

### Third Year program PCS3 Physics and Computer Science

This program is for students who wish to qualify for the Bachelor of Science specialising in Physics and Computer Science and for graduate membership of the Australian Institute of Physics. Entry to the program normally is restricted to students who have completed the program PCS2.

Students who complete this program are eligible to apply for entry into an honours program in Physics or in Computer Science

36 units comprising

|   |                               |   |
|---|-------------------------------|---|
| PHYS 3115   | Physics Laboratory 3A         | 3 |
| PHYS 3121   | Thermal Physics               | 3 |
| PHYS 3123   | Atomic and Nuclear Physics    | 3 |
| PHYS 3124   | Solid State Science           | 3 |
| PHYS 3131   | Electromagnetism              | 3 |
| Second or Third Year Computer Science topic plus 18 units selected from the following |                               |   |
| COMP 3001   | Programming Language Concepts | 3 |
| COMP 3003   | Language Translators          | 3 |
| COMP 3004   | Computer Networks             | 3 |
| COMP 3006   | Database Systems 2            | 3 |
| COMP 3007   | Artificial Intelligence       | 3 |
| COMP 3010   | Computer Architecture 2       | 3 |
| COMP 3011   | Operating Systems             | 3 |
| COMP 3012   | Software Engineering 2        | 3 |

## PHYSICS AND MATHEMATICS

### First Year requirements

The following topics must be selected as part of the 36 unit First Year program

|           |                |     |
|-----------|----------------|-----|
| MATH 1121 | Mathematics IA | 4.5 |
| MATH 1122 | Mathematics IB | 4.5 |
| PHYS 1101 | Physics IA     | 4.5 |
| PHYS 1102 | Physics IB     | 4.5 |

### Second Year program PM2 Physics 2 and Mathematics 2

This program provides a broad base for further studies for the bachelor and honours degrees and is for students who wish to specialise in both Physics and Mathematics. It leads to the Third Year program PM3 Physics 3 and Mathematics 3

36 units comprising

|           |   |   |
|-----------|---|---|
| MATH 2111 | Vector Calculus                           | 3 |
| MATH 2121 | Linear Algebra and Differential Equations | 3 |
| MATH 2023 | Mathematics for the Physical Sciences     | 3 |
| MATH 2110 | Statistical Science                       | 3 |
| MATH 2041 | Numerical Analysis                        | 3 |
| STAT 2100 | Probability                               | 3 |
| PHYS 2130 | Electromagnetic Fields and Waves          | 3 |
| PHYS 2115 | Quantum Phenomena                         | 3 |
| PHYS 2113 | Thermal Science                           | 3 |
| PHYS 2123 | Modern Optics                             | 3 |
| PHYS 2121 | Physics Laboratory 2                      | 3 |

plus 3 units of elective topics

### Third Level program PM3 Physics 3 and Mathematics 3

This program is for the students who wish qualify for the Bachelor of Science with specialisations in both Physics and Mathematics and gain graduate membership of the Australian Institute of Physics. Entry normally is restricted to students who have completed the program PM2. Students who complete this program are eligible to apply for entry into an honours program in Physics or in Mathematics

36 units comprising

|                                  |   |   |
|----------------------------------|---|---|
| PHYS 3131                        | Electromagnetism                          | 3 |
| PHYS 3123                        | Atomic and Nuclear Physics                | 3 |
| PHYS 3121                        | Thermal Physics                           | 3 |
| PHYS 3124                        | Solid State Science                       | 3 |
| PHYS 3115                        | Physics Laboratory 3A                     | 3 |
| PHYS 3111                        | Quantum Mechanics 2                       | 3 |
| MATH 3013                        | Complex Analysis                          | 3 |
| plus 15 units from the following |   |   |
| MATH 2041                        | Numerical Analysis                        | 3 |
| MATH 3026                        | Difference and Differential Equations     | 3 |
| MATH 2014                        | Principles of Analysis*                   | 3 |
| MATH 3065                        | Lagrangian and Rigid Body Mechanics       | 3 |
| MATH 3025                        | Calculus of Variations                    | 3 |
| MATH 2034                        | Logic and Graphs                          | 3 |
| MATH 2035                        | Groups and Codes                          | 3 |
| MATH 2100                        | Probability and Signal Analysis           | 3 |
| MATH 4301                        | Engineering Mathematics 4                 | 3 |
| EASC 3008                        | Data Analysis in the Earth Sciences       | 3 |
| EASC 3009                        | Numerical Modelling in the Earth Sciences | 3 |

or other topics (with permission)

\* MATH 2014 Principles of Analysis must be taken by students intending to proceed to a honours program in Mathematics

## Programs of study for multidisciplinary programs

### EARTH SCIENCES/ARCHAEOLOGY

#### First Year program EA1 Earth Sciences I/ Archaeology I

36 units comprising

|           |                             |     |
|-----------|-----------------------------|-----|
| ARCH 1001 | Introduction to Archaeology | 4.5 |
| ARCH 1003 | Practical Archaeology       | 4.5 |
| CHEM 1101 | Chemistry IA                | 4.5 |
| CHEM 1102 | Chemistry IB                | 4.5 |
| EASC 1001 | Earth Sciences IA           | 4.5 |



|           |                  |     |
|-----------|------------------|-----|
| EASC 1002 | Marine Science I | 4 5 |
| MATH 1121 | Mathematics 1A   | 4 5 |
| MATH 1122 | Mathematics 1B   | 4 5 |

**Second Year program EA2 Earth Sciences2/  
Archaeology 2**

36 units comprising

|           |                          |   |
|-----------|--------------------------|---|
| ARCH 2001 | Australian Archaeology A | 6 |
| ARCH 2002 | Australian Archaeology B | 6 |
| ARCH 2103 | Quaternary Ecology       | 6 |

or

|           |                             |   |
|-----------|-----------------------------|---|
| ARCH 3009 | Archaeological Science      | 6 |
| EASC 2001 | Understanding the Earth     | 3 |
| EASC 2002 | Hydrologic Environments     | 3 |
| EASC 2003 | The Ocean                   | 3 |
| EASC 2004 | Earth Sciences Laboratory   | 3 |
| EASC 2012 | Earth Sciences Field Camp 1 | 3 |

plus 3 units from

|           |                                    |   |
|-----------|------------------------------------|---|
| EASC 2005 | The Shelf and Coastal Zone         | 3 |
| EASC 2006 | The Atmosphere                     | 3 |
| EASC 2007 | Water Quality and Pollution        | 3 |
| EASC 2008 | Optical Mineralogy                 | 3 |
| EASC 2009 | Geological Materials               | 3 |
| EASC 2010 | Sedimentary Processes and Products | 3 |

**Third Year program EA3 Earth Sciences 3/  
Archaeology 3**

18 units from the following

|           |   |   |
|-----------|---|---|
| ARCH 3001 | Rock Art and Archaeology                  | 6 |
| ARCH 3002 | North American Archaeology A              | 6 |
| ARCH 3003 | Early Celtic Art and Archaeology          | 6 |
| ARCH 3004 | Historical Archaeology                    | 6 |
| ARCH 3005 | Maritime Archaeology                      | 6 |
| ARCH 3006 | North American Archaeology B              | 6 |
| ARCH 3007 | Power Ethnicity and Gender in Archaeology | 6 |
| ARCH 3008 | Modern Material Culture                   | 6 |
| ARCH 3009 | Archaeological Science                    | 6 |

or

|           |                                   |   |
|-----------|-----------------------------------|---|
| ARCH 2103 | Quaternary Ecology                | 6 |
| ARCH 3301 | Archaeological Theory and Method* | 6 |
| ARCH 3302 | Archaeological Field Methods*     | 6 |

plus the following

|           |  |   |
|-----------|--|---|
| EASC 3007 | Environmental Geology and Geophysics*  | 3 |
| EASC 3010 | Remote Sensing and Data Visualisation* | 3 |
| EASC 3012 | Earth Sciences Field Camp 2*           | 3 |

plus 9 units from the following

|           |                       |   |
|-----------|-----------------------|---|
| EASC 3001 | Physical Oceanography | 3 |
| EASC 3002 | Physical Meteorology  | 3 |

|           |   |   |
|-----------|---|---|
| EASC 3003 | Meteorology and Oceanography Laboratory | 3 |
| EASC 3004 | Marine Geology and Geophysics           | 3 |
| EASC 3005 | Soil Plant Water Relations              | 3 |
| EASC 3006 | Groundwater Hydrology                   | 3 |
| EASC 3011 | Natural Hazards                         | 3 |

\* Completion of these topics is required for admission to an honours program

**COGNITIVE SCIENCE**

**First Year program SCS Cognitive Science**

36 units comprising

|           |                                 |     |
|-----------|---------------------------------|-----|
| BIOL 1101 | Biology 1A Biological Diversity | 4 5 |
| BIOL 1102 | Biology 1B Gene Expression      | 4 5 |
| COMP 1101 | Information Technology 1        | 4 5 |
| COMP 1102 | Computer Programming 1          | 4 5 |
| PSYC 1104 | Aspects of Psychology A         | 4 5 |
| PSYC 1105 | Aspects of Psychology B         | 4 5 |
| MATH 1121 | Mathematics 1A                  | 4 5 |
| MATH 1122 | Mathematics 1B                  | 4 5 |

**Second Year Program SCS Cognitive Science**

36 units comprising

|           |   |   |
|-----------|---|---|
| COMP 2007 | Systems Programming                     | 3 |
| COMP 2008 | Computer Programming 2A                 | 3 |
| COMP 2001 | Computer Programming 2B                 | 3 |
| MMED 2926 | Neuroscience 2                          | 6 |
| PSYC 2001 | Physiological Basis of Behaviour        | 3 |
| PSYC 2006 | Cognitive Science 1                     | 6 |
| PSYC 2009 | Basic Research Design and Data Analysis | 3 |
| PSYC 2011 | Cognition                               | 3 |
| SPTH 2504 | Introductory Linguistics                | 3 |
| SPTH 2505 | Linguistics 1 4                         | 3 |

**Third Year Program SCS Cognitive Science**

36 units comprising

|           |                         |   |
|-----------|-------------------------|---|
| COMP 3007 | Artificial Intelligence | 3 |
| MMED 3922 | Neuroscience 3C         | 6 |
| PSYC 3006 | Cognitive Science 2     | 3 |
| PSYC 3037 | Learning and Memory*    | 3 |
| SPTH 3501 | Psycholinguistics       | 3 |

plus 18 units from the following

|           |                               |   |
|-----------|-------------------------------|---|
| COMP 2004 | Computer Organisation         | 3 |
| COMP 2005 | Database Systems 1            | 3 |
| COMP 2006 | Software Engineering 1        | 6 |
| COMP 3001 | Programming Language Concepts | 3 |
| COMP 3003 | Language Translators          | 3 |
| COMP 3004 | Computer Networks             | 3 |
| COMP 3006 | Database Systems 2            | 3 |
| COMP 3011 | Operating Systems             | 3 |
| COMP 3012 | Software Engineering 2        | 3 |

|           |  |   |
|-----------|--|---|
| COMP 3013 | Computer Science Project                               | 3 |
| MATH 2034 | Logic and Graphs                                       | 3 |
| MATH 2035 | Groups and Codes                                       | 3 |
| MATH 2111 | Vector Calculus  | 3 |
| PHIL 2030 | Mind and Knowing                                       | 3 |
| PHIL 2040 | Minds Brains and Computers                             | 6 |
| PHIL 2080 | Logic Reasoning and<br>Argumentation                   | 6 |
| PSYC 2008 | Social Psychology *                                    | 3 |
| PSYC 3001 | Research Methods *                                     | 3 |
| PSYC 3031 | Introduction to Abnormal<br>Psychology *               | 3 |
| PSYC 3036 | Psychophysiology of States of<br>Awareness*            | 3 |
| PYSC 3039 | Introduction to Cognitive<br>Neuroscience              | 3 |
| PSYC 3045 | Psychological Assessment.<br>Basic Principles          | 3 |
| PSYC 3131 | Introduction to Abnormal<br>Psychology (Practical)     | 3 |
| PYSC 3136 | Psychophysiology of States of<br>Awareness (Practical) | 3 |
| PSYC 3137 | Learning and Memory(Practical)                         | 3 |
| PSYC 3139 | Introduction to Cognitive<br>Neuroscience (Practical)  | 3 |

In special circumstances variations to the program may be approved by the Director of Studies

\* Denotes topics required to be completed for course accreditation by the Australian Psychological Society

## Advanced Entry Program

The Advanced Entry Program (AEP) is a fast track program designed for Year 12 students who have demonstrated exceptional ability in mathematics and physical sciences

It recognises that such students would benefit from an accelerated program of study which would enable them to complete a BSc (Honours) program in three years of study instead of the normal four years

There are two streams one in Mathematics Physics and Earth Sciences and the other in Chemical Physics

To be eligible for consideration for entry to the program students normally must have completed the SACE (or equivalent) and have received grades of 19 or 20 in Mathematics 1 Mathematics 2 and Physics at Stage 2 or have received grades of 6 or 7 in both Mathematics and Physics for the International Baccalaureate (IB) For the Chemical Physics program they also must have achieved these grades in Stage 2 Chemistry or IB Chemistry

Other applicants may be considered if they have demonstrated outstanding potential in other ways such as through participation in the Physics Olympiad or high achievement in national mathematics or science competitions

Consideration also may be given to international students who have outstanding achievements in the British A levels or equivalent examinations

To qualify for the Bachelor of Science (Honours) under the Advanced Entry Program a student must complete 72 units with a grade of P or NGP or better in each topic according to one of the two programs of study set out below then satisfy the requirements for an approved Bachelor of Science honours program in the normal way (see Honours degree section following)

Students who do not wish to continue through the Advanced Entry Program may revert to a normal BSc program at the end of their first semester

## Chemical Physics program

### Special combined First and Second Year program (AEC2)

36 units comprising

|           |  |   |
|-----------|--|---|
| CHEM 2402 | Physical and Inorganic<br>Chemistry 2B       | 6 |
| CHEM 2900 | Concepts in Chemistry                        | 3 |
| MATH 2111 | Vector Calculus                              | 3 |
| MATH 2121 | Linear Algebra and<br>Differential Equations | 3 |
| MATH 2023 | Mathematics for the Physical<br>Sciences     | 3 |
| PHYS 2130 | Electromagnetic Fields and<br>Waves          | 3 |
| PHYS 2115 | Quantum Phenomena                            | 3 |
| PHYS 2113 | Thermal Science                              | 3 |
| PHYS 2121 | Physics Laboratory 2                         | 3 |
| PHYS 2123 | Modern Optics                                | 3 |
| PHYS 2126 | Concepts in Physics                          | 3 |

### Special Third Year program (AEC3)

36 units comprising

|           |  |   |
|-----------|--|---|
| CHEM 3210 | Physical Chemistry 3                                     | 6 |
| CHEM 3310 | Inorganic Chemistry 3                                    | 6 |
| CHEM 3420 | Special Topics C   | 3 |
| MATH 2111 | Vector Calculus (for 2000 only)                          | 3 |
| MATH 2023 | Mathematics for the Physical<br>Sciences (for 2000 only) | 3 |
| PHYS 2114 | Computational Methods                                    | 3 |
| PHYS 3116 | Physics Laboratory 3B                                    | 3 |
| PHYS 3121 | Thermal Physics  | 3 |
| PHYS 3123 | Atomic and Nuclear Physics                               | 3 |
| PHYS 3124 | Solid State Science                                      | 3 |

**Mathematics / Physics / Earth Sciences program****Special combined First and Second Year program (AEP2)**

36 units comprising

|                                |   |   |
|--------------------------------|---|---|
| EASC 2001                      | Understanding the Earth                   | 3 |
| MATH 2111                      | Vector Calculus                           | 3 |
| MATH 2121                      | Linear Algebra and Differential Equations | 3 |
| MATH 2023                      | Mathematics for the Physical Sciences     | 3 |
| PHYS 2130                      | Electromagnetic Fields and Waves          | 3 |
| PHYS 2112                      | Quantum Phenomena                         | 3 |
| PHYS 2113                      | Thermal Science                           | 3 |
| PHYS 2121                      | Physics Laboratory 2                      | 3 |
| PHYS 2123                      | Modern Optics                             | 3 |
| PHYS 2126                      | Concepts in Physics                       | 3 |
| Second Year Mathematics topics |   | 6 |

**Special Third Year program (AEP3)**

36 units comprising

|           |   |   |
|-----------|---|---|
| MATH 2023 | Mathematics for the Physical Sciences (for 2000 only) | 3 |
| MATH 3013 | Complex Analysis                                      | 3 |
| MATH 3065 | Lagrangian and Rigid Body Mechanics                   | 3 |
| PHYS 3115 | Physics Laboratory 3A                                 | 3 |
| PHYS 3121 | Thermal Physics                                       | 3 |
| PHYS 3131 | Electromagnetism                                      | 3 |

plus one of the following 18 unit discipline related groups

**Mathematics**

|           |                        |   |
|-----------|------------------------|---|
| MATH 3025 | Calculus of Variations | 3 |
| STAT 2100 | Probability            | 3 |
| MATH 2041 | Numerical Analysis     | 3 |
| MATH 2110 | Statistical Science 2  | 3 |

Third Year Mathematics elective

plus 3 units of elective topics

OR

**Physics**

|           |                            |   |
|-----------|----------------------------|---|
| PHYS 3111 | Quantum Mechanics 2        | 3 |
| PHYS 3123 | Atomic and Nuclear Physics | 3 |
| PHYS 3116 | Physics Laboratory 3B      | 3 |
| PHYS 3124 | Solid State Science        | 3 |
| PHYS 3113 | Medical Physics            | 3 |

plus 3 units of elective topics

OR

**Earth Science The Ocean and Atmosphere Stream**

18 units from

|           |           |   |
|-----------|-----------|---|
| EASC 2003 | The Ocean | 3 |
|-----------|-----------|---|

|           |                                       |   |
|-----------|---------------------------------------|---|
| EASC 2006 | The Atmosphere                        | 3 |
| EASC 3001 | Physical Oceanography                 | 3 |
| EASC 3002 | Physical Meteorology                  | 3 |
| EASC 3003 | Air and Sea Measurements              | 3 |
| EASC 3008 | Data Analysis in Earth Sciences       | 3 |
| EASC 3009 | Modelling in Earth Sciences           | 3 |
| EASC 3010 | Remote Sensing and Data Visualisation | 3 |

**Honours degree**

A student who has completed all the requirements of the Bachelor of Science with a specialisation in an appropriate discipline area or completed another qualification which the Faculty Board agrees is equivalent, may be accepted for admission to an honours program provided a sufficiently high standard has been achieved in fulfilling the requirements of the bachelors degree

Students who complete the Bachelor of Science with no area of specialisation or who hold a lesser qualification may be admitted after completing additional work as prescribed by the Board

To qualify for the honours degree a student must complete at least one of the following programs

Students who withdraw during the honours year will not be permitted to re enrol as an honours student except with the permission of the relevant school

**BIOLOGICAL SCIENCES B4**

A student shall undertake a prescribed course of work in an approved field of biology Fields of study available include animal physiology behavioural biology biochemistry biotechnology cell physiology plant systematics and speciation developmental biology ecology genetics immunology microbiology palaeobiology plant physiology population genetics marine biology and biology with psychology

Enrolment in particular areas depends on topics taken in the bachelors degree and grades achieved

**CHEMICAL PHYSICS PCH4**

Entry to this program normally is restricted to students who have satisfied the requirements of the Bachelor of Science and completed the program AEP3 (Chemical Physics stream) or the program PCH3 at a sufficiently high level

The program will consist of a research project (50%) and at least 5 coursework topics (50%) chosen in consultation with the program adviser

Normally the topics will be chosen from

Chemistry honours topics in Surface Science  
Chemical Reaction Rates Seminar in Chemical  
Physics and

PHYS 7141 Atomic Collision Processes  
PHYS 7151 Advanced Statistical Mechanics  
PHYS 3111 Quantum Mechanics 2

or other honours topics offered in Chemistry or  
Physics

Research projects are available in such areas as  
laser spectroscopy surface chemistry atmospheric  
chemistry electron atom scattering (e 2e)  
spectroscopy

This program will be supervised by a Joint Honours  
Committee established by the School of  
Chemistry Physics and Earth Sciences

### CHEMISTRY C4

The program consists of a research project and at  
least 5 coursework topics chosen in consultation  
with the program adviser and the research project  
supervisor together with attendance at, and  
participation in research colloquia and seminars  
and other designated activities. The program  
normally commences in the first week of February

Research work is available in the fields of natural  
product synthesis medicinal chemistry  
heterocyclic chemistry stereochemistry reaction  
mechanisms organometallics physical organic  
chemistry forensic chemistry theoretical  
chemistry laser spectroscopy chemical  
crystallography bioinorganic chemistry  
macrocylic chemistry atmospheric chemistry and  
surface chemistry. A list of research projects for  
the following year will be made available early in  
second semester. A list of coursework topics will  
be made available at the beginning of the year

Eligibility to undertake a particular honours  
research project will depend upon the areas of  
specialisation studied in the Third Year of the  
bachelors degree

Performance in the research project is assessed by  
the research supervisor and via a thesis a seminar  
and an oral examination. Coursework will be  
assessed by examination. Students must participate  
satisfactorily in all facets of the honours program

### COMPUTER SCIENCE CS4 Computer Science and SCS Cognitive Science

#### CS4 Computer Science

The Computer Science honours program  
considerably enhances a student's knowledge of  
Computer Science and Information Technology

Students are required to complete 5 topics and a  
project. The project has a weighting of 5 topics  
Students may take more than 5 topics and in this  
case only the best 5 are considered in their  
assessment.

Topics vary from year to year but the following  
indicates some likely options Building Graphical  
Interfaces Natural Language Learning Tools for  
Software Engineering and Programming Language  
Design

The honours project is intended to promote the  
development of research skills through an in depth  
investigation of a particular area of Computer  
Science and Information Technology under the  
guidance of a supervisor. Students are expected to  
acquire new knowledge and to develop basic  
research skills. The Honours Project is not merely  
a large system building exercise. Rather the  
principal objective is for students to show initiative  
and to develop insight in assimilating and critically  
evaluating ideas. At the end of the project the  
student must demonstrate a reasonably deep  
understanding of a particular area of Computer  
Science and Information Technology and have been  
able to apply the requisite knowledge to solve a  
substantial problem. The actual nature of the  
project is determined by negotiation between the  
students and their selected supervisor

#### SCS Cognitive Science

To be eligible for entry into the Cognitive Science  
honours program in the discipline of Computer  
Science students must pass usually at a Distinction  
or high Credit average the following

the 21 units of core Computer Science topics in  
the Cognitive Science program sequence  
one of the following:

|           |                       |   |
|-----------|-----------------------|---|
| COMP 2004 | Computer Organisation | 3 |
| COMP 2005 | Database Systems I    | 3 |

15 units of Third Year Computer Science topics  
as listed in the Cognitive Science Third Year  
program

To qualify for the honours degree students must  
complete satisfactorily a project (50%) and 56  
honours level Computer Science topic\* (10% each)  
offered by any of the three South Australian  
universities

\* With the permission of the Honours Coordinator  
it may be possible to substitute honours topics  
from other disciplines

**EARTH SCIENCES ES4**

On the basis of a satisfactory level of performance in their undergraduate program of study students may be invited or may apply to undertake an honours degree. Students must pass 18 units (6 topics) of coursework selected from the following list (or equivalent topics as approved by the honours coordinator)

|           |  |
|-----------|--|
| EASC 7001 | Advanced Oceanography                  |
| EASC 7002 | Advanced Meteorology                   |
| EASC 7003 | Advanced Water Science 1               |
| EASC 7004 | Advanced Water Science 2               |
| EASC 7005 | Advanced Geophysics                    |
| EASC 7006 | Advanced Geology                       |
| EASC 7007 | Advanced Data Processing and Modelling |

In addition students must pursue a project under the supervision of a staff member and produce a satisfactory written thesis for examination and assessment (18 units)

**MATHEMATICS M4 Mathematics and MC4 Computational Mathematics**

Entry into an honours program in a given specialisation will be restricted to students who have achieved a sufficiently high standard (normally at least a Credit average) in an appropriate Third Year program

In each of the programs of study for the honours degree a student shall complete 8 topics and a supervised project. The topics and the subject area of the project will be selected in consultation with the honours coordinator and will consist of core topics appropriate to the relevant specialisation together with optional topics. Optional topics may be selected from the honours or graduate level topics in any field offered in Mathematics and Statistics at Flinders or within the Faculty of Mathematical and Computer Sciences at the University of Adelaide. With permission of the Board topics also may be chosen from those offered by other schools or departments of the University which represent a sequel to Third Year topics already completed.

A student may on application be permitted to substitute approved Second or Third Year topics amounting to a total of 9 units for two optional honours level topics. The Second or Third Year topics may be selected from any in Mathematics and Statistics not already taken but in the case of other schools or departments in the University these topics must in addition form a logical

extension of the work already done. The programs of study in the indicated specialisations are as follows

**Mathematics (M4)**

Computational Mathematics (MC4)

**PHYSICS P4**

Entry into the honours physics program is restricted to students who have achieved a sufficiently high standard (normally a Credit average) in an appropriate Third Year program or its equivalent. The program comprises lectures and project work. The project work includes for students specialising in Experimental Physics experiments carried out in the research laboratories under the supervision of a member of staff or for Theoretical Physics students further reading or lecture courses or research work carried out under the supervision of a member of staff. Students will be examined on each topic taken and on their project work.

Students specialising in either Experimental Physics or Theoretical Physics take PHYS 7171 Physics Seminar and 5 other topics. The topics are chosen subject to the approval of the coordinator of undergraduate teaching in Physics. Normally the majority will be chosen from the following:

|           |                                |
|-----------|--------------------------------|
| PHYS 7131 | Advanced Quantum Mechanics     |
| PHYS 7141 | Atomic Collision Processes     |
| PHYS 7151 | Advanced Statistical Mechanics |
| PHYS 7163 | Particle Physics               |

**Note** A limited number of topics from the University of Adelaide Physics honours program also may be chosen

**Honours degree (Medicine/Health Sciences)**

An honours program in Medicine or Health Sciences is offered by the Faculty of Health Sciences to students who have

completed either the Bachelor of Science or a qualification deemed equivalent by the Faculty Board or another acceptable qualification and other work as prescribed by the Board and reached a sufficiently high standard in their undergraduate degree or equivalent qualification (normally a GPA of 5 or above) particularly in areas relating to their proposed honours studies.

The honours program comprises 36 units of study taken in one year full time or two years part time in the following topics

|           |   |    |
|-----------|---|----|
| MMED 7002 | Honours Program in the School of Medicine | 36 |
| or        |   |    |
| HLTH 7000 | Honours Program in Health Sciences        | 36 |

A Bachelor of Science Honours Committee will approve a student's admission and proposed program and appoint a supervisor and two assessors. The committee and the supervisors of each student enrolled in the degree shall comprise the Examinations Board.

**A detailed booklet about the honours program and the projects available may be obtained from Dr JR Oliver, (Chairperson of the Honours Committee) – telephone (08) 8204 4239**

### Combined Science/Law program

A BSc program in Biological Sciences, Chemistry, Computer Science, Earth Sciences, Mathematics or Physics can be undertaken in a joint program with studies in law.

A combined Bachelor of Science / Bachelor of Laws and Legal Practice requires a minimum of 210 units of study and a Bachelor of Science / Bachelor of Laws a minimum of 192 units.

For admission to the program, students first must apply for admission to the Bachelor of Laws and Legal Practice. If successful, they then apply for admission to the Bachelor of Science at the time of enrolment.

Students who commence but subsequently do not wish to complete the combined program may be eligible to transfer to the Bachelor of Science program and to receive credit for some or all of the topics already completed.

#### Program of study

To qualify for the combined degrees of Bachelor of Science / Bachelor of Laws and Legal Practice, a student must complete the following program of study with a grade of P or NGP or better in each topic:

a law component of 138 units for the Bachelor of Laws and Legal Practice or 120 units for the Bachelor of Laws [See Bachelor of Laws and Legal Practice entry for further information]

a 72 unit BSc component according to one of the programs set out below

### BIOLOGICAL SCIENCES BSSL

#### First Year

27 units of First Year Science topics which must include

|             |                                 |     |
|-------------|---------------------------------|-----|
| BIOL 1101   | Biology 1A Biological Diversity | 4.5 |
| BIOL 1102   | Biology 1B Gene Expression      | 4.5 |
| plus either |                                 |     |
| CHEM 1101   | Chemistry 1A and                | 4.5 |
| CHEM 1102   | Chemistry 1B                    | 4.5 |
| or          |                                 |     |
| CHEM 1201   | Introduction to Chemistry A     | 4.5 |
|             | and                             |     |
| CHEM 1202   | Introduction to Chemistry B     | 4.5 |

#### Second Year

21 units of Second Year Biology topics as specified in Biology Program B2

#### Third Year

24 units of Third Year Biology topics, excluding special topics, as listed in Biology Program B3

### CHEMISTRY CHSL

#### First Year

27 units of First Year Science topics which must include

|             |                             |     |
|-------------|-----------------------------|-----|
| either      |                             |     |
| CHEM 1101   | Chemistry 1A and            | 4.5 |
| CHEM 1102   | Chemistry 1B                | 4.5 |
| or          |                             |     |
| CHEM 1201   | Introduction to Chemistry A | 4.5 |
|             | and                         |     |
| CHEM 1202   | Introduction to Chemistry B | 4.5 |
|             | and                         |     |
| CHEM 1102   | Chemistry 1B                | 4.5 |
| plus either |                             |     |
| PHYS 1101   | Physics 1A                  | 4.5 |
| or          |                             |     |
| PHYS 1102   | Physics 1B                  | 4.5 |
| or          |                             |     |
| MATH 1121   | Mathematics 1A              | 4.5 |
| or          |                             |     |
| MATH 1122   | Mathematics 1B              | 4.5 |
| or          |                             |     |
| MATH 1201   | Introductory Mathematics 1A | 4.5 |
|             | and                         |     |
| MATH 1202   | Introductory Mathematics 1B | 4.5 |

#### Second Year

24 units of Second Year Chemistry core topics as specified in Chemistry Program C2

**Third Year**

21 units comprising

|           |                                      |   |
|-----------|--------------------------------------|---|
| CHEM 3110 | Organic Chemistry 3                  | 6 |
| CHEM 3310 | Inorganic Chemistry 3                | 6 |
| CHEM 2600 | Environmental Chemistry              | 3 |
| CHEM 3010 | Structural and Analytical Techniques | 6 |

**COMPUTER SCIENCE CSSL****First Year**

27 units of First Year Science topics which must include

|           |                          |     |
|-----------|--------------------------|-----|
| COMP 1101 | Information Technology 1 | 4.5 |
| COMP 1102 | Computer Programming 1   | 4.5 |

**Second Year**

21 units comprising

|           |                         |   |
|-----------|-------------------------|---|
| COMP 2001 | Computer Programming 2B | 3 |
| COMP 2004 | Computer Organisation   | 3 |
| COMP 2005 | Database Systems 1      | 3 |
| COMP 2006 | Software Engineering 1  | 6 |
| COMP 2007 | Systems Programming     | 3 |
| COMP 2008 | Computer Programming 2A | 3 |

**Third Year**

24 units selected from the following

|           |                               |   |
|-----------|-------------------------------|---|
| COMP 3001 | Programming Language Concepts | 3 |
| COMP 3003 | Language Translators          | 3 |
| COMP 3004 | Computer Networks             | 3 |
| COMP 3006 | Database Systems 2            | 3 |
| COMP 3007 | Artificial Intelligence       | 3 |
| COMP 3010 | Computer Architecture 2       | 3 |
| COMP 3011 | Operating Systems             | 3 |
| COMP 3012 | Software Engineering 2        | 3 |
| COMP 3013 | Computer Science Project      | 6 |

**EARTH SCIENCES ESSL****First Year**

27 units of First Year Science topics which must include

|             |                    |     |
|-------------|--------------------|-----|
| EASC 1001   | Earth Sciences 1A  | 4.5 |
| EASC 1002   | Marine Science 1   | 4.5 |
| plus either |                    |     |
| MATH 1121   | Mathematics 1A     | 4.5 |
| or          |                    |     |
| MATH 1122   | Mathematics 1B     | 4.5 |
| or          |                    |     |
| PHYS 1101   | Physics 1A         | 4.5 |
| or          |                    |     |
| PHYS 1102   | Physics 1B         | 4.5 |
| or          |                    |     |
| MATH 1201   | Mathematics 1A and | 4.5 |
| MATH 1202   | Mathematics 1B     | 4.5 |

**Second Year**

24 units comprising

|                                  |   |   |
|----------------------------------|---|---|
| EASC 2001                        | Understanding the Earth                   | 3 |
| EASC 2002                        | Hydrologic Environments                   | 3 |
| EASC 2003                        | The Ocean                                 | 3 |
| EASC 2004                        | Earth Sciences Laboratory                 | 3 |
| plus 12 units from the following |   |   |
| EASC 2005                        | The Shelf and Coastal Zone                | 3 |
| EASC 2006                        | The Atmosphere                            | 3 |
| EASC 2007                        | Water Quality and Pollution               | 3 |
| EASC 2008                        | Optical Mineralogy                        | 3 |
| EASC 2009                        | Geologic Materials                        | 3 |
| EASC 2010                        | Sedimentary Processes and Products        | 3 |
| EASC 2011                        | Astronomy and Navigation                  | 3 |
| EASC 2012                        | Earth Sciences Field Camp 1               | 3 |
| MATH 2111                        | Vector Calculus                           | 3 |
| MATH 2121                        | Linear Algebra and Differential Equations | 3 |

**Third Year**

21 units from the following

|           |                                       |     |
|-----------|---------------------------------------|-----|
| EASC 3001 | Physical Oceanography                 | 3   |
| EASC 3002 | Physical Meteorology                  | 3   |
| EASC 3003 | Air and Sea Measurements              | 3   |
| EASC 3004 | Marine Geophysics and Geology         | 3   |
| EASC 3005 | Soil Plant Water Relations            | 3   |
| EASC 3006 | Groundwater Hydrology                 | 3   |
| EASC 3007 | Environmental Geology and Geophysics  | 3   |
| EASC 3008 | Data Analysis in Earth Sciences       | 3   |
| EASC 3009 | Modelling in Earth Sciences           | 3   |
| EASC 3010 | Remote Sensing and Data Visualisation | 3   |
| EASC 3011 | Natural Hazards                       | 3   |
| EASC 3012 | Earth Sciences Field Camp 2           | (3) |
| MATH 2041 | Numerical Analysis                    | 3   |
| MATH 2023 | Mathematics for the Physical Sciences | 3   |
| MATH 2070 | Scientific Computing                  | 3   |

**MATHEMATICS MASL****First Year**

27 units of First Year Science topics which must include

|           |                |     |
|-----------|----------------|-----|
| MATH 1121 | Mathematics 1A | 4.5 |
| MATH 1122 | Mathematics 1B | 4.5 |

**Second Year**

24 units comprising

|           |   |   |
|-----------|---|---|
| MATH 2111 | Vector Calculus                           | 3 |
| MATH 2121 | Linear Algebra and Differential Equations | 3 |

|           |                        |   |
|-----------|------------------------|---|
| MATH 2014 | Principles of Analysis | 3 |
| STAT 2100 | Probability            | 3 |
| STAT 2110 | Statistical Science 2  | 3 |
| MATH 2034 | Logic and Graphs       | 3 |

plus 6 units of elective Science topics

### Third Year

21 units comprising:

|           |                  |   |
|-----------|------------------|---|
| MATH 3013 | Complex Analysis | 3 |
|-----------|------------------|---|

plus 15 units selected from the following

|           |                                       |   |
|-----------|---------------------------------------|---|
| MATH 2023 | Mathematics for the Physical Sciences | 3 |
| MATH 2070 | Scientific Computing                  | 3 |
| MATH 2041 | Numerical Analysis                    | 3 |
| MATH 2035 | Groups and Codes                      | 3 |
| MATH 2100 | Probability and Signal Analysis       | 3 |
| MATH 3025 | Calculus of Variations                | 3 |
| MATH 3026 | Difference and Differential Equations | 3 |
| MATH 3065 | Lagrangian and Rigid Body Mechanics   | 3 |
| MATH 4301 | Engineering Mathematics 4             | 3 |
| STAT 2110 | Statistics Computing Laboratory 6     | 6 |

plus 3 units of Science topics

### PHYSICS PHSL

#### First Year

27 units of First Year Science topics which must include

|           |                |     |
|-----------|----------------|-----|
| MATH 1121 | Mathematics IA | 4.5 |
| MATH 1122 | Mathematics IB | 4.5 |
| PHYS 1101 | Physics IA     | 4.5 |
| PHYS 1102 | Physics IB     | 4.5 |

#### Second Year

24 units comprising

|           |   |   |
|-----------|---|---|
| PHYS 2130 | Electromagnetic Fields and Waves          | 3 |
| PHYS 2115 | Quantum Phenomena                         | 3 |
| PHYS 2113 | Thermal Science                           | 3 |
| PHYS 2121 | Physics Laboratory 2                      | 3 |
| PHYS 2123 | Modern Optics                             | 3 |
| MATH 2111 | Vector Calculus                           | 3 |
| MATH 2121 | Linear Algebra and Differential Equations | 3 |
| MATH 2023 | Mathematics for the Physical Sciences     | 3 |

### Third Year

21 units comprising

|           |                            |   |
|-----------|----------------------------|---|
| PHYS 3115 | Physics Laboratory 3A      | 3 |
| PHYS 3116 | Physics Laboratory 3B      | 3 |
| PHYS 3121 | Thermal Physics            | 3 |
| PHYS 3123 | Atomic and Nuclear Physics | 3 |
| PHYS 3124 | Solid State Science        | 3 |
| PHYS 3131 | Electromagnetism           | 3 |
| MATH 3013 | Complex Analysis           | 3 |

### Globalisation

Students undertaking a single specialisation in the BSc should consult with their First Year Science Counsellor to determine how they may take the Globalisation Program as part of their degree

The program is unique to Flinders. There are no prerequisites and no prior knowledge is assumed in either science or information technology

Globalisation topics are available only to students taking the Globalisation Program

#### Program of Study

Students wishing to take the program must take all seven topics in a particular sequence

#### First Year

|           |                                  |     |
|-----------|----------------------------------|-----|
| GLOB 1001 | Introduction to Globalisation    | 4.5 |
| GLOB 1002 | Survival Guide to a Global World | 4.5 |

#### Second Year

|           |  |   |
|-----------|--|---|
| GLOB 2001 | Understanding World and Global Diversity | 6 |
| GLOB 2002 | Environment and Ecosystems               | 6 |

#### Third Year

|           |  |   |
|-----------|--|---|
| GLOB 3001 | Communications in a Global World       | 6 |
| GLOB 3002 | Experiencing a Global World            | 3 |
| GLOB 3003 | Ethical Decision Making Global Context | 3 |