Bachelor of Applied Science (SC01)

Year offered: 2010
Admissions: Yes
CRICOS code: 003502J
Course duration (full-time): 3 Years
Course duration (part-time): 6 Years
Domestic fees (indicative): 2010: CSP $2,200 (indicative) per semester
International Fees (indicative): 2010: $11,750 (indicative) per semester
Domestic Entry: February and July* (Conditions apply for July entry)
International Entry: February and July* (Conditions apply for July entry)
QTAC code: 418011
Past rank cut-off: 77
Past OP cut-off: 12
OP Guarantee: Yes
Assumed knowledge: English (4, SA) and Maths B (4, SA)
Preparatory studies: For information on acquiring assumed knowledge visit
Total credit points: 288
Standard credit points per full-time semester: 48
Standard credit points per part-time semester: 24
Course coordinator: Dr Marion Bateson
Discipline coordinator: Dr Perry Hartfield (Biochemistry Major); Dr Marion Bateson (Biotechnology Major); Dr Robert Johnson (Chemistry Major); Dr Ian Williamson (Ecology Major); Dr Robin Thwaites (Environmental Science Major); Dr Emad Kiriakous (Forensic Science Major); Dr Gary Huftile (Geoscience Major); Dr Christine Knox (Microbiology Major); Dr Stephen Hughes (Physics Major)
Campus: Gardens Point

Majors
- Bachelor of Applied Science (Chemistry)
- Bachelor of Applied Science (Ecology)
- Bachelor of Applied Science (Forensic Science)
- Bachelor of Applied Science (Geoscience)
- Bachelor of Applied Science (Microbiology)
- Bachelor of Applied Science (Biotechnology)
- Bachelor of Applied Science (Biochemistry)
- Bachelor of Applied Science (Environmental Science)
- Bachelor of Applied Science (Physics)

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The flexibility of QUT's Bachelor of Applied Science allows you to tailor the qualification to your needs and career aspirations. Would you like to be at the forefront of the latest discoveries in genetic engineering, improve the lives of others by researching new diagnostic techniques and treatments for diseases, or monitor a community's water supply ensuring it is safe to drink? You could help save an endangered species, investigate renewable energy sources or formulate solutions to problems like water shortages and salinity. You could advise world leaders on the causes and effects of global warming or even discover a new star in a far away galaxy.

Recommended Study
At least one of the sciences; either Chemistry, Physics, Biological Science, Earth Science or Maths C.

Why Choose this Course
Employability:
Our courses are designed in consultation with industry, government and the professions. At QUT you won't just learn theory, you will apply it to real-world situations, ensuring your skills will be in demand when you graduate.

Practical teaching
From the beginning of your course you can expect to spend quality time in QUT’s state-of-the-art laboratories learning the latest techniques and using equipment found in industry.

Learn from the experts
Our lecturers are experts in their field and include award-winning teachers and world-renowned researchers.

Cutting-edge technologies
You will learn about the latest discoveries from QUT’s internationally recognised research facilities ensuring you graduate with the most up-to-date knowledge.

Financial support
A range of scholarships is available including the Dean’s Scholars Accelerated Honours Program, Vice-Chancellor’s Scholarship and Industrial Chemistry bursaries.

Real experience
If you are considering a career in research you can apply for a Vacation Research Experience Scholarship and undertake a real research project during the Summer Program.

Convenience
Gardens Point campus has a prime location in Brisbane's city centre with easy access via buses, trains and ferries.

Design your own degree
You have a broad range of options to choose from and the flexibility to create your own personal science degree program. If you are not sure of your career direction, don't worry because this decision can be delayed until after you
have sampled a range of science disciplines during your first year of study. The 24 unit degree comprises:

**First-year program (eight units)**
The first year is designed to give you experience in a wide range of basic science disciplines, consisting of three general foundation units, one maths unit, and four major foundation units. Some of these foundation sciences, such as mathematics and chemistry, will underpin all of your later studies. All of the first-year studies are designed to challenge and engage you in the wonders of science, regardless of your prior exposure to science studies. You should seek advice from our expert staff of your choice of major to suit your interests and capabilities, and your personal and career aspirations.

**Major (eight units)**
Choose your main specialisation study area (your major) from the list below. This will form the basis for your qualification, for example Bachelor of Applied Science (Biotechnology). As QUT courses are designed in close consultation with industry you will be eligible for the relevant professional accreditation when you graduate. The major areas available are:

- Biochemistry
- Biotechnology
- Chemistry
- Ecology
- Environmental Science
- Forensic Science*
- Geoscience
- Microbiology
- Physics

* The Forensic Science major must be taken as a double major with another science area (Chemistry, Biotechnology, Biochemistry or Microbiology).

**Second major (six units)**
Personalise your degree by choosing a secondary specialisation (your second major) to complement your major area of study. This secondary specialisation may be one of the other majors, a second major (listed below), or an area outside the science disciplines:

- One of the nine Science majors listed above or
- Applied Geology
- Astrophysics
- Biodiversity
- Chemistry for Industry
- Life Science Technologies
- Mathematics

or a non-science second major from this list:

- Aviation
- Corporate IT Systems
- Environmental Engineering Studies
- Ethics and Human Rights
- Foreign Languages
- Games Technology
- Geography
- Journalism
- Management
- Marketing
- Music
- Nutrition
- Psychology
- Spatial Science

**Optional units (two units)**
You also have the freedom to choose two units of study from Science and Technology, or across the University, to suit your own interests. Alternatively you may choose units to complement or deepen your expertise in your chosen science area of study.

**Science Second Major Areas of Study**
You will choose a second major to complement your major area of study. This second major may be one of the majors offered within the Bachelor of Applied Science, or it may be one of the science second majors listed below. Alternatively you may choose another area of study outside the sciences.

**Science Second Majors:**

**Applied Geology:**
The Applied Geology second major is designed to complement the Geoscience major. The skills learned through core units in the major are applied to activities related to the petroleum, mineral, hydrogeological and environmental professions. You will learn the specialist techniques required to understand the genesis of ore deposits, set up mineral exploration programs, produce groundwater models, understand the fluid flow in petroleum reservoirs or manage the effects of human activity on the environment.

**Astrophysics:**
The Astrophysics second major is an exciting blend of astrophysics, geophysics, cosmology, digital image processing and remote sensing units, designed to be taken with a major in Physics, Mathematics or Geoscience. The second major is relevant to many real-world problems and applications, including satellite technology, telecommunications, minerals exploration and global warming. By taking this second major you will develop skills in computing, instrumentation, image processing, geodesy...
and materials science that will be useful for a wide variety of careers in industry and the public sector.

**Biodiversity:**
Biodiversity has evolved over the years as a discipline concerned with the conservation and sustainable use of the earth’s biological diversity. It deals with the components of biological diversity, genes to biomes, and seeks to describe and quantify this diversity, and determine how it is produced and maintained. The Biodiversity second major is designed to complement both the Ecology and Environmental Science majors. Common threads are the basic biology of the species in Australian ecosystems, the systems they are a part of, and the evolution of these species and ecosystems.

**Chemistry for Industry:**
The Industrial Chemistry second major is designed to partner the Chemistry major. The emphasis is on analytical chemistry and chemical technology. It aims to familiarise you with state-of-the-art equipment and modern laboratory information systems as well as online monitoring and control of industrial processes. This second major is well recognised by employers in industrial, hospital and sports laboratories, by food and pharmaceutical producers and by instrument manufacturers as well as research organisations. As a graduate from this program you can look forward to a rewarding career commencing employment as a chemist and then moving through an organisation in supervisory and managerial capacities. A number of industry-sponsored bursaries are available each year for students enrolled in the Chemistry and Chemistry for Industry second majors.

**Life Science Technologies:**
The many and varied disciplines which are characteristic of research and development activities in the life sciences are reflected in employer demand for a broad range of graduates with different specialisations and skills. The life sciences technologies second major addresses this demand by enabling you to tailor units from an available list to reflect your personal interests while strengthening your skills and expertise. In second year, you will undertake three units that expand your knowledge in a range of basic life science areas including physiology. In third year you will build your expertise and practical skills by selecting three advanced units from an approved list in the areas of biotechnology, biochemistry, microbiology or physiology. The strong technology focus of these units will complement your primary major and enhance your opportunities in an ever-increasing variety of niche employment areas.

**Mathematics:**
Mathematical Science provides powerful tools for analysis of today’s complex world and gives an insight into many important real-world problems.

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**Professional Recognition**
For graduates with approved study: AusBiotech Ltd, Australasian Association of Clinical Biochemists (AACB), Australasian Institute of Mining and Metallurgy (AIMM), Australian and New Zealand Forensic Science Society (ANZFSS), Australian Institute of Geoscientists (AIG), Australian Institute of Physics (AIP), Australian Society for Biochemistry and Molecular Biology (ASBMB), Australian Society for Medical Research (ASMR), Australian Society for Microbiology (ASM), Australian Wildlife Management Society (AWMS), Ecological Society of Australia (ESA), Environment Institute of Australia and New Zealand (ElANZ), Geological Society of Australia (GSA), Royal Australian Chemical Institute (RACI), Soil Science Society of Australia (SSSA).

**Course Rules**
1. To fulfil the requirements for the award of the Bachelor of Applied Science degree, a student must complete a total of at least 288 credit points, comprising at least 192 credit points of science units. The units completed for the award of the degree must include:
   
   (a) the first year program as outlined in the course summary
   (b) a major study
   (c) a second major study

Major and second major studies are defined in terms of the discipline area and the academic level at which the units are offered.

A major must be completed in one of the following discipline areas: biochemistry; biotechnology; chemistry; ecology; environmental science; forensic science; geoscience; microbiology; physics. A major comprises 96 credit points of units at advanced level, including at least 48 credit points at the third level.

A second major may be completed by selecting appropriate units from another major, or from the following discipline areas:

Science applied geology, astrophysics, biodiversity, chemistry for industry, life science technologies, mathematics.

Non-Science: aviation, corporate IT systems, environmental engineering studies, ethics and human rights, foreign languages, games technology, geography, journalism, management, marketing, music, nutrition, psychology, spatial science.

A second major comprises 72 credit points with at least 60 credit points at advanced level for the Science second major.
majors and at least 48 credit points for the non-Science second majors. Major and second major studies may be taken in closely related discipline areas.

2. Optional (elective) units may be chosen from (a) SCO1 majors/second majors other than those undertaken by a student, (b) other appropriate units offered by the Faculty of Science and Technology, and (c) units offered by other faculties.

3. Students are normally expected to complete the course in minimum time. A full-time student normally enrolls in an average of 48 credit points per semester for six semesters and a part-time student normally enrolls in 24 credit points per semester for 12 semesters. (A full-time student is one who is enrolled in 36 or more credit points per semester, whereas a part-time student is one who is enrolled in less than 36 credit points per semester.)

Notes on the Rules

1. For offerings in the Faculty of Science and Technology, the term advanced level refers to units in Schedules 2 and 3. For units offered outside the Faculty of Science and Technology, the term advanced level refers to units for which there is at least one prerequisite unit.

2. Level 2 and level 3 units are listed in Schedules 2 and 3 respectively according to their unit codes. For each unit, the major(s) and/or second major(s) in which the unit is offered are shown. It should be noted that not every advanced level unit offered in each major/second major is mandatory.

3. The major undertaken by a student will qualify the generic award title of BAppSc and will appear in the award title in parentheses. The general form of the award will therefore be: BAppSc(Major).

Deferment

QUT allows current Year 12 school leavers to defer their undergraduate admission offer for one year, or for six months if offered mid-year admission, except in courses using specific admission requirements such as questionnaires, portfolios, auditions, prior study or work experience.

Non-year 12 students may also request to defer their QTAC offer on the basis of demonstrated special circumstances.

Find out more on deferment.

Further Information

For further information about this course, please contact the following:

Course Coordinator
Dr Marion Bateson
Phone: +61 7 3138 1269
Email: m.bateson@qut.edu.au

Discipline Coordinators

Biochemistry Major (Cell and Molecular Biosciences Discipline)
Dr Perry Hartfield
Phone: +61 7 3138 2984
Email: p.hartfield@qut.edu.au
Alternative phone contact: +61 7 3138 2782
Alternative email contact: enquiry.scitech@qut.edu.au

Biotechnology Major (Cell and Molecular Biosciences Discipline)
Dr Marion Bateson
Phone: +61 7 3138 1269
Email: m.bateson@qut.edu.au

Chemistry Major (Chemistry Discipline)
Dr Dennis Arnold
Phone: +61 7 3138 2482
Email: d.arnold@qut.edu.au
Alternative phone contact: +61 7 3138 2782
Alternative email contact: enquiry.scitech@qut.edu.au

Ecology Major (Biogeosciences Discipline)
Dr Ian Williamson
Phone: +61 7 3138 2782
Email: enquiry.scitech@qut.edu.au

Environmental Science Major (Biogeosciences Discipline)
Dr Robin Thwaites
Phone: +61 7 3138 2782
Email: enquiry.scitech@qut.edu.au

Forensic Science Major (Chemistry Discipline)
Dr Emad Kiriakous
Phone: +61 7 3138 2782
Email: enquiry.scitech@qut.edu.au

Geoscience Major (Biogeosciences Discipline)
Dr Gary Huftile
Phone: +61 7 3138 2782
Email: enquiry.scitech@qut.edu.au

Microbiology Major (Cell and Molecular Biosciences Discipline)
Dr Christine Knox
Phone: +61 7 3138 2782
Email: enquiry.scitech@qut.edu.au
### Physics Major (Physics Discipline)

Dr Stephen Hughes  
Phone: +61 7 3138 2782  
Email: enquiry.scitech@qut.edu.au

### Second Major in Applied Geology (compatible with Geoscience Major only)

**NOTES:**  
- In the full-time course structure each of the two electives available in the course need to be selected in the relevant semesters to total 4 units per semester.  
- Select SIX appropriate units from the following program: [Note: units cannot be included if already counted towards Geoscience Major]

<table>
<thead>
<tr>
<th>Year 1, Semester 1</th>
<th>Units as per Geoscience major</th>
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</thead>
<tbody>
<tr>
<td>Year 1, Semester 2</td>
<td>Units as per Geoscience major</td>
</tr>
</tbody>
</table>
| Year 2, Semester 1 | NQB302 Earth Surface Systems  
Recommended Elective:  
UDB281 Geographic Information Systems |
| Year 2, Semester 2 | NQB403 Soils and the Environment  
NQB413 Stratigraphy |
| Year 3, Semester 1 | NQB503 Spatial Analysis of Environmental Systems  
NQB512 Economic Geology |
| Year 3, Semester 2 | NQB612 Basin Analysis and Petroleum Geology  
NQB613 Plate Tectonics  
NQB614 Groundwater Systems |

**Recommended Majors:**  
This second major is compatible with Geoscience Major only

### Second Major in Astrophysics (compatible with Physics major only)

<table>
<thead>
<tr>
<th>Year 1, Semester 1</th>
<th>Units as per Physics major</th>
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</thead>
</table>
| Year 2, Semester 1 | PCB593 Digital Image Processing  
PQB360 Global Energy Balance and Climate Change |
| Year 2, Semester 2 | PQB460 Astrophysics 1  
Plus Elective |
| Year 3, Semester 1 | MAB312 Linear Algebra  
Plus Elective |
| Year 3, Semester 2 | PQB661 Lasers and Photonics  
Plus either:  
ENB422 Energy Management  
Or  
PQB660 Astrophysics 2 |

**Recommended Majors:**  
This second major is compatible with Physics major only

### Second Major in Aviation (subject to timetable availability)

Students who complete a Diploma of Aviation, approved by the Civil Aviation Authority of Australia, from an external provider can apply for a second major in Aviation. These students would receive 96 credit points toward the Bachelor of Applied Science (72 credit points at advanced level for the second major plus a further 24 credit points of elective units).

**Note:**  
Students interested in undertaking this second major should consult the course coordinator.

### Second Major in Biochemistry (compatible with Life Science or Chemistry major only)

This second major comprises six of the units, in excess of those already included in your major, from the Biochemistry major. You will need to ensure all necessary pre- and co-requisites are satisfied. Note: LQB386 can be
Second Major in Biodiversity (compatible with any Science major)

NOTES:
- In the full-time course structure each of the two electives available in the course need to be selected in the relevant semesters to total 4 units per semester.
- Select SIX appropriate units from the following program:

Year 1, Semester 1
- Units as per selected major

Year 1, Semester 2
- Units as per selected major

Year 2, Semester 1
- LQB386 Microbial Structure and Function
- NQB322 Invertebrate Biology
- NQB323 Plant Biology

Year 2, Semester 2
- LQB489 Plant Physiology and Cell Biology
- NQB403 Soils and the Environment
- NQB423 Vertebrate Biology

Year 3, Semester 1
- NQB502 Field Methods in Natural Resource Sciences
- NQB503 Spatial Analysis of Environmental Systems

Year 3, Semester 2
- NQB601 Sustainable Environmental Management

Recommended Majors:
- This second major is compatible with Life Science or Chemistry major only.

Note:
- NQB322, NQB323 and NQB423 are mandatory if not already taken in the major.

Second Major in Biotechnology (compatible with Life Science or Chemistry major only)

This second major comprises six of the units, in excess of those already included in your major, from the Biotechnology major. You will need to ensure all necessary pre- and co-requisites are satisfied. Note: LQB386 can be included in the second major when taken with a Biochemistry major.

Recommended Majors:
- This second major is compatible with Life Science or Chemistry major only.

Second Major in Chemistry (compatible with Life Science or Environmental Science major only)

This second major comprises six of the units, in excess of those already included in your major, from the Chemistry major. You will need to ensure all necessary pre- and co-requisites are satisfied.

Recommended Majors:
- This second major is compatible with Life Science or Environmental Science major only.

Second Major in Chemistry for Industry (compatible with Chemistry major only)

Year 1, Semester 1
- Units as per Chemistry major

Year 1, Semester 2
- Units as per Chemistry major

Year 2, Semester 1
- PQB313 Analytical Chemistry For Industry
  - Plus Elective

Year 2, Semester 2
- PQB404 Nanotechnology and Nanoscience
  - PQB423 Process Principles

Year 3, Semester 1
- PQB513 Instrumental Analysis
  - PQB525 Unit Operations

Year 3, Semester 2
- PQB623 Chemistry in Industry and Technology
  - Plus Elective

Recommended Majors:
- This co-major is compatible with Chemistry
Second Major in Corporate IT Systems (subject to timetable availability)

<table>
<thead>
<tr>
<th>Year 1, Semester 1</th>
<th>Units as per selected major</th>
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<tr>
<td>Year 1, Semester 2</td>
<td>Units as per selected major</td>
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<tr>
<td>Years 2 and 3, Semester 1</td>
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<tr>
<td>INB120</td>
<td>Corporate Systems</td>
</tr>
<tr>
<td>INB220</td>
<td>Business Analysis</td>
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<tr>
<td>IT Elective Unit (2nd or 3rd year unit)</td>
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<tr>
<td>Years 2 and 3, Semester 2</td>
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<tr>
<td>INB103</td>
<td>Industry Insights</td>
</tr>
<tr>
<td>INB123</td>
<td>Project Management Practice</td>
</tr>
<tr>
<td>INB335</td>
<td>Information Resources</td>
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</table>

Recommended Majors:

This second major is compatible with any Science major.

Second Major in Ecology (compatible with Natural Resource Science or Chemistry major only)

This second major comprises six of the units, in excess of those already included in your major, from the Ecology major. You will need to ensure all necessary pre- and co-requisites are satisfied.

Recommended Majors:

This second major is compatible with Natural Resource Science or Chemistry major only.

Second Major in Environmental Engineering Studies (subject to timetable availability)

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<tr>
<th>Year 1, Semester 1</th>
<th>Units as per selected major</th>
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<td>Year 1, Semester 2</td>
<td>Units as per selected major</td>
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<tr>
<td>Years 2 and 3, Semester 1</td>
<td></td>
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<tr>
<td>ENB383</td>
<td>Environmental Resource Management</td>
</tr>
<tr>
<td>UDB266</td>
<td>Planning Processes and Consultations</td>
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</tbody>
</table>

Recommended Majors:

This co-major is compatible with any Science major.

Second Major in Forensic Science (compatible with Life Science or Chemistry major only)

No longer available (2010 onwards). Students already enrolled should contact the course coordinator.
This second major comprises six of the units, in excess of those already included in your major, from the Forensic Science major. You will need to ensure all necessary pre- and co-requisites are satisfied.

**Recommended Majors:**

This second major is compatible with Life Science or Chemistry major only.

### Second Major in Games Technology (subject to timetable availability)

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<tr>
<th>Year 1, Semester 1</th>
<th>Units as per selected major</th>
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<tr>
<td>Year 1, Semester 2</td>
<td>Units as per selected major</td>
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</table>

Select a total of 6 units from Years 2 and 3, Semesters 1 and 2:

<table>
<thead>
<tr>
<th>Years 2 and 3, Semester 1</th>
<th>INB270 Programming</th>
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<tbody>
<tr>
<td></td>
<td>INB370 Software Development</td>
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<tr>
<td></td>
<td>INB371 Data Structures and Algorithms</td>
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<tr>
<td></td>
<td>INB381 Modelling and Animation Techniques</td>
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<tr>
<td>Years 2 and 3, Semester 2</td>
<td>INB270 Programming</td>
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<td></td>
<td>INB382 Real Time Rendering Techniques</td>
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<td></td>
<td>MAB281 Mathematics for Computer Graphics</td>
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</tbody>
</table>

**Recommended Majors:**

This second major is compatible with any Mathematics or Physics major

### Second Major in Geoscience (compatible with a Natural Resource Science or Physics major only)

This second major comprises six of the units, in excess of those already included in your major, from the Geoscience major. You will need to ensure all necessary pre- and co-requisites are satisfied.

**Recommended Majors:**

This second major is compatible with Natural Resource Science or Physics major only.

### Second Major in Journalism (subject to timetable availability)

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<tr>
<th>Year 1, Semester 1</th>
<th>Units as per selected major</th>
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<td>Year 1, Semester 2</td>
<td>Units as per selected major</td>
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<table>
<thead>
<tr>
<th>Years 2 and 3, Semester 1</th>
<th>KJB101 Digital Journalism</th>
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<tr>
<td></td>
<td>KJB120 Newswriting</td>
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<td></td>
<td>KJB239 Journalism Ethics and Issues</td>
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<tr>
<td>Years 2 and 3, Semester 2</td>
<td>KFB205 Fashion and Style Journalism</td>
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<td></td>
<td>KJB224 Feature Writing</td>
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<td>KJB280 International Journalism</td>
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</table>

**Recommended Majors:**

This second major is compatible with any Science major

### Second Major in Life Science Technologies (compatible with any Life Science major)

| Year 1, Semester 1 | Units as per selected major |

<table>
<thead>
<tr>
<th>Years 2 and 3, Semester 1</th>
<th>CLB105 Australia and the South Pacific</th>
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<tbody>
<tr>
<td></td>
<td>CLB110 Environment and Society</td>
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<td></td>
<td>CLB111 Environmental Hazards</td>
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**Recommended Majors:**

This second major is compatible with any Life Science major
<table>
<thead>
<tr>
<th>Year 1, Semester 2</th>
<th>Units as per selected major</th>
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<tbody>
<tr>
<td>Year 2, Semester 1</td>
<td>LQB388 Medical Physiology 1</td>
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<td></td>
<td>Plus either:</td>
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<td></td>
<td>LQB383 Molecular and Cellular Regulation</td>
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<td>Or</td>
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<td></td>
<td>LQB386 Microbial Structure and Function</td>
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<tr>
<td>Year 2, Semester 2</td>
<td>LQB488 Medical Physiology 2</td>
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<td></td>
<td>Or</td>
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<td></td>
<td>LQB489 Plant Physiology and Cell Biology</td>
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<tr>
<td>Year 3, Semesters 1 and 2</td>
<td>Select a total of THREE units from semester 1 and 2 units listed:</td>
</tr>
<tr>
<td></td>
<td>LQB582 Biomedical Research Technologies</td>
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<td></td>
<td>LQB584 Medical Cell Biology</td>
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<tr>
<td></td>
<td>LQB585 Plant Genetic Manipulation</td>
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<td></td>
<td>LQB588 Applied Medical Physiology</td>
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<tr>
<td>Year 3, Semester 2</td>
<td>LQB681 Biochemical Research Skills</td>
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<tr>
<td></td>
<td>LQB684 Medical Biotechnology</td>
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<td></td>
<td>LQB685 Plant Microbe Interactions</td>
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<td></td>
<td>LQB686 Microbial Technology and Immunology</td>
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</tbody>
</table>

**Recommended Majors:**

- This second major is compatible with any Life Science major (ie Biochemistry, Biotechnology, Microbiology)

**Second Major in Management (subject to timetable availability)**

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<tr>
<th>Year 1, Semester 1</th>
<th>Units as per selected major</th>
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<tbody>
<tr>
<td>Year 1, Semester 2</td>
<td>Units as per selected major</td>
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<tr>
<td></td>
<td><strong>Years 2 and 3, Semesters 1 and 2</strong></td>
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<tr>
<td></td>
<td>BSB115 Management</td>
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<tr>
<td></td>
<td>MGB200 Leading Organisations</td>
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<tr>
<td></td>
<td>MGB210 Managing Operations</td>
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</tbody>
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**Second Major in Mathematics (compatible with any Science major)**

Please consult the Mathematics coordinator, Dr Dann Mallet (Email: dg.mallet@qut.edu.au) and the MA54 Bachelor of Mathematics course structure

**Second Major in Microbiology (compatible with Life Science or Chemistry major only)**

This second major comprises six of the units, in excess of those already included in your major, from the Microbiology major. You will
need to ensure all necessary pre- and co-requisites are satisfied.

**Recommended Majors:**
This second major is compatible with Life Science or Chemistry major only.

**Second Major in Physics (compatible with Geoscience major only)**
This second major comprises six of the units, in excess of those already included in your major, from the Physics major. You will need to ensure all necessary pre- and co-requisites are satisfied.

**Recommended Majors:**
This second major is compatible with Geoscience major only.

**Second Major in Psychology (subject to timetable availability)**
Please note: PUB201 can be taken in Semester 1 or Semester 2.

**Recommended Majors:**
This second major is compatible with any Science major

**Second Major in Spatial Science (subject to timetable availability)**

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<tr>
<th>Year 1, Semester 1</th>
<th>Units as per selected major</th>
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<tr>
<td>Year 1, Semester 2</td>
<td>Units as per selected major</td>
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<tr>
<td>Years 2 and 3, Semester 1</td>
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<tr>
<td>LQB388 Medical Physiology 1</td>
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<tr>
<td>PUB474 Food Science</td>
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<td>Years 2 and 3, Semester 2</td>
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<tr>
<td>LQB481 Biochemical Pathways and Metabolism</td>
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<td>LQB488 Medical Physiology 2</td>
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<td>PUB201 Food and Nutrition</td>
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<td>PUB405 Nutrition Science</td>
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<td>PUB204 Perception and Cognition</td>
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**Second Major in Nutrition (compatible with any Life Science major)**

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<td>Years 2 and 3, Semester 1</td>
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<tr>
<td>KMB003 Sex Drugs Rock 'n' roll</td>
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<td>KMB004 World Music</td>
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<tr>
<td>KMB119 Music and Sound Production 1</td>
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<td>Years 2 and 3, Semester 2</td>
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<td>KMB106 Music and Sound for Multimedia</td>
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<td>KMB107 Sound, Image, Text</td>
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<td>KMB129 Music and Sound Production 2</td>
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**Recommended Majors:**
This second major is compatible with any Science major

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**Second Major in Spatial Science (subject to timetable availability)**

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<td>Years 2 and 3, Semester 1</td>
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<tr>
<td>UDB181 Geospatial Positioning and GPS</td>
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**Recommended Majors:**
This second major is compatible with any Science major

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**Information for future students**
Published on: 16 May 2011
UNIT SYNOPSISES

AMB200 CONSUMER BEHAVIOUR
This unit provides students with the fundamental theories and models to develop a sound understanding of consumers, their needs, and behaviours. It provides a detailed examination of the consumer decision process and the internal and external influences on this core decision process. The unit also assists students in applying this knowledge to the development, implementation and evaluation of marketing activities within an organisation.

Prerequisites: BSB126, CTB126, BSB116, or BSB117
Antirequisites: MIB204
Equivalents: CTB200
Credit points: 12
Contact hours: 3 per week
Campus: Gardens Point
Teaching period: 2010 SEM-1, 2010 SEM-2 and 2010 SUM

AMB201 MARKETING AND AUDIENCE RESEARCH
This unit provides an introduction to the conduct and evaluation of marketing and audience research across the disciplines of advertising, marketing and public relations. Class members explore how field studies, survey and experimental research are employed to support advertising, marketing and public relations information needs. The unit provides an overview of research process, research design, methods of data collection and analysis, and the development of research proposals to support decision-making. Class members also explore issues related to research on media audiences, research ethics, and the management of client briefings.

Prerequisites: BSB126, CTB126, BSB116, or BSB117
Antirequisites: MIB305, MGB220, COB334
Equivalents: CTB201
Credit points: 12
Contact hours: 3 per week
Campus: Gardens Point and Caboolture
Teaching period: 2010 SEM-1, 2010 SEM-2 and 2010 SUM

AMB240 MARKETING PLANNING AND MANAGEMENT
This unit extends the student's knowledge of the fundamental marketing concepts and theories introduced in the Faculty Core unit in Marketing, by adding further breadth and depth of knowledge of marketing and developing skills in the application of this knowledge to marketing planning and management within the business environment. Emphasis is on the role of the marketing manager as the product manager in undertaking analysis, planning, implementation and control of marketing activities.

Prerequisites: BSB126 or CTB126
Equivalents: CTB240
Credit points: 12
Contact hours: 3 per week
Campus: Gardens Point and Caboolture
Teaching period: 2010 SEM-1 and 2010 SEM-2

AMB335 E-MARKETING STRATEGIES
Prerequisites: AMB240 or CTB240, and AMB201
Equivalents: AMB241
Credit points: 12
Teaching period: 2010 SEM-1 and 2010 SEM-2

AMB336 INTERNATIONAL MARKETING
Prerequisites: AMB240, CTB240, AMB210, or IBB210
Equivalents: IBB213
Credit points: 12
Campus: Gardens Point and Caboolture
Teaching period: 2010 SEM-1, 2010 SEM-2 and 2010 SUM

AMB340 SERVICES MARKETING
This unit explores the special characteristics of services that distinguish the marketing of services from goods. Topics include: the distinctive aspects of consumer decision-making relative to services and the implications for marketing strategy formation; the management of demand and supply; customer services and its influence on service satisfaction; service quality management and measurement; internationalisation of the service sector and distribution modes for services that reflect the significant impacts of new technologies on service delivery.
Prerequisites: AMB240 or CTB240, and AMB201 or CTB201
Antirequisites: MIB311
Equivalents: CTB340
Credit points: 12
Contact hours: 3 per week
Campus: Gardens Point
Teaching period: 2010 SEM-1 and 2010 SEM-2

BSB115 MANAGEMENT
The unit provides an introduction to the theories and practice of management and organisations. Emphasis is on the conceptual and people skills that are needed in all areas of management and in all areas of organisational life. The unit acknowledges that organisations exist in an increasingly international environment where the emphasis will be on knowledge, the ability to learn, to change and to innovate. Organisations are viewed from individual, group, corporate and external environmental perspectives.
Antirequisites: BSD115
Equivalents: CTB115
Credit points: 12
Contact hours: 3 per week
Campus: Gardens Point and Caboolture
Teaching period: 2010 SEM-1, 2010 SEM-2 and 2010 SUM

BSB126 MARKETING
This introductory subject examines the role and importance of marketing to the contemporary organisation. Emphasis is placed on understanding the basic principles and practices of marketing such as the marketing concept, market segmentation, management information systems and consumer behaviour. The unit explores the various elements of the marketing mix, with special reference to product, price, distribution, and promotion, including advertising and public relations. By way of introduction only, key issues relating to services marketing, e-marketing and strategic marketing are also canvassed.
Antirequisites: BSB116
Equivalents: CTB126
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point and Caboolture
Teaching period: 2010 SEM-1, 2010 SEM-2 and 2010 SUM

CLB105 AUSTRALIA AND THE SOUTH PACIFIC
This unit is based on a critical study of the evolving relationship between Australia and the Pacific Islands. The key issue in this unit is: does Australia have a Pacific history?
Credit points: 12
Campus: Kelvin Grove
Teaching period: 2010 SEM-2

CLB110 ENVIRONMENT AND SOCIETY
People and nature interact to create distinctive and dynamic places and landscapes. Applied geography, with its integrating perspective and skills-base, helps us to understand this. The discipline hence addresses some of our most pressing social and environmental problems. Geography objectively views human activities, natural systems and their inter-relationships in terms of consequent spatial patterns and impacts on landscapes, regions and places.
Credit points: 12
Campus: Kelvin Grove
Teaching period: 2010 SEM-2

CLB111 ENVIRONMENTAL HAZARDS
This unit takes a geographical perspective to investigate the characteristics and distribution of environmental hazards, patterns of risk and vulnerability, and how people perceive, manage and adjust to hazardous environments.
Credit points: 12
Campus: Kelvin Grove
Teaching period: 2010 SEM-2

CLB113 AUSTRALIAN GEOGRAPHICAL STUDIES
Australia faces challenging problems and changes in relation to its changing population, socio-economic development and environmental sustainability. Many of these problems, relating to land-use and settlement patterns, migration trends, resource and hazard distribution, regional socio-economic structure, remoteness and accessibility etc, have a geographical basis. The aim is to describe and analyse, Australia's natural and social landscapes, their interaction, and the changes occurring in them from a geographical perspective.
Credit points: 12
Campus: Kelvin Grove
Teaching period: 2010 SEM-1

DEB200 INTRODUCING SUSTAINABILITY
This unit will enable you as a graduating Built Environment and Engineering professional to take active and positive steps to transform professional practice in ways that promote the sustainability of our planet, our economy and our society. As future professionals in the fields of Design, Urban Development and Engineering Systems, you will need to understand and apply the concepts of sustainability in your professional practice if we are to achieve sustainable development in the 21st Century.
Equivalents: BEB200
Credit points: 12
Campus: Gardens Point
Teaching period: 2010 SEM-2

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ENB274 DESIGN OF ENVIRONMENTALLY SUSTAINABLE SYSTEMS
This unit extends and applies the knowledge developed in BEB200 Introducing Sustainability to important issues such as site investigation, development of site planning criteria, site planning, environmental management and quality, pollution prevention and control, and resources and waste management. BEB200 and ENB274 form the foundations of the civil and environmental degree. This unit builds upon generic competencies acquired in BEB100 Introducing Professional Learning and ENB271 Design of Structural Timber and Earthworks. It also provides transport planning fundamentals, which will be built upon in ENB372 Design and Planning of Highways and ENB379 Transport Engineering and Planning Applications. 
Prerequisites: BEB200 or ENB200 or ENB100 or UDB100 or SCB110  Assumed knowledge: ENB271 is assumed knowledge.  
Equivalents: CEB214  Credit points: 12  
Contact hours: 4 per week  
Campus: Gardens Point  
Teaching period: 2010 SEM-1

ENB380 ENVIRONMENTAL LAW AND ASSESSMENT
The adverse consequences of human activity have resulted in the adoption of various international treaties, enactment of stringent legislative requirements, and a growing demand for improved management practices. Engineers need to be aware of the way in which the law works, to be able to communicate with lawyers, and to recognise the legal and political implications of their projects. An understanding of the local, state, and federal governments' power to regulate development and the legal and planning requirements and assessment procedures is essential for professional engineering practice.

Prerequisites: ENB383  Assumed knowledge: BEB200 or ENB200 are assumed knowledge.  
Equivalents: CEB416  Credit points: 12  
Contact hours: 4 per week  
Campus: Gardens Point  
Teaching period: 2010 SEM-2

ENB383 ENVIRONMENTAL RESOURCE MANAGEMENT
This unit addresses management of solids and hazardous wastes generated from domestic, commercial, and industrial sources. It includes the following: waste minimisation; promotion of efficient use of resources; promotion of the use of waste through recycling and energy production; viewing waste as a resource; reducing the mass, volume and toxicity of the waste; disposing of waste in a socially and environmentally acceptable manner; waste avoidance; recycling; energy production; treatment; disposal. Waste management is an important aspect of civil and environmental engineering education.

Assumed knowledge: ENB274 or ENB200 or BEB200 is assumed knowledge  
Equivalents: CEB418  Credit points: 12  
Contact hours: 4 per week  
Campus: Gardens Point  
Teaching period: 2010 SEM-1

ENB422 ENERGY MANAGEMENT
Topics covered in this unit include: Global energy and climate issues, the systematic process by which energy use is monitored and analysed; individual treatment of electricity, fuels and their properties, compressed air, buildings, cycle requirements, energy recovery equipment; financial analysis of proposals. Environmental aspects will be considered for each topic. 
Assumed knowledge: ENB201 or ENB221 and ENB222 are assumed knowledge.  
Equivalents: MMB451  
Credit points: 12  
Contact hours: 3 per week  
Campus: Gardens Point  
Teaching period: 2010 SEM-2

INB103 INDUSTRY INSIGHTS
This unit aims to develop your awareness of the career possibilities in the ICT industry and to equip you with some of the essential skills required of an ICT professional. The unit helps you to derive a roadmap for your career; to enable you to identify the qualities, skills and interests you need to possess, to plan your career path. The unit will also introduce you to the inter-disciplinary nature of ICT careers.

Antirequisites: ITB002  
Credit points: 12  
Contact hours: 3 per week  
Campus: Gardens Point  
Teaching period: 2010 SEM-1 and 2010 SEM-2

INB120 CORPORATE SYSTEMS
Corporate Systems Management is a growing area where people can make a difference to the way organisations and societies operate. In key business domains, such as Government, Health, Finance, Utilities and Primary Industries, Corporate Systems Managers play a vital role in directing the socio-technical systems that affect everyone's lives. This unit will help students to gain an overview of these major roles and key business domains in order to set the scene for their future studies and help them to match their emerging professional interests with potential career directions.

Antirequisites: ITB360  
Credit points: 12  
Contact hours: 3 per week  
Campus: Gardens Point  
Teaching period: 2010 SEM-1

INB123 PROJECT MANAGEMENT PRACTICE
Successful businesses use Project Management (PM) processes to structure the implementation, upgrades and process improvement activities undertaken within organisations. This unit investigates project management processes and analyses, combines and applies the basic elements and tools of successful projects to ICT cases. With a focus on contemporary organisations, the unit covers activities such as communication and risk management, change management, recording keeping and project reporting. The unit covers practical, relevant and topical PM
issues delivered as a complex project activity.

**Antirequisites:** INN500 **Assumed knowledge:** Completion of 48 credit points of an Undergraduate study is assumed knowledge. **Credit points:** 12 **Contact hours:** 3 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-2

**INB220 BUSINESS ANALYSIS**
This unit aims to give you an introduction to the role, knowledge, and skills required of a business analyst. This unit focuses on both the trades—tools and methods used by a business analyst, as well as the soft skills—creativity and communication, both of which are critical to successful business and requirements analysis. Through lectures, cases studies and role playing activities, you will develop basic knowledge and skills required for introductory business analysis (BA).

**Credit points:** 12 **Contact hours:** 3 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-1

**INB270 PROGRAMMING**
This unit aims to give you a positive introduction to the skills required in solving computational problems and implementing solutions in a programming or scripting language. Although some theoretical aspects of computer programming are introduced briefly, the overall emphasis of the unit is programming practice. The unit emphasises generic programming concepts and related problem-solving strategies. The skills you learn in this unit will be applicable to a wide variety of commonly-used, industrially-significant programming and scripting languages.

**Prerequisites:** INB104 or ENB246 **Antirequisites:** ITB003, ITB112, ITB411, INN270 **Credit points:** 12 **Contact hours:** 3 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-2

**INB335 INFORMATION RESOURCES**
This unit will help you to understand the structure of the information environment, to reflect upon the information resources you discover, and to develop the ability to find appropriate information for future problem solving. You will develop your skills in identifying, accessing, evaluating and retrieving information resources to meet specific information needs. The unit will also help you develop skills in teamwork and oral and written communication.

**Equivalents:** ITB322 **Credit points:** 12 **Contact hours:** 3 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-2

**INB370 SOFTWARE DEVELOPMENT**
Understanding software development is an integral part of the IT industry for software engineers. Software development relies on object technologies, programming techniques and numerous code libraries provided by language developers and third party vendors. Integrated Development Environments, unit testing frameworks, automated and continuous build tools and versioning systems are all becoming part of the tool set modern software developers must be familiar with. This unit is designed to introduce these technologies and techniques to show how software can be rapidly developed.

**Prerequisites:** INB270 or ITB003 or INN270 **Credit points:** 12 **Contact hours:** 3 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-1

**INB371 DATA STRUCTURES AND ALGORITHMS**
The purpose of this unit is to ensure that you have a sound knowledge of modern programming techniques and their use in providing medium-scale software solutions. This unit will teach you to decompose a problem and produce a modular solution to a programming task. The principles to analyse algorithms for efficiency will also be introduced. In addition, you will acquire the necessary skills for you to use the tools available in common development environments, such as Microsoft Visual Studio.

**Prerequisites:** INB270 or ITB003 **Antirequisites:** ITB711, ITB702, INN371 **Credit points:** 12 **Contact hours:** 3 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-1

**INB381 MODELLING AND ANIMATION TECHNIQUES**
The unit will provide you with the knowledge and skills to use an industry standard graphics API to implement graphics applications and to develop a basic real time animation system using an industry standard language.

**Prerequisites:** INB371 and MAB281 **Equivalents:** ITB746 **Credit points:** 12 **Contact hours:** 3 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-1 and 2010 SEM-2

**INB382 REAL TIME RENDERING TECHNIQUES**
This unit will provide you with knowledge and skills in basic to advanced techniques in real-time rendering using shading languages. You will be able to implement a high-quality real-time rendering system in an industry standard API.

**Prerequisites:** INB371, INB381 and MAB281 **Antirequisites:** ITB648 and ITB649 **Equivalents:** ITB747 **Credit points:** 12 **Contact hours:** 3 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-2
KFB205 FASHION AND STYLE JOURNALISM
This unit maps the scope and practice of fashion and style journalism in Australia and internationally. It will allow you to develop the skills necessary to conceptualise and produce fashion and style editorial content in a variety of styles and contexts.
Assumed knowledge: KFB103 plus completion of 72 credit points of study; or enrolment in a Creative Industries Postgraduate course is assumed knowledge. Equivalents: KJB339 Credit points: 12 Contact hours: 3 per week Campus: Kelvin Grove Teaching period: 2010 SEM-2

KJB101 DIGITAL JOURNALISM
This unit acquaints you with the uses journalists make of computers in their work: for word-processing, personal information management, time management, and gathering information for stories and journalism assignments by searching online and CD-ROM databases, by analysing public records with spreadsheets and by using email to interview sources found on Internet bulletin boards and in newsgroups, usergroups, and listservers.
Credit points: 12 Contact hours: 3 per week Campus: Kelvin Grove Teaching period: 2010 SEM-1 and 2010 SEM-2

KJB120 NEWSWRITING
In this unit you learn to think like journalists, to evaluate events for their potential news value, to record interviews and perform other reporting tasks and to write news stories. It includes the evolution and theories of reporting.
Antirequisites: KJP401 Credit points: 12 Contact hours: 3 per week Campus: Kelvin Grove Teaching period: 2010 SEM-1 and 2010 SEM-2

KJB224 FEATURE WRITING
Students conduct interviews and other research that they use to write Internet, newspaper and/or magazine articles that profile personalities or stories or that treat processes, events and places to exploit their human-interest value.
Prerequisites: KJB120 or KWB107 or KWB381 Antirequisites: KJP403 Credit points: 12 Contact hours: 3 per week Campus: Kelvin Grove Teaching period: 2010 SEM-1 and 2010 SEM-2

KJB239 JOURNALISM ETHICS AND ISSUES
QUT Journalism supports the development of socially responsible, ethical journalists. KJB239 is a core journalism unit. It begins with an overview of western and eastern moral philosophical traditions and moves on to examine current journalistic practice in the context of Australian and international news media operations, regulatory bodies and the stance of professional journalism organisations. Students generate ethical dilemmas and work through them individually, making difficult decisions about issues such as invasion of privacy, protection of sources and conflict of interest. The impact of developing information and communication technologies is also addressed.
Credit points: 12 Contact hours: 3.5 per week Campus: Kelvin Grove Teaching period: 2010 SEM-1

KJB280 INTERNATIONAL JOURNALISM
This unit identifies, compares and analyses the diversity of journalistic practice in different countries and regions. You will look at historical conditions that have led to variations in journalism across the world, how different politico-economic systems affect journalistic activity, and how and why different news media take distinct approaches to covering world issues. You will develop the cross-cultural awareness and background knowledge required to identify story ideas, relate to sources and produce news reports in different countries and cultural environments.
Prerequisites: KJB120 or KJP400 Credit points: 12 Contact hours: 4 per week Campus: Kelvin Grove Teaching period: 2010 SEM-2

KMB003 SEX DRUGS ROCK 'N' ROLL
In this unit, you gain an insight into the interaction between music and society by analysing the artistic, economic, and political landscape of the diverse, innovative music of the 21st century including rock and pop music, world music, dance music, indigenous music and new age music.
Equivalents: KMB640 Credit points: 12 Contact hours: 3 per week Campus: Kelvin Grove and Caboolture Teaching period: 2010 SEM-1

KMB004 WORLD MUSIC
You will gain an awareness and better understanding of world music, its particular significance within Australia and its impact upon contemporary music through a series of lectures, demonstrations and tutorials.
Assumed knowledge: A knowledge of music fundamentals is assumed knowledge. Equivalents: KMB631 Credit points: 12 Contact hours: 3 per week Campus: Kelvin Grove Teaching period: 2010 SEM-1

KMB106 MUSIC AND SOUND FOR MULTIMEDIA
This unit deals with studio recording techniques, computer-assisted composition, the role of music in non-linear structures, the effect of sound in digital media productions, sound effects and Foley techniques, musical acoustics, and digital sound theory.
Assumed knowledge: Sound recording and operation of audio editing software is assumed knowledge. Credit points: 12 Contact hours: 2.5 per week Campus: Kelvin Grove Teaching period: 2010 SEM-2

KMB107 SOUND, IMAGE, TEXT
This unit focuses on the rich and varied relationship between sound and image in a number of media and
artforms, including film, music video, theatre, installation, mixed media performance and many more.

Equivalents: KMB638  Credit points: 12  Contact hours: 2.5 per week  Campus: Kelvin Grove and Caboolture  Teaching period: 2010 SEM-2

KMB119 MUSIC AND SOUND PRODUCTION 1
This unit introduces students to the fundamentals principles of music and sound production through a mix of theory and practice. Students gain an understanding of sound recording, sound production and live sound reinforcement and develop listening skills essential for music and sound production.

Equivalents: KMB108, KMB621  Credit points: 12  Contact hours: 3 per week  Campus: Kelvin Grove  Teaching period: 2010 SEM-1

KMB129 MUSIC AND SOUND PRODUCTION 2
This unit builds on Music and Sound Production 1. It introduces students to sound synthesis and signal processing and extends the students understanding of the approaches and aesthetics underpinning creative music and sound production. Students will further develop practical skills in music and sound composition and deepen their knowledge of the hardware and software commonly used in creative production.

Equivalents: KMB105, KMB619  Credit points: 12  Contact hours: 3 per week  Campus: Kelvin Grove  Teaching period: 2010 SEM-2

LQB383 MOLECULAR AND CELLULAR REGULATION
Molecular and Cellular Regulation is a second year unit and is a continuation and expansion of topics introduced in SCB112 Cellular Basis of Life and SCB122 Cell & Molecular Biology. Molecular and Cellular Regulation strengthens the focus on the molecular and genetic aspects of cellular processes and the consequences to the organism of failure of these basic processes. Topics taught relate to gene structure and regulation in prokaryotes and eukaryotes and the role of gene expression in the development of complex organisms. Related concepts such as cell signalling, communication, proliferation and survival are further developed in this unit.

Prerequisites: SCB122 or LSB238  Antirequisites: LSB468 and LSB338  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1

LQB386 MICROBIAL STRUCTURE AND FUNCTION
Aspects of microbiology impinge upon many facets of daily life, for example, human health, genetic engineering, the food industry and the built and natural environment. The unit introduces you to and provides you with a solid foundation in the basic microbiology required for progression to advanced studies in Microbiology. This unit provides knowledge about safe handling and study of micro-organisms that is also very important in many other disciplines, because micro-organisms are used as models and tools in a wide range of study areas.

Prerequisites: SCB112 and (SCB121 or SCB113)  Antirequisites: LSB328  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1

LQB388 MEDICAL PHYSIOLOGY 1
This unit deals specifically with the physiological systems that are responsible for the maintenance of health in humans. In the course of the semester students will investigate half the systems that constitute the human body (with the remainder dealt with in the second semester unit Physiology 2 [LQB488]). The unit offers a useful frame of reference for students enrolled in courses such as animal biology, biochemistry, microbiology, molecular biology, nutrition and human movements. Together with Physiology 2 [LQB488] this unit is a prerequisite to the third level unit, Applied Physiology [LQB588] and will be of particular interest to students considering medicine as a postgraduate career option.

Prerequisites: SCB120, LSB131, LSB142, LSB255, LSB258 or NRB270  Antirequisites: LSB358  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1

LQB481 BIOCHEMICAL PATHWAYS AND METABOLISM
The study of biochemistry and cell biology, along with molecular biology, provides students with the knowledge required for the proper understanding of the structure and function of living organisms at the molecular level. As such, this unit extends the studies begun in the unit LQB381 Biochemistry into the metabolic processes occurring in living cells, and provides students with a basis for further studies in biochemistry as well as support for other units in the third year of the course.

Prerequisites: LQB381 or LSB308  Antirequisites: LSB275, LSB325, LSB408  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2010 SEM-2

LQB488 MEDICAL PHYSIOLOGY 2
This unit deals specifically with the physiological systems that are responsible for the maintenance of health in humans. In the course of the semester students will investigate half the systems that constitute the human body (with the remainder having been dealt with in the first semester unit Physiology 1 [LQB388]). The unit offers a useful frame of reference for students enrolled in courses such as animal biology, biochemistry, microbiology, molecular biology, nutrition and human movements. Together with Physiology 1 [LQB388] this unit is a prerequisite to the third level units, Applied Physiology
[LQB588] and will be of particular interest to students considering medicine as a postgraduate career option.  

**Prerequisites:** LSB131, LSB142, LSB255, LSB258, NRB270, or SCB120  

**Antirequisites:** LSB458  

**Credit points:** 12  

**Contact hours:** 4 per week  

**Campus:** Gardens Point  

**Teaching period:** 2010 SEM-2

### LQB489 PLANT PHYSIOLOGY AND CELL BIOLOGY

Plants are a vital resource providing food, medicines, fibre and fuel. The utilisation and manipulation of plants requires an understanding of growth and development on a molecular, cellular and whole plant basis. This is an intermediate-level unit covering the principles of plant cell biology and physiology to provide a platform for more advanced studies in plant biology and biotechnology. It integrates the fundamentals of plant physiology, biochemistry and molecular biology in such a way to enable students to understand how plants grow, develop and interact with their environment, and will also be valuable for lifelong appreciation of the potential of agriculture and its contribution to humanity. The aim of this unit is to provide you with an understanding of plant function from the cell to the whole plant, skills in measuring and monitoring these processes and an appreciation of how they are influenced by the environment.

**Prerequisites:** SCB120 or SCB122 or NRB270 or LSB238  

**Antirequisites:** LSB397, LSB497  

**Credit points:** 12  

**Contact hours:** 4 per week  

**Campus:** Gardens Point  

**Teaching period:** 2010 SEM-2

### LQB582 BIOMEDICAL RESEARCH TECHNOLOGIES

This unit will study the technical principles and practical techniques that are essential for advancing research and development in biochemistry and biotechnology.

**Credit points:** 12  

**Contact hours:** 4 per week  

**Campus:** Gardens Point  

**Teaching period:** 2010 SEM-1

### LQB584 MEDICAL CELL BIOLOGY

This unit builds and extends the understanding of basic theoretical and practical aspects of molecular cell biology developed in previous cell and molecular biology units. Medical Cell Biology develops and extends the context of the cellular environment and its central role within the organism providing all of the biological functions required by the organism to survive, defend and protect itself from disease and trauma. An understanding of cell biology theory and molecular mechanisms of animal development and disease is essential for introduction to higher level units in medical biotechnology.

**Prerequisites:** LQB383 or LSB338  

**Antirequisites:** LSB449, LSB503, LSN584  

**Credit points:** 12  

**Contact hours:** 4 per week  

**Campus:** Gardens Point  

**Teaching period:** 2010 SEM-1

### LQB585 PLANT GENETIC MANIPULATION

The potential of plant biotechnology can only be recognised as a result of the significant advances being made in technologies enabling the genetic manipulation of plants. Familiarity with the strategies, techniques and breadth of applications is essential as a basis for anyone planning a career in plant biotechnology. The unit is designed with a significant emphasis on achieving technical expertise in plant genetic manipulation and control of gene expression.

**Credit points:** 12  

**Contact hours:** 4 per week  

**Campus:** Gardens Point  

**Teaching period:** 2010 SEM-1

### LQB588 APPLIED MEDICAL PHYSIOLOGY

This unit focuses on the development of your skills and knowledge relevant to research in physiology and other biomedical fields. This unit is designed to foster your development of a range of skills including: critical thinking, team work, planning, writing, time-management, problem-solving and organisation skills. This unit will help you to interpret scientific literature and to understand how the use of statistical methods relates to research. The unit will cover a range of advanced topics in physiology using a more integrative and applied approach than previously encountered. It introduces some issues currently under debate and at the forefront of physiology research.

**Prerequisites:** LQB388 (LSB358) or LSB488 (LSB458) or LSB231 or HMB273 or LSB250  

**Equivalents:** LSB558

**Credit points:** 12  

**Contact hours:** 4 per week  

**Campus:** Gardens Point  

**Teaching period:** 2010 SEM-1

### LQB681 BIOCHEMICAL RESEARCH SKILLS

In the real world, the design and completion of successful research and/or business projects demand that individuals gather information, solve problems, work effectively as a part of a team and analyse and communicate results in a critical manner. This unit offers opportunities for you to develop these skills that are valued highly by potential employers and research project leaders. This unit is a capstone biochemistry unit designed to prepare you as a prospective graduate for independent and group research.

**Prerequisites:** LQB381 or LSB308. Students with equivalent study can apply for a requisite waiver  

**Equivalents:** LSB607

**Credit points:** 12  

**Contact hours:** 5 per week  

**Campus:** Gardens Point  

**Teaching period:** 2010 SEM-2

### LQB684 MEDICAL BIOTECHNOLOGY

In this unit students gain a thorough understanding of diagnostics and therapeutics in the commercial environment of medical biotechnology. LQB6849 aims to increase the student's understanding of cell-based strategies, approaches and applications used as therapeutic interventions in medicine. The unit focuses on current, state-of-the-art and emerging technologies and applications.
within biotechnology as directed to novel therapeutic discoveries, design, development and delivery of clinical therapeutics including tissue transplantation and regeneration, cellular therapies, genetic therapies, immunotherapies, clinical, ethical and regulatory affairs. **Prerequisites:** LQB584 or LSB503 or LSB449 **Antirequisites:** LSN684 **Assumed knowledge:** A background understanding of Cell and Molecular Biology as provided in LQB383, LQB483 and LQB584 is assumed knowledge **Equivalents:** LSB609 **Credit points:** 12 **Contact hours:** 5 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-2

### LQB685 PLANT MICROBE INTERACTIONS

Microorganisms, including viruses, bacteria and fungi, cause many devastating diseases in plants and are responsible for significant losses to crops in Australia and Internationally. Diagnosis and control of these organisms, which vary considerably in their biology and infection strategies, is an ongoing challenge. However, plant genetic engineering approaches are now offering new and novel solutions to these problems. These approaches are of widespread scientific, commercial and humanitarian interest. The application of current technologies and development of new, novel technologies relies on an understanding of the biology of the organism, of the way in which these organisms cause disease in plants and the mechanism by which many plants are resistant. **Prerequisites:** LQB483 or LSN483 and LSN101 and LSN102 **Antirequisites:** LSB578 **Assumed knowledge:** LQB386 recommended **Credit points:** 12 **Contact hours:** 4 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-2

### LQB686 MICROBIAL TECHNOLOGY AND IMMUNOLOGY

Increasingly microbiologists are employing emerging technologies to rapidly detect, localise, characterise and identify microorganisms to gain a greater understanding of their prevalence, distribution, physiological functions, genotypes/phenotypes and pathogenesis. This unit will extend your knowledge of the origins of microorganisms and recently sequenced microbial genomes, and provide you with the necessary knowledge for the development and application of emerging microbial technologies. The study of microorganisms is enhanced by an understanding of the host immunological response(s) to microbial colonisation and disease. **Prerequisites:** LQB386 and LQB483 **Antirequisites:** LSB648 **Credit points:** 12 **Contact hours:** 4 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-2

### MAB210 MANAGING OPERATIONS

Increasingly microbiologists are employing emerging technologies to rapidly detect, localise, characterise and identify microorganisms to gain a greater understanding of their prevalence, distribution, physiological functions, genotypes/phenotypes and pathogenesis. This unit will extend your knowledge of the origins of microorganisms and recently sequenced microbial genomes, and provide you with the necessary knowledge for the development and application of emerging microbial technologies. The study of microorganisms is enhanced by an understanding of the host immunological response(s) to microbial colonisation and disease. **Prerequisites:** LQB386 and LQB483 **Antirequisites:** LSB648 **Credit points:** 12 **Contact hours:** 4 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-2

### MAB312 LINEAR ALGEBRA

This unit covers the following broad topics from linear algebra: matrix analysis; eigenvalues and eigenvectors; vector spaces; inner product spaces. **Prerequisites:** (MAB111 or MAB121) and (MAB112 or MAB122) **Credit points:** 12 **Contact hours:** 4 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-2

### MGB200 LEADING ORGANISATIONS

This unit introduces you to a range of perspectives in understanding human behaviour and its context within organisation structures. The unit also enables you to interpret, analyse, evaluate and explain conditions and consequences of work in organisations with a view to understanding and appreciating complex management issues in day to day experiences in business. **Prerequisites:** BSB115 or CTB115 **Antirequisites:** MGB211, CTB211, MGB222, CTB232 **Credit points:** 12 **Contact hours:** 3 **Campus:** Gardens Point **Teaching period:** 2010 SEM-1 and 2010 SUM

### MGB210 MANAGING OPERATIONS

This unit extends general management approaches to the production operations subsystems of service and manufacturing organisations. The unit focuses on the deployment of productive resources in order to maximise the added value of services and products. Issues of quality and efficiency are considered analytically in terms of broader strategies and constraints. It considers the opportunities that new technology brings to operational strategies in both manufacturing and service. Project management principles are considered in relation to resource deployment and continuous improvement. **Prerequisites:** BSB115 or CTB115 **Equivalents:** CTB243 **Credit points:** 12 **Contact hours:** 3 per week **Campus:** Gardens Point **Teaching period:** 2010 SEM-1 and 2010 SEM-2

### MGB223 ENTREPRENEURSHIP AND INNOVATION
This unit introduces students to the nature and characteristics of entrepreneurship and innovation and explores the inter-relationship between the two within contemporary economies from managerial perspective. Learning will be directed towards developing the theoretical and applied knowledge, skills, and attitudes that will support and enhance innovation and enterprise creation activity, through the development of a business plan. The unit is designed for those individuals interested in creating a new venture or working in industries as employees of venture owners or those that serve this sector. Students will have opportunity to build a comprehensive plan of their business concept.

**Prerequisites:** BSB115 or CTB115  
**Equivalents:** CTB223  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point and Caboolture  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

### MGB225 INTERCULTURAL COMMUNICATION AND NEGOTIATION SKILLS

The course develops students' abilities to identify and resolve problems in cross-cultural communication or negotiation situations where cultural differences have created misunderstandings or undesirable or unexpected outcomes. It first explores the concept of 'national culture' by considering the work of major theorists of cultural value dimensions - from Hall to Schwartz. Students are encouraged to analyse communication/negotiation process issues in terms of these value dimensions and to practise managing the process of communication/negotiation to improve their outcomes.

**Prerequisites:** BSB115, CTB115, BSB119 or BSB124  
**Antirequisites:** MGB312  
**Equivalents:** IBB205  
**Credit points:** 12  
**Contact hours:** 3  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

### MGB309 STRATEGIC MANAGEMENT

In this unit fundamental elements of strategy, which can be used in the decision making process, are placed in a framework that is developed within the particular context of Australia's economic development position. The emphasis is upon process and content issues that affect the strategic performance and positioning of the organisation. This involves creating an understanding of the universal building blocks of competitive advantage at the business, corporate and international levels. By understanding the nature and determinants of competitive and strategic advantages, students should enhance their professional competences to be able to take a more strategic and critical perspective.

**Prerequisites:** MGB200, MGB211, CTB211, MGB222, or CTB232  
**Antirequisites:** MIB314  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point and Caboolture  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

### MGB310 SUSTAINABILITY IN A CHANGING ENVIRONMENT

This unit provides participants with an opportunity to investigate selected and critical issues in the relationship between business activity and the imperative of creating sustainable futures. The unit draws on interdisciplinary sources to encourage the development of a systemic view that incorporates global, corporate, and personal levels of analysis. The unit prepares participants to make a significant contribution to the sustainable development of organisations and society. The unit will be of value to business and non-business students seeking careers in private, public, and not-for-profit sectors.

**Prerequisites:** MGB200, MGB211, CTB211, MGB222, or CTB232  
**Antirequisites:** MGB334, CTB334, MGB212  
**Credit points:** 12  
**Contact hours:** 3  
**Campus:** Gardens Point and Caboolture  
**Teaching period:** 2010 SEM-2

### NQB302 EARTH SURFACE SYSTEMS

Understanding long and short term climate and environmental change is now recognised as crucial to the interpretation of our biotic, geomorphic and cultural landscapes. To fully understand environment change it is important to recognise the interconnectedness between the atmosphere, hydrosphere, lithosphere, biosphere and humanity's place within these spheres over various temporal and spatial scales. Developing knowledge of past and present climate change and landscaping processes helps to predict future process pathways for natural resource management, civil engineering, risk analysis, and impact assessment in the context of both natural and anthropogenic induced change.

**Assumed knowledge:** NQB201 is assumed knowledge.  
**Equivalents:** NRB301  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1

### NQB322 INVERTEBRATE BIOLOGY

Anyone pursuing a career as an ecologist, environmental biologist, or teacher needs to be familiar with invertebrates, including their diversity and how they function. Because approximately 90% of all invertebrates are arthropods, this unit focuses on this dominant phylum, which includes all the animals with jointed exoskeletons (the insects, prawns and crabs, spiders, millipedes and more). The aim is to provide you with an overview of arthropod diversity, structure and function, as a basis for exploring the role of arthropods in natural and human-modified systems.

**Equivalents:** NRB370  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1

### NQB323 PLANT BIOLOGY
This unit will provide an understanding and appreciation of plants by taking an evolutionary approach to the study of major plant groups. Content includes life cycles, morphology, adaptations for survival in varied environments, economic and ecological aspects of various groups as they relate to humans, phylogeny and diversity of major groups. This unit will encourage careful observation, curiosity and thinking about plants. The practicals will provide an opportunity to observe and understand form, function and diversity and will emphasise development of skills in plant systematics and identification, with special emphasis on Australian flora.

**Prerequisites:** SCB112  
**Equivalents:** NRB371  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1

### NQB403 SOILS AND THE ENVIRONMENT

Soils are the most dynamic component of Earth surface processes, being the interface of the lithosphere and the atmosphere and a key system within the biosphere and the hydrosphere. It is, therefore, one of the most critical resources to consider within the context of climate change. This unit will provide you with grounding in soil science by emphasising pedological principles, their application to environmental soil analysis and management, and knowledge of ecosystem function of soils in a changing environment. The unit would provide experience in describing and classifying soils and soil materials as well as field experience in the investigation of soil processes and the assessment of resource potential and environmental hazard.

**Prerequisites:** NQB302 or NRB301 or (ENB272 and ENB274)  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-2

### NQB413 STRATIGRAPHY

Sedimentary rocks that cover most the Earth's surface are arranged into layers that record the history of the Earth's surface for long periods of geological time. The study of sedimentary rock layers (strata) is called stratigraphy. The types of sedimentary rocks that are preserved in particular strata are direct indications of the conditions that prevailed during their formation. The study of stratigraphy can help unravel the geological history of the area. Hence, stratigraphy is a fundamental part of the education of any geoscientist, and especially of those who wish to be involved in fossil fuel exploration and water resource management.

**Prerequisites:** NQB314 or NRB331  
**Equivalents:** NRB437  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-2

### NQB423 VERTEBRATE BIOLOGY

Any graduate wishing to pursue a career in the biological or environmental sciences should be familiar with the evolution and ecology of vertebrates. Vertebrates are often considered key wildlife species and are often the focus of conservation efforts. However, we use vertebrates for food, recreation, work, and medical research, and they are also pests and vectors of disease. This unit will examine the evolutionary diversity of the major groups of both extinct and extant vertebrates, and apply concepts relating to their phylogeny, morphology, physiology and behaviour. Practicals will provide an opportunity to observe and understand form, function and diversity and to develop skills in identification of Australian vertebrates.

**Prerequisites:** SCB112  
**Equivalents:** NRB470  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-2

### NQB502 FIELD METHODS IN NATURAL RESOURCE SCIENCES

Field experience is an essential part of the professional training of geologists, environmental scientists, ecologists, and natural resource specialists in general. The theory and practice of methods to interpret, measure, map, and monitor important natural resource features and characteristics are essential to the study of geological, ecological and environmental systems. Methods of survey, mapping and interpretation are necessary skills for resource assessment, geo-exploration, environmental impact assessment, land evaluation, baseline studies, and ecological investigations. There are varying emphases on these outcomes depending on the type of field survey you undertake in this unit.

**Prerequisites:** (NQB321 or NQB411) and (NQB302 or NQB412)  
**Assumed knowledge:** 36 credit points of second level science units in selected major is assumed knowledge. NQB302 and NQB403 for Env Sc, NQB321 for Ecol, NQB411 and NQB412 for Geosc  
**Equivalents:** NRB601  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1

### NQB503 SPATIAL ANALYSIS OF ENVIRONMENTAL SYSTEMS

TBA  
**Equivalents:** NRB501  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1

### NQB512 ECONOMIC GEOLOGY

The unit is divided up into two 6 week modules. The first module concentrates on the formation of coal deposits, the geology of Australian coal basins, formation and exploitation of coal seam gas and coal resource evaluation. The second module concentrates on the formation and preservation of economic mineral deposits.

**Prerequisites:** NQB411, NQB413  
**Antirequisites:** NRB535  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1
NQB601 SUSTAINABLE ENVIRONMENTAL MANAGEMENT

Sustainable environmental management requires a multidisciplinary approach to decision-making. This approach must be founded on scientific knowledge about the environment, but to be effective, the science must also be integrated with social, economic, political and technological policies. This unit explores contemporary environmental management issues: the science behind them, linkages between them, their cultural settings and sustainable solutions.

Assumed knowledge: 48 credit points of second level science units is assumed knowledge. Equivalents: NRB600 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2010 SEM-2

NQB612 BASIN ANALYSIS AND PETROLEUM GEOLOGY

This unit provides students with a fundamental working knowledge of sedimentary strata at regional and basin-wide scales, and enables them to solve problems in the exploration for hydrocarbons and other stratabound resources. It deals with the tectonic settings, styles of subsidence, patterns of sedimentary fill, thermal and diagenetic histories and resource distribution within sedimentary basins. Integrated lithostratigraphic, biostratigraphic, sequence stratigraphic, geophysical, and geochemical data sets are introduced as fundamental aspects of basin analysis. The unit develops an understanding of exploration and production aspects of the oil and gas industries.

Prerequisites: (NQB413 or NRB437) and (NQB513 or NRB534). NQB513 can be studied in the same teaching period as NQB612 Equivalents: NRB636 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2010 SEM-2

NQB613 PLATE TECTONICS

This unit considers geological observations in the context of a unifying theory. It examines lithospheric plates, plate geometries, Earth morphology, relative and absolute plate movements, stresses of plate interactions, types of plate boundaries, and orogenesis. It also examines the development of the most important geologic theory of the 20th century.

Prerequisites: (NQB412 or NRB434) and (NQB314 or NRB331) and (NQB411 or NRB436) and (NQB513 or NRB534). NQB513 can be studied in the same teaching period as NQB613 Equivalents: NRB635 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2010 SEM-2

NQB614 GROUNDWATER SYSTEMS

This unit focuses on the origin, occurrence and movement of groundwater; aquifer properties; chemistry and quality of groundwater; exploration methods for groundwater; drilling methods and well testing equipment; assessment of groundwater problems, both supply and quality; and introduction to modelling of groundwater systems. Groundwater resources of Australia are covered and current issues. Lectures are supported by desktop exercises. Students will obtain practical experience with pump tests and computer modelling. There is interaction with government and private sector hydrogeologists, and a field site visit for hands-on well testing.

Prerequisites: NQB302 or NRB301 or ENB383 Equivalents: NRB633 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2010 SEM-2

PCB593 DIGITAL IMAGE PROCESSING

This unit provides students with a basic understanding of the computer techniques used in image processing and reconstruction. Specific areas of study include the following: the structure of a digital image; image display techniques; grey scale palettes and look-up tables; Fourier transform theory; convolution theory; image processing hardware; image processing techniques, eg analysis, enhancement and restoration; spatial filtering; Fourier space filtering; methods of image reconstruction; 3D volume and surface rendering; applications of image processing in medicine, astronomy and remote sensing, etc.

Prerequisites: PCB375-2 or PCB496 or PQB250 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2010 SEM-1

PQB313 ANALYTICAL CHEMISTRY FOR INDUSTRY

A modern chemist working in industry requires a thorough understanding of the fundamentals of analytical chemistry on which applications in sophisticated, state-of-the-art instrumental methods are based. This unit provides students with a grounding in the classical qualitative and quantitative gravimetric and wet analysis, together with common spectrophotometric and electrochemical methods of analysis. Through the practical program in this unit, students will be able to learn the connections between the theoretical aspects of analytical chemistry and the work in the laboratory. The chemistry behind some applications of these methods is also discussed, eg water, fertilisers, foods, minerals, metals, etc.

Prerequisites: SCB131 Equivalents: PCB314 Credit points: 12 Contact hours: 4.5 per week Campus: Gardens Point Teaching period: 2010 SEM-1

PQB360 GLOBAL ENERGY BALANCE AND CLIMATE CHANGE

Modern societies are becoming increasingly aware of potential environmental problems associated with
conventional energy production technologies. Application of alternative technologies is therefore increasing, with ambitious targets and plans to support research and development for reducing energy related environmental consequences. This unit is designed to offer science and engineering students an opportunity to gain awareness about the expanding field of alternative energy technologies and to understand relationships between use of energy and its impact on local and global environment.

**Prerequisites:** MAB111 or MAB131  
**Equivalents:** PCB656  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1

**PQB404 NANOTECHNOLOGY AND NANOSCIENCE**

Nanotechnology is the science of constructing molecular-scale devices and of their applications. Like biotechnology, it is a growth industry and has the potential to significantly affect our lives and the world in which we live. Nanotechnology is truly interdisciplinary, it draws on the strengths of all the basic sciences. The lecture component of the unit will comprise an introduction to the field of Nanotechnology and Nanoscience, with a bias towards Chemical Technology applications derived from the Physical Sciences. The laboratory component will focus on the techniques currently used to characterise and manipulate nanoscale material and the construction of functional devices from nanoscale, molecule components.

**Prerequisites:** SCB111 and SCB121  
**Equivalents:** PCB445  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-2

**PQB423 PROCESS PRINCIPLES**

This unit will provide students with an understanding of the fundamentals of mass and energy balances around a system whether that system be a piece of laboratory equipment, an individual industrial operation, a combination of industrial operations, or a natural phenomenon. It will also assist students to develop generic skills in reporting and oral presentation through an individual investigation of a global mass or energy balance.

**Prerequisites:** SCB131  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-2

**PQB460 ASTROPHYSICS 1**

This second level unit is one of the key units in the astrophysics co-major and introduces students to most of the main aspects of astrophysics. This unit is essential as it defines the connections between the supporting units of the co-major. Students are required to use the knowledge and skills developed in first level physics, maths and natural resource units.

**Prerequisites:** PCB136 or PBB250 or SCB123  
**Equivalents:** PCB469  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-2

**PQB617 INSTRUMENTAL ANALYSIS**

This unit presents a theoretical background for the general theory of relativity and relativistic cosmology. This includes special theory of relativity, four-vectors and tensors, tensor calculus, covariant differentiation, least action principle and main postulates in special and general relativity, concepts of the interval and space-time metric, gravitation redshift, geodesic equation, energy tensor, Einstein equations for gravitational field, gravitational collapse, Schwarzschild metric, event-horizon for black holes, gravitational waves, cosmological principle, standard cosmological models, Robertson-Walker metric, dark energy, evolution of the universe, Big bang, cosmological horizons, cosmic background radiation, and cosmological redshift.

**Prerequisites:** PQB450 or PCB362, and MAB311 or MAB521  
**Equivalents:** PCB669  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-2

**PQB661 LASERS AND PHOTONICS**

Having gained an understanding of mass and energy balances in PQB423 you will be able to appreciate the principles underlying the design and operation of the many individual processes, or unit operations, that together make up a large part of any full-scale industrial process. It is vital that Chemists involved in Chemical Technology understand how unit operations work so that they can interact effectively with unit operators and process engineers. An additional role of this unit is to build a knowledge base for the subsequent development of generic skills in Chemical Technology through a problem-solving exercise involving an authentic industrial process in PQB623.

**Prerequisites:** PQB423  
**Equivalents:** PCB524  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1

**PQB623 CHEMISTRY IN INDUSTRY AND TECHNOLOGY**

This unit includes mass transfer and heat transfer operations. The unit also includes field trips to various industrial sites, the preparation of field trip report, and a group problem-solving exercise.

**Prerequisites:** PQB525 or PCB524  
**Credit points:** 12  
**Contact hours:** 5 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-2

**PQB660 ASTROPHYSICS 2**

This second level unit is one of the key units in the astrophysics co-major and introduces students to most of the main aspects of astrophysics. This unit is essential as it defines the connections between the supporting units of the co-major. Students are required to use the knowledge and skills developed in first level physics, maths and natural resource units.

**Prerequisites:** PCB136 or PBB250 or SCB123  
**Equivalents:** PCB469  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-2
Laser and photonic technologies are rapidly maturing areas responsible for creating new industries and employment opportunities for scientists and engineers in the areas of information technology, manufacturing, sensing and health. In particular, the vast global optical communications industry has dramatically increased information transport rates through the development of new laser sources and photonic devices. At the heart of all advances in photonics is a greater understanding of light-matter interactions and the processes used to fabricate devices. This unit is offered to science and engineering students who seek to understand the physical principles underpinning lasers and photonic devices and their use in a range of optical technologies.

**Prerequisites:** (PQB251 or PCB260 or EEB340 or ENB242 or ENB343) and (MAB311 or MAB233)

**Equivalents:**
- PCB664

**Credit points:** 12

**Contact hours:** 4 per week

**Campus:** Kelvin Grove

**Teaching period:** 2010 SEM-2

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**PYB007 INTERPERSONAL PROCESSES AND SKILLS**

Psychology is generally a people-based profession with many positions involving not only understanding and testing people but communicating with them. More broadly however in most areas of modern work, and indeed within personal relationships, people need developed interpersonal skills and the ability to conceptualise interactive processes. The microskills for communication are also the foundation for helping relationships and counselling.

**Antirequisites:** PYB074, HHB113, PYB111

**Credit points:** 12

**Contact hours:** 3 per week

**Campus:** Gardens Point and Kelvin Grove

**Teaching period:** 2010 SEM-1 and 2010 SEM-2

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**PYB100 FOUNDATION PSYCHOLOGY**

This unit provides an introduction to the major content areas of psychology, including an introduction to psychological research and report-writing, for students intending to pursue further studies in psychology.

Psychology is a broad-ranging and multifaceted discipline which encompasses the scientific study of human behaviour, and the systematic application of knowledge gained from psychological research to a broad range of applied issues. The goal of this introductory unit is to introduce you to the major subfields and perspectives in psychology, and to develop your understanding of the research methods and report-writing conventions used in psychological research.

**NOTE for Summer 2010 students:** Students should set aside 2 weeks from Mon 29 Nov – Fri 10 Dec, with the final exam on Monday 13th December. Lectures and tutorials will be on Monday, Tuesday, Wednesday of each week (29 and 30 Nov, 1 Dec, and 6, 7, 8 Dec), with the exam on the last Monday (13th).

**Antirequisites:** PYB012

**Equivalents:** PYB101

**Credit points:** 12

**Contact hours:** 3 hours per week

**Campus:** Kelvin Grove

**Teaching period:** 2010 SEM-2, 2010 SEM-1 and 2010 SEM-2

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**PYB201 FOOD AND NUTRITION**

This unit includes the following: an introduction to the history of food and nutrition in Australia; the food system; the food supply; proteins, carbohydrates, fats, vitamins and minerals; food grouping systems; dietary guidelines; the recommended dietary intakes; nutrition through the life cycle; food and nutrition problems; nutrition as a public health issue; and international nutrition issues.

**Credit points:** 12

**Contact hours:** 4 per week

**Campus:** Kelvin Grove and External

**Teaching period:** 2010 SEM-2

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**PYB405 NUTRITION SCIENCE**

Nutrition science examines a range of nutrient components in our food supply, including the biochemical pathways and physiological effects in the body, possible health implications of deficiency or toxicity and important dietary sources. It integrates nutritional knowledge with the science of biochemistry and clinical physiology and provides the foundation on which further studies in nutrition can be built.

**Prerequisites:** (LSB308 or LQB381) and PUB201 and (LQB481 or LSB408). (LQB481 or LSB408) can be enrolled in the same teaching period.

**Credit points:** 12

**Contact hours:** 4 per week

**Campus:** Kelvin Grove

**Teaching period:** 2010 SEM-2

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**PYB474 FOOD SCIENCE**

To fulfil their needs as future professionals working in food and nutrition related areas, students explore the nature of foods and their constituents, studying the underlying scientific principles related to the manufacture, preservation, distribution and the final production of food items for consumption. This unit is available ONLY in courses where it is listed as a core unit.

**Prerequisites:** PUB201

**Credit points:** 12

**Contact hours:** 5 per week

**Campus:** Kelvin Grove

**Teaching period:** 2010 SEM-1

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Kelvin Grove  Teaching period: 2010 SEM-1

PYB203 DEVELOPMENTAL PSYCHOLOGY
This unit provides an introduction to life span developmental psychology. It unit covers the major theories of life span development and includes biological, social and cognitive aspects of development from birth through to old age. It emphasises the interdependency of all aspects of development and the importance of the physical, family, socio-cultural and historical contexts within which development occurs. The unit aims to develop the student's understanding of general patterns of human development and of the ways in which the development of particular individuals and groups may vary from these general patterns.

Prerequisites: PYB012, PYB101, PYB102 or PYB100
Credit points: 12  Contact hours: 3 per week  Campus: Kelvin Grove  Teaching period: 2010 SEM-2

PYB204 PERCEPTION AND COGNITION
Cognitive psychology is a major empirical and theoretical area of psychology which explores the processes and structures involved at each stage of information processing within the brain. The structures and processes involved in perception provide the brain with its basic information about both the external world and many of the current states of the individual. Higher level cognitive processes and structures provide the foundation upon which more complex aspects of behaviour are based. The unit is placed in second semester of second year so that students following the normal course structure have an adequate background in research design and data analysis.

Prerequisites: (PYB100 or PYB101 or PYB102) and PYB110  Equivalents: PYB303  Credit points: 12  Campus: Kelvin Grove  Teaching period: 2010 SEM-2

PYB304 PHYSIOLOGICAL PSYCHOLOGY
This unit aims to provide a broad introduction to the area of neuropsychology and discusses both the clinical and cognitive approaches in the field. Three broad areas are covered: neuroanatomy, neuropathology, the cognitive analysis of resulting deficits. Students learn about major neuroanatomical structures and their interconnections, with an emphasis on how this information is applied in the clinical setting. They also study a number of neuropsychological disorders in terms of their diagnosis, assessment and treatment, as well as the psychosocial effects such deficits have on the patients.

Prerequisites: PYB102, PYB101 or PYB100  Assumed knowledge: Successful completion of all first and second year units is assumed knowledge.  Credit points: 12  Contact hours: 3 per week  Campus: Kelvin Grove  Teaching period: 2010 SEM-1

UDB164 POPULATION AND URBAN STUDIES
This unit introduces the students to the demographic, economic, social and physical aspects of our cities to help understand the nature of cities we live in. The topics covered include: demographic and economic changes in cities, theoretical models of cities, issues such as social diversity, gentrification, masterplanned communities, and public spaces in cities.

Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2010 SEM-2

UDB181 GEOSPATIAL POSITIONING AND GPS
This unit will introduce students to skills and knowledge of spatial referencing, site measurement; use of maps and air photos. It will include introduction to map projections; concepts and theory of Global Positioning Systems; introduction to global and local coordinate systems; mission planning and data collection. The unit will highlight the importance of geospatial positioning applications in society.

Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1

UDB182 SURVEYING
This unit provides a foundation in field instrumentation and survey computations; a framework for acquisition of a high level of knowledge and practical competence in plane survey computations; use of optical and electronic theodolites; EDM and total electronic station systems, and a focus on collection/presentation of pre-design contour and detail spatial information.

Equivalents: PSB640  Credit points: 12  Contact hours: 5 per week  Campus: Gardens Point  Teaching period: 2010 SEM-2

UDB266 PLANNING PROCESSES AND CONSULTATIONS
Students learn how land uses are generated and can be planned. They study the logic, role and methods of successive stages of planning processes including aims, information analysis and synthesis, evaluation, strategy development, monitoring and review. They learn how to consult widely in the community and with other professionals to develop and apply flexible and widely relevant planning processes.

Prerequisites: (UDB163 and UDB164) or ENB274 or DE40MJR-LNDARCH - Landscape Architecture Major  Equivalents: PSB433  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1

UDB281 GEOGRAPHIC INFORMATION SYSTEMS
This unit investigates the basic concepts of geographic information systems. Topics to be covered include components of GIS, spatial databases, data acquisition, reference frameworks, use of photographs and images,
spatial analysis and graphic output design issues. The unit will highlight the importance of geographic information systems the unit will highlight the importance of geospatial positioning applications in society.

**Equivalents:** PSB631  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1

**UDB282 REMOTE SENSING**
This unit includes the following: history and principals of remote sensing; types of imagery, image interpretation, satellite systems; supervised and unsupervised image classification; interpretation, analysis and presentation of data; applications in the earth sciences.

**Equivalents:** PSB655  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-2

**UDB381 GEOSPATIAL MAPPING**
This unit will provide the student with a sound knowledge and understanding of image mapping principles (including photogrammetry) and processes as well as practical skills and understanding required to collect spatial information and to produce fundamental mapping products. In addition this unit will provide the skills and knowledge of the principles and characteristics of cartographic communication, surface modelling techniques and digital mapping.

**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1

**UDB387 SPATIAL AND LAND INFORMATION MANAGEMENT**
The spatial information science application areas of this unit include: application areas; resource management; urban and rural planning; cadastral administration; facilities management. System planning includes a system planning overview, functional requirements analysis, system evaluation and benchmarking. System implementation includes database creation, implementation issues, and implementation strategies. Other aspects include standards, legal issues, and knowledge-based techniques.

**Prerequisites:** UDB281  
**Equivalents:** PSB612  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1