Bachelor of Applied Science (Biotechnology) (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
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 Marion Bateson
Campus: Gardens Point

Overview
Biotechnology is the application of molecular biology and biochemical principles to create a new generation of products and processes for the benefit of society. It is one of the fastest growing areas of science and business in the world today. Biotechnology is helping to address global challenges such as malnutrition, disease, depleting energy sources, and climate change. The extensive range of molecular and bioinformatic tools available today is revolutionising our understanding of gene function and interaction in all organisms. This is leading to rapid advances in diagnostics, therapeutics and improved productivity in industry, medicine and agriculture. As a biotechnologist you can be involved at many levels from cutting-edge research, through to product development, commercialisation and marketing.

Recommended Study
Chemistry and Biological Science.

Why Choose this Course
You will gain experience in contemporary molecular technologies in QUT’s state-of-the-art biotechnology laboratories including basic genetic engineering, cell culture and tissue engineering in both animal and plant systems. You will use QUT’s computing facilities that provide access to online bioinformatics tools. The close relationship between teaching and research at QUT means you will have access to the latest technologies and learn from teachers involved in leading-edge research programs and industry.

Career Outcomes
As a QUT biotechnology graduate you will have a wide range of exciting career opportunities available to you across a number of existing and emerging global industries. New career opportunities include nanotechnology, proteomics, materials science, molecular farming and bioinformatics. Our biotechnology graduates find career opportunities in medical and agricultural research, product development or marketing, hospitals and diagnostic laboratories, in teaching and in many areas of government and private industry.

Professional Recognition
Graduates are eligible for membership of AusBiotech Ltd, Australian Society for Biochemistry and Molecular Biology and, depending on unit selection, Australian Society for Medical Research and the Australian Society for Microbiology.

Your Course
Year 1
You will undertake introductory core studies in a range of scientific areas including life sciences, chemistry, physics, mathematics and environmental science to give you a solid foundation for your future studies. You will also be introduced to the structure and function of DNA, RNA and proteins, and their role in cell function. Following these introductory studies you should be in a position to confirm your choice of a major area of study.

Year 2
You will develop a more detailed understanding of biochemical principles, cell biology and the structure and function of biomolecules. A strong focus is placed on developing practical skills in molecular biology and cell culture that will underpin your future studies. You will have access to real-world molecular biology laboratories with modern equipment and highly skilled tutors. You will also be introduced to bioinformatics through hands-on computer-based exercises.

Year 3
You will further develop both theoretical and practical skills in DNA manipulation and genetic engineering as well as advanced bioinformatics. You will also focus on specific...
applications in biotechnology including current advances in diagnostics and detection, cell culture and tissue engineering in both animal and plant systems, functional genomics, proteomics and microarray technology. Teaching approaches at this level will encourage critical thinking, and problem-based learning, and you will undertake a mix of independent activities and group work.

Biotechnology Full-time Course Structure: First Semester Entry

Year 1, Semester 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCB110</td>
<td>Science Concepts and Global Systems</td>
</tr>
<tr>
<td>SCB111</td>
<td>Chemistry 1</td>
</tr>
<tr>
<td>SCB112</td>
<td>Cellular Basis of Life</td>
</tr>
<tr>
<td>MAB101</td>
<td>Statistical Data Analysis 1</td>
</tr>
<tr>
<td>MAB105</td>
<td>Preparatory Mathematics</td>
</tr>
<tr>
<td>MAB120</td>
<td>Algebra and Calculus</td>
</tr>
<tr>
<td>MAB121</td>
<td>Calculus and Differential Equations</td>
</tr>
</tbody>
</table>

NOTE:
1. Students without a Sound Achievement (4 semesters) in Maths A should enrol in MAB105.
2. Students with a Sound Achievement in Maths B and NOT wishing to major in Physics should enrol in MAB101.
3. Students with a Sound Achievement in Maths C and wishing to major in Physics should enrol in MAB121.
4. Students without a Sound Achievement in Maths C and wishing to major in Physics should enrol in MAB120.
5. Students without a Sound Achievement in Maths B or Maths A should consult with the course coordinator.

Year 1, Semester 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>SCB120</td>
<td>Plant and Animal Physiology</td>
</tr>
<tr>
<td>SCB121</td>
<td>Chemistry 2</td>
</tr>
<tr>
<td>SCB122</td>
<td>Cell and Molecular Biology</td>
</tr>
<tr>
<td>SCB123</td>
<td>Physical Science Applications</td>
</tr>
</tbody>
</table>

Note: students taking forensic science or chemistry second majors should replace SCB120 Plant and Animal Physiology with SCB131 Experimental Chemistry

Year 2, Semester 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>LQB381</td>
<td>Biochemistry: Structure and Function</td>
</tr>
<tr>
<td>LQB383</td>
<td>Molecular and Cellular Regulation</td>
</tr>
</tbody>
</table>

Plus TWO other units selected according to the second major requirements

Year 2, Semester 2 *

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>LQB483</td>
<td>Molecular Biology Techniques</td>
</tr>
<tr>
<td>LQB484</td>
<td>Introduction to Genomics and Bioinformatics</td>
</tr>
</tbody>
</table>

Plus TWO other units selected according to the second major requirements

Year 3, Semester 1 *

Select TWO units from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>LQB583</td>
<td>Genetic Research Technology</td>
</tr>
<tr>
<td>LQB584</td>
<td>Medical Cell Biology</td>
</tr>
<tr>
<td>LQB585</td>
<td>Plant Genetic Manipulation</td>
</tr>
</tbody>
</table>

Plus TWO other units selected according to the second major requirements

Year 3, Semester 2 *

Select TWO units from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>LQB682</td>
<td>Protein Biochemistry and Bioengineering</td>
</tr>
<tr>
<td>LQB684</td>
<td>Medical Biotechnology</td>
</tr>
<tr>
<td>LQB685</td>
<td>Plant Microbe Interactions</td>
</tr>
</tbody>
</table>

Plus TWO other units selected according to the second major requirements

Recommended Second Majors:

- Biochemistry
- Chemistry
- Forensic Science
- Life Science Technologies
- Microbiology

* Elective Unit for all Majors:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>SCB500</td>
<td>Industry Project</td>
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</tbody>
</table>

NOTE: SCB500 Industry Project is a unit that will be offered as an elective in all majors. This unit requires 84 credit points of Level 2 and/or 3 Science units, so it may only be taken at the completion of Year 2 in Summer or during Year 3.

Biotechnology Full-time Course Structure: Mid-Year Entry

Mid-Year (July) Entry

FOR DOMESTIC STUDENTS: Due to the careful construction of scientific knowledge demanded in the SC01 degree, mid-year entry requires some compromises. There are two ways to construct a mid-year program:

1. Take foundation units and their follow-up units together, rather than in sequence. This will be very challenging, but will allow you to start second year units at the start of the next year. Please contact either the course coordinator or the discipline coordinator to...
devise a suitable program of study. Please note: as this option usually involves taking units from different levels concurrently, which may not be possible to complete within the standard time frame.

2. Take three units per semester for the first three semesters, adding one semester to your degree completion time. This allows you to do your first year units in the correct sequence, at a slightly more leisurely pace, while still being officially a full-time student. You may enrol in a fourth unit (level 2 unit from your chosen major) provided you have the necessary prerequisites. This is the recommended option.

FOR INTERNATIONAL STUDENTS: Mid-year entry is only available under certain circumstances. Please contact the Course Coordinator to discuss available midyear entry and advance standing options on a case by case basis.

<table>
<thead>
<tr>
<th>Year 1, semester commencing July</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCB111 Chemistry 1</td>
</tr>
<tr>
<td>SCB112 Cellular Basis of Life</td>
</tr>
<tr>
<td>SCB120 Plant and Animal Physiology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2, semester commencing February</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCB110 Science Concepts and Global Systems</td>
</tr>
<tr>
<td>SCB121 Chemistry 2</td>
</tr>
<tr>
<td>MAB101 Statistical Data Analysis 1</td>
</tr>
<tr>
<td>Or</td>
</tr>
<tr>
<td>MAB105 Preparatory Mathematics</td>
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</table>

<table>
<thead>
<tr>
<th>Year 2, semester commencing July</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCB122 Cell and Molecular Biology</td>
</tr>
<tr>
<td>SCB123 Physical Science Applications</td>
</tr>
<tr>
<td>MAB101 Statistical Data Analysis 1</td>
</tr>
<tr>
<td>Or</td>
</tr>
</tbody>
</table>

Biotechnology Part-time Course Structure

Students interested in undertaking this major part-time should consult the discipline coordinator.

UNIT SYNOPSES

LQB381 BIOCHEMISTRY: STRUCTURE AND FUNCTION
This unit extends basic organic chemistry theory to the level of the biological macromolecules. A clear understanding of the structure and function of these molecules is essential to a student's understanding of the metabolism of living cells. Hence this biomolecular unit is a fundamental prerequisite for all advanced units in the various disciplines in the field of life sciences.

Prerequisites: (SCB121 and SCB122) or (SCB111 and SCB121)
Antirequisites: LSB275 and LSB325 and LSB308
Credit points: 12
Teaching period: 2010 SEM-1

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 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
Teaching period: 2010 SEM-1

LQB483 MOLECULAR BIOLOGY TECHNIQUES
Molecular biology and recombinant DNA technologies have important roles in many areas within the life sciences, including medicine, agriculture, cell biology, environmental science and forensics. Through close alignment of theoretical concepts and practical skills, this lab-based unit expands on molecular themes introduced in earlier cell and molecular biology units to develop expertise in modern recombinant DNA techniques and an understanding of strategies used to identify and manipulate genes. The close relationship between theory and practice in this unit is designed to develop competence, independence and critical thinking that will provide students with a solid foundation for advanced molecular biology studies presented in several third level units.

Prerequisites: LSB238 or SCB122
Antirequisites: LSB468, LSB338, LSB483
Assumed knowledge: LQB383 is recommended prior study
Credit points: 12
Teaching period: 2010 SEM-2
LQB484 INTRODUCTION TO GENOMICS AND BIOINFORMATICS
The completion of the Human Genome project, along with similar projects on other organisms of a prokaryote and eukaryote nature, marked the beginning of a major revolution in fundamental biology that changed our understanding of the natural world. To understand how information on genome structure-function relationships (i.e. bioinformatics) is being used in areas such as gene discovery, disease diagnosis and drug development, students need to understand how the information content of DNA and proteins is extracted and analysed. This unit introduces students to the approaches to database mining and genome exploration.
Prerequisites: LQB383 or LSB338 or LSN101 and LSN102
Antirequisites: LSB537, LSB619, LSB469
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2010 SEM-1

LQB583 GENETIC RESEARCH TECHNOLOGY
The tools available for the discovery and manipulation of new genes are increasing exponentially and, in turn, this is having a significant impact in many areas of the life sciences. The true potential for this ultimately relies on the ability to link genes and their function. There are many strategies, both targeted and global, which facilitate an understanding of gene and genome structure function relationships. These strategies rely on integrated technologies based on molecular genetics, molecular biology and genetic engineering. The identification of function leads then to unlimited potential for detection and manipulation of these genes in human, animal and plant systems.
Prerequisites: LQB483
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

LQB682 PROTEIN BIOCHEMISTRY AND BIOENGINEERING
This unit is designed to give you the essential concepts and techniques driving research and industrial biotechnology so that you will be equipped for multiple careers in the biological sciences. The skills you develop will allow you to enter a practical laboratory environment or to apply your knowledge in related areas of evaluations of technologies and intellectual property.
Prerequisites: LQB381 or LSB308 or LSN101 and LSN102
Antirequisites: LSB605, LSB608
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 discovery, 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  
**Assumed knowledge:** LQB386 recommended  
**Credit points:** 12  
**Teaching period:** 2010 SEM-2

### MAB101 STATISTICAL DATA ANALYSIS 1

Experiments, observational studies, sampling, and polls; data and variables; framework for describing and manipulating probability; independence; Binomial and Normal distributions; population parameters and sample statistics; concepts of estimation and inference; standard error; confidence intervals for means and proportions; tests of hypotheses on means and proportions (one sample and two independent samples); inference using tables of counts; modelling relationships using regression analysis; model diagnosis; use of statistical software.

**Prerequisites:** BSB123, EFB101, MAB141, MAN101  
**Assumed knowledge:** Grade of at least Sound Achievement in Senior Mathematics B (or equivalent) or MAB105 is assumed knowledge.  
**Credit points:** 12  
**Teaching period:** 2010 SEM-2

### MAB105 PREPARATORY MATHEMATICS

This unit is a substitute for Senior Mathematics B for those students who need the equivalent background for the successful study of units which assume it. It includes: basic number facts, natural numbers, integers, rational numbers, real numbers and their operations; basic algebra; functions and equations, graphs, linear functions, equations and applications; systems of linear equations; quadratic, exponential, logarithmic and trigonometric functions, properties and applications; introduction to calculus; rates of change, derivatives, rules of differentiation, second derivatives, maxima and minima and applications; integration and applications. This unit is incompatible with an exit assessment of High Achievement or better in Senior Mathematics B.

**Assumed knowledge:** Year 10 Level 6 Mathematics is assumed knowledge  
**Credit points:** 12  
**Teaching period:** 2010 SUM-2, 2010 SEM-1 and 2010 SEM-2

### MAB120 ALGEBRA AND CALCULUS

This unit introduces and reviews the elementary concepts of function, calculus, matrices and vectors with special reference to applications in science, technology and business where appropriate. Topics covered include the algebra of complex numbers, elementary functions (polynomial, trigonometric, exponential and logarithmic) and their properties, differentiation and integration methods and principles, geometric and algebraic applications of vectors and the solution of linear systems using matrices.

**Prerequisites:** MAB100, MAB125, MAB180  
**Assumed knowledge:** Grade of at least Sound Achievement in Senior Mathematics B (or equivalent) or MAB105 is assumed knowledge  
**Equivalents:** MAB100, MAB125, MAB180  
**Credit points:** 12  
**Teaching period:** 2010 SUM-2, 2010 SEM-2 and 2010 SUM

### MAB121 CALCULUS AND DIFFERENTIAL EQUATIONS

This unit extends the areas of function and calculus introduced in MAB120 by introducing series representations for functions and more advanced methods of differentiation and integration for functions of one variable. A strong connection to real world problems is made by introducing the use of differential equations in modelling, and exploring appropriate methods of solution. Practical calculations of volumes and surface areas of solids of revolution extend your interpretations of the definite integral. Taylor and Fourier series are introduced as a means of approximating functions by sums of polynomials and periodic functions. Some more advanced methods for indefinite integrals, such as partial fraction decomposition, are also introduced.

**Prerequisites:** MAB111, MAB126  
**Assumed knowledge:** Grade of at least Sound Achievement in Senior Mathematics C (or equivalent) or MAB125 or MAB180 or MAB120 is assumed knowledge  
**Equivalents:** MAB111, MAB126  
**Credit points:** 12  
**Teaching period:** 2010 SUM-2, 2010 SEM-2 and 2010 SUM

### SCB110 SCIENCE CONCEPTS AND GLOBAL SYSTEMS

You will undertake interdisciplinary study of the physical, geological and biological concepts relating to the origins of life; from the creation of matter and planets, to the emergence of life in all its complexity, culminating in evolution of earth ecosystems. Human influences, overlaid upon earth’s complex systems, will be examined as to their type, extent, and impact. In counterpoint, you will explore the breadth of philosophical developments underlying our search for knowledge; fundamental thoughts and ideas that span the last 2,500 years of human history. Ultimately, these concepts evolved through the development of a scientific method and we explore its workings in relation to the ongoing enterprise of human understanding.

**Credit points:** 12  
**Teaching period:** 2010 SUM-2, 2010 SEM-2 and 2010 SUM
SCB111 CHEMISTRY 1
This unit covers the fundamentals of general and physical chemistry. Topics include atomic and molecular structure, introduction to chemical bonding, reaction stoichiometry, thermochemistry, gas phase chemistry, reaction kinetics, equilibrium, acids, bases, buffers, oxidation, reduction and electrochemistry. The practical program involves experiments illustrating a range of chemical reaction types including precipitation reactions, acid-base chemistry and redox chemistry using analytical experimental methods. A comprehensive tutorial program (CHELP) complements the lectures and is designed to assist students to develop the problem solving skills required for further study in chemistry and related sciences.

Antirequisites: SCB113 Credit points: 12 Contact hours: 4.5 per week Campus: Gardens Point Teaching period: 2010 SEM-1 and 2010 SEM-2

SCB112 CELLULAR BASIS OF LIFE
A study of life processes in all five groups of living organisms (bacteria, protists, fungi, plants and animals). Traditional topics in biology are integrated with recent research advances in molecular and cellular biology to provide a comprehensive foundation for later units in the medical, biotechnological and ecological sciences. The unit begins by constructing cells from the four quantitatively important groups of biological molecules (proteins, lipids, carbohydrates and nucleic acids). Molecular and evolutionary aspects of genetics are then introduced, with the great diversity of reproductive strategies found among organisms being emphasised. Finally, bioenergetics (photosynthesis and respiration) and its relevance to environmental issues is outlined.

Antirequisites: LSB118 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2010 SEM-1 and 2010 SEM-2

SCB120 PLANT AND ANIMAL PHYSIOLOGY
Regardless of which area of biology you decide to specialise in, you will need to understand the complex interactions between cells, tissues, organs and organ systems that comprise multi-cellular organisms. Although many living processes can be explained at the levels of biochemistry, biophysics and cell biology, a true understanding of complex, multicellular organisms requires integration of knowledge drawn from all of these areas, combined with the more complex physiological and structural levels you will learn about in this unit. The knowledge gained in this and other first level units provides you with the conceptual framework necessary to understand processes occurring from the cellular to the whole organism level and to higher levels of organisation.

Prerequisites: SCB112 Equivalents: NRB270 Credit points: 12 Contact hours: 4.5 per week Campus: Gardens Point Teaching period: 2010 SEM-2

SCB121 CHEMISTRY 2
Chemistry is the central science. This is a unit of fundamental importance as it covers the background and general principles that underpin understanding in many Science and Health related disciplines, particularly in regards to the chemistry of life. In this unit students will be introduced to fundamental aspects of chemistry including the electronic structure of atoms, chemical bonding and molecular structure. From this basis students will develop an understanding of the fundamentals of organic chemistry including chirality, functional groups and organic reactions which will lead to important bio-inorganic molecules and coordination complexes.

Prerequisites: (SCB111 or PCB142). SCB111 can be studied in the same teaching period. Antirequisites: SCB113 Credit points: 12 Contact hours: 4.5 per week Campus: Gardens Point Teaching period: 2010 SEM-1 and 2010 SEM-2

SCB122 CELL AND MOLECULAR BIOLOGY
SCB122 Cell and Molecular Biology 1 equips students with a comprehensive understanding the molecular basis of the cell. This unit expands on the basic principles and concepts relating to cell structure, function, perpetuation and specialisation introduced in SCB112 and introduces students to fundamental molecular mechanisms central to the organisation of the cell. Students will be shown how macromolecular interactions are crucial to information flow and heredity. Students are taught the relationships between chromosomes, genes and cellular function and ultimately how these may determine an organism's phenotype. This unit underpins cell biology and molecular biology units that are offered in second year Life Science units. SCB122 is also ideal for interfaculty students (eg Education, Business, Arts) who will undertake no further life science studies.

Prerequisites: SCB112 Antirequisites: LSB238 Credit points: 12 Contact hours: 4.5 per week Campus: Gardens Point Teaching period: 2010 SEM-2

SCB123 PHYSICAL SCIENCE APPLICATIONS
Physics principles underpin all of the sciences and 'new technologies'. This unit adopts an investigative team-based approach to provide students with an appreciation of fundamental concepts in physical science, together with experience in the application of these concepts to a range of 'real world' problems. The unit should be taken in the first year of study as the fundamental principles introduced here will be built upon in later units in the context of each science student's major discipline area. Employers in cutting-edge industries expect science graduates to have effective strategies for problem solving, skills for collaborative work and scientific communication and research skills. This unit aims to develop these skills by applying the fundamental concepts of physical science to problems in a team.
environment.

**Credit points:** 12  **Contact hours:** 4.5 per week  
**Campus:** Gardens Point  **Teaching period:** 2010 SEM-2

**SCB500 INDUSTRY PROJECT**

In this unit students will apply scientific methods and quantitative techniques to real work issues. Students will develop an appropriate plan for analysing and resolving an industry issue under the guidance of both a QUT supervisor and an associate supervisor from an industry partner. At the end of the unit students will present both an oral seminar and a written report.

**Credit points:** 12  **Contact hours:** 52  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-1, 2010 SEM-2 and 2010 SUM