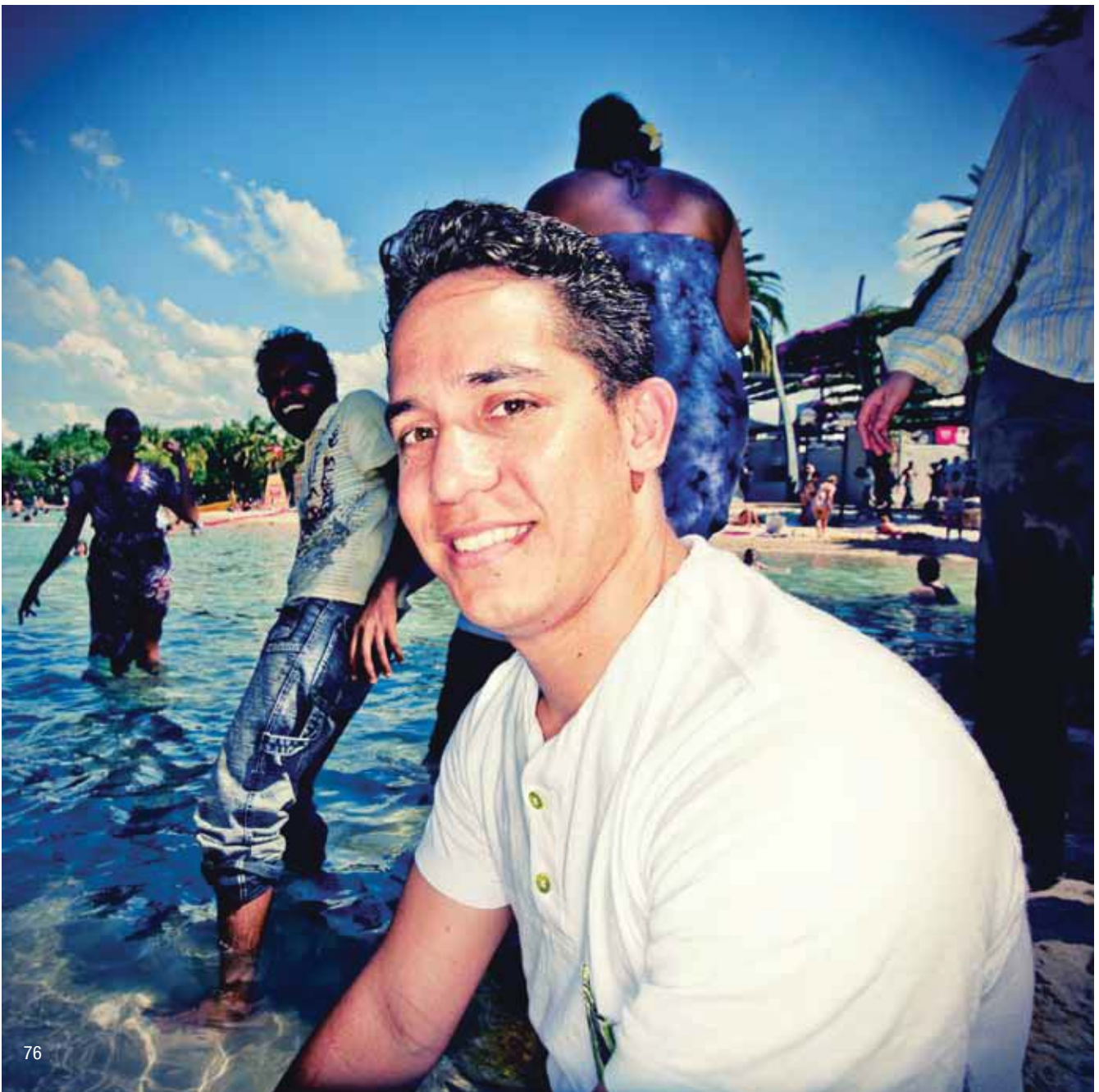


# Science and Technology

**Vejux Vaiora** French Polynesia

## **Bachelor of Information Technology (Network Systems) Graduate**

I was very focussed throughout my study and I found QUT staff and my fellow students very supportive in managing the study load. The skills and technical knowledge I have gained through my information technology degree has equipped me to pursue a career as a network engineer, and hopefully one day even create my own company. I studied hard but also made time to enjoy lots of activities, including skydiving!



## Why choose Science and Technology at QUT?

- Science and Technology are the engines of growth and underpin modern society. Here, in the Faculty, we are preparing graduates for exciting future careers that make a difference.
- QUT has begun works on a new A\$230 million Science and Technology Precinct (opening in 2012) to bring together teaching and research in science, technology, engineering and mathematics (STEM) in a world-leading model.
- Academic learning is complemented by a strong practical component, including: laboratory programs, work experience opportunities, industry internships and student projects working jointly with industry. Students have the opportunity to engage in real-world activities appropriate to their discipline, for example, professional attachments in pharmacy, medical science, biotechnology and technology fields, or best practice training in our CISCO networking academy.
- More than half of all students who wish to study information technology in Brisbane, Australia list QUT as their university of choice.
- As a graduate, you will not only have leading-edge knowledge, but also the skills to apply this knowledge to new challenges and emerging technologies.
- All courses offered by the Faculty are developed and continually updated and refined in consultation with the relevant industry body to provide graduates with professional accreditation. As a result, our graduates are highly valued and sought after by employers.
- You'll get personal support from our duty tutors, Peer Assisted Support Scheme (PASS), Peer mentoring, learning support officers, and friendly staff.

## Facilities

- The Faculty's state-of-the-art laboratories give students the opportunity to practise on up-to-date equipment and learn the latest techniques used in the workplace.
- Students undertake first-year classes in specially designed laboratories and may also learn in QUT's customised facilities such as forensic science, pharmacy, medical imaging, biotechnology or chemistry laboratories.

- The Faculty has recently acquired 52 hectares of bushland at Samford Valley. This has been transformed into a living laboratory for QUT scientists and students to undertake ecological research.
- Mathematics staff and students use QUT's High Performance Computing facility with supercomputers and the latest numerical software packages and visualisation tools.
- We are constantly upgrading and enhancing what we offer to give you the most rewarding experience as a student. In recent years for IT students we have created:
  - new computer labs with state-of-the-art equipment and the latest software
  - a stylish modern environment in our QUT offices in Margaret Street for our research students and community to collaborate.

## International accreditation and profile

- Approximately 15 per cent of our student body is comprised of international students from some 52 countries.
- We are the Area Academy Training Centre, Australia and New Zealand, for the CISCO Networking Academy Program (CNAP) and we maintain strong linkages with global companies such as Microsoft, SAP, Oracle and Infosys.
- Since 2006, the Faculty has received 10 prestigious Australian and Teaching Council (ALTC) awards for teaching excellence, outstanding contributions to student learning and for programs that enhance learning. For example, we received an award for the development of a transformational linguistic approach to the teaching of anatomy and one for modern communication practices and contextualised mathematics.
- Our diversity supports our excellent international reputation in the design and delivery of all our courses and in producing graduates who gain employment anywhere in the world—from Brisbane to Singapore, Shanghai to Silicon Valley.

## Undergraduate study areas

Animation  
Biochemistry  
Biomedical Science  
Biotechnology  
Business Process Management  
Chemistry  
Corporate Systems Management

Databases  
Data Mining and Warehousing  
Digital Environments and Media  
Enterprise Systems  
Ecology  
Environmental Science  
Forensic Science  
Games Design, Development and Technology  
Geoscience  
Information Management and Systems  
Interactive Media and Entertainment  
Mathematics  
Medical Imaging/Radiography  
Pathology  
Medical Science  
Microbiology  
Network Systems  
Pharmacy  
Physics  
Programming  
Radiation Therapy  
Security  
Software Development  
Software Engineering  
Software Technology  
Technology Innovation  
Web Development and Technology

## Number of students

5165

## Careers

Just some of the varied careers available through our courses are:

Animator  
Biochemist  
Business analyst  
Chemist  
Clinical scientist  
Computer scientist  
Environmental officer/consultant  
Film and television special effects developer  
Forensic scientist  
Games developer/designer  
Geologist  
Information security advisor  
IT consultant  
Information technology manager  
Mathematician  
Medical scientist  
Microbiologist  
Molecular biologist  
Network administrator  
Pharmacist  
Radiographer  
Research commercialisation officer  
Software engineer  
Sound designer  
Statistician  
Technology entrepreneur  
Web developer

[www.qut.edu.au/sci-tech](http://www.qut.edu.au/sci-tech)

# Course information

## Bachelor of Applied Science (SC01)

**CRICOS code:** 003502J

**Indicative fee:** \$12,500 per semester

**Campus:** Gardens Point

**Semester of entry:** February and July\*

**Duration:** 3 years (6 semesters) full-time

### Program objectives:

The Bachelor of Applied Science is a flexible course, so it can be tailor-made to suit your particular interests and career ambitions. If you like science, but are unsure of which career path you would like to take, this course gives you the chance to study a broad range of study areas early on so you can choose a career that suits you.

You can combine a number of areas of science (e.g. Forensic Science with Biotechnology), or study science with another area like business or languages – it's up to you.

You will graduate with the qualification of your choice e.g. Bachelor of Applied Science (Biotechnology).

### Why choose QUT for applied science?

This course is designed in consultation with industry representatives and relevant professional bodies so you can rest assured that your studies will cover the latest technological advances and new techniques used in the workplace.

You will learn from academic staff involved in ground-breaking research at QUT who are at the forefront of new technological development.

### Career outcomes:

Your science career could take you to the forefront of the latest discoveries in genetic engineering, improving the lives of others by researching new diagnostic techniques and treatments for diseases, or monitoring a community's water supply to ensure 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 faraway galaxy.

Due to QUT's practical emphasis of teaching and opportunities for real-world experience, graduates are sought after by employers. QUT science graduates have a reputation for being highly skilled and employment-ready.

At present there is a shortage of qualified professionals in areas such as chemistry and geoscience resulting in many QUT graduates receiving job offers before completing their studies.

Students completing majors in biotechnology, biochemistry or microbiology have successfully gained entry to postgraduate medicine programs.

### Program structure:

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. 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 on 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. Choose your major from the following study areas:
  - Biochemistry
  - Biotechnology
  - Chemistry
  - Ecology
  - Environmental science
  - Forensic science<sup>^</sup>
  - Geoscience
  - Microbiology
  - Physics

<sup>^</sup> The Forensic Science major must be taken as a double major with another science area, e.g. 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. Your secondary specialisation may be one of the other majors (listed above), a second major (listed below), or an area outside the science disciplines.

Choose 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 information technology systems
- Environmental engineering studies
- Foreign languages
- Games technology
- Geography
- Journalism
- Management
- Marketing
- Music
- 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.

**July intake:** please contact the course coordinator to determine July entry options.

\* July entry without advanced standing is only available for Environmental Science Major

## All Majors (except Physics)

### Program structure:

#### Year 1, semester 1

- Science concepts and global systems
- Chemistry 1
- Cellular basis of life
- Statistical data analysis 1

NOTE: Students without a Sound Achievement (4 semesters) in Maths B (or equivalent) should consult the course coordinator.

## Major – Biochemistry

#### Year 1, semester 2

- Plant and animal physiology
- Chemistry 2
- Cell and molecular biology
- Physical science applications

#### Year 2, semester 1

- Biochemistry: structure and function
- Molecular and cellular regulation
- Second major unit
- Second major unit

#### Year 2, semester 2

- Molecular biology techniques
- Biochemical pathways and metabolism
- Second major unit
- Second major unit

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**Year 3, semester 1**

- Biomedical research technologies
- Functional biochemistry
- Second major unit
- Second major unit

**Year 3, semester 2**

- Biochemical research skills
- Protein biochemistry and bioengineering
- Second unit
- Second unit

## Major – Biotechnology

**Program structure:**

**Year 1, semester 2**

- Plant and animal physiology
- Chemistry 2
- Cell and molecular biology
- Physical science applications

**Year 2, semester 1**

- Biochemistry: structure and function
- Molecular and cellular regulation
- Second major unit
- Second major unit

**Year 2, semester 2**

- Molecular biology techniques
- Introduction to genomics and bioinformatics
- Second major unit
- Second major unit

**Year 3, semester 1**

Select TWO units from:

- Genetic research technology
- Medical cell biology
- Plant genetic manipulation

PLUS

- Second major unit
- Second major unit

**Year 3, semester 2**

Select TWO units from:

- Protein biochemistry and bioengineering
- Medical biotechnology
- Plant microbe interactions

PLUS

- Second major unit
- Second major unit

## Major – Chemistry

**Program structure:**

**Year 1, semester 2**

- Chemistry 2
- Physical science applications
- Experimental chemistry

PLUS EITHER

- Algebra and calculus

OR

- Cell and molecular biology

**Year 2, semester 1**

- Analytical chemistry for scientists and technologists
- Structure and bonding
- Second major unit
- Second major unit

**Year 2, semester 2**

- Reaction kinetics, thermodynamics and mechanisms
- Chemical spectroscopy
- Second major unit
- Second major unit

**Year 3, semester 1**

- Advanced physical chemistry
- Organic mechanisms and synthesis
- Second major unit
- Second major unit

**Year 3, semester 2**

- Advanced inorganic chemistry
- Chemical research
- Second major unit
- Second major unit

## Major – Ecology

**Program structure:**

**Year 1, semester 2**

- History of life on earth
- Plant and animal physiology
- Planet earth

PLUS ONE OF

- Chemistry 2
- Physical science applications
- Cell and molecular biology

**Year 2, semester 1**

- Ecology
- PLUS ONE OF:
- Earth surface systems
  - Plant biology
  - Invertebrate biology

PLUS

- Second major unit
- Second major unit

**Year 2, semester 2**

- Genetics and evolution
- Experimental design
- Second major unit
- Second major unit

**Year 3, semester 1**

- Population genetics and molecular ecology
- Population management

PLUS

- Second major unit
- Second major unit

**Year 3, semester 2**

- Conservation biology
  - Ecological systems
- PLUS
- Second major unit
  - Second major unit

## Major – Environmental Science

**Program structure:**

**Year 1, semester 2**

- Planet earth
- History of life on earth
- Plant and animal physiology

PLUS ONE OF

- Chemistry 2
- Cell and molecular biology
- Physical science applications

**Year 2, semester 1**

- Earth surface systems
- Ecology
- Second major unit
- Second major unit

**Year 2, semester 2**

- Experimental design
- Soils and environment
- Second major unit
- Second major unit

**Year 3, semester 1**

- Environmental modelling
- PLUS EITHER
- Field methods in natural resource sciences

OR

- Spatial analysis of environmental systems

PLUS

- Second major unit
- Second major unit

**Year 3, semester 2**

- Sustainable environmental management
- PLUS ONE OF

- Environmental chemistry
- Groundwater systems
- Ecological systems

PLUS

- Second major unit
- Second major unit

## Major – Forensic Science\*\*

**Program structure:**

**Year 1, semester 2**

- Cell and molecular biology
- Physical science applications
- Experimental chemistry
- Chemistry 2

**Year 2, semester 1**

- Molecular and cellular regulation
- Forensic sciences – from crime scene to court

PLUS

- Second major unit
- Second major unit

**Year 2, semester 2**

- Forensic scientific evidence
- Analytical chemistry for scientists and technologists
- Second major unit
- Second major unit

**Year 3, semester 1**

- Instrumental analysis
- Forensic physical evidence
- Second major unit
- Second major unit

**Year 3, semester 2**

- Forensic analysis
- Forensic DNA profiling
- Second major unit
- Second major unit

\*\* The major in Forensic Science must be taken in conjunction with another eight-unit science major

## Major – Geoscience

**Program structure:**

**Year 1, semester 2**

- Exploration of the universe
- History of life on earth
- Planet earth
- Physical science applications

**Year 2, semester 1**

- Sedimentary geology
- Mineralogy
- Second major unit
- Second major unit

#### Year 2, semester 2

- Petrology of igneous and metamorphic rocks
- Structural geology and field methods
- Second major unit
- Second major unit

#### Year 3, semester 1

- Field methods in natural resource sciences
- Geophysics
- Second major unit
- Second major unit

#### Year 3, semester 2

- Geochemistry
- PLUS ONE OF
- Basin analysis and petroleum geology
  - Plate tectonics
  - Groundwater systems
- PLUS
- Second major unit
  - Second major unit

## Major – Microbiology

### Program structure:

#### Year 1, semester 2

- Plant and animal physiology
- Chemistry 2
- Cell and molecular biology
- Physical science applications

#### Year 2, semester 1

- Biochemistry: structure and function
- Microbial structure and function
- Second major unit
- Second major unit

#### Year 2, semester 2

- Molecular biology techniques
- Clinical microbiology 1
- Second major unit
- Second major unit

#### Year 3, semester 1

- Clinical microbiology 2
- Applied microbiology 1: water air and soil
- Second major unit
- Second major unit

#### Year 3, semester 2

- Applied microbiology 2: food and quality assurance
- Microbial technology and immunology
- Second major unit
- Second major unit

## Major – Physics

### Program structure:

#### Year 1, semester 1

- Science concepts and global systems
- Chemistry 1
- Cellular basis of life

#### PLUS EITHER:

- Algebra and calculus

#### OR

- Calculus and differential equations

NOTE: Choice depends on prior level of mathematics study.

#### Year 1, semester 2

- Algebra and analytic geometry
- Mechanics and electromagnetism
- Waves and optics

#### PLUS either:

- Calculus and differential equations

#### OR

- Computational mathematics 1

#### Year 2, semester 1

- Thermodynamics of solids and gases
- Advanced calculus
- Second major unit
- Second major unit

#### Year 2, semester 2

- Energy fields and radiation
- Electronics and instrumentation
- Second major unit
- Second major unit

#### Year 3, semester 1

- Quantum and condensed matter physics
- Physical analytical techniques
- Second major unit
- Second major unit

#### Year 3, semester 2

- Experimental physics
- Advanced theoretical physics
- Second major unit
- Second major unit

#### Optional unit for all majors\*:

- Industry project

\* NOTE: SCB500 Industry Project is a unit that will be offered as an optional unit 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.

## Bachelor of Medical Imaging Science (ST30)

CRICOS code: 073448G

Indicative fee: \$11,300 per semester

Campus: Gardens Point

Semester of entry: February

Duration: 3 years (6 semesters) full-time

### Program objectives:

This course leads to employment as a medical imaging technologist or diagnostic radiographer, a rewarding profession with excellent prospects.

Radiographers play an important role in the health-care sector, providing vital information to assist with the diagnosis and treatment of medical disorders.

### Why choose QUT for medical imaging science?

Excellent employment prospects can be expected as QUT works closely with the health sector to ensure that the number of graduates is in line with demand. In recent years, more than 90 per cent of graduates gained full-time employment within four months of graduating.

This course is designed in consultation with clinical staff from radiology departments, so you will gain advanced knowledge of new diagnostic techniques

and equipment used in the workplace. QUT's well-equipped X-ray laboratories allow you to graduate with experience using equipment and techniques similar to those used in industry. Clinical placements in hospitals and private practices provide an opportunity to use your skills in a real workplace.

### Professional recognition:

On graduation, you will be eligible for provisional accreditation by the Australian Institute of Radiography. Full membership requires the completion of an additional professional development year of clinical experience.

### Career outcomes:

As a radiographer you will play a key role in patient care by providing referring medical practitioners with additional diagnostic information to assist in patient management and treatment. You may become a team member in a radiology department in a hospital, private radiology practice or health department, or you may be employed in medical equipment sales.

### English entry requirements:

IELTS of 7.0 with no sub-scores less than 7.0 or its equivalent occupation English test.

### Additional entry requirements:

#### Blue card

A current blue card authorised with QUT may be required prior to commencing the clinical placement components in this course. For more information visit [www.qut.edu.au/bluecard](http://www.qut.edu.au/bluecard) and ensure that you allow adequate time for processing your application and issuing of the card in order to avoid clinical experience delays.

### Program structure:

#### Year 1, semester 1

- Anatomy 1
- Patient care in professional practice
- Radiation physics
- Principles of medical radiations

#### Year 1, semester 2

- Anatomy 2 and introductory pathology
- Radiation safety and biology
- General radiography 1
- Radiographic practice

#### Year 2, semester 1

- Systematic pathology
- Regional and imaging anatomy 1
- Radiographic equipment
- General radiography 2
- Clinical radiography 1

#### Year 2, semester 2

- Regional and imaging anatomy 2
- Radiographic equipment
- Special procedures
- Complementary imaging techniques
- Clinical radiography 2

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#### Year 3, semester 1

- Advanced radiographic technique 1
- Clinical radiography 3
- Digital image processing
- Project
- Computed tomography imaging

#### Year 3, semester 2

- Clinical radiography 3
- Advanced radiographic technique 2
- Project
- Magnetic resonance imaging

NOTE: Courses under review and subject to University approval. Refer to [www.qut.edu.au/coursechanges](http://www.qut.edu.au/coursechanges) for updates on approved courses.

## Bachelor of Applied Science (Medical Science) (LS37)

CRICOS code: 020331D

Indicative fee: \$12,900 per semester

Campus: Gardens Point

Semester of entry: February and July  
(\*Conditions apply)

Duration: 3 years (6 semesters) full-time

### Program objectives:

The Bachelor of Applied Science (Medical Science) is an exciting and innovative program leading to many rewarding career options. Not only is the degree the preferred qualification for employment in the pathology industry as a medical laboratory scientist, it also gives you an excellent foundation for a career in biomedical and clinical research. The program gives you hands-on experience in cutting edge diagnostic techniques and the opportunity to learn from, and be mentored by, workplace professionals.

### Why choose QUT for medical science?

This is the only medical laboratory science degree in South-East Queensland that is currently accredited by the Australian Institute of Medical Scientists (AIMS). More than 90 per cent of graduates seeking employment within the pathology industry are successful within months of graduating. The course is designed in consultation with managers and academics in pathology and research laboratories, so you will gain advanced knowledge of the latest diagnostic techniques used in these settings.

Throughout the course, you will undertake practical classes in QUT's state-of-the-art laboratories, so that when you graduate you will have extensive experience with techniques, equipment and instruments used daily in industry and research.

As part of your professional development, during your final year you will also undertake one semester of work integrated learning where you will interact directly with, and be mentored by, practising medical scientists or clinical

researchers. You may also be able to complete part of your work placement in regional Australia or an international laboratory.

### Professional recognition:

As a graduate, you will be immediately eligible for membership with the Australian Institute of Medical Scientists, and will have completed the academic and work placement requirements for admission as a full member. Depending on your clinical discipline(s) of employment, you will be eligible to apply for membership of various professional organisations including the Australasian Association of Clinical Biochemists, Australian Society of Microbiology, Australian Society of Cytology, Human Genetics Society of Australasia, Haematology Society of Australia and New Zealand, Australian and New Zealand Society of Blood Transfusion, and Australian Society of Thrombosis and Haemostasis.

### Career outcomes:

As a medical laboratory scientist, you will perform, interpret and report on analyses (or conduct research) in the areas of immunology, haematology, transfusion science, microbiology (bacteriology, mycology, virology and parasitology), histopathology, cytology, biochemistry and molecular biology. After graduating you may decide to specialise in areas such as cytological diagnosis, transplantation science, stem cell therapies, forensic testing, molecular diagnostics, cytogenetics and health informatics, or proceed to a managerial position within a private laboratory or hospital.

If you wish to undertake postgraduate studies in medicine this course is an excellent pre-medical degree. As a graduate, you can pursue further studies leading to a career in medical research. Graduates are currently working as researchers in areas such as cancer diagnosis, malaria, virology, stem cells, infectious diseases, immunology, transfusion science, eye disease, reproductive medicine and molecular biology.

### Additional entry requirements:

Students are required to undertake a minimum six-week work experience program in a practising pathology laboratory. This takes place at the end of the second year in the full-time program. Proof of successful vaccination against Hepatitis B must be provided by students at the end of the first semester of year two of the program.

## Blue card

A current blue card authorised with QUT may be required prior to commencing the clinical placement components of this course. Please ensure you allow at least 28 days for processing. For more information visit [www.qut.edu.au/bluecard](http://www.qut.edu.au/bluecard)

### Program structure:

#### Year 1, semester 1

- Mathematics and statistics for medical sciences
- Chemistry for health and medical sciences
- Cellular basis of life
- Fundamentals of professional practice 1

#### Year 1, semester 2

- Human physiology
- Human anatomy
- Cell and molecular biology
- Experimental chemistry

#### Year 2, semester 1

- Molecular and cellular regulation
- Microbial structure and function
- Biochemistry
- Pathology

#### Year 2, semester 2

- Quantitative medical science
- Diagnostic microbiology 1
- Immunology 1
- Histopathology 1

#### Year 2, summer semester

- Professional practice

#### Year 3, semester 1

- Clinical biochemistry 1
- Microbial immunology
- Haematology 1
- Histopathology 2

#### Year 3, semester 2

- Clinical biochemistry 2
- Diagnostic microbiology 2
- Haematology 2
- Immunohaematology

## Bachelor of Biomedical Science (SC40)

CRICOS code: 052768K

Indicative fee: \$12,400 per semester

Campus: Gardens Point

Semester of entry: February

Duration: 3 years (6 semesters) full-time

### Program objectives:

The Bachelor of Biomedical Science is a highly relevant and appropriate qualification for entry into postgraduate medicine studies. You will study a winning blend of essential science, humanities, and health-related topics to give you the best grounding possible for entry into postgraduate medical studies or a career in health-related laboratory professions.

### Why choose QUT for biomedical science?

QUT's real-world focus and practical approach to teaching in all degree qualifications has resulted in science graduates consistently gaining entry to postgraduate medicine studies. While

preparing you for entry examinations to postgraduate medical schools, the course also prepares you for employment.

#### Professional recognition:

Depending on the subjects selected in the final year of the course, graduates will be eligible for membership of one or more of the following organisations: Australian Association of Clinical Biochemists, AusBiotech Ltd, Australian Society for Microbiology.

#### Career outcomes

This course provides a solid foundation for the entry exams to postgraduate medical schools. Many opportunities are also available for postgraduate study in health and science, including honours and postgraduate qualifications leading to careers in medical research. The Bachelor of Biomedical Science is also designed for students seeking a science-based qualification that will lead to employment opportunities in medical biotechnology, medical microbiology and clinical biochemistry fields.

#### Program structure:

##### Year 1, semester 1

- Mathematics and statistics for medical science
- Interpersonal processes and skills
- Chemistry 1
- Cellular basis of life

##### Year 1, semester 2

- Human anatomy
- Physics 1H
- Chemistry 2
- Cell and molecular biology

##### Year 2, semester 1

- Molecular and cellular regulation
- Microbial structure and function
- Physiology 1
- Biochemistry

##### Year 2, semester 2

- Introduction to human rights and ethics
- Molecular biology techniques
- Clinical microbiology 1
- Quantitative medical science

##### Year 3, semester 1

- Genetic research technology
- Medical cell biology
- Clinical microbiology 2
- Clinical biochemistry 1

##### Year 3, semester 2

- Medical physiology 2
- Medical biotechnology
- Clinical biochemistry 2
- Clinical physiology

#### Alternative options (year 3):

Students may substitute ONE unit from EACH of Year 3/Semesters 1 and 2 (or Year 2/ Semester 2) with an approved pair of second major units from the following list, provided that a MATCHING SET of science units is deleted: (e.g. Clinical biochemistry 1 and 2). The second major unit options are subject to timetabling and campus offerings.

#### Health counselling:

##### Semester 1

- Psychology

##### Semester 2

- Counselling theory and practice 1

#### Public health:

##### Semester 1

- Australian health care systems
- OR
- Epidemiology

##### Semester 2

- Contemporary public health
- OR
- Evidence based practice

#### Exercise science for preventative medicine:

##### Semester 1

- Foundations of motor control, learning and development

##### Semester 2

- Exercise physiology 1

#### Indigenous perspectives:

##### Semester 1

- Indigenous Australian culture studies

##### Semester 2

- Indigenous knowledge: research ethics and protocols

#### Contemporary ethics:

##### Semester 1

- Gene technology and ethics

##### Semester 2

- Ethics, technology and the environment

#### Epidemiology and infectious diseases:

##### Semester 1

- Epidemiology

##### Semester 2

- Molecular microbiology

## Bachelor of Corporate Systems Management (IT06)

CRICOS code: 059712C

Indicative fee: \$11,500 per semester

Campus: Gardens Point

Semester of entry: February

Duration: 3 years (6 semesters) full-time

#### Program objectives:

If you are a creative thinker who is intrigued by new and evolving applications of information technology (such as cloud computing, 4G smart phones and Google Buzz); who recognises their growing importance and impact on individuals, organisations and society; and who seeks to understand and positively influence and apply these developments in the business world, then this is the degree for you.

This degree will teach you how to combine your creativity with IT knowledge and apply them to the real world. You will learn to analyse business needs and devise IT-enabled business systems and tools that deliver the necessary information to key people via the most appropriate technologies. You will also learn how to add value to an organisation by understanding their information challenges, and evolving and managing their systems and processes to ensure success in a competitive world. Today, business success depends on the application of the right information technology solutions, but the wrong IT decisions can be a disaster. This degree will give you the edge in understanding the relationships between information, technology, business and people.

#### Why choose QUT for corporate systems management?

This is an IT degree for business thinkers. You may have a great idea for new mobile software, a new way to conduct business over the net or even how a business could out-manoeuvre its competitors with its information technology systems. This degree will equip you with the knowledge and skills to turn these ideas into business reality. There is a worldwide shortage of creative IT professionals who understand the current, ever-changing business environment, so why not capitalise on it and study Corporate Systems Management.

The course is industry relevant and flexible, with the option to focus studies on areas such as IT management, enterprise systems, IT consulting, business process engineering, and knowledge management.

#### Professional recognition:

This course is accredited by the Australian Computer Society (ACS). ACS accreditation is internationally recognised by the Seoul Accord.

#### Career outcomes:

Career destinations from this degree are management, analyst or consultant roles such as business analyst, project manager, process analyst, program manager, or data manager in fields ranging from health to finance to media and entertainment services. If you are interested in creating your own business, you may start your own consultancy service to assist businesses in using information technology and improve their business performance. The career possibilities are numerous and relevant experience is in great demand by industry.

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### Program structure:

The 24-unit degree comprises:

- sixteen faculty core units that will give you a solid understanding of the relationships between information, technology, business and people
- eight optional units in a specialisation of your choice – you could choose to further specialise in IT or in other disciplines ranging from Business and Finance to Creative Industries Management to Justice Studies (see below for some examples).

### Some examples of specialisations are:

- Adult and community learning
- Business systems engineering
- Construction management – administration
- Creative industries management
- Databases
- Entrepreneurship
- Finance
- Forensics
- Human resource management
- Information systems
- Information technology management/ information management
- International studies
- Law
- Management
- Marketing
- Organisational psychology
- Public health

### Year 1, semester 1

- Industry Insights
- Corporate systems
- Impact of IT
- Organisational databases

### Year 1, semester 2

- Management, people and organisations
- Project management practice
- Information systems development
- One unit from specialisation or optional unit

### Year 2, semester 1

- Business analysis
- Technology management
- Creating new enterprises
- One unit from specialisation or optional unit

### Year 2, semester 2

- Marketing
- Websites for electronic commerce
- Two units from specialisation or optional unit

### Year 3, semester 1

- Enterprise systems applications
- Information systems consulting
- Two units from specialisation or optional unit

### Year 3, semester 2

- Business process modelling
- Corporate systems management project
- Two units from specialisation or optional unit

## Bachelor of Games and Interactive Entertainment (IT04)

CRICOS code: 059710E

Indicative fee: \$11,700 per semester

Campus: Gardens Point

Semester of entry: February

Duration: 3 years (6 semesters) full-time

### Program objectives:

The Bachelor of Games and Interactive Entertainment gives you the opportunity to join the growing industry of digital entertainment and electronic games by acquiring expertise in game development and other forms of interactive media. A strong foundation in both entertainment technology and creative skills is complemented with options in games programming including graphics programming and game artificial intelligence. You will gain experience in the identification and evaluation of ideas, creation of design concepts, critique of existing and potential products, analysis of cultural impact and industry trends, right through to the development and delivery of a final product.

### Why choose QUT for games and interactive entertainment?

Students are taught design and technology skills from experts in their field. QUT has close links with many of the local and international studios and publishers based in South-East Queensland. Many QUT graduates are already employed in the games industry, which is worth upwards of A\$40 billion globally, according to the Game Developers Association of Australia. QUT's Bachelor of Games and Interactive Entertainment will give you experience across the whole process of games and interaction development and, as a graduate, you will be well positioned to start your career.

### Professional recognition:

The Software Technologies major within this course is accredited by the Australian Computer Society (ACS). ACS accreditation is internationally recognised by the Seoul Accord.

### Career outcomes:

Depending on your specialisation, graduates may find employment as a games/digital media programmer, game designer, simulation developer or designer, animator, film and television special effects developer, quality assurance tester, games/digital media reviewer, video game tester, mobile entertainment and communications developer, web developer, digital product strategist, computer systems engineer, multimedia designer, software engineer or technical officer.

### Program structure:

The 24-unit degree comprises:

- five Faculty core units plus a final-year project worth 36 credit points (three units equivalent)
- eight units in your chosen primary area of study, also known as your major. You can choose from:

- Animation
- Digital media
- Game design
- Software technologies

- four units in a secondary area of study, also known as your minor. You can choose from:

- Animation
- Advanced animation\*
- Advanced software technologies^
- Digital media
- Entrepreneurship
- Game design
- Legal issues
- Marketing
- Mathematics for games
- Mobile and network technologies
- Physics for games
- Software technologies
- Sound design

- four optional units where you can choose units from across QUT to complement your studies.

### Year 1, semester 1

- Computer game studies
- Building IT systems
- Industry insights
- Introducing design

### Year 1, semester 2

- Games production
- Three units from your primary OR secondary areas

### Year 2, semester 1

- Four units from your primary OR secondary areas

### Year 2, semester 2

- Four units from your primary OR secondary areas, OR optional units

### Year 3, semester 1

- BGIE design project (one unit)
- Three units from your primary OR secondary areas, OR optional units

### Year 3, semester 2

- BGIE capstone project (2 units)
- Two units from your primary OR secondary areas, OR optional units

\* Entry into this minor is limited to IT04 students enrolled in the Animation Major, who have completed at least 96 credit points of study, and have gained an average grade of 5.0 or above across the following units from the Animation Major: KIB105, KIB108, KVB105, KVB106.

^ Entry into this minor is limited to IT04 students enrolled in the Software Technologies Major, who have completed at least 96 credit points of study.

## Bachelor of Information Technology (IT23)

CRICOS code: 012656E

Indicative fee: \$11,700 per semester

Campus: Gardens Point

Semester of entry: February and July.

October entry is only available to students entering the first year of IT23. October classes

will be undertaken by the QUT International College and students will transfer to the Gardens Point campus in February of the following year.

**Duration:** 3 years (6 semesters) full-time

### Program objectives:

Information technology enables almost every aspect of modern society; from phones to MP3 players to dashboard navigation systems, from ATMs to robotic assembly lines to satellite communication, from online booking systems to banking to instant messaging. Information Technology is everywhere you look.

The information technology landscape is ever-changing making a job in IT an interesting and rewarding career path. At present we are entering the new, connected era where the virtual and real worlds are becoming one, through applications like Facebook, Twitter and Second Life. If you want to make an impact on this industry and be part of what makes it evolve, this is the degree for you.

This degree equips you to build and apply creative, innovative IT solutions across diverse industries. A comprehensive, work-integrated learning curriculum gives you the opportunity to explore a wide range of areas within IT and gain deep understanding within your chosen speciality.

### Why choose QUT for information technology?

You will experience an innovative, hands-on approach to learning through projects where you develop information technology systems. This course also teaches entrepreneurship skills for those students who want to learn how to commercialise their ideas/innovations. The degree structure is flexible, giving you the opportunity to customise your degree to suit the area/s you wish to focus on.

The modern IT professional needs to know more than technology; they have to understand how to shape the industries of the future, through an effective blend of information technology and business knowledge. This is why the Faculty has close contact with industry and ensures that the degree is structured to meet industry needs, now and in the future. This in turn enables you to develop the right skills and knowledge needed to get a job and progress your career. Students are also offered many other work-integrated learning opportunities where you receive first-hand industry experience.

As the Area Academy Training Centre, Australia and New Zealand, for the CISCO Networking Academy Program (CNAP), we also offer a range of CISCO

programs. As a QUT Bachelor of IT Student, completion of any CISCO programs at QUT can be accredited to your QUT degree.

Through our flexible degree program, with opportunities for engagement with real-world professionals and industry leaders, you will have the opportunity to prepare yourself for the future and realise your full potential.

### Professional recognition:

This course is accredited by the Australian Computer Society (ACS). ACS accreditation is internationally recognised by the Seoul Accord.

### Career outcomes:

Information technology is an integral part of all commercial, industrial, government, social and personal activities. Graduates find employment in all areas of information technology, such as an information manager, web developer, database manager, network administrator, games developer, electronic commerce developer, data communications specialist, software engineer, systems programmer, multimedia specialist, computer scientist, systems analyst or programmer, business analyst or quality assurance tester/professional.

In the long term, your career opportunities are unbounded. While some information technology graduates retain a technical focus, others evolve into domain experts, managers, executives, entrepreneurs or researchers. Graduates have every opportunity to achieve the highest levels of their profession.

### Program structure:

The 24-unit degree comprises:

- Eight core units – you take four of these in the first semester to introduce you to the breadth of information technology and its relationship to modern society. The other four units are at a more advanced level and are spread over the rest of your degree program to develop your professional skills in preparation for your career.
- Four breadth units – these units introduce you to technical topics in the specialist areas of information technology, giving you a solid background to become an effective IT professional.
- Four specialisation units – allowing you to focus on your chosen area of study. OR
- You can pick a selection of units from different specialisation areas – this option allows you to study across a breadth of information technology subjects rather than focusing on one primary area of study.
- Eight complementary units – these optional units allow you to customise your degree by studying in another professional discipline (for example,

business, health or science). Or you may choose to gain further depth in other specialist areas of information technology.

### Specialisations to choose from include:

- Business process management
- Data warehousing
- Digital environments
- Enterprise systems
- Network systems
- Software engineering
- Web technologies

#### Year 1, semester 1

- Impact of IT
- Emerging technology
- Industry insights
- Building IT systems

#### Year 1, semester 2

- Three breadth units
- One complementary unit

#### Year 2, semester 1

- Scalable systems development
- One breadth unit
- One specialisation unit
- One complementary unit

#### Year 2, semester 2

- One specialisation unit
- Three complementary units

#### Year 3, semester 1

- Professional practice in IT
- The business of IT
- One specialisation unit
- One complementary unit

#### Year 3, semester 2

- IT capstone project
- One specialisation unit
- Two complementary units

## Bachelor of Mathematics (MA54)

**CRICOS code:** 049433D

**Indicative fee:** \$11,700 per semester

**Campus:** Gardens Point

**Semester of entry:** February and July

**Duration:** 3 years (6 semesters) full-time

### Program objectives:

In a modern society, mathematics is a powerful tool, helping us to solve complex problems and giving a foundation to understand and improve the world we live in. Mathematics graduates have diverse career opportunities in a range of industries and roles.

### Why choose QUT for mathematics?

The course structure is flexible in nature so that you can choose to study only mathematics units or include some units from another area of interest, such as science, business, or information technology. You will be able to design a program to suit your interests and career aspirations by combining advanced units from a number of mathematical specialisations.

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#### Professional recognition:

Membership of the Australian Mathematical Society, the Statistical Society of Australia Inc, and the Australian Society for Operations Research is available.

#### Career outcomes:

As a mathematics graduate, you will find employment opportunities across a wide range of areas such as finance, investment, information technology, environmental management, health, marketing, logistics, defence, media, education and research. In addition to your knowledge and abilities in mathematics, you will also be highly valued for your analytical and problem-solving skills. Development of skills in communication, problem solving, critical thinking and teamwork form an integral part of the course. Bachelor of Mathematics graduates are likely to enjoy favourable employment outcomes due to the current demand for qualified statisticians and mathematicians.

#### Program structure:

Students complete at least 192 credit points (16x12 credit point units) of Mathematics units according to the following requirements:

##### Level 1 compulsory mathematics units

- Algebra and calculus
- Statistical data analysis 1
- Calculus and differential equations
- Algebra and analytic geometry
- Statistical modelling 1
- Computational mathematics 1

NOTE: Algebra and Calculus is for students who do not have an exit assessment of at least Sound Achievement in four semesters of Senior Mathematics B and Senior Mathematics C (or equivalent)

##### Level 2 and 3 mathematics units

At least 120 credit points (10 twelve credit point units) must be taken from Level 2 and Level 3 Mathematics units with at least 48 credit points (4x12 credit point units) from Level 3 mathematics units

##### Compulsory mathematics units

- Advanced calculus
- Linear algebra

PLUS Choose from the following level 2 and 3 units

##### Level 2 mathematics units

- Mathematics of finance
- Statistical modelling 2
- Operations research 2
- Differential equations
- Applied statistics 2
- Computational mathematics 2
- Mathematical modelling
- Discrete mathematics
- Introduction to scientific computation

##### Level 3 mathematics units

- Applied mathematics 3
  - Computational mathematics 3
  - Statistical inference
  - Operations research 3A
  - Statistical techniques
  - Time series analysis
  - Partial differential equations
  - Financial mathematics
  - Applied statistics 3
  - Operations research 3B
  - Industry project
  - Advanced mathematical modelling
- Up to a maximum of 96 credit points may be taken as optional units from areas such as information technology, business, finance, economics or physics.

## Bachelor of Technology Innovation (ST50) (includes Honours)

CRICOS code: 070694G

Indicative fee: \$12,500 per semester

Campus: Gardens Point

Semester of entry: February and July

Duration: 4 years (8 semesters) full-time

#### Program objectives:

The Bachelor of Technology Innovation is designed to train the next generation of techno-entrepreneurs to translate research outcomes in science and technology into business opportunities. The four-year coursework plus Honours degree focuses on the business of innovation where you will learn the skills required to bring complex emerging technologies to the global marketplace.

#### Why choose QUT for technology innovation?

This degree covers the innovation contexts of science and information technology, within your primary study area of choice (Study Area A). Choose from biochemistry, biomedical science, biotechnology, chemistry, digital media, ecology, environmental science, forensic science, games technology, geoscience, information technology, microbiology and physics.

If you like to work in a dynamic world of translating discovery and creativity into commercial products, meeting people, and working in a high-powered team environment to build money-making enterprises, then this course is for you. The Bachelor of Technology Innovation will allow a rapid entry into the high-flying world of commercialisation and technology transfer. This new degree builds upon the successful Bachelor of Biotechnology Innovation which has seen graduates realise outstanding job outcomes, often successfully competing against graduates with PhDs and MBAs.

#### Professional recognition

On graduation, you will be eligible to join professional organisations relevant to your disciplinary specialisation, the Association of Professional Engineers, Scientists and Managers, Australia (APESMA) and the Australian Institute of Management (AIM).

#### Career outcomes

As a graduate of the Bachelor of Technology Innovation you can choose to be a business-savvy scientist, operate in the world of commercialisation and technology transfer, or start up a business enterprise to bring your own products to market. Graduates of the predecessor degree have taken up key positions in the biotechnology sector as investment analysts and advisors, business development associates, commercialisation officers, government advisers and scientists working on commercially oriented products. Some graduates have even established their own companies.

## Major – Biochemistry

#### Program structure:

##### Year 1, semester 1

- Innovation in science and technology
- Chemistry 1
- Cellular basis of life

Plus ONE of the following units:

- Algebra and calculus
- Statistical data analysis 1
- Preparatory mathematics
- Calculus and differential equations

NOTE: 1. Students without a Sound Achievement (4 semesters) in Maths B or its equivalent should enrol in Preparatory Mathematics.

2. Students with a Sound Achievement in Maths B or its equivalent and NOT wishing to major in Mathematics or Physics should enrol in Statistical Data Analysis 1.

3. Students with a Sound Achievement in Maths C or its equivalent and wishing to major in Mathematics or Physics should enrol in Calculus and Differential Equations.

4. Students without a Sound Achievement in Maths C or its equivalent and wishing to major in Mathematics or Physics should enrol in Algebra and Calculus.

##### Year 1, semester 2

- Plant and animal physiology
- Chemistry 2
- Cell and molecular biology
- Physical science applications

##### Year 2, semester 1

- Biochemistry: structure and function
- Molecular and cellular regulation

Plus TWO units from the relevant options List which may include one unit from outside of the Faculty\*

\* Recommended Year 2 Semester 1 units

- Microbial structure and function
- Medical physiology 1

#### Year 2, semester 2

- Biochemical pathways and metabolism
  - Molecular biology techniques
- Plus TWO units from the relevant options List which may include one unit from outside of the Faculty<sup>#</sup>

<sup>#</sup> Recommended Year 2 Semester 2 units

Any TWO units listed below provided

prerequisites are met

- Introduction to genomics and bioinformatics
- Clinical microbiology 2
- Medical physiology 2
- Plant physiology and cell biology

#### Year 3, semester 1

- Functional biochemistry
- Biomedical research technologies
- Engaging with the innovation industry
- Management

#### Year 3, semester 2

- Biochemical research skills
- Protein biochemistry and bioengineering
- Marketing
- Entrepreneurship and innovation

#### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

#### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation skills
- Innovation and commercialisation project
- Innovation and commercialisation project

## Major – Biomedical Science

### Program structure:

#### Year 1, semester 1

- Innovation in science and technology
- Mathematics and statistics for medical science
- Chemistry 1
- Cellular basis of life

#### Year 1, semester 2

- Human anatomy
- Physics 1h
- Chemistry 2
- Cell and molecular biology

#### Year 2, semester 1

- Molecular and cellular regulation
- Microbial structure and function
- Medical physiology 1
- Biochemistry

#### Year 2, semester 2

- Molecular biology techniques
- Introduction to genomics and bioinformatics
- Clinical microbiology 1
- Quantitative medical science

#### Year 3, semester 1

- Engaging with the innovation industry
- Management

Plus any TWO units of the following five units:

- Genetic research technology
- Medical cell biology
- Clinical microbiology 2
- Clinical biochemistry 1
- One university wide optional unit

#### Year 3, semester 2

- Marketing
  - Entrepreneurship and innovation
- Plus any two units of the following five units provided prerequisites are met:

- Medical physiology 2
- Medical biotechnology
- Clinical biochemistry 2
- Clinical physiology
- One university wide optional unit

#### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

#### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation skills
- Innovation and commercialisation project
- Innovation and commercialisation project

## Major – Biotechnology

### Program structure:

#### Year 1, semester 1

- Innovation in science and technology
- Chemistry 1
- Cellular basis of life
- Mathematics unit as per SC01 course rules (see biochemistry example)

#### Year 1, semester 2

- Plant and animal physiology
- Chemistry 2
- Cell and molecular biology
- Physical science applications

#### Year 2, semester 1

- Biochemistry: structure and function
  - Molecular and cellular regulation
- Plus TWO units from the relevant options List which may include one unit from outside of the Faculty<sup>\*</sup>
- <sup>\*</sup> Recommended Year 2 Semester 1 units
- Microbial structure and function
  - Medical physiology 1

#### Year 2, semester 2

- Molecular biology techniques
- Introduction to genomics and bioinformatics

Plus TWO units from the relevant options List which may include one unit from outside of the Faculty<sup>#</sup>

<sup>#</sup> Recommended Year 2 Semester 2 units

Any TWO units listed below provided prerequisites are met

- Biochemical pathways and metabolism
- Clinical microbiology 2
- Medical physiology 2
- Plant physiology and cell biology

#### Year 3, semester 1

- Engaging with the innovation industry
- Management

Plus any TWO of the three units below provided prerequisites are met

- Genetic research technologies
- Medical cell biology
- Plant genetic manipulation

#### Year 3, semester 2

- Marketing
- Entrepreneurship and innovation

Plus any TWO of the three units below provided prerequisites are met

- Protein biochemistry and bioengineering
- Medical biotechnology
- Plant-microbe interaction

#### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

#### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation
- Innovation and commercialisation project
- Innovation and commercialisation project

## Major – Chemistry

### Program structure:

#### Year 1, semester 1

- Innovation in science and technology
- Chemistry 1
- Cellular basis of life
- Mathematics unit as per SC01 course rules (see biochemistry example above)

#### Year 1, semester 2

- Chemistry 2
  - Physical science applications
  - Experimental chemistry
- Plus ONE of the following two units:
- Algebra and calculus
  - Cell and molecular biology

#### Year 2, semester 1

- Analytical chemistry for scientists and technologists
  - Structure and bonding
- Plus TWO units from the relevant options List which may include one unit from outside of the Faculty<sup>\*</sup>
- <sup>\*</sup> Recommended Year 2 Semester 1 unit
- Analytical chemistry for industry
  - Algebra and calculus – must be undertaken by students who undertook SCB122 in year 1 semester 2

#### Year 2, semester 2

- Reaction kinetics, thermodynamics and mechanisms
  - Chemical spectroscopy
- Plus TWO units from the relevant options List which may include one unit from outside of the Faculty<sup>#</sup>
- <sup>#</sup> Recommended Year 2 Semester 2 units
- Nanotechnology and nanoscience
  - Process principles

#### Year 3, semester 1

- Advanced physical chemistry
- Organic mechanisms and synthesis
- Engaging with the innovation industry
- Management

#### Year 3, semester 2

- Advanced inorganic chemistry
- Chemical research
- Marketing
- Entrepreneurship and innovation

#### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

#### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation
- Innovation and commercialisation project
- Innovation and commercialisation project

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## Major – Digital Media

### Program structure:

#### Year 1, semester 1

- Innovation in science and technology
- Building IT systems
- Computer games studies
- Introducing design

#### Year 1, semester 2

- Industry insights
- Introduction to games production
- Block C or block D unit
- Block C or block D unit

#### Year 2, semester 1

- Multimedia systems
- Visual communication
- Interface and information design
- Block C or block D unit

#### Year 2, semester 2

- Advanced multimedia systems
- Visual interactions
- Block C or block D unit
- Block C or block D unit

#### Year 3, semester 1

- Embodied interaction
- Mobile devices
- Engaging with the innovation industry
- Management

#### Year 3, semester 2

- Tangible media
- Block C or block D or optional unit
- Marketing
- Entrepreneurship and innovation

#### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

#### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation skills
- Innovation and commercialisation project
- Innovation and commercialisation project

#### Block B Units: Digital Media

- Visual communication
- Visual interactions
- Multimedia systems
- Advanced multimedia systems
- Mobile devices
- Interface and information design
- Embodied interactions
- Tangible media

#### Block C Units: Minors

##### Animation

- Animation and motion graphics
- Drawing for design
- Drawing for animation
- Animation history and practices

##### Game Design

- Concept development for game design and interactive media
- Enabling immersion
- Fundamentals of game design

Plus ONE of the following two units:

- Advanced game design
- Interaction design

#### Mathematics for Games<sup>#</sup>

- Algebra and calculus
- Calculus and differential equations
- Algebra and analytical geometry
- Linear algebra

<sup>#</sup> Students who have completed Maths C (or equivalent) can substitute Algebra and Calculus with one of the following units: Advanced Calculus, or Mathematical Modelling

#### Mobile and Network Technologies\*

- Emerging technology
- Networks
- Internet protocols and services
- Wireless and mobile networks

#### Sound Design

- Music and sound production 2
- Multiplatform sound design
- Sound, image, text
- Music and sound production 1

#### Software Technologies

- Programming
- Databases
- Systems architecture
- Algorithms and data structures

#### Physics for Games

- Algebra and calculus
- Mechanics and electromagnetism
- Waves and optics

Plus ONE of the following three units:

- Energy, fields and radiation
- Astrophysics 1
- Digital image processing

## Major – Ecology

### Program structure:

#### Year 1, semester 1

- Innovation in science and technology
- Chemistry 1
- Cellular basis of life
- Mathematics unit (see biochemistry example above)

#### Year 1, semester 2

- Planet earth
  - History of life on earth
  - Plant and animal physiology
- Plus ONE of the following three units:
- Chemistry 2
  - Cell and molecular biology
  - Physical science applications

#### Year 2, Semester 1

- Ecology
- Plus ONE of the following three units:
- Earth surface systems
  - Invertebrate biology
  - Plant biology

Plus TWO units from the relevant options List which may include one unit from outside of the Faculty\*

- \* Recommended Year 2 Semester 1 units
- Invertebrate biology
- Plant biology

#### Year 2, semester 2

- Experimental design
  - Genetics and evolution
- Plus TWO units from the relevant options List which may include one unit from outside of the Faculty<sup>#</sup>

<sup>#</sup> Recommended Year 2 Semester 2 units

- Genetics and evolution
- Vertebrate biology

#### Year 3, semester 1

- Engaging with the innovation industry
- Management
- Population genetics and molecular ecology
- Population management

#### Year 3, semester 2

- Marketing
- Entrepreneurship and innovation
- Population genetics
- Ecological systems

#### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

#### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation skills
- Innovation and commercialisation project
- Innovation and commercialisation project

## Major – Environmental Science

### Program structure:

#### Year 1, semester 1

- Innovation in science and technology
- Chemistry 1
- Cellular basis of life
- Mathematics unit (see biochemistry example above)

#### Year 1, semester 2

- Planet earth
  - History of life on earth
  - Plant and animal physiology
- Plus ONE of the following three units:
- Chemistry 2
  - Cell and molecular biology
  - Physical science applications

#### Year 2, semester 1

- Earth surface systems
  - Ecology
- Plus TWO units from the relevant options List which may include one unit from outside of the Faculty\*

\* Recommended Year 2 Semester 1 units

- Invertebrate biology
- Plant biology

#### Year 2, semester 2

- Soils and the environment
  - Experimental design
- Plus TWO units from the relevant options List which may include one unit from outside of the Faculty<sup>#</sup>

<sup>#</sup> Recommended Year 2 Semester 2 units

- Genetics and evolution
- Vertebrate biology

#### Year 3, semester 1

- Engaging with the innovation industry
- Management
- Environmental modelling

Plus ONE of the two following units:

- Field methods in natural resource sciences
- Spatial analysis of environmental systems

### Year 3, semester 2

- Marketing
- Entrepreneurship and innovation
- Sustainable environmental management

Plus ONE of the three following units:

- Environmental chemistry
- Groundwater systems
- Ecological systems

### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation skills
- Innovation and commercialisation project
- Innovation and commercialisation project

## Major – Forensic Science

### Program structure:

#### Year 1, semester 1

- Innovation in science and technology
- Chemistry 1
- Cellular basis of life
- Mathematics unit as per SC01 course rules (see biochemistry example above)

#### Year 1, semester 2

- Chemistry 2
- Cell and molecular biology
- Physical science applications
- Experimental chemistry

#### Year 2, semester 1

- Molecular and cellular regulation
- Forensic sciences – from crime scene to court

Plus TWO units from the relevant options List which may include one unit from outside of the Faculty\*

- \* Recommended Year 2 Semester 1 unit
- Structure and bonding

#### Year 2, semester 2

- Forensic scientific evidence
- Analytical chemistry for scientists and technologists

Plus TWO units from the relevant options List which may include one unit from outside of the Faculty#

- # Recommended Year 2 Semester 2 unit
- Chemical spectroscopy

#### Year 3, semester 1

- Instrumental analysis
- Forensic physical evidence
- Engaging with the innovation industry
- Management

#### Year 3, semester 2

- Forensic DNA profiling
- Forensic analysis
- Marketing
- Entrepreneurship and innovation

#### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation
- Innovation and commercialisation project
- Innovation and commercialisation project

## Major – Games Technology

### Program structure:

#### Year 1, semester 1

- Innovation in science and technology
- Building IT systems
- Computer games studies
- Introducing design

#### Year 1, semester 2

- Industry insights
- Introduction to games production
- Programming
- Mathematics for computer graphics

#### Year 2, semester 1

- Software development
- Data structures and algorithms
- Block C or block D unit
- Block C or block D unit

#### Year 2, semester 2

- Modelling and animation techniques
- Databases
- Computer architecture and systems
- Block C or block D unit

#### Year 3, semester 1

- Block C or block D Unit
- Real time rendering techniques

OR

- Ai for games
- Engaging with the innovation industry
- Management

#### Year 3, semester 2

- Block C or block D unit
- Block C or block D or optional unit
- Marketing
- Entrepreneurship and innovation

#### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

#### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation skills
- Innovation and commercialisation project
- Innovation and commercialisation project

Block B Units: Games Technology\*

\* Requirement for this Major is a SA or better in Queensland Maths B (or equivalent)

- Programming
- Databases
- Systems architecture
- Algorithms and data structures
- Modelling and animation techniques
- Real time rendering techniques

OR

- Ai for games
- Software development
- Mathematics for computer graphics

### Block C Units: Minors

#### Animation

- Animation and motion graphics
- Drawing for design
- Drawing for animation
- Animation history and practices

### Advanced Software Technologies#

- Systems programming
- Agile software development
- Enterprise software architecture

Plus ONE of the following units:

- Real time rendering techniques
- Ai for games
- Only available to Games Technology major students

### Digital Media

- Visual communication
- Visual interactions
- Multimedia systems
- Advanced multimedia systems

### Game Design

- Concept development for game design and interactive media
- Enabling immersion
- Fundamentals of game design

Plus ONE of the following units:

- Advanced game design
- Interaction design

### Mathematics for Games#

- Algebra and analytic geometry
- Calculus and differential equations
- Linear algebra

# Students who have completed Maths C (or equivalent) can substitute MAB120 with one of the following units: MAB311 or MAB422

### Mobile and Network Technologies\*

- Emerging technology
- Networks
- Internet protocols and services
- Wireless and mobile networks

### Sound Design

- Music and sound technology
- Music and sound for multimedia
- Sound, image, text
- Sound recording and acoustics

### Physics for Games

- Calculus and differential equations
- Mechanics and electromagnetism
- Waves and optics

### Choose 1 from the following

- Energy, fields and radiation
- Astrophysics 1
- Digital image processing

## Major – Geoscience

### Program structure:

#### Year 1, semester 1

- Innovation in science and technology
- Chemistry 1
- Cellular basis of life
- Mathematics unit (see biochemistry example on page 91)

#### Year 1, semester 2

- Planet earth
- History of life on earth
- Physical science applications
- Exploration of the universe

#### Year 2, semester 1

- Mineralogy
- Sedimentary geology

Plus TWO units from the relevant options List which may include one unit from outside of the Faculty\*

- \* Recommended Year 2 Semester 1 units
- Earth surface systems
- Geographic information systems

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#### Year 2, semester 2

- Petrology of igneous and metamorphic rocks
  - Structural geology and field methods
- Plus TWO units from the relevant options List which may include one unit from outside of the Faculty<sup>#</sup>

<sup>#</sup> Recommended Year 2 Semester 2 units

- Soils and the environment
- Stratigraphy

#### Year 3, semester 1

- Field methods in natural resource sciences
- Geophysics
- Engaging with the innovation industry
- Management

#### Year 3, semester 2

- Marketing
  - Entrepreneurship and innovation
  - Geochemistry
- Plus ONE of the following three units:
- Basin analysis and petroleum geology
  - Plate tectonics
  - Groundwater systems

#### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

#### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation skills
- Innovation and commercialisation project
- Innovation and commercialisation project

## Major – Information Technology

### Program structure:

#### Year 1, semester 1

- Innovation in science and technology
- Emerging technology
- Industry insights
- Building IT systems

#### Year 1, semester 2

- IT breadth option unit
- IT breadth option unit
- IT breadth option unit
- One unit from the relevant options list

#### Year 2, semester 1

- Scalable systems development
- IT breadth option unit
- IT specialisation option unit
- One unit from the relevant options list

#### Year 2, semester 2

- IT Specialisation Option Unit
- One unit from the relevant options list
- One unit from the relevant options list
- One unit from the relevant options list

#### Year 3, semester 1

- Engaging with the innovation industry
- Management
- IT specialisation option unit
- One unit from the relevant options list

#### Year 3, semester 2

- Marketing
- Entrepreneurship and innovation
- It specialisation option unit
- One unit from the relevant options list

#### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

#### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation skills
- Innovation and commercialisation project
- Innovation and commercialisation project

### IT Breadth Option Units

You must complete four (4) units from the following list.

- Corporate systems
- Databases
- Business analysis
- Systems architecture
- Networks
- Security
- Programming
- The web
- Interaction design

### IT Specialist Option Units

You must complete four (4) units from the following list. Please ensure you have completed a minimum of 36 credit points (3 units) of IT Breadth Option Units before commencing these units. The units are grouped in areas to assist you in focusing your studies.

#### 1. Enterprise Systems:

- Project management practice
- Technology management
- Enterprise systems
- Enterprise systems applications

#### 2. Web Technologies:

- Electronic commerce site development
- Advanced web applications development
- Enterprise software architecture
- Multimedia systems
- Advanced multimedia systems

#### 3. Business Process Management:

- Business process modelling
- Business process management
- Information systems consulting
- Smart services

#### 4. Information Management:

- Information management
- Management issues for info professionals
- Information retrieval
- Information programs
- Information issues and values
- Information resources

#### 5. Data Warehousing:

- Database design
- Software development with oracle
- Enterprise data mining
- Advanced data mining and data warehousing

#### 6. Network Systems:

- Internet protocols and services
- Computer network administration
- Network planning and deployment
- Wireless and mobile networks

#### 7. Software Engineering:

- Software development
- Algorithms and data structures
- Agile software development
- Enterprise software architecture

#### 8. Ungrouped:

- Cryptology and protocols
- Systems programming
- Computational intelligence for control and embedded systems

#### 9. Digital Environments:

- Mobile devices
- Enterprise 2.0
- Web 2.0 applications
- Information issues and values

## Major – Microbiology

### Program structure:

#### Year 1, semester 1

- Innovation in science and technology
- Chemistry 1
- Cellular basis of life
- Mathematics unit (see biochemistry example)

#### Year 1, semester 2

- Plant and animal physiology
- Chemistry 2
- Cell and molecular biology
- Physical science applications

#### Year 2, semester 1

- Biochemistry: structure and function
  - Microbial structure and function
- Plus TWO units from the relevant options List which may include one unit from outside of the Faculty<sup>#</sup>
- <sup>#</sup> Recommended Year 2 Semester 1 units
- Molecular and cellular regulation
  - Medical physiology 1

#### Year 2 semester 2

- Molecular biology techniques
- Clinical microbiology 2

Plus TWO units from the relevant options List which may include one unit from outside of the Faculty<sup>#</sup>

<sup>#</sup> Recommended Year 2 Semester 2 units

- Any TWO units listed below provided prerequisites are met
- Biochemical pathways and metabolism
  - Introduction to genomics and bioinformatics
  - Medical physiology 2
  - Plant physiology and cell biology

#### Year 3, semester 1

- Engaging with the innovation industry
- Management
- Clinical microbiology 2
- Applied microbiology 1: water, air and soil

#### Year 3, semester 2

- Marketing
- Entrepreneurship and innovation
- Microbial technology and immunology
- Applied microbiology 2: food and quality assurance

#### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

#### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation
- Innovation and commercialisation project
- Innovation and commercialisation project

## Major – Physics

### Program structure:

#### Year 1, semester 1

- Innovation in science and technology (nominal Faculty-wide unit derived from INB101)
- Chemistry 1
- Cellular basis of life
- Mathematics unit (see biochemistry example above)

#### Year 1, semester 2

- Algebra and analytic geometry
- Mechanics and electromagnetism
- Waves and optics

Plus ONE of the following two units:

- Calculus and differential equations
- Computational mathematics 1

#### Year 2, semester 1

- Advanced calculus
  - Thermodynamics of solids and gases
- Plus TWO units from the relevant options List which may include one unit from outside of the Faculty\*
- \* Recommended Year 2 Semester 1 units
  - Digital image processing
  - Global energy balance and climate change

#### Year 2, semester 2

- Energy, fields and radiation
  - Electronics and instrumentation
- Plus any TWO ADVANCED units offered by the Faculty of Science and Technology#
- #Recommended Year 2 Semester 2 unit
  - Astrophysics 1

#### Year 3, semester 1

- Quantum and condensed matter physics
- Physical analytical techniques
- Engaging with the innovation industry
- Management

#### Year 3, semester 2

- Advanced theoretical physics
- Experimental physics
- Marketing
- Entrepreneurship and innovation

#### Year 4, semester 1

- Introduction to intellectual property law
- Marketing planning and management
- Managing business growth
- Innovation and commercialisation project

#### Year 4, semester 2

- Innovation commercialisation strategies
- Intercultural communication and negotiation skills
- Innovation and commercialisation project
- Innovation and commercialisation project

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.

NOTE: Courses under review and subject to University approval.

Refer to [www.qut.edu.au/coursechanges](http://www.qut.edu.au/coursechanges) for updates on approved courses.

## Bachelor of Pharmacy (SC45)

CRICOS code: 055902G

Indicative fee: \$12,200 per semester

Campus: Gardens Point

Semester of entry: February

Duration: 4 years (8 semesters) full-time

Note: Strict quotas apply for this course

### Why choose QUT for pharmacy?

This course is continually updated in close consultation with senior representatives of the pharmacy profession. The inclusion of essential pharmacy and business management skills will help you to operate effectively in your chosen setting. QUT's small class sizes and comprehensive modern facilities ensure a high-quality educational experience.

### Professional recognition:

Following graduation, approximately 12 months of pre-registration training performed under the supervision of a registered pharmacist is required to meet the registration requirements of the Pharmacy Board of Australia. Further IELTS requirements may apply. Refer to [www.pharmacyboard.gov.au](http://www.pharmacyboard.gov.au) for more information. Graduates will be eligible for membership of a number of professional associations, including the Pharmaceutical Society of Australia (PSA), the Pharmacy Guild, and the Society of Hospital Pharmacists of Australia (SHPA).

### Career outcomes:

Pharmacists are employed in a range of settings including community pharmacies, hospitals, the pharmaceutical industry, and in drug regulatory and research roles. Community pharmacists are often the first health professional contacted for medical advice and play a major role as health providers and educators for the general public. Hospital pharmacists work closely with doctors in a patient-care role, conduct and manage clinical drug trials, evaluate newly released medicines and prepare medicines for patients requiring specialised treatments.

### English entry requirements:

IELTS (quota applies) of 7.0 with no sub-score less than 7.0.

### Additional entry requirements:

#### Blue card

A current blue card authorised with QUT may be required prior to commencing the clinical placement components in this course. For more information visit [www.qut.edu.au/bluecard](http://www.qut.edu.au/bluecard) and ensure that you allow adequate time for processing your application and issuing of the card in order to avoid clinical experience delays.

### Program structure:

#### Year 1, semester 1

- Mathematics and statistics for medical science
- Interpersonal processes and skills
- Cellular basis of life
- Chemistry for health and medical science

#### Year 1, semester 2

- Human anatomy
- Cell and molecular biology
- Experimental chemistry
- Introduction to pharmacy practice

#### Year 2, semester 1

- Medical physiology 1
- Biochemistry
- Pharmacy practice 1
- Pharmaceutical chemistry and pharmacology 1

#### Year 2, semester 2

- Medical physiology 2
- Pharmacy practice 2
- Pharmacokinetics
- Medicinal chemistry and pharmacology 2
- Medical Physical 1

#### Year 3, semester 1

- Microbial structure and function
- Pharmacy practice 3
- Pharmaceutics 1
- Pharmacology 3
- Medical Physiology 2

#### Year 3, semester 2

- Pharmacy practice 4
- Pharmaceutics 2
- Pharmacogenomics and drug metabolism
- Pharmacotherapeutics

NOTES: Progression to Year 4 cannot occur before the successful completion of Years 1, 2 and 3. Year 4 requires enrolment in all four (4) units each semester.

#### Year 4, semester 1

- Pharmacy practice 5
- Pharmacotherapeutics 2
- Pharmacy management 1
- Professional placements 1

#### Year 4, semester 2

- Pharmacy practice 6
- Pharmacotherapeutics 3
- Pharmacy management 2
- Professional placements 2

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## Double Degrees

Selected Science and Technology undergraduate degrees are available in the following double degree options:

CRICOS code	Course code	Course title	Campus	Duration (full-time)	Semester of entry	Indicative fees per semester
042263G	IX31	Bachelor of Applied Science/Bachelor of Business	Gardens Point	4 years	February	\$11,900
037540M	IX14	Bachelor of Applied Science/Bachelor of Education (Primary)	Kelvin Grove + Gardens Point	4 years	February	\$12,200
020322E	IX02	Bachelor of Applied Science/Bachelor of Education (Secondary)	Kelvin Grove + Gardens Point	4 years	February	\$14,100
063032D	IX65	Bachelor of Applied Science/Bachelor of Games and Interactive Entertainment	Gardens Point	4 years	February	\$11,800
020327M	IX55	Bachelor of Applied Science/Bachelor of Information Technology	Gardens Point	4 years	February	\$11,100
066294B	IX72	Bachelor of Applied Science/Bachelor of Laws	Gardens Point	5.5 years	February	\$11,800
049434C	SC20	Bachelor of Applied Science/Bachelor of Mathematics	Gardens Point	4 years	February and July	\$12,200
059601K	IX37	Bachelor of Business/Bachelor of Mathematics	Gardens Point	4 years	February	\$11,400
063024D	IX63	Bachelor of Business/Bachelor of Games and Interactive Entertainment	Gardens Point	4 years	February	\$11,400
059595C	IX58	Bachelor of Business/Bachelor of Information Technology	Gardens Point	4 years	February	\$11,400
063022F	IX62	Bachelor of Business/Bachelor of Corporate Systems Management	Gardens Point	4 years	February	\$11,400
063028M	IT07	Bachelor of Corporate Systems Management/Bachelor of Information Technology	Gardens Point	4 years	February	\$11,500
063030F	IX61	Bachelor of Corporate Systems Management/Bachelor of Justice	Gardens Point	4 years	February	\$11,000
063029K	IT09	Bachelor of Corporate Systems Management/Bachelor of Games and Interactive Entertainment	Gardens Point	4 years	February	\$11,500
059227E	IX56	Bachelor of Creative Industries/Bachelor of Information Technology	Gardens Point	4 years	February	\$11,300
020329J	IF21	Bachelor of Engineering (Electrical)/Bachelor of Mathematics	Gardens Point	5 years	February	\$12,200
006384G	IX54	Bachelor of Engineering (Electrical)/Bachelor of Information Technology	Gardens Point	5 years	February	\$12,200
064812A	IX69	Bachelor of Fine Arts (Interactive and Visual Design)/Bachelor of Information Technology	Gardens Point	4 years	February	\$10,800
063031E	IX64	Bachelor of Games and Interactive Entertainment/Bachelor of Mathematics	Gardens Point	4 years	February	\$11,700
066292D	IX53	Bachelor of Information Technology/Bachelor of Laws	Gardens Point	5.5 years	February	\$11,300
059226F	IX57	Bachelor of Information Technology/Bachelor of Mathematics	Gardens Point	4 years	February	\$11,700

Double degrees require an enrolment of more than the standard credit point load in some semesters.

### Want to find out more about the courses you can combine with a QUT Science and Technology degree?

Bachelor of Engineering (Electrical) page 29  
 Bachelor of Laws or Justice page 74  
 Bachelor of Education (Secondary) page 59  
 Bachelor of Education (Primary) page 58  
 Bachelor of Information Technology page 83  
 Bachelor of Business page 40  
 Bachelor of Creative Industries page 50  
 Bachelor of Fine Arts page 51–54