

## Faculty of Science

### Entry Programs (International)

- QC01 Foundation Program (1 Semester)
- QC02 Foundation Program (2 Semesters)
- QC03 Bridging Program
- QC04 Extended Foundation Program (3 Semesters)
- QC10 English for Academic Purposes for degree programs
- QC20 General English
- QC21 General English Extension
- QC22 English for Tertiary Preparation

### Bachelor Degree

- LS37 Bachelor of Applied Science (Medical Science)
- LS50 Bachelor of Biotechnology Innovation
- MA54 Bachelor of Mathematics
- PH38 Bachelor of Applied Science - Medical Radiation Technology (Medical Imaging Technology)
- PH38 Bachelor of Applied Science - Medical Radiation Technology (Radiotherapy Technology)
- SC01 Bachelor of Applied Science
- SC01 Bachelor of Applied Science (Carseldine First-year Experience Program)
- SC01 + SC60 Bachelor of Applied Science & Bachelor of Applied Science (Honours) - Dean's Scholars Accelerated Honours Program
- SC40 Bachelor of Biomedical Science
- SC45 Bachelor of Pharmacy

### Bachelor Degree (Double)

- IF21 Bachelor of Engineering (Electrical)/ Bachelor of Mathematics
- IF29 Bachelor of Applied Science/Bachelor of Information Technology (FOR CONTINUING STUDENTS ONLY)
- IF39 Bachelor of Applied Science/Bachelor of Laws
- IF58 Bachelor of Mathematics/Bachelor of Information Technology (FOR CONTINUING STUDENTS ONLY)
- IF60 Bachelor of Mathematics/Bachelor of Business (Accountancy, Banking and Finance or Economics) (FOR CONTINUING STUDENTS ONLY)
- IF61 Bachelor of Applied Science/Bachelor of Business (FOR CONTINUING STUDENTS ONLY)
- IF84 Bachelor of Applied Science/Bachelor of Education (Primary) (FOR CONTINUING STUDENTS ONLY)
- IF86 Bachelor of Arts/Bachelor of Applied Science (FOR CONTINUING STUDENTS ONLY)
- IX02 Bachelor of Applied Science/Bachelor of Education (Secondary)
- IX14 Bachelor of Applied Science/Bachelor of Education (Primary)
- IX26 Bachelor of Applied Science / Bachelor of Information Technology
- IX29 Bachelor of Information Technology / Bachelor of Mathematics
- IX31 Bachelor of Applied Science / Bachelor of Business
- IX37 Bachelor of Business / Bachelor of Mathematics
- IX64 Bachelor of Games and Interactive Entertainment/Bachelor of Mathematics
- IX65 Bachelor of Applied Science/Bachelor of Games and Interactive Entertainment
- SC20 Bachelor of Applied Science/Bachelor of Mathematics

## **Honours**

LS50 Bachelor of Biotechnology Innovation

SC01 + SC60 Bachelor of Applied Science & Bachelor of Applied Science (Honours) - Dean's Scholars Accelerated Honours Program

SC60 Bachelor of Applied Science (Honours)

## **Graduate Certificate**

IX97 Graduate Certificate In Research Commercialisation

LS66 Graduate Certificate in Biotechnology

MA65 Graduate Certificate in Mathematical Science

PH60 Graduate Certificate in Applied Science (Breast Ultrasound)

PH62 Graduate Certificate in Lighting (on-shore)

PH63 Graduate Certificate in Lighting (off-shore)

## **Graduate Diploma**

LS76 Graduate Diploma in Biotechnology

LS90 Graduate Diploma in Medical Science (Anatomical Pathology)

MA75 Graduate Diploma in Mathematical Science

PH71 Graduate Diploma in Applied Science (Medical Physics)

PH71 Graduate Diploma in Applied Science (Medical Ultrasound)

PH72 Graduate Diploma in Lighting (on-shore)

PH75 Graduate Diploma in Cardiac Ultrasound

SC71 Graduate Diploma in Applied Science

## **Masters Degree (Coursework)**

LS86 Master of Biotechnology

LS87 Master of Medical Science

LS96 Master of Biotechnology (Advanced)

MA85 Master of Mathematical Science

PH80 Master of Applied Science (Medical Physics)

PH80 Master of Applied Science (Medical Ultrasound)

PH82 Master of Lighting (on-shore)

PH83 Master of Lighting (off-shore)

PH85 Master of Cardiac Ultrasound

## **Masters Degree (Research)**

SC80 Master of Applied Science (Research)

## **Doctoral**

IF49 Doctor of Philosophy (Mathematics)

IF49 Doctor of Philosophy (Science)

## **Study Abroad (Non-degree)**

NA05 International Visiting Students

NA06 International Visiting Students

## **University wide unit sets**

Unit sets: Accounting and Economics

Unit sets: Advertising, Marketing and Public Relations

Unit sets: Communication

Unit sets: Corporate Systems  
Unit sets: Creative Industries  
Unit sets: Environmental Studies  
Unit sets: Health and Psychology  
Unit sets: Information Technology  
Unit sets: International Exchange  
Unit sets: International Studies  
Unit sets: Languages  
Unit sets: Management  
Unit sets: Mathematics and Statistics  
Unit sets: Multimedia and Technologies  
Unit sets: Physical and Chemical Sciences  
Unit sets: Science  
Unit sets: Society and Culture

## OVERVIEW

The Faculty of Science seeks to provide graduates with interesting and rewarding careers.

Fully equipped scientific and computing laboratories and state-of-the art lecture theatres assist in the practical delivery of innovative teaching programs.

Science education in the Faculty is further enriched by a number of research programs and QUT's multidisciplinary research institutes (in particular the Institute of Health and Biomedical Innovation and the institute for Sustainable Resources).

The Deans Scholars Accelerated Honours Program for high achieving students fast tracks science studies while workplace learning links with industry provide students with the opportunity to earn a salary while progressing through their degree.

Double degree options are available as part of a flexible program of academic studies.

The Bachelor of Pharmacy course offered at Gardens Point focuses on community and hospital pharmacy practice.

The Faculty offers a range of courses within its four multidisciplinary schools: School of Life Sciences, School of Mathematical Sciences, School of Natural Resource Sciences and School of Physical and Chemical Sciences.

The School of Life Sciences offers studies in courses focused on biomedical and medical sciences, biotechnology, microbiology, and biochemistry. The School enjoys close working relationships with industry which, in turn, help to provide students with a 'hands-on' approach to all of its courses.

The School of Mathematical Sciences offers studies in applied mathematics, mathematical finance, applied statistics, scientific computation and visualisation, and operations research. There is an emphasis on the applications of mathematics and many of the units are enriched by examples from business and industry.

The School of Natural Resource Sciences offers major studies in environmental science, ecology and geoscience, complemented with the co-majors in biodiversity, and applied geology.

The School of Physical and Chemical Sciences offers majors in both Physics and Chemistry with co-majors in astrophysics, forensic science and industrial chemistry. Forensic science can also be taken as a double major with chemistry, biochemistry, biotechnology or microbiology. The School also offers courses in medical radiation technology with majors in medical imaging technology and radiotherapy technology, which lead to a career as a diagnostic radiographer or radiation therapist respectively.

The first year of the Applied Science course is offered at the Carseldine campus as well as at Gardens Point. For information about the Faculty of Science visit: <http://www.sci.qut.edu.au/>

Email: [sci-enquiries@qut.edu.au](mailto:sci-enquiries@qut.edu.au)  
Phone: +61 7 3138 2152

## SENIOR STAFF

### Faculty Office

*Executive Dean:* Professor M.L. Britz, BSc(Hons) PhD *Melb*

*Assistant Dean (International, Community and Industry Engagement):* Professor A. Taji, BAgSc(Hons) *Tehran*, GradDipHortSci *Syd.*, PhD Flinders, MDP *Harvard*

*Assistant Dean (Research):* Professor M.N. Sillence, BSc(Hons) CertEd PhD *Leeds*

*Assistant Dean (Teaching and Learning):* Vacant

*Director of Postgraduate Studies:* Vacant

*Faculty Manager:* S.Bee, BSc GradDipAdmin *Griff*, JP(Qual)

### School of Life Sciences

*Head:* Professor A.C. Herington, BSc(Hons) PhD *Monash*

#### Professors:

J.A. Clements, BAppSc MAppSc *RMIT*, PhD *Monash*

C. Nelson, BSc(Hons) PhD *Canberra*

P. Timms, MSc PhD *Qld*, FASM

Z. Upton, BSc(Hons) PhD *Adel*

#### Associate Professors:

J. Aaskov, BSc(Hons) PhD *Leeds*

C.C. Collet, BSc(Hons) PhD *Latrobe*

P. Giffard, BSc(Hons) PhD *Aberdeen*

L.M. Hafner, BSc(Hons) PhD *LaTrobe*

R.M. Harding, BSc(Hons) PhD *Qld*

C.P. Morris, BSc(Hons) PhD *Adel*

F.B. Ross, BSc(Hons) PhD *Qld*

T.P. Walsh, BSc(Hons) PhD *Qld*

### School of Mathematical Sciences

*Head:* Professor A.N. Pettitt, BSc(Hons) MSc PhD *Nott*, FSS, MSSAI

#### Professors:

V.V. Anh, BSc(Hons) PhD *Tas*, MEc *NE*, FAustMS, MSSAI, MIEEE

E. Kozan, BSc MSc *Middle East*, PhD *Hacettepe*, MASOR

H. MacGillivray, BSc(Hons) PhD *Qld*, MSSAI

D.L.S. McElwain, BSc(Hons) *Qld*, PhD *York (Canada)*

K.Mengersen, BA(Hons) PhD *NE*, FRSS, MSSAI, MIMS, MIBS

I.W. Turner, BAppSc (Maths), MAppSc (Maths) *QIT*, PhD *Qld*

*Associate Professor:* G.J. Pettet, BSc BMath BMath(Hons) DipEd PhD *Newcastle*

### School of Natural Resource Sciences

*Head:* Associate Professor D.A. Gust, BA *Lawrence*, MA *Rice*, PhD *ANU*

*Professor:* P.R. Grace, BSc *ANU*, PhD *Qld*

*Associate Professor:* P.B. Mather, BSc(Hons) PhD *Lot*

### School of Physical and Chemical Sciences

*Acting Head:* Dr G. Ayoko, BSc(Hons) *A.Bello*, MSc *A.Bello*, PhD *Sus*, MRACI, CChem, MRSC

#### Professors:

R.L.W. Frost, BEd MSc PhD *Qld*, DSc *QUT*, CChem, FRACI

L. Morawska, MSc(Physics) PhD(Physics) *Jagiellonian*

#### Associate Professors:

D. Arnold, BSc(Hons) PhD *Qld*, DSc *QUT*, CChem, FRACI

S. Bottle, BSc (Hons) *Qld*, PhD *Griff*

B.H. Cornish, DipT BAppSc MAppSc(MedPhys) GradDip-BusAdmin PhD *QUT*, MACPSEM, MAIP

P.M. Fredericks, BSc(Hons) DPhil *Sus*, CChem, FRACI

P. Rowntree, DipAppSc (DiagRad) GradDipEd (Tert) *USQ*,

FIR, AISRRT  
H.Y. Zhu, BSc *Inner Mongolia Univ, China* MSc *Nankai, China* PhD *UIA, Belgium*

## RESEARCH CENTRES

Program Leader: Professor Sean McElwain  
Phone: +61 7 3138 5185

### Research Programs

The Faculty of Science provides an environment within which a variety of programs interact, developing new and innovative collaborations at the interface between disciplines. Our knowledge of nature is expanding at an exponential rate and with this comes opportunities in complex areas requiring multi-disciplinary research teams. The Faculty's research has been structured so as to maintain critical mass within disciplines, while bringing together the expertise from different research programs to tackle a range of complex research problems. The Faculty has a specific focus of four major themes which are: energy, the environment, food production and health .

The Faculty has a broad range of research programs grouped within six clusters which provide and maintain state of the art technology equipment and facilities; importantly, these facilities are shared across the Faculty and are available to all programs giving researchers and research students access to the extensive range of equipment and technologies within the Faculty of Science.

#### *Applied Chemistry*

This cluster brings together expertise in medicinal and forensic chemistry; novel materials and nanotechnology and polymers, to address research problems concerning health, food production and the environment.

Program Leader: Professor Ray Frost  
Phone: +61 7 3138 2407

#### *Applied Physics*

This cluster contains experts in applied optics and nanotechnology; environmental physics and medical physics who contribute to research projects concerning health, energy and the environment.

Program Leader: Professor Christian Langton  
Phone: c/- +61 7 3138 2152 (Faculty of Science office)

#### *Biomedical Science – Cells and Tissues*

This cluster is focussed on health research, specifically in the areas of hormone dependant cancer; infectious diseases and tissue repair and regeneration.

Program Leader: Professor Peter Timms  
Phone: +61 7 3138 6199

#### *Healthy and Sustainable Environments*

This cluster brings together experts on air quality; earth, water and climate systems and ecosystems to address issues that concern both food production and the environment.

Program Leader: Professor Peter Grace  
Phone: +61 7 3138 9283

#### *Plant, Molecular and Industrial Biotechnology*

This program is working in the areas of bio-processing; food production and biosecurity; tropical crops and bio-commodities, with projects that concern energy and food production, health and the environment.

Program Leader: Professor Margaret Britz  
Phone: +61 7 3138 2205

#### *Statistics, Applicable Mathematics & Operations Research*

This program provides expertise in operations research; modelling in health, industry, environment and finance; and statistical and computational methods to support research activities across the Faculty in health, energy, food and environmental research.

## Bachelor of Engineering (Electrical)/ Bachelor of Mathematics (IF21)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 020329J

**Course duration (full-time):** 5 years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$6,712

**International Fees (per semester):** 2008: \$11,184 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 419572

**Past rank cut-off:** 76

**Past OP cut-off:** 12

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging; ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 480

**Standard credit points per full-time semester:** 48

**Course coordinator:** Dr R.Mahalinga-Iyer (Engineering); Associate Professor Graeme Pettet (Mathematics)

**Discipline coordinator:** Dr Ed Palmer (Engineering)

**Campus:** Gardens Point

### Recommended study

Chemistry, Maths C and Physics are recommended.

### Career Opportunities

Electrical and computer engineers design, install and maintain electrical, electronic, telecommunications and computing systems on behalf of government and private companies. A stronger training in mathematics and statistics enhances capabilities in modelling, analysis and design.

### Overview

The program integrates both the engineering and mathematics degree. Mathematics and engineering have always had close connections, but recent advancement in mathematics and statistics are increasingly being used to help solve complex engineering problems.

### Special Course Requirements

A candidate for this course must obtain at least 60 days of industrial experience in an engineering environment approved by the course coordinator.

### Professional Recognition

This degree meets the requirements for membership of Engineers Australia, and the coursework requirements for accredited graduate membership of the Australian Mathematical Society. Students may also become a member of the Statistical Society of Australia.

### Mathematics Bursaries

Students enrolled in this course can apply for industry-sponsored bursaries. These bursaries are awarded to Australian citizens or permanent residents on a competitive basis. Applications should be submitted by 1 December of the year preceding entry to the course. For further information see [www.maths.qut.edu.au](http://www.maths.qut.edu.au)

### Contact Details

#### Electrical Coordinator

Dr Ed Palmer

Email: [bee.enquiries@qut.com](mailto:bee.enquiries@qut.com)

#### Mathematics Coordinator

Associate Professor Graeme Pettet

Phone: +61 7 3138 5238

Email: [g.pettet@qut.edu.au](mailto:g.pettet@qut.edu.au)

### Further information

Phone +61 7 3138 1993, Fax +61 7 3864 1516, email: [bee.enquiries@qut.com](mailto:bee.enquiries@qut.com)

### Deferment

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

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

Find out more on deferment.

### Course structure - For students with four semesters of Senior Mathematics B and Senior Mathematics C

For students with four semesters of both Senior Mathematics B and Senior Mathematics C (or equivalent) with an exit assessment of at least Sound Achievement in both subjects.

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#### Year 1, Semester 1

BEB100	Introducing Professional Learning
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
PCB136	Engineering Physics 1C

#### Year 1, Semester 2

ENB101	Engineering Mechanics 1
ENB103	Electrical Engineering
MAB101	Statistical Data Analysis 1
MAB210	Statistical Modelling 1

#### Year 2, Semester 1

## SCIENCE

ENB240	Introduction To Electronics
ENB246	Engineering Problem Solving
MAB220	Computational Mathematics 1
MAB311	Advanced Calculus

### Electrical.

Please refer to EN40 Electrical Course Structure - Standard Program.

### Course structure - For students with four semesters of Senior Mathematics B (or equivalent) only

#### Year 2, Semester 2

ENB243	Linear Circuits and Systems
ENB244	Microprocessors and Digital Systems
MAB413	Differential Equations Mathematics elective (Level 2 or 3)

For students with four semesters of Senior Mathematics B (or equivalent) only, with an exit assessment of at least Sound Achievement.

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#### Year 3, Semester 1

ENB242	Introduction To Telecommunications
ENB350	Real-time Computer-based Systems
MAB312	Linear Algebra
MAB314	Statistical Modelling 2

#### Year 1, Semester 1

BEB100	Introducing Professional Learning
MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1
PCB136	Engineering Physics 1C

#### Year 3, Semester 2

ENB245	Introduction To Design and Professional Practice
ENB352	Communication Environments For Embedded Systems
MAB420	Computational Mathematics 2
MAB480	Introduction to Scientific Computation OR Computing Elective

#### Year 1, Semester 2

ENB101	Engineering Mechanics 1
ENB103	Electrical Engineering
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C

#### Year 4, Semester 1

ENB301	Instrumentation and Control
ENB340	Power Systems and Machines
ENB342	Signals, Systems and Transforms Mathematics elective (Level 3)

#### Year 2, Semester 1

ENB240	Introduction To Electronics
ENB246	Engineering Problem Solving
MAB220	Computational Mathematics 1
MAB311	Advanced Calculus

#### Year 2, Semester 2

ENB243	Linear Circuits and Systems
ENB244	Microprocessors and Digital Systems
MAB210	Statistical Modelling 1
MAB413	Differential Equations

#### Year 4, Semester 2

ENB345	Advanced Design and Professional Practice
ENB346	Digital Communications
ENB458	Modern Control Systems
MAB414	Applied Statistics 2

#### Year 3, Semester 1

ENB242	Introduction To Telecommunications
ENB350	Real-time Computer-based Systems
MAB312	Linear Algebra
MAB314	Statistical Modelling 2

#### Year 5, Semester 1

BEB701	Work Integrated Learning 1
BEB801	Project 1 Applications Minor Selective Mathematics elective (Level 3)

#### Year 3, Semester 2

ENB245	Introduction To Design and Professional Practice
ENB352	Communication Environments For Embedded Systems
MAB420	Computational Mathematics 2
MAB480	Introduction to Scientific Computation OR Computing Elective

#### Year 5, Semester 2

BEB802	Project 2
ENB344	Industrial Electronics Applications Minor Selective Mathematics elective (Level 3)

#### Year 4, Semester 1

ENB301	Instrumentation and Control
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Applications Minor Selectives - Same as for EN40



ENB340 Power Systems and Machines  
ENB342 Signals, Systems and Transforms  
Mathematics elective (Level 3)

the course.

**Potential Careers:**

Electrical and Computer Engineer, Electrical Engineer, Mathematician, Statistician.

**Year 4, Semester 2**

ENB345 Advanced Design and Professional Practice  
ENB346 Digital Communications  
ENB458 Modern Control Systems  
MAB414 Applied Statistics 2

**Year 5, Semester 1**

BEB701 Work Integrated Learning 1  
BEB801 Project 1  
Applications Minor Selective  
Mathematics elective (Level 3)

**Year 5, Semester 2**

BEB802 Project 2  
ENB344 Industrial Electronics  
Applications Minor Selective  
Mathematics elective (Level 3)

Applications Minor Selectives - Same as for EN40 Electrical.

Please refer to EN40 Electrical Course Structure - Standard Program.

**Mathematics Electives (Level 2)**

MAB422 Mathematical Modelling  
MAB461 Discrete Mathematics

**Mathematics Electives (Level 3)**

Four units required:

MAB521 Applied Mathematics 3  
MAB522 Computational Mathematics 3  
MAB524 Statistical Inference  
MAB533 Statistical Techniques  
MAB536 Time Series Analysis  
MAB613 Partial Differential Equations  
MAB624 Applied Statistics 3  
MAB672 Advanced Mathematical Modelling

**NOTES:**

- For students commencing in 2004 onwards, the units MAB523 Introduction to Quality Management and MAB621 Discrete Mathematics do not contribute to the mandatory 48 credit points minimum from Level 3 Mathematics units. This does not apply to students who commenced prior to 2004.

- Some deviations from the above course structure may be possible with the permission of the course coordinator. This is more likely to apply in the later years than the earlier years of

## Bachelor of Applied Science/Bachelor of Information Technology (FOR CONTINUING STUDENTS ONLY) (IF29)

**Year offered:** 2008

**Admissions:** No

**CRICOS code:** 020327M

**Course duration (full-time):** 4 Years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$6,346

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 419302; Dfee: 419306

**Past rank cut-off:** 72. Dfee places were not offered last year.

**Past OP cut-off:** 13. Dfee places were not offered last year.

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 408 (Note: The minimum course load per semester required for full-time enrolment may be more than 36 credit points)

**Standard credit points per full-time semester:** 48

**Course coordinator:** Dr Megan Hargreaves (Science); Ruth Christie(InfTech)

**Discipline coordinator:** Dr Perry Hartfield (Biochemistry); Dr Marion Bateson (Biotechnology); Dr Robert Johnson (Chemistry); Dr Ian Williamson (Ecology); Dr Robin Thwaites (Environmental Science); Dr Emad Kiriakous (Forensic Science); Dr Gary Huftile (Geoscience); Dr Christine Knox (Microbiology); Dr Greg Michael (Physics)

**Campus:** Gardens Point

### Career Opportunities

The course prepares you for an increasing range of careers that involve the application of information technology to science. As a graduate of the double degree, you are also qualified for employment in the areas of software engineering and data communications.

The Bachelor of Applied Science allows multi-disciplinary programs of study to help position you within the broad range of science disciplines and qualify you as a competent professional within your chosen field.

### Recommended study

At least one of the sciences. For the majors in biochemistry, biotechnology, forensic science and microbiology - Biological Science and Chemistry are recommended; for the major in physics - Maths C is recommended.

### Course Design

The science component of the course offers you a choice of one of the major areas of study available in the Bachelor of Applied Science (SC01) course. To allow you to complete the double degree in a shorter period of time, your co-major will be taken from the information technology program therefore it is not possible to choose any of the co-majors listed under the Bachelor of Applied Science course.

The information technology component gives you the opportunity to undertake a combined major in Data Communications and Software Engineering. Theoretical aspects are balanced by strong practical components in both of the Science and Information Technology degrees.

### Professional Recognition

Graduates will satisfy the requirements for membership in the relevant professional body for their chosen science major. See the Bachelor of Applied Science (SC01) course for details. Graduates are also eligible for membership of the Australian Computer Society (ACS).

### Cooperative Education Program

An optional one-year period of paid work experience in an area of information technology is available to eligible full-time students. The Cooperative Education Program is a joint venture between employers and educators to better prepare students for employment upon graduation. Companies that QUT's Cooperative Education students have worked with include Energex, Boeing, CITEC, Global Banking and Securities Transaction, various Queensland Government departments, Dialog, TABQ, RACQ and Sun Microsystems.

For more information visit [www.fit.qut.edu.au/courses/undergrad/coop/](http://www.fit.qut.edu.au/courses/undergrad/coop/)

### Contact Details

#### Science Coordinator

Dr Megan Hargreaves

Phone: +61 7 3138 2244

Email: [m.hargreaves@qut.edu.au](mailto:m.hargreaves@qut.edu.au)

#### Information Technology Coordinator

Dr Alan Tickle

Phone: +61 7 3138 2782

Email: [fit.enquiry@qut.edu.au](mailto:fit.enquiry@qut.edu.au)

#### Discipline Coordinators

##### Biochemistry

Dr Perry Hartfield

Phone: +61 7 3138 2984

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##### Biotechnology

Dr Marion Bateson

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##### Chemistry

Dr Robert Johnson

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*Ecology*

Dr Ian Williamson  
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*Environmental Science*

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*Forensic Science*

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*Geoscience*

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*Microbiology*

Dr Christine Knox  
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*Physics*

Dr Greg Michael  
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**Deferment**

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

Find out more on deferment.

**Course structure - Major in Biochemistry**

**Year 3, Semester 1**

LSB308 Biochemistry  
LSB338 Cell and Molecular Biology 2  
IT Elective Unit selected from list  
IT Elective Unit selected from list

**Year 3, Semester 2**

LSB408 Metabolism  
LSB468 Molecular Biology  
ITB720 Internet Protocols and Services  
IT Elective Unit selected from list

**Year 4, Semester 1**

LSB508 Advanced Metabolism  
LSB527 Biomedical Research Technologies

ITB009 Core Project Management  
IT Elective Unit selected from list

**Year 4, Semester 2**

LSB607 Protein Purification  
LSB608 Protein Science  
IT Elective Unit selected from list  
IT Elective Unit selected from list

**Course Structure - Major in Biotechnology (Medical Strand)**

**Year 3, Semester 1**

LSB308 Biochemistry  
LSB338 Cell and Molecular Biology 2  
IT Elective Unit selected from list

**Year 3, Semester 2**

LSB468 Molecular Biology  
LSB469 Introduction to Genomics and Bioinformatics  
ITB720 Internet Protocols and Services  
IT Elective Unit selected from list

**Year 4, Semester 1**

LSB537 Genetic Engineering  
LSB509 Medical Biotechnology 1  
ITB009 Core Project Management  
IT Elective Unit selected from list

**Year 4, Semester 2**

LSB609 Medical Biotechnology 2  
LSB619 Genomics and Bioinformatics  
IT Elective Unit selected from list  
IT Elective Unit selected from list

**Course structure - Major in Chemistry**

**Year 3, Semester 1**

PCB334 Inorganic Chemistry  
PCB354 Structure and Mechanism in Organic Chemistry  
IT Elective Unit selected from list

**Year 3, Semester 2**

PCB405 Principles of Physical Chemistry  
PCB444 Spectroscopy  
ITB720 Internet Protocols and Services  
IT Elective Unit selected from list

**Year 4, Semester 1**

PCB505 Advanced Physical Chemistry  
PCB554 Synthesis and Reactivity in Organic Chemistry  
ITB009 Core Project Management

IT Elective Unit selected from list

**Year 4, Semester 2**

PCB634 Organometallic and Coordination Chemistry  
 PCB644 Frontiers in Chemistry  
 IT Elective Unit selected from list  
 IT Elective Unit selected from list

**Course Structure - Major in Ecology**

**Year 3, Semester 1**

NRB301 Earth Surface Systems  
 NRB311 Population Ecology  
 IT Elective Unit selected from List

**Year 3, Semester 2**

NRB410 Genetics and Evolution  
 NRB412 Experimental Design  
 IT Elective Unit selected from List  
 ITB720 Internet Protocols and Services

**Year 4, Semester 1**

NRB510 Population Genetics  
 NRB511 Population Management  
 ITB009 Core Project Management  
 IT Elective Unit selected from List

**Year 4, Semester 2**

NRB610 Ecological Applications  
 NRB611 Conservation Biology  
 IT Elective Unit selected from List  
 IT Elective Unit selected from List

**Course structure - Major in Environmental Science**

**Year 3, Semester 1**

NRB301 Earth Surface Systems  
 NRB311 Population Ecology  
 IT Elective Unit selected from List

**Year 3, Semester 2**

NRB412 Experimental Design  
 NRB440 Environmental Chemistry  
 ITB720 Internet Protocols and Services  
 IT Elective Unit selected from List

**Year 4, Semester 1**

NRB500 Environmental Systems and Modelling  
 NRB601 Field Mapping and Monitoring of Natural Resources  
 ITB009 Core Project Management  
 IT Elective Unit selected from List

**Year 4, Semester 2**

NRB501 Spatial Analysis of Environmental Systems  
 NRB600 Sustainable Environmental Management  
 IT Elective Unit selected from List  
 IT Elective Unit selected from List

**Course structure - Major in Forensic Science**

**Year 3, Semester 1**

LSB468 Molecular Biology  
 SCB384 Forensic Science  
 IT Elective Unit selected from List

**Year 3, Semester 2**

JSB979 Forensic Scientific Evidence  
 PCB414 Industrial and Environmental Analytical Chemistry  
 ITB720 Internet Protocols and Services  
 IT Elective Unit selected from List

**Year 4, Semester 1**

PCB514 Instrumental Analysis  
 PCB584 Forensic Examination of Physical Evidence  
 ITB009 Core Project Management  
 IT Elective Unit selected from List

**Year 4, Semester 2**

LSB684 Forensic DNA Profiling  
 PCB684 Forensic Analysis and Toxicology  
 IT Elective Unit selected from List  
 IT Elective Unit selected from List

**Course structure - Major in Geoscience**

**Year 3, Semester 1**

NRB331 Sedimentary Geology  
 NRB333 Mineralogy  
 IT Elective Unit selected from List

**Year 3, Semester 2**

NRB434 Structural Geology  
 NRB436 Introduction to Igneous and Metamorphic Petrology  
 ITB720 Internet Protocols and Services  
 IT Elective Unit selected from list

**Year 4, Semester 1**

ITB009 Core Project Management  
 IT Elective Unit selected from list  
 NRB534 Geophysics  
 NRB536 Petrology and Geochemistry  
 NRB601 Field Mapping and Monitoring of Natural Resources

## SCIENCE

### Year 4, Semester 2

IT Elective Unit selected from list  
IT Elective Unit selected from list  
One unit selected from:

NRB633 Hydrogeology  
NRB635 Plate Tectonics and Advanced Structural Geology

### Course structure - Major in Microbiology

### Year 3, Semester 1

LSB308 Biochemistry  
LSB328 Microbiology 1  
IT Elective Unit selected from List

### Year 3, Semester 2

ITB720 Internet Protocols and Services  
IT Elective Unit selected from List  
LSB428 Microbiology 2  
LSB468 Molecular Biology

### Year 4, Semester 1

ITB009 Core Project Management  
IT Elective Unit selected from List  
Two units from  
LSB528 Environmental Microbiology  
LSB547 Bacterial Pathogenesis and Disease Diagnosis  
LSB568 Electron Microscopy  
LSB578 Virology

### Year 4, Semester 2

IT Elective Unit selected from List  
IT Elective Unit selected from List  
Two units from:

LSB628 Food Microbiology  
LSB647 Clinical Mycology and Parasitology  
LSB648 Molecular Microbiology

### Course structure - Major in Physics

### Year 3, Semester 1

PCB361 AC Theory and Electronics  
PCB362 Physics 2  
IT Elective Unit selected from List

### Year 3, Semester 2

ITB720 Internet Protocols and Services  
IT Elective Unit selected from List  
PCB460 Instrumentation and Computational Methods  
PCB462 Thermodynamics and Solid State Physics

### Year 4, Semester 1

PCB561 Quantum and Condensed Matter Physics  
PCB562 Physical Methods of Analysis  
ITB009 Core Project Management  
IT Elective Unit selected from list

### Year 4, Semester 2

PCB661 Experimental Physics  
PCB665 Physics 3  
IT Elective Unit selected from List  
IT Elective Unit selected from List

### IT Elective Unit List

#### Information Technology Elective Unit List

ITB001 Problem Solving and Programming  
ITB002 IT Professional Studies  
ITB003 Object Oriented Programming  
ITB004 Database Systems  
ITB005 Systems Architecture  
ITB006 Networks  
ITB007 Web Development  
ITB008 Modelling Analysis and Design  
ITB009 Core Project Management  
ITB010 Core Project Implementation  
ITB011 CCNA 1 & 2: Network Fundamentals and Routing Protocols  
ITB012 CCNA 3&4: LAN SWITCHING/WIRELESS AND ACCESSING THE WAN  
ITB016 Fundamentals of Games Design  
ITB017 Advanced Games Design  
ITB218 Applications Programming  
ITB223 Software Development with ORACLE  
ITB228 Enterprise Systems  
ITB229 Database Design  
ITB230 Project  
ITB233 Enterprise Systems Applications  
ITB239 Enterprise Data Mining  
ITB254 Interaction Design  
ITB257 Multimedia Systems  
ITB259 Advanced Multimedia Systems  
ITB260 E-Commerce Site Development  
ITB264 Information Systems Consulting  
ITB266 Information Management  
ITB298 Business Process Modelling  
ITB322 Information Resources  
ITB360 Corporate Systems  
ITB361 Socio-technical Systems  
ITB362 Organisational Databases  
ITB363 Project Management Practice

ITB364	Information Systems Development	Systems Analyst, Virologist.
ITB365	Business Analysis	
ITB366	Information Systems Operations	
ITB370	Project	
ITB705	Intelligent Systems	
ITB702	Algorithms and Data Structures	
ITB706	Systems Programming	
ITB712	Software Engineering Studies	
ITB713	Advanced Java Programming	
ITB716	Advanced Web Applications Development	
ITB717	Enterprise Software Architecture	
ITB720	Internet Protocols and Services	
ITB721	Unix Network Administration	
ITB722	Network Planning and Deployment	
ITB730	Information Security Fundamentals	
	ITB731 is offered bi-annually and will be available for 2009	
ITB723	Wireless and Mobile Networks	
ITB731	Security Technologies	
ITB746	Modelling and Animation Techniques	
ITB747	Real Time Rendering Techniques	
ITB732	Cryptology and Protocols	
ITB749	Scientific Programming	
ITB750	Computer Game Studies	
ITB751	Games Production	
	ITB761/2/3/4/5 Please check with the relevant coordinator for further information on Special Topics.	
	ITB762 Special Topic in 1/2008 is to be used for CCNA 1 & 2: Internetworking and Routing Basics	
ITB761	Special Topic 1	
ITB762	CCNA 1 & 2: INTERNETWORKING AND ROUTING BASICS	
ITB763	Special Topic 3	
ITB764	Special Topic 4	
ITB765	Special Topic 5	
ITB847	Computational Intelligence for Control and Embedded Systems	
MAB281	Mathematics for Computer Graphics	

**Potential Careers:**

Analytical Chemist, Astrophysicist, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Data Communications Specialist, Economist, Environmental Scientist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Medical Biotechnologist, Medical Physicist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Network Administrator, Network Manager, Physicist, Plant Biotechnologist, Population Ecologist, Software Engineer,

## Bachelor of Applied Science/Bachelor of Laws (IF39)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 012661G

**Course duration (full-time):** 5 Years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,703

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 419712

**Past rank cut-off:** 90

**Past OP cut-off:** 6

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 528 (Note: The minimum course load per semester required for full-time enrolment may be more than 36 credit points)

**Standard credit points per full-time semester:** 60 (years 1 and 4), 48 (years 2, 3 and 5)

**Course coordinator:** Dr Megan Hargreaves (Science); Dr. William Dixon Director, Undergraduate Programs (Law)

**Discipline coordinator:** Dr Perry Hartfield (Biochemistry); Dr Marion Bateson (Biotechnology); Dr Robert Johnson (Chemistry); Dr Ian Williamson (Ecology); Dr Robin Thwaites (Environmental Science); Dr Emad Kiriakous (Forensic Science); Dr Gary Huftile (Geoscience); Dr Scott McCue (Mathematics); Dr Christine Knox (Microbiology); Dr Greg Michael (Physics)

**Campus:** Gardens Point

### Career Opportunities

As a graduate, you may enter legal practice with an education in both the content and process of science and data analysis that will enable you to deal with the complexities of litigation that have a scientific and technological dimension, such as inventions, trade secrets, quantitative evidence, and constitutional disputes giving rise to environmental issues. On the other hand, you may choose to follow a career path in the sciences, enhancing your opportunities in a particular discipline such as environmental science or biotechnology through your knowledge of the law.

### OP Guarantee

The OP Guarantee does not apply to this course.

### Course Design

The course is designed to cover all major areas of the law as well as allowing students to choose any one of the science majors that are offered in the Bachelor of Applied

Science (SC01) course.

To complete the double degree in a shorter period of time, the co-major will be taken from the law program therefore it is not possible for students to choose any of the co-majors listed under the Bachelor of Applied Science course.

### Professional Recognition

Graduates will satisfy the requirements of membership in the relevant professional body for their chosen science major. See the Bachelor of Applied Science (SC01) course for details. The Bachelor of Laws component covers the areas of law required for admission as a legal practitioner and/or barrister in all Australian states and territories.

### Contact Details

#### Science Coordinator

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#### Law Coordinator

Ms Sheryl Jackson

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### Discipline Coordinators

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## SCIENCE

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### Physics

Dr Greg Michael  
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### Deferment

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

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

Find out more on deferment.

### Course structure - Major in Biochemistry

#### Year 1, Semester 1

	Introduction to Legal Research #
LWB141	Legal Institutions and Method
LWB142	Law, Society and Justice
SCB111	Chemistry 1
SCB112	Cellular Basis of Life Either
MAB101	Statistical Data Analysis 1 Or
MAB104	Introductory Quantitative Methods

#### Year 1, Semester 2

LWB143	Legal Research and Writing
LWB144	Laws and Global Perspectives
SCB120	Plant and Animal Physiology
SCB121	Chemistry 2
SCB122	Cell and Molecular Biology

#### Year 2, Semester 1

LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulation
LQB386	Microbial Structure and Function
LWB136	Contracts A

#### Year 2, Semester 2

LQB481	Biochemical Pathways and Metabolism
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LQB483	Molecular Biology Techniques
LWB137	Contracts B Either
LQB484	Introduction to Genomics and Bioinformatics Or
LQB486	Clinical Microbiology 1

#### Year 3, Semester 1

LQB581	Functional Biochemistry
LQB582	Biomedical Research Technologies
LWB138	Fundamentals of Torts
LWB238	Fundamentals of Criminal Law

#### Year 3, Semester 2

LQB681	Biochemical Research Skills
LQB682	Protein Biochemistry and Bioengineering
LWB139	Select Issues in Torts
LWB239	Criminal Responsibility

#### Year 4, Semester 1

LWB231	Introduction to Public Law
LWB236	Real Property A
LWB240	Principles of Equity
LWB332	Commercial and Personal Property Law
LWB333	Theories of Law

#### Year 4, Semester 2

LWB235	Australian Federal Constitutional Law
LWB237	Real Property B
LWB241	Trusts
LWB331	Administrative Law
LWB334	Corporate Law

#### Year 5, Semester 1

LWB431	Civil Procedure
LWB432	Evidence
LWB434	Advanced Research and Legal Reasoning Law Elective Units *

#### Year 5, Semester 2

LWB433	Professional Responsibility Elective Units *
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### Course structure - Major in Biotechnology

#### Year 1, Semester 1

	Introduction to Legal Research #
LWB141	Legal Institutions and Method
LWB142	Law, Society and Justice
SCB111	Chemistry 1
SCB112	Cellular Basis of Life



## SCIENCE

	Either
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

### Year 1, Semester 2

LWB143	Legal Research and Writing
LWB144	Laws and Global Perspectives
SCB120	Plant and Animal Physiology
SCB121	Chemistry 2
SCB122	Cell and Molecular Biology

### Year 2, Semester 1

LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulation
LQB386	Microbial Structure and Function
LWB136	Contracts A

### Year 2, Semester 2

LQB483	Molecular Biology Techniques
LQB484	Introduction to Genomics and Bioinformatics
LWB137	Contracts B
	Either:
LQB481	Biochemical Pathways
	Or
LQB486	Clinical Microbiology 1

### Year 3, Semester 1

LWB138	Fundamentals of Torts
LWB238	Fundamentals of Criminal Law
	Select TWO units from:
LQB583	Genetic Research Technology
LQB584	Medical Cell Biology
LQB585	Plant Genetic Manipulation

### Year 3, Semester 2

LWB139	Select Issues in Torts
LWB239	Criminal Responsibility
	Select TWO units from:
LQB682	Protein Biochemistry and Bioengineering
LQB684	Medical Biotechnology
LQB685	Plant Microbe Interactions

### Year 4, Semester 1

LWB231	Introduction to Public Law
LWB236	Real Property A
LWB240	Principles of Equity
LWB332	Commercial and Personal Property Law
LWB333	Theories of Law

### Year 4, Semester 2

LWB235	Australian Federal Constitutional Law
LWB237	Real Property B
LWB241	Trusts
LWB331	Administrative Law
LWB334	Corporate Law

### Year 5, Semester 1

LWB431	Civil Procedure
LWB432	Evidence
LWB434	Advanced Research and Legal Reasoning
	Elective Units *

### Year 5, Semester 2

LWB433	Professional Responsibility
	Elective Units *

## Course structure - Major in Chemistry

### Year 1, Semester 1

	Introduction to Legal Research #
LWB141	Legal Institutions and Method
LWB142	Law, Society and Justice
SCB111	Chemistry 1
SCB112	Cellular Basis of Life
	Either
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

### Year 1, Semester 2

LWB143	Legal Research and Writing
LWB144	Laws and Global Perspectives
MAB100	Mathematical Sciences 1A
SCB121	Chemistry 2
SCB131	Experimental Chemistry

### Year 2, Semester 1

LWB136	Contracts A
PQB312	Analytical Chemistry for Scientists and Technologists
PQB313	Analytical Chemistry for Industry
PQB331	Structure and Bonding

### Year 2, Semester 2

LWB137	Contracts B
PQB401	Chemical Reactions 1
PQB442	Chemical Spectroscopy
	Either
PQB404	Nanotechnology and Nanoscience
	Or
PQB423	Process Principles

## SCIENCE

### Year 3, Semester 1

LWB138	Fundamentals of Torts
LWB238	Fundamentals of Criminal Law
PQB502	Materials Chemistry and Characterisation
PQB531	Chemical Reactions 2

### Year 3, Semester 2

LWB139	Select Issues in Torts
LWB239	Criminal Responsibility
PQB631	Applied Molecular Science
PQB642	Chemical Research

### Year 4, Semester 1

LWB231	Introduction to Public Law
LWB236	Real Property A
LWB240	Principles of Equity
LWB332	Commercial and Personal Property Law
LWB333	Theories of Law

### Year 4, Semester 2

LWB235	Australian Federal Constitutional Law
LWB237	Real Property B
LWB241	Trusts
LWB331	Administrative Law
LWB334	Corporate Law

### Year 5, Semester 1

LWB431	Civil Procedure
LWB432	Evidence
LWB434	Advanced Research and Legal Reasoning
	Elective Units *

### Year 5, Semester 2

LWB433	Professional Responsibility
	Elective Units *

### Course structure - Major in Ecology

#### Year 1, Semester 1

	Introduction to Legal Research #
LWB141	Legal Institutions and Method
LWB142	Law, Society and Justice
SCB111	Chemistry 1
SCB112	Cellular Basis of Life
	Either
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

#### Year 1, Semester 2

LWB143	Legal Research and Writing
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LWB144	Laws and Global Perspectives
NQB201	Planet Earth
NQB202	History of Life on Earth
SCB120	Plant and Animal Physiology

#### Year 2, Semester 1

LWB136	Contracts A
NQB301	Soils and Sedimentation
NQB321	Ecology
	Either
NQB322	Invertebrate Biology
	Or
NQB323	Vertebrate Biology

#### Year 2, Semester 2

LWB137	Contracts B
NQB421	Experimental Design
NQB422	Genetics and Evolution
	Either
NQB401	Spatial Analysis of Environmental Systems
	Or
NQB423	Plant Biology

#### Year 3, Semester 1

LWB138	Fundamentals of Torts
LWB238	Fundamentals of Criminal Law
NQB502	Field Mapping and Monitoring of Natural Resources
NQB521	Population Genetics and Molecular Ecology

#### Year 3, Semester 2

LWB139	Select Issues in Torts
LWB239	Criminal Responsibility
NQB621	Population Management
NQB622	Population Genetics

#### Year 4, Semester 1

LWB231	Introduction to Public Law
LWB236	Real Property A
LWB240	Principles of Equity
LWB332	Commercial and Personal Property Law
LWB333	Theories of Law

#### Year 4, Semester 2

LWB235	Australian Federal Constitutional Law
LWB237	Real Property B
LWB241	Trusts
LWB331	Administrative Law
LWB334	Corporate Law

#### Year 5, Semester 1

## SCIENCE

LWB431	Civil Procedure
LWB432	Evidence
LWB434	Advanced Research and Legal Reasoning Elective Units *

### Year 5, Semester 2

LWB433	Professional Responsibility Elective Units *
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### Course structure - Major in Environmental Science

#### Year 1, Semester 1

	Introduction to Legal Research #
LWB141	Legal Institutions and Method
LWB142	Law, Society and Justice
SCB111	Chemistry 1
SCB112	Cellular Basis of Life Either
MAB101	Statistical Data Analysis 1 Or
MAB104	Introductory Quantitative Methods

#### Year 1, Semester 2

LWB143	Legal Research and Writing
LWB144	Laws and Global Perspectives
NQB202	History of Life on Earth
SCB120	Plant and Animal Physiology
SCB121	Chemistry 2

#### Year 2, Semester 1

LWB136	Contracts A
NQB301	Soils and Sedimentation
NQB321	Ecology Either
NQB322	Invertebrate Biology Or
NQB323	Vertebrate Biology

#### Year 2, Semester 2

LWB137	Contracts B
NQB401	Spatial Analysis of Environmental Systems
NQB421	Experimental Design Either
NQB422	Genetics and Evolution Or
NQB423	Plant Biology

#### Year 3, Semester 1

LWB138	Fundamentals of Torts
LWB238	Fundamentals of Criminal Law
NQB501	Environmental Modelling

NQB502	Field Mapping and Monitoring of Natural Resources
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### Year 3, Semester 2

LWB139	Select Issues in Torts
LWB239	Criminal Responsibility
NQB601	Sustainable Environmental Management
NQB602	Environmental Chemistry

### Year 4, Semester 1

LWB231	Introduction to Public Law
LWB236	Real Property A
LWB240	Principles of Equity
LWB332	Commercial and Personal Property Law
LWB333	Theories of Law

### Year 4, Semester 2

LWB235	Australian Federal Constitutional Law
LWB237	Real Property B
LWB241	Trusts
LWB331	Administrative Law
LWB334	Corporate Law

### Year 5, Semester 1

LWB431	Civil Procedure
LWB432	Evidence
LWB434	Advanced Research and Legal Reasoning Elective Units *

### Year 5, Semester 2

LWB433	Professional Responsibility Elective Units *
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### Course structure - Major in Forensic Science

#### Year 1, Semester 1

	Introduction to Legal Research
LWB141	Legal Institutions and Method
LWB142	Law, Society and Justice
SCB111	Chemistry 1
SCB112	Cellular Basis of Life Either
MAB101	Statistical Data Analysis 1 Or
MAB104	Introductory Quantitative Methods

#### Year 1, Semester 2

LWB143	Legal Research and Writing
LWB144	Laws and Global Perspectives
SCB121	Chemistry 2
SCB122	Cell and Molecular Biology
SCB131	Experimental Chemistry

**Year 2, Semester 1**

LQB383 Molecular and Cellular Regulation  
 LWB136 Contracts A  
 PQB331 Structure and Bonding  
 SCB384 Crime Scene and Forensic Science

**Year 2, Semester 2**

JSB979 Forensic Scientific Evidence  
 LWB137 Contracts B  
 PQB312 Analytical Chemistry for Scientists and Technologists  
 PQB401 Chemical Reactions 1

**Year 3, Semester 1**

LWB138 Fundamentals of Torts  
 LWB238 Fundamentals of Criminal Law  
 PQB513 Instrumental Analysis  
 PQB584 Forensic Physical Evidence

**Year 3, Semester 2**

LWB139 Select Issues in Torts  
 LWB239 Criminal Responsibility  
 Either  
 LQB680 Forensic DNA Profiling  
 Or  
 PQB684 Forensic Analysis

**Year 4, Semester 1**

LWB231 Introduction to Public Law  
 LWB236 Real Property A  
 LWB240 Principles of Equity  
 LWB332 Commercial and Personal Property Law  
 LWB333 Theories of Law

**Year 4, Semester 2**

LWB235 Australian Federal Constitutional Law  
 LWB237 Real Property B  
 LWB241 Trusts  
 LWB331 Administrative Law  
 LWB334 Corporate Law

**Year 5, Semester 1**

LWB431 Civil Procedure  
 LWB432 Evidence  
 LWB434 Advanced Research and Legal Reasoning  
 Elective Units

**Year 5, Semester 2**

LWB433 Professional Responsibility  
 Elective Units

**Course structure - Major in Geoscience**

**Year 1, Semester 1**

Introduction to Legal Research #  
 LWB141 Legal Institutions and Method  
 LWB142 Law, Society and Justice  
 SCB110 Science Concepts and Global Systems  
 SCB111 Chemistry 1  
 Either  
 MAB101 Statistical Data Analysis 1  
 Or  
 MAB104 Introductory Quantitative Methods

**Year 1, Semester 2**

LWB143 Legal Research and Writing  
 LWB144 Laws and Global Perspectives  
 NQB201 Planet Earth  
 NQB202 History of Life on Earth  
 SCB222 Exploration of the Universe

**Year 2, Semester 1**

LWB136 Contracts A  
 NQB301 Soils and Sedimentation  
 NQB311 Mineralogy  
 NQB321 Ecology

**Year 2, Semester 2**

LWB137 Contracts B  
 NQB401 Spatial Analysis of Environmental Systems  
 NQB411 Petrology  
 NQB412 Structural Geology and Field Methods

**Year 3, Semester 1**

LWB138 Fundamentals of Torts  
 LWB238 Fundamentals of Criminal Law  
 NQB512 Stratigraphy  
 NQB513 Geophysics

**Year 3, Semester 2**

LWB139 Select Issues in Torts  
 LWB239 Criminal Responsibility  
 NQB602 Environmental Chemistry  
 NQB614 Hydrogeology

**Year 4, Semester 1**

LWB231 Introduction to Public Law  
 LWB236 Real Property A  
 LWB240 Principles of Equity  
 LWB332 Commercial and Personal Property Law  
 LWB333 Theories of Law

**Year 4, Semester 2**

## SCIENCE

LWB235	Australian Federal Constitutional Law
LWB237	Real Property B
LWB241	Trusts
LWB331	Administrative Law
LWB334	Corporate Law

### Year 5, Semester 1

LWB431	Civil Procedure
LWB432	Evidence
LWB434	Advanced Research and Legal Reasoning Elective Units *

### Year 5, Semester 2

LWB433	Professional Responsibility Elective Units *
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### Course structure - Major in Mathematics [WITH Mathematics C from Senior]

#### Year 1, Semester 1

	Introduction to Legal Research #
LWB141	Legal Institutions and Method
LWB142	Law, Society and Justice
MAB101	Statistical Data Analysis 1
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C

#### Year 1, Semester 2

LWB143	Legal Research and Writing
LWB144	Laws and Global Perspectives
MAB210	Statistical Modelling 1
MAB220	Computational Mathematics 1
	One Science unit - selected from:
SCB111	Chemistry 1
SCB112	Cellular Basis of Life
SCB123	Physical Science Applications

#### Year 2, Semester 1

LWB136	Contracts A
	One Science unit - selected from:
SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1
SCB112	Cellular Basis of Life
	Two Level 2 Mathematics units* - available units are:
MAB311	Advanced Calculus
MAB312	Linear Algebra
MAB314	Statistical Modelling 2
MAB315	Operations Research 2
*	Students must complete at least one of MAB311, MAB312, MAB413

#### Year 2, Semester 2

LWB137	Contracts B
	Three Level 2 Mathematics units* - available units are:
MAB313	Mathematics of Finance
MAB413	Differential Equations
MAB414	Applied Statistics 2
MAB420	Computational Mathematics 2
MAB480	Introduction to Scientific Computation
*	Students must complete at least one of MAB311, MAB312, MAB413

#### Year 3, Semester 1

LWB138	Fundamentals of Torts
LWB238	Fundamentals of Criminal Law
	Two Level 3 Mathematics units - available units are:
MAB521	Applied Mathematics 3
MAB522	Computational Mathematics 3
MAB523	Introduction to Quality Management
MAB525	Operations Research 3A
MAB526	Statistical Science 3
MAB672	Advanced Mathematical Modelling

#### Year 3, Semester 2

LWB139	Select Issues in Torts
LWB239	Criminal Responsibility
	Two Level 3 Mathematics units - available units are:
MAB524	Statistical Inference
MAB613	Partial Differential Equations
MAB621	Discrete Mathematics
MAB623	Financial Mathematics
MAB624	Applied Statistics 3
MAB625	Operations Research 3B

#### Year 4, Semester 1

LWB231	Introduction to Public Law
LWB236	Real Property A
LWB240	Principles of Equity
LWB332	Commercial and Personal Property Law
LWB333	Theories of Law

#### Year 4, Semester 2

LWB235	Australian Federal Constitutional Law
LWB237	Real Property B
LWB241	Trusts
LWB331	Administrative Law
LWB334	Corporate Law

#### Year 5, Semester 1

## SCIENCE

LWB431	Civil Procedure
LWB432	Evidence
LWB434	Advanced Research and Legal Reasoning Elective Units *

### Year 5, Semester 2

LWB433	Professional Responsibility Elective Units *
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### Course structure - Major in Mathematics [WITHOUT Mathematics C from Senior]

#### Year 1, Semester 1

	Introduction to Legal Research #
LWB141	Legal Institutions and Method
LWB142	Law, Society and Justice
MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1
SCB110	Science Concepts and Global Systems

#### Year 1, Semester 2

LWB143	Legal Research and Writing
LWB144	Laws and Global Perspectives
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
MAB210	Statistical Modelling 1

#### Year 2, Semester 1

LWB136	Contracts A
MAB220	Computational Mathematics 1 Two Level 2 Mathematics units* - available units are:
MAB311	Advanced Calculus
MAB312	Linear Algebra
MAB314	Statistical Modelling 2
MAB315	Operations Research 2
*	Students must complete at least one of MAB311, MAB312, MAB413

#### Year 2, Semester 2

LWB137	Contracts B Three Level 2 Mathematics units* - available units are:
MAB313	Mathematics of Finance
MAB413	Differential Equations
MAB414	Applied Statistics 2
MAB420	Computational Mathematics 2
MAB480	Introduction to Scientific Computation
*	Students must complete at least one of MAB311, MAB312, MAB413

#### Year 3, Semester 1

LWB138	Fundamentals of Torts
LWB238	Fundamentals of Criminal Law Two Level 3 Mathematics units - available units are:
MAB521	Applied Mathematics 3
MAB522	Computational Mathematics 3
MAB523	Introduction to Quality Management
MAB525	Operations Research 3A
MAB526	Statistical Science 3
MAB672	Advanced Mathematical Modelling

#### Year 3, Semester 2

LWB139	Select Issues in Torts
LWB239	Criminal Responsibility Two Level 3 Mathematics units - available units are:
MAB524	Statistical Inference
MAB613	Partial Differential Equations
MAB621	Discrete Mathematics
MAB623	Financial Mathematics
MAB624	Applied Statistics 3
MAB625	Operations Research 3B

#### Year 4, Semester 1

LWB231	Introduction to Public Law
LWB236	Real Property A
LWB240	Principles of Equity
LWB332	Commercial and Personal Property Law
LWB333	Theories of Law

#### Year 4, Semester 2

LWB235	Australian Federal Constitutional Law
LWB237	Real Property B
LWB241	Trusts
LWB331	Administrative Law
LWB334	Corporate Law

#### Year 5, Semester 1

LWB431	Civil Procedure
LWB432	Evidence
LWB434	Advanced Research and Legal Reasoning Elective Units *

#### Year 5, Semester 2

LWB433	Professional Responsibility Elective Units *
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### Course structure - Major in Microbiology

#### Year 1, Semester 1

Introduction to Legal Research #

## SCIENCE

LWB141	Legal Institutions and Method
LWB142	Law, Society and Justice
SCB111	Chemistry 1
SCB112	Cellular Basis of Life Either
MAB101	Statistical Data Analysis 1 Or
MAB104	Introductory Quantitative Methods

### Year 1, Semester 2

LWB143	Legal Research and Writing
LWB144	Laws and Global Perspectives
SCB120	Plant and Animal Physiology
SCB121	Chemistry 2
SCB122	Cell and Molecular Biology

### Year 2, Semester 1

LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulation
LQB386	Microbial Structure and Function
LWB136	Contracts A

### Year 2, Semester 2

LQB483	Molecular Biology Techniques
LQB486	Clinical Microbiology 1
LWB137	Contracts B Either
LQB481	Biochemical Pathways and Metabolism Or
LQB484	Introduction to Genomics and Bioinformatics

### Year 3, Semester 1

LWB138	Fundamentals of Torts
LWB238	Fundamentals of Criminal Law
LQB586	Clinical Microbiology 2
LQB587	Applied Microbiology 1: Water, Air and Soil

### Year 3, Semester 2

LWB139	Select Issues in Torts
LWB239	Criminal Responsibility Either
LQB686	Microbial Technology and Immunology Or
LQB687	Applied Microbiology 2: Food and Quality Assurance

### Year 4, Semester 1

LWB231	Introduction to Public Law
LWB236	Real Property A
LWB240	Principles of Equity
LWB332	Commercial and Personal Property Law

LWB333	Theories of Law
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### Year 4, Semester 2

LWB235	Australian Federal Constitutional Law
LWB237	Real Property B
LWB241	Trusts
LWB331	Administrative Law
LWB334	Corporate Law

### Year 5, Semester 1

LWB431	Civil Procedure
LWB432	Evidence
LWB434	Advanced Research and Legal Reasoning Elective Units *

### Year 5, Semester 2

LWB433	Professional Responsibility Elective Units *
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## Course structure - Major in Physics

### Year 1, Semester 1

	Introduction to Legal Research #
LWB141	Legal Institutions and Method
LWB142	Law, Society and Justice
SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1 Either
MAB100	Mathematical Sciences 1A Or
MAB111	Mathematical Sciences 1B

### Year 1, Semester 2

LWB143	Legal Research and Writing
LWB144	Laws and Global Perspectives
MAB112	Mathematical Sciences 1C
PQB250	Mechanics and Electromagnetism
PQB251	Waves and Optics

### Year 2, Semester 1

LWB136	Contracts A
MAB311	Advanced Calculus
PQB350	Thermodynamics of Solids and Gases
PQB360	Global Energy Balance and Climate Change

### Year 2, Semester 2

LWB137	Contracts B
PQB450	Energy Fields and Radiation
PQB451	Electronics and Instrumentation Either
MMB451	Energy Management

Or

PQB460 Astrophysics 1

**Year 3, Semester 1**

LWB138 Fundamentals of Torts

LWB238 Fundamentals of Criminal Law

PQB550 Quantum and Condensed Matter Physics

PQB551 Physical Analytical Techniques

**Year 3, Semester 2**

LWB139 Select Issues in Torts

LWB239 Criminal Responsibility

PQB650 Advanced Theoretical Physics

PQB651 Experimental Physics

**Year 4, Semester 1**

LWB231 Introduction to Public Law

LWB236 Real Property A

LWB240 Principles of Equity

LWB332 Commercial and Personal Property Law

LWB333 Theories of Law

**Year 4, Semester 2**

LWB235 Australian Federal Constitutional Law

LWB237 Real Property B

LWB241 Trusts

LWB331 Administrative Law

LWB334 Corporate Law

**Year 5, Semester 1**

LWB431 Civil Procedure

LWB432 Evidence

LWB434 Advanced Research and Legal Reasoning

Elective Units \*

**Year 5, Semester 2**

LWB433 Professional Responsibility

Elective Units \*

**Potential Careers:**

Actuary, Analytical Chemist, Astrophysicist, Barrister, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Crown Law Officer, Ecologist, Environmental Scientist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, In-House Lawyer, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Mathematician, Medical Biotechnologist, Medical Physicist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Physicist, Plant Biotechnologist, Population Ecologist, Programmer, Quantitative Analyst, Social Scientist, Solicitor, Statistician, Virologist.

**Footnotes for Law Units**

# Introduction to Legal Research is a two (2) hour lecture conducted in the first week only of Semester 1, 2004. It is designed to introduce students to the basics of legal research and provide an orientation to use of the Law Library. Students will be expected to undertake a library exercise in LWB141 Legal Institutions and Method using the skills and information outlined in this lecture.

\* Law Elective Units - In order to satisfy the requirements for the Bachelor of Laws component of the double degree, a student is required to complete a total of 48 credit points of elective units.



## Doctor of Philosophy (Mathematics) (IF49)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 012650M

**Course duration (full-time):** 30 to 48 months with an honours degree; 24 to 48 months with a masters degree

**Course duration (part-time):** 42 to 96 months with an honours degree; 36 to 96 months with a masters degree

**Domestic fees (per credit point):** RTS/RTA: 2008 Full fee tuition \$135 per credit point (exceeded max. entitlement) *(subject to annual review)*

**Domestic fees (indicative):** 2008: \$12,960 (exceeded max. entitlements)

**International Fees (per semester):** 2008: \$11,184 per semester *(subject to annual review)*

**International Entry:** At any time

**Course coordinator:** Associate Professor Peter Mather

**Discipline coordinator:** Professor Vo Anh

**Campus:** Gardens Point

Email: v.anh@qut.edu.au

### Potential Careers:

Actuary, Data Communications Specialist, Mathematician, Statistician.

### Overview

The Doctor of Philosophy in science will suit graduates with an honours or masters degree who wish to seek highly-paid employment prospects in industry and research organisations and universities.

### Entry requirements

Candidates must have a relevant first-class or second-class division A (upper division) honours degree or an appropriate masters degree.

### Course Description

When enrolling in the doctoral program, students can undertake an approved project in any field of interest supported by a research area within the Faculty of Science (outlined in the Faculty Prospectus).

Please note that these areas of research specialisation are given as a guide only. Staff are happy to discuss these and any related topics. Please contact the program leader of the relevant research area for further information.

Students can undertake the course either full-time or part-time. If studying full-time with an appropriate honours degree, students can expect to complete their Doctor of Philosophy degree in three-and-a-half-years. Full details of the course structure are outlined in the following website: <http://www.research.qut.edu.au/restdncen/>

### Contact Details

#### Course Coordinator

Associate Professor Peter Mather

Phone: +61 7 3138 1737

Email: p.mather@qut.edu.au

#### Discipline Coordinator:

#### Mathematics

Professor Vo Anh

Phone: +61 7 3138 5195

**Doctor of Philosophy (Science) (IF49)****Year offered:** 2008**Admissions:** Yes**CRICOS code:** 006381M**Course duration (full-time):** 30 to 48 months with an honours degree; 24 to 48 months with a masters degree**Course duration (part-time):** 42 to 96 months with an honours degree; 36 to 96 months with a masters degree**Domestic fees (per credit point):** RTS/RTA: 2008 Full fee tuition \$135 per credit point (exceeded max. entitlement) (*subject to annual review*)**Domestic fees (indicative):** 2008: \$12,960 (exceeded max. entitlements)**International Fees (per semester):** 2008: \$11,184 per semester (*subject to annual review*)**International Entry:** At any time**Course coordinator:** Associate Professor Peter Mather**Discipline coordinator:** Dr Geoff Will (Chemistry); Associate Professor Terry Walsh & Professor Judith Clements (Life Sciences); Associate Professor Peter Mather (Natural Resource Sciences); Dr Andrew Fielding (Physics)**Campus:** Gardens Point**Overview**

The Doctor of Philosophy in science will suit graduates with an honours or masters degree who wish to seek highly-paid employment prospects in industry and research organisations and universities.

**Entry requirements**

Candidates must have a relevant first-class or second-class division A (upper division) honours degree or an appropriate masters degree.

**Course Description**

When enrolling in the doctoral program, students can undertake an approved project in any field of interest supported by a research area within the Faculty of Science (outlined on pages 16-21 of the Faculty Prospectus).

Please note that these areas of research specialisation are given as a guide only. Staff are happy to discuss these and any related topics. Please contact the program leader of the relevant research area for further information.

Students can undertake the course either full-time or part-time. If studying full-time with an appropriate honours degree, students can expect to complete their Doctor of Philosophy degree in three-and-a-half years. Full details of the course structure are outlined in the following website: <http://www.research.qut.edu.au/restdncen/>

**Contact Details****Course Coordinator**

Associate Professor Peter Mather

Phone: +61 7 3138 1737

Email: p.mather@qut.edu.au

**Discipline Coordinators:****Chemistry**

Dr Geoff Will

Phone: +61 7 3138 2297

Email: g.will@qut.edu.au

**Life Sciences**

Associate Professor Terry Walsh

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Email: t.walsh@qut.edu.au

Professor Judith Clements

Phone: +61 7 3138 6198

Email: j.clements@qut.edu.au

**Natural Resource Sciences**

Associate Professor Peter Mather

Phone: +61 7 3138 1737

Email: p.mather@qut.edu.au

**Physics**

Dr Andrew Fielding

Phone: +61 7 3138 5325

Email: a.fielding@qut.edu.au

**Potential Careers:**

Biologist, Biotechnologist, Chemist, Chemist Industrial, Clinical Laboratory Scientist, Coastal Scientist, Conservation Biologist, Ecologist, Environmental Scientist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Hydrogeologist, Industrial Chemist, Marine Scientist, Medical Biotechnologist, Medical Physicist, Medical Scientist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Physicist, Population Ecologist.

## Bachelor of Mathematics/Bachelor of Information Technology (FOR CONTINUING STUDENTS ONLY) (IF58)

**Year offered:** 2008

**Admissions:** No

**CRICOS code:** 020327M

**Course duration (full-time):** 4 Years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (subject to annual review)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$6,434

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 419552; Dfee: 419556

**Past rank cut-off:** 75. Dfee places were not offered last year.

**Past OP cut-off:** 12. Dfee places were not offered last year.

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 420 (Note: The minimum course load per semester required for full-time enrolment may be more than 36 credit points)

**Course coordinator:** Dr Gary Carter (Mathematics) Richard Thomas (IT)

**Discipline coordinator:** Dr Gary Carter (Mathematics),

**Campus:** Gardens Point

### Career Opportunities

As a graduate you may find employment as a programmer, software engineer, systems programmer, technical support specialist, systems manager, systems designer, computer scientist, security analyst, systems analyst, data communications specialist, mathematician, or statistician.

### Course Structure

The double degree offers a foundation in mathematics and information technology in the first year. You will then select integrated strands combining units from the areas of applicable mathematics, computational mathematics, operations research, statistics, or financial mathematics with a combined major in Data Communications and Software Engineering.

### Professional Recognition

On graduation, you will be eligible for membership of the Mathematical Society of Australia, the Statistical Society of Australia Inc and, depending on unit selection, the Australian Society for Operations Research. Graduates of the Bachelor of Information Technology meet the knowledge requirement for admission to the Australian Computer Society.

### Cooperative Education Program

An optional one-year period of paid work experience in an area of information technology is available to eligible full-time students. The Cooperative Education Program is a joint venture between employers and educators to better prepare students for employment upon graduation. Companies that QUT's Cooperative Education students have worked with include Energex, Boeing, CITEC, Global Banking and Securities Transaction, various Queensland Government departments, Dialog, TABQ, RACQ and Sun Microsystems.

For more information visit [www.fit.qut.edu.au/courses/undergrad/coop/](http://www.fit.qut.edu.au/courses/undergrad/coop/)

### Mathematics Scholarships

Students enrolled in this course can apply for industry-sponsored scholarships. Mathematics equity scholarships are also awarded on the basis of socioeconomic disadvantage.

### Contact Details

#### Course Coordinator

Dr Gary Carter (*Mathematics*)

Phone: +61 7 3138 5090

Email: [g.carter@qut.edu.au](mailto:g.carter@qut.edu.au)

#### Associate Course Coordinator

Dr Alan Tickle (*Information Technology*)

Phone: +61 7 3138 2782

Email: [if58enquiry.fit@qut.edu.au](mailto:if58enquiry.fit@qut.edu.au)

### Deferment

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

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

Find out more on deferment.

### Course structure - For students with four semesters of Senior Mathematics B and Senior Mathematics C

For students with four semesters of Senior Mathematics B and Senior Mathematics C (or equivalent) with an exit assessment of at least Sound Achievement in both

#### Year 1, Semester 1

ITB001	Problem Solving and Programming
ITB004	Database Systems
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C

#### Year 1, Semester 2

ITB002	IT Professional Studies
ITB003	Object Oriented Programming

## SCIENCE

ITB005	Systems Architecture
MAB210	Statistical Modelling 1
MAB220	Computational Mathematics 1

### Year 2, Semester 1

ITB006	Networks
ITB008	Modelling Analysis and Design
MAB101	Statistical Data Analysis 1
MAB312	Linear Algebra

### Year 2, Semester 2

ITB712	Software Engineering Studies
	OR
	IT Elective Unit selected from list
	Level 2 or 3 Maths unit
	Level 2 or 3 Maths unit

### Year 3, Semester 1

MAB311	Advanced Calculus
	Level 2 or 3 Maths unit
	IT Elective Unit selected from list

### Year 3, Semester 2

ITB720	Internet Protocols and Services
	IT Elective Unit selected from list
	Level 2 or 3 Maths unit
	Level 2 or 3 Maths unit
	Elective (This elective unit may be taken from any faculty in QUT, subject to the approval of the Head of School)

### Year 4, Semester 1

ITB009	Core Project Management
	IT Elective Unit selected from list
	Level 2 or 3 Maths unit
	Level 2 or 3 Maths unit

### Year 4, Semester 2

ITB010	Core Project Implementation
	IT Elective Unit selected from list
	Level 2 or 3 Maths unit
	Level 2 or 3 Maths unit

### Course structure - For students with four semesters of Senior Mathematics B (or equivalent) only

For students with four semesters of Senior Mathematics B (or equivalent) only, with an exit assessment of at least Sound Achievement

### Year 1, Semester 1

ITB001	Problem Solving and Programming
ITB004	Database Systems

MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1

### Year 1, Semester 2

ITB002	IT Professional Studies
ITB003	Object Oriented Programming
ITB005	Systems Architecture
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C

### Year 2, Semester 1

ITB006	Networks
ITB008	Modelling Analysis and Design
MAB220	Computational Mathematics 1
MAB312	Linear Algebra

### Year 2, Semester 2

ITB712	Software Engineering Studies
	OR
	IT Elective Unit selected from list
MAB210	Statistical Modelling 1
	Level 2 or 3 Maths unit

### Year 3, Semester 1

	IT Elective Unit selected from list
MAB311	Advanced Calculus
	Level 2 or 3 Maths unit

### Year 3, Semester 2

ITB720	Internet Protocols and Services
	IT Elective Unit selected from list
	Level 2 or 3 Maths unit
	Level 2 or 3 Maths unit
	Level 2 or 3 Maths unit

### Year 4, Semester 1

ITB009	Core Project Management
	IT Elective Unit selected from list
	Level 2 or 3 Maths unit
	Level 2 or 3 Maths unit

### Year 4, Semester 2

	IT Elective Unit selected from list
	IT Elective Unit selected from list
	Level 2 or 3 Maths unit
	Level 2 or 3 Maths unit

### Mathematics Units

Students must complete at least 48 credit points from Level 3 mathematics units

## SCIENCE

### Level 2 Units

MAB281	Mathematics for Computer Graphics
MAB311	Advanced Calculus
MAB312	Linear Algebra
MAB313	Mathematics of Finance
MAB314	Statistical Modelling 2
MAB315	Operations Research 2
MAB413	Differential Equations
MAB414	Applied Statistics 2
MAB420	Computational Mathematics 2
MAB422	Mathematical Modelling
MAB461	Discrete Mathematics
MAB480	Introduction to Scientific Computation
MAB481	Visualisation and Data Analysis

### Level 3 Units

MAB521	Applied Mathematics 3
MAB522	Computational Mathematics 3
MAB524	Statistical Inference
MAB525	Operations Research 3A
MAB533	Statistical Techniques
MAB536	Time Series Analysis
MAB613	Partial Differential Equations
MAB623	Financial Mathematics
MAB624	Applied Statistics 3
MAB625	Operations Research 3B
MAB640	Industry Project
MAB672	Advanced Mathematical Modelling
MAB681	Advanced Visualisation and Data Analysis

NOTES: For students commencing in 2004 onwards, the units MAB311 Advanced Calculus and MAB312 Linear Algebra are mandatory. The suggested locations can be swapped.

NOTE: For students commencing in 2004 onwards, the units MAB523 Introduction to Quality Management and MAB621 Discrete Mathematics do not contribute to the mandatory 48 credit points minimum from Level 3 Mathematics units.

NOTE: All Mathematics units have 4 contact hours per week.

### IT Elective Unit List

#### Information Technology Elective Unit List

ITB001	Problem Solving and Programming
ITB002	IT Professional Studies
ITB003	Object Oriented Programming
ITB004	Database Systems
ITB005	Systems Architecture
ITB006	Networks

ITB007	Web Development
ITB008	Modelling Analysis and Design
ITB009	Core Project Management
ITB010	Core Project Implementation
ITB011	CCNA 1 & 2: Network Fundamentals and Routing Protocols
ITB012	CCNA 3&4: LAN SWITCHING/WIRELESS AND ACCESSING THE WAN
ITB016	Fundamentals of Games Design
ITB017	Advanced Games Design
ITB218	Applications Programming
ITB223	Software Development with ORACLE
ITB228	Enterprise Systems
ITB229	Database Design
ITB230	Project
ITB233	Enterprise Systems Applications
ITB239	Enterprise Data Mining
ITB254	Interaction Design
ITB257	Multimedia Systems
ITB259	Advanced Multimedia Systems
ITB260	E-Commerce Site Development
ITB264	Information Systems Consulting
ITB266	Information Management
ITB298	Business Process Modelling
ITB322	Information Resources
ITB360	Corporate Systems
ITB361	Socio-technical Systems
ITB362	Organisational Databases
ITB363	Project Management Practice
ITB364	Information Systems Development
ITB365	Business Analysis
ITB366	Information Systems Operations
ITB370	Project
ITB705	Intelligent Systems
ITB702	Algorithms and Data Structures
ITB706	Systems Programming
ITB712	Software Engineering Studies
ITB713	Advanced Java Programming
ITB716	Advanced Web Applications Development
ITB717	Enterprise Software Architecture
ITB720	Internet Protocols and Services
ITB721	Unix Network Administration
ITB722	Network Planning and Deployment
ITB730	Information Security Fundamentals
	ITB731 is offered bi-annually and will be available for 2009
ITB723	Wireless and Mobile Networks
ITB731	Security Technologies

ITB746	Modelling and Animation Techniques
ITB747	Real Time Rendering Techniques
ITB732	Cryptology and Protocols
ITB749	Scientific Programming
ITB750	Computer Game Studies
ITB751	Games Production
	ITB761/2/3/4/5 Please check with the relevant coordinator for further information on Special Topics.
	ITB762 Special Topic in 1/2008 is to be used for CCNA 1 & 2: Internetworking and Routing Basics
ITB761	Special Topic 1
ITB762	CCNA 1 & 2: INTERNETWORKING AND ROUTING BASICS
ITB763	Special Topic 3
ITB764	Special Topic 4
ITB765	Special Topic 5
ITB847	Computational Intelligence for Control and Embedded Systems
MAB281	Mathematics for Computer Graphics

**Potential Careers:**

Actuary, Computer Game Programmer, Data Communications Specialist, Database Manager, Market Research Manager, Mathematician, Network Administrator, Network Manager, Programmer, Quantitative Analyst, Software Engineer, Statistician, Systems Analyst.

## Bachelor of Mathematics/Bachelor of Business (Accountancy, Banking and Finance or Economics) (FOR CONTINUING STUDENTS ONLY) (IF60)

**Year offered:** 2008

**Admissions:** No

**CRICOS code:** 027274G

**Course duration (full-time):** 4 Years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$6,752

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February and July

**QTAC code:** 419212; Dfee: 419216

**Past rank cut-off:** 80. Dfee places were not offered last year.

**Past OP cut-off:** 10. Dfee places were not offered last year.

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 432

**Standard credit points per full-time semester:** 54 (Average)

**Course coordinator:** Prof Erhan Kozan (Mathematics); Mr Andrew Paltridge (Business)

**Discipline coordinator:** Ms Ros Kent (Accountancy); Dr Adam Clements (Banking & Finance) and Dr Radhika Lahiri (Economics)

**Campus:** Gardens Point

### Discontinuation

Students should note that from Semester 1, 2007 this course has been renamed and recoded to IX37 Bachelor of Business/Bachelor of Mathematics. Therefore, there will be no further intake into this course, however, students who are currently enrolled, or have already been made an offer into this current course for 2007, are able to remain enrolled in it.

For course structure information on the new course, please refer to the new course.

### Career Opportunities

Test Graduates are equipped to undertake sophisticated economic and financial modelling which is important in business and government decision making. Quantitative analysts are employed by the financial sector in order to optimise returns both in the short and long-term. Graduates may also become actuarial trainees in the insurance and superannuation area although further study is required in order to qualify as an actuary.

Graduates of the Accountancy major can expect to find employment in auditing, financial analysis, corporate secretarial functions, costing, taxation, receivership, bankruptcy, trusteeship or management services.

Graduates of the Banking and Finance major find employment in the banking area of finance which can involve retail, wholesale or international projects, the funding of operations and investment of funds in loans or liquidity.

Graduates with Economics training are highly sought after. They are employed as economists and in a wide variety of related professional areas to provide strategic analysis and policy advice.

### Professional Recognition

Graduates will be eligible for membership of the Mathematical Society of Australia, the Statistical Society of Australia and, depending on unit selection, the Australian Society of Operations Research. Depending on the choice of major, extended major or specialisation graduates may be eligible for membership of the Economic Society of Australia (Queensland Division), Australian Institute of Management, Financial Services Institute of Australasia (FINSIA), Chartered Secretaries Australia, CPA Australia and the Institute of Chartered Accountants in Australia (ICAA).

### Course Design

The course offers the opportunity to combine Mathematics with a business course majoring in Accountancy, Banking and Finance or Economics, which can be combined with an extended major in the same field, or with a double major from any of the Bachelor of Business majors, including Electronic Business.

### Mathematics Scholarships

Students enrolled in this course can apply for industry sponsored scholarships. Mathematics equity scholarships are also awarded on the basis of socioeconomic disadvantage.

### Course Combinations

Recommended combinations for the Business component are:

Accountancy: Extended major in Professional Accounting

Banking & Finance: Extended major in Banking, Financial Economics or Funds Management; or double major in Economics

Economics: Extended major in Financial Economics or double major in Banking & Finance.

\*Please note that EFB101 Data Analysis for Business which is normally undertaken in the majors of Accountancy, Banking and Finance & Economics, is not required as the content will be covered in the statistics units from the mathematics component of the program.

Students also note that enrolment in the unit EFB326 Applied Portfolio Management is restricted to students

## SCIENCE

undertaking the Financial Economics specialisation (FES) and the following extended majors: Banking (BFX); Financial Economics (FEX); and Funds Management (FDX).

### Deferment

QUT allows current Year 12 school leavers to defer their undergraduate admission offer for one year, or for six months if offered mid-year admission, except in courses using specific admission requirements such as questionnaires, folios, auditions, prior study or work experience. Further information is available at [www.deferment.qut.edu.au](http://www.deferment.qut.edu.au)

### Contact Details

#### Science Coordinator

Prof Erhan Kozan  
Phone: +61 7 3138 1029  
Email: [e.kozan@qut.edu.au](mailto:e.kozan@qut.edu.au)

#### Business Coordinator

Mr Andrew Paltridge  
Phone: +61 7 3138 2343  
Email: [a.paltridge@qut.edu.au](mailto:a.paltridge@qut.edu.au)

### Discipline Coordinators

#### Accountancy

Dr John Sweeting  
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#### Banking and Finance

Dr Adam Clements  
Phone: + 61 7 3138 2525  
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#### Economics

Dr Radhika Lahiri  
Phone: +61 7 3138 2753  
Email: [r.lahiri@qut.edu.au](mailto:r.lahiri@qut.edu.au)

### Course structure - Banking and Finance Major (for students with SA in Senior Maths B only)

#### Year 1, Semester 1

BSB110	Accounting
BSB113	Economics
MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1

#### Year 1, Semester 2

BSB122	Quantitative Analysis and Finance
EFB102	Economics 2
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
MAB210	Statistical Modelling 1

#### Year 2, Semester 1

BSB126	Marketing
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EFB210	Finance 1
MAB311	Advanced Calculus
MAB313	Mathematics of Finance

#### Year 2, Semester 2

BSB111	Business Law and Ethics
BSB114	Government, Business and Society
EFB307	Finance 2
MAB220	Computational Mathematics 1 Mathematics Elective (Level 2 or 3)

#### Year 3, Semester 1

BSB115	Management, People and Organisations
EFB201	Financial Markets
MAB312	Linear Algebra Mathematics Elective (Level 2 or 3) Business Double Major/Extended Major/Specialisation

#### Year 3, Semester 2

EFB312	International Finance Mathematics Elective (Level 2 or 3) Business Double Major/Extended Major/Specialisation Business Double Major/Extended Major/Specialisation
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#### Year 4, Semester 1

Mathematics Elective (Level 2 or 3)
Mathematics Elective (Level 2 or 3)
Mathematics Elective (Level 2 or 3)
Business Double Major/Extended Major/Specialisation
Business Double Major/Extended Major/Specialisation

#### Year 4, Semester 2

Mathematics Elective (Level 2 or 3)
Mathematics Elective (Level 2 or 3)
Mathematics Elective (Level 2 or 3)
Business Double Major/Extended Major/Specialisation

### Business Units

**NOTE:** Students must select BSB119 International & Electronic Business to replace one of the Mathematics Electives

Students should refer to the BS56 Course Notes entry for information on double major/extended major/specialisation units

### Course structure - Economics Major (for students with SA in Senior Maths B & C)

#### Year 1, Semester 1



## SCIENCE

BSB110	Accounting	Mathematics Elective (Level 2 or 3)
BSB113	Economics	Mathematics Elective (Level 2 or 3)
MAB101	Statistical Data Analysis 1	Mathematics Elective (Level 2 or 3)
MAB111	Mathematical Sciences 1B	Business Double Major/Extended Major/Specialisation

### Year 1, Semester 2

BSB119	International and Electronic Business
BSB122	Quantitative Analysis and Finance
EFB102	Economics 2
MAB112	Mathematical Sciences 1C
MAB210	Statistical Modelling 1

### Year 2, Semester 1

EFB202	Business Cycles and Economic Growth
EFB211	Firms, Markets and Resources
MAB311	Advanced Calculus Mathematics Elective (Level 2)

### Year 2, Semester 2

BSB114	Government, Business and Society
BSB126	Marketing Business Double Major/Extended Major/Specialisation
MAB220	Computational Mathematics 1
MAB313	Mathematics of Finance

### Year 3, Semester 1

BSB115	Management, People and Organisations
MAB312	Linear Algebra Mathematics Elective (Level 2) Business Double Major/Extended Major/Specialisation Business Double Major/Extended Major/Specialisation

### Year 3, Semester 2

EFB314	International Trade and Economic Competitiveness Mathematics Elective (Level 2 or 3)
EFB329	Contemporary Applications of Economics Theory Business Double Major/Extended Major/Specialisation

### Year 4, Semester 1

BSB111	Business Law and Ethics Mathematics Elective (Level 2 or 3) Mathematics Elective (Level 2 or 3) Mathematics Elective (Level 2 or 3) Business Double Major/Extended Major/Specialisation
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### Year 4, Semester 2

### Business Units

Students should refer to the BS56 Course Notes entry for information on double major/extended major/specialisation units

### Course structure - Economics Major (for students with SA in Senior Maths B only)

#### Year 1, Semester 1

BSB110	Accounting
BSB113	Economics
MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1

#### Year 1, Semester 2

BSB122	Quantitative Analysis and Finance
EFB102	Economics 2
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
MAB210	Statistical Modelling 1

#### Year 2, Semester 1

EFB202	Business Cycles and Economic Growth
EFB211	Firms, Markets and Resources
MAB311	Advanced Calculus
MAB313	Mathematics of Finance

#### Year 2, Semester 2

BSB114	Government, Business and Society
BSB126	Marketing
EFB329	Contemporary Applications of Economics Theory
MAB220	Computational Mathematics 1 Mathematics Elective (Level 2 or 3)

#### Year 3, Semester 1

BSB115	Management, People and Organisations
MAB312	Linear Algebra Mathematics Elective (Level 2 or 3) Business Double Major/Extended Major/Specialisation Business Double Major/Extended Major/Specialisation

#### Year 3, Semester 2

EFB314	International Trade and Economic Competitiveness Mathematics Elective (Level 2 or 3)
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## SCIENCE

Business Double Major/Extended Major/Specialisation

EFB318 Portfolio and Security Analysis

Business Double Major/Extended Major/Specialisation

EFB324 Macroeconomics and Global Financial Markets

EFB326 Applied Portfolio Management

### Year 4, Semester 1

BSB111 Business Law and Ethics

Mathematics Elective (Level 2 or 3)

Mathematics Elective (Level 2 or 3)

Mathematics Elective (Level 2 or 3)

Business Double Major/Extended Major/Specialisation

### Extended Major in Financial Economics (for Economics Major)

EFB200 Applied Regression Analysis

EFB210 Finance 1

EFB324 Macroeconomics and Global Financial Markets

EFB325 Financial Microeconomics

Plus two units from the Financial Economics Extended Major Options list below:

### Year 4, Semester 2

Mathematics Elective (Level 2 or 3)

Mathematics Elective (Level 2 or 3)

Mathematics Elective (Level 2 or 3)

Business Double Major/Extended Major/Specialisation

EFB201 Financial Markets

EFB326 Applied Portfolio Management

EFB327 Econometrics of Financial Markets

EFB328 Public Economics and Finance

### Business Units

NOTE: Students must select BSB119 International & Electronic Business to replace one of the Mathematics Electives.

Students should refer to the BS56 Course Notes entry for information on double major/extended major/specialisation units

### Extended Major in Funds Management

AYB225 Management Accounting

EFB308 Finance 3

EFB309 Financial Derivatives

EFB318 Portfolio and Security Analysis

Plus two units from the Funds Management Extended Major Options list below:

### Extended Major in Banking

AYB225 Management Accounting

AYB312 Financial Institutions Law

EFB310 Financial Institutions - Control

EFB311 Financial Institutions - Lending

Plus two units from the Banking Extended Major Options listed below:

EFB200 Applied Regression Analysis

EFB308 Finance 3

EFB309 Financial Derivatives

EFB318 Portfolio and Security Analysis

EFB326 Applied Portfolio Management

AYB312 Financial Institutions Law

EFB200 Applied Regression Analysis

EFB310 Financial Institutions - Control

EFB311 Financial Institutions - Lending

EFB326 Applied Portfolio Management

### Extended Major in Professional Accounting

AYB223 Law of Business Associations

AYB325 Taxation Law

EFB102 Economics 2

EFB210 Finance 1

AYB311 Financial Accounting Issues

AYB321 Strategic Management Accounting

### Extended Major in Financial Economics (for Banking & Finance Major)

EFB200 Applied Regression Analysis

EFB202 Business Cycles and Economic Growth

EFB211 Firms, Markets and Resources

EFB325 Financial Microeconomics

Plus two units from the Financial Economics Extended Major Options list below

EFB308 Finance 3

EFB309 Financial Derivatives

### Course structure - Mathematics Units

#### Level 2 units

MAB311 Advanced Calculus

MAB312 Linear Algebra

MAB313 Mathematics of Finance

MAB314 Statistical Modelling 2

MAB315 Operations Research 2

MAB413 Differential Equations

MAB414	Applied Statistics 2
MAB420	Computational Mathematics 2
MAB422	Mathematical Modelling
MAB461	Discrete Mathematics
MAB480	Introduction to Scientific Computation
MAB481	Visualisation and Data Analysis

**Level 3 units**

MAB521	Applied Mathematics 3
MAB522	Computational Mathematics 3
MAB524	Statistical Inference
MAB525	Operations Research 3A
MAB533	Statistical Techniques
MAB536	Time Series Analysis
MAB613	Partial Differential Equations
MAB623	Financial Mathematics
MAB624	Applied Statistics 3
MAB625	Operations Research 3B
MAB640	Industry Project
MAB672	Advanced Mathematical Modelling
MAB681	Advanced Visualisation and Data Analysis

NOTES: - MAB311 Advanced Calculus and MAB312 Linear Algebra are mandatory for students who commenced in 2004 onwards. They can be taken in a different semester 1 to that suggested in the programs above.

- For students commencing in 2004 onwards, the units MAB523 Introduction to Quality Management and MAB621 Discrete Mathematics do not contribute to the mandatory 48 credit points minimum from Level 3 Mathematics units. This does not apply for students who commenced prior to 2004.

- MAB681 will not be offered in 2008, but will be offered in Semester 2 2009 and every second year.

**Potential Careers:**

Account Executive, Accountant, Actuary, Banker, Banking and Finance Professional, Business Analyst, Certified Practising Accountant, Computer Game Programmer, Corporate Secretary, Economist, Financial Advisor/Analyst, Financial Project Manager, Funds Manager, Government Officer, Investment Manager, Market Research Manager, Mathematician, Quantitative Analyst, Risk Manager, Statistician, Stockbroker.

## Bachelor of Applied Science/Bachelor of Business (FOR CONTINUING STUDENTS ONLY) (IF61)

**Year offered:** 2008

**Admissions:** No

**CRICOS code:** 042263G

**Course duration (full-time):** 4 years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP\$6,502

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 419832; Dfee: 419836

**Past rank cut-off:** 80. Dfee places were not offered last year.

**Past OP cut-off:** 10. Dfee places were not offered last year.

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 432

**Standard credit points per full-time semester:** 54 (average)

**Course coordinator:** Dr Megan Hargreaves (Science); Mr Andrew Paltridge (Business)

**Discipline coordinator:** Dr John Sweeting (Accountancy); Dr Gayle Kerr (Advertising); Ms Sherrena Buckby (Electronic Business); Dr Amanda Gudmundsson (Human Resource Management); Mr Simon Ridings (International Business); Prof Robert Waldersee (Management); Mr Bill Proud (Marketing); Ms Robina Xavier (Public Relations); Dr Adam Clements (Banking & Finance) and Dr Radhika Lahiri (Economics); Science Discipline Coordinator details are listed under Contact Details below

**Campus:** Gardens Point

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This course has been discontinued. Currently enrolled students should check the Course Summary Sheet (via QUT Virtual) for enrolment and unit information.

### Potential Careers:

Academic, Account Executive, Accountant, Advertising Professional, Analytical Chemist, Astrophysicist, Banker, Banking and Finance Professional, Biochemist, Biologist, Biomechanical Engineer, Biomedical Engineer, Biotechnologist, Business Analyst, Chemist, Chemist Industrial, Clinical Laboratory Scientist, Coastal Scientist, Conservation Biologist, Ecologist, Economist, Environmental Scientist, Estimator, Exchange Student, Financial Advisor/Analyst, Financial Project Manager,

Forensic Scientist, Funds Manager, Geologist, Geophysicist, Geoscientist, Government Officer, Health Physicist, Home Economist, Human Resource Developer, Human Resource Manager, Hydrogeologist, Immunologist, Industrial Chemist, International Business Specialist, Investment Manager, Laboratory Technician (Chemistry), Manager, Marine Scientist, Marketing Officer/Manager, Medical Biotechnologist, Medical Physicist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Physicist, Plant Biotechnologist, Policy Officer, Population Ecologist, Programmer, Public Servant, Stockbroker, Virologist.

## Bachelor of Applied Science/Bachelor of Education (Primary) (FOR CONTINUING STUDENTS ONLY) (IF84)

Year offered: 2008

Admissions: No

Course duration (full-time): 4 Years

Domestic fees (per credit point): Commonwealth Supported Place; Full Fee Tuition 2008: \$135 per credit point (subject to annual review)

Domestic fees (indicative): 2008: Full fee tuition \$12,960; CSP \$4,936

Domestic Entry: February

QTAC code: 409142

Past rank cut-off: 80

Past OP cut-off: 10

OP Guarantee: Yes

Assumed knowledge: English (4 SA), Maths B (4 SA)

Total credit points: 384

Standard credit points per full-time semester: 48

Course coordinator: Dr Megan Hargreaves (Science): Dr Mary Ryan (Education)

Campus: Gardens Point and Kelvin Grove

### Career Outcomes

The Bachelor of Applied Science allows multidisciplinary programs of study that not only help students position themselves within the broad range of science disciplines but also qualify them as a competent professional in their chosen field.

Students are equipped to undertake research after graduation if they desire. The Bachelor of Education (Primary) prepares students to teach at all levels of the primary school. Students may also complete a discipline/content studies major in one of the key learning areas of the Queensland school curriculum.

### Professional Recognition

The Bachelor of Education (Primary) is recognised by the Queensland Board of Teacher Registration as meeting the requirements for registration as a teacher in Queensland. Applicants for registration as a teacher in Queensland are subject to national criminal history checks.

For graduates with approved study: Australasian Association of Clinical Biochemists, Australasian Institute of Mining and Metallurgy, Australian Biotechnology Association, Australian Institute of Geoscientists, Australian Institute of Physics, Australian Mathematical Society, Australian Society of Biochemistry and Molecular Biology, Australian Society for Medical Research, Australian Society for Microbiology, Australian Society of Operations Research, Ecological Society of Australia, Geological Society of Australia, Royal Australian Chemical Institute, and the Statistical Society of Australia.

### Contact Details

#### Science Coordinator

Dr Megan Hargreaves

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#### Education Coordinator

Ms Mary Ryan

Phone: +61 7 3138 3988

Email: me.ryan@qut.edu.au

#### Faculty of Education Office

Phone: +61 7 3138 3947

Fax: +61 7 3138 3949

Email: educationenq@qut.edu.au

### Course Structure for Commencing Students in 2002

Students complete 192 credit points from units in the Bachelor of Applied Science degree (meeting all of the requirements of the core program and a major study), and 192 credit points from the Bachelor of Education (Primary) program. The science units and the units EDB001, MDB383, CLB376 and EDB430 are undertaken during the first five semesters of the double degree program.

### Course structure - Major in Biochemistry

#### Year 1, Semester 1

EDB001	Teaching and Learning Studies 1: Teaching in New Times
LSB118	Life Science
PCB101	Physical Science
PCB142	Chemistry 1

#### Year 1, Semester 2

LSB238	Cell and Molecular Biology 1
MDB383	Using Technology In The Curriculum
NRB270	Animal and Plant Structure and Function
PCB242	Chemistry 2

#### Year 2, Semester 1

CLB376	Studies Of Society And Environment Curriculum
LSB308	Biochemistry
LSB338	Cell and Molecular Biology 2 Either
MAB101	Statistical Data Analysis 1 Or
NRB100	Environmental Science

#### Year 2, Semester 2

EDB430	Primary Professional Practice 1: Classroom Management
LSB408	Metabolism
LSB468	Molecular Biology
LSB608	Protein Science

#### Year 3, Semester 1

## SCIENCE

LSB508	Advanced Metabolism	CLB376	Studies Of Society And Environment Curriculum
LSB527	Biomedical Research Technologies Either	LSB308	Biochemistry
LSB537	Genetic Engineering Or	LSB338	Cell and Molecular Biology 2 Either
LSB568	Electron Microscopy One Science Elective	MAB101	Statistical Data Analysis 1 Or
		NRB100	Environmental Science

### Year 3, Semester 2

CLB454	Language And Literacy Curriculum
EDB431	Primary Professional Practice 2: Curriculum Decision Making
MDB384	Science Education
SPB001	Human Development and Education

### Year 4, Semester 1

CLB413	Programming And Assessment In Language And Mathematics
EDB432	Primary Professional Practice 3: Inclusive Curriculum
HMB307	Health and Physical Education Curriculum (Primary)
MDB450	Primary Mathematics Curriculum

### Year 4, Semester 2

CLB306	Understanding Educational Practices
EDB433	Primary Professional Practice 4: Beginning Teaching
KKB914	Visual and Performing Arts Curriculum 1
SPB002	Psychology of Learning and Teaching

### NOTES

Students with an approved LOTE background in their undergraduate degree who wish to undertake CLB334 Primary LOTE Curriculum Studies in place of CLB413 should contact the Student Affairs office on 3864 3847. CLB334 is offered internally in semester 2.

### Course structure - Major in Biotechnology

#### Year 1, Semester 1

EDB001	Teaching and Learning Studies 1: Teaching in New Times
LSB118	Life Science
PCB101	Physical Science
PCB142	Chemistry 1

#### Year 1, Semester 2

LSB238	Cell and Molecular Biology 1
MDB383	Using Technology In The Curriculum
NRB270	Animal and Plant Structure and Function
PCB242	Chemistry 2

#### Year 2, Semester 1

#### Year 2, Semester 2

LSB408	Metabolism Either
LSB497	Plant Molecular Biology Or
LSB468	Molecular Biology
LSB657	Perspectives in Life Science
EDB430	Primary Professional Practice 1: Classroom Management

#### Year 3, Semester 1

LSB537	Genetic Engineering One Science Elective Two of
LSB509	Medical Biotechnology 1
LSB568	Electron Microscopy
LSB577	Plant Biotechnology 1

#### Year 3, Semester 2

CLB454	Language And Literacy Curriculum
EDB431	Primary Professional Practice 2: Curriculum Decision Making
MDB384	Science Education
SPB001	Human Development and Education

#### Year 4, Semester 1

CLB413	Programming And Assessment In Language And Mathematics
EDB432	Primary Professional Practice 3: Inclusive Curriculum
HMB307	Health and Physical Education Curriculum (Primary)
MDB450	Primary Mathematics Curriculum

#### Year 4, Semester 2

CLB306	Understanding Educational Practices
EDB433	Primary Professional Practice 4: Beginning Teaching
KKB914	Visual and Performing Arts Curriculum 1
SPB002	Psychology of Learning and Teaching
	In 2002 EDB432 will be available in semester 2 to students who do not successfully complete the requirements of the unit in semester 1. This offering will be in external mode only.

**NOTES**

Students with an approved LOTE background in their undergraduate degree who wish to undertake CLB334 Primary LOTE Curriculum Studies in place of CLB413 should contact the Student Affairs office on 3864 3847. CLB334 is offered internally in semester 2.

**Course structure - Major in Chemistry**

**Year 1, Semester 1**

EDB001	Teaching and Learning Studies 1: Teaching in New Times
MAB100	Mathematical Sciences 1A
PCB101	Physical Science
PCB142	Chemistry 1

**Year 1, Semester 2**

MDB383	Using Technology In The Curriculum
PCB242	Chemistry 2
PCB260	Physics 1A
PCB434	Inorganic Chemistry

**Year 2, Semester 1**

CLB376	Studies Of Society And Environment Curriculum
NRB100	Environmental Science
PCB305	Principles of Physical Chemistry
PCB354	Structure and Mechanism in Organic Chemistry

**Year 2, Semester 2**

EDB430	Primary Professional Practice 1: Classroom Management
PCB414	Industrial and Environmental Analytical Chemistry
PCB444	Spectroscopy
PCB634	Organometallic and Coordination Chemistry

**Year 3, Semester 1**

LSB118	Life Science
PCB505	Advanced Physical Chemistry
PCB554	Synthesis and Reactivity in Organic Chemistry One of
PCB514	Instrumental Analysis
PCB584	Forensic Examination of Physical Evidence
PCB604	Project

**Year 3, Semester 2**

CLB454	Language And Literacy Curriculum
EDB431	Primary Professional Practice 2: Curriculum Decision Making
MDB384	Science Education
SPB001	Human Development and Education

**Year 4, Semester 1**

CLB413	Programming And Assessment In Language And Mathematics
EDB432	Primary Professional Practice 3: Inclusive Curriculum
HMB307	Health and Physical Education Curriculum (Primary)
MDB450	Primary Mathematics Curriculum

**Year 4, Semester 2**

CLB306	Understanding Educational Practices
EDB433	Primary Professional Practice 4: Beginning Teaching
KKB914	Visual and Performing Arts Curriculum 1
SPB002	Psychology of Learning and Teaching

**NOTES**

Students with an approved LOTE background in their undergraduate degree who wish to undertake CLB334 Primary LOTE Curriculum Studies in place of CLB413 should contact the Student Affairs office on 3864 3847. CLB334 is offered internally in semester 2.

**Course structure - Major in Ecology**

**Year 1, Semester 1**

EDB001	Teaching and Learning Studies 1: Teaching in New Times
LSB118	Life Science
NRB100	Environmental Science
PCB101	Physical Science

**Year 1, Semester 2**

MAB101	Statistical Data Analysis 1
MDB383	Using Technology In The Curriculum
NRB270	Animal and Plant Structure and Function
NRB410	Genetics and Evolution

**Year 2, Semester 1**

CLB376	Studies Of Society And Environment Curriculum
NRB311	Population Ecology
NRB312	Experimental Design
NRB370	Invertebrate Biology

**Year 2, Semester 2**

EDB430	Primary Professional Practice 1: Classroom Management
NRB411	Ecological Methods
NRB470	Vertebrate Biology
NRB611	Conservation Biology

**Year 3, Semester 1**

NRB510	Population Genetics
NRB511	Population Management

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NRB572 Terrestrial Ecosystems  
One Science Elective

NRB371 Plant Biology  
ITB843 Computing Applications

### Year 3, Semester 2

CLB454 Language And Literacy Curriculum  
EDB431 Primary Professional Practice 2: Curriculum Decision Making  
MDB384 Science Education  
SPB001 Human Development and Education

### Year 2, Semester 2

EDB430 Primary Professional Practice 1: Classroom Management  
NRB400 Environmental Systems  
NRB440 Environmental Chemistry  
NRB600 Sustainable Environmental Management

### Year 4, Semester 1

CLB413 Programming And Assessment In Language And Mathematics  
EDB432 Primary Professional Practice 3: Inclusive Curriculum  
HMB307 Health and Physical Education Curriculum (Primary)  
MDB450 Primary Mathematics Curriculum

### Year 3, Semester 1

NRB500 Environmental Systems and Modelling  
NRB501 Spatial Analysis of Environmental Systems  
NRB572 Terrestrial Ecosystems  
One Science Elective

### Year 3, Semester 2

CLB454 Language And Literacy Curriculum  
EDB431 Primary Professional Practice 2: Curriculum Decision Making  
MDB384 Science Education  
SPB001 Human Development and Education

### Year 4, Semester 2

CLB306 Understanding Educational Practices  
EDB433 Primary Professional Practice 4: Beginning Teaching  
KKB914 Visual and Performing Arts Curriculum 1  
SPB002 Psychology of Learning and Teaching

### Year 4, Semester 1

CLB413 Programming And Assessment In Language And Mathematics  
EDB432 Primary Professional Practice 3: Inclusive Curriculum  
HMB307 Health and Physical Education Curriculum (Primary)  
MDB450 Primary Mathematics Curriculum

### NOTES

Students with an approved LOTE background in their undergraduate degree who wish to undertake CLB334 Primary LOTE Curriculum Studies in place of CLB413 should contact the Student Affairs office on 3864 3847. CLB334 is offered internally in semester 2.

### Course structure - Major in Environmental Science

#### Year 1, Semester 1

EDB001 Teaching and Learning Studies 1: Teaching in New Times  
MAB101 Statistical Data Analysis 1  
NRB100 Environmental Science  
PCB101 Physical Science

#### Year 1, Semester 2

LSB118 Life Science  
MDB383 Using Technology In The Curriculum  
NRB232 Environmental Geology  
PCB142 Chemistry 1

#### Year 2, Semester 1

CLB376 Studies Of Society And Environment Curriculum  
NRB300 Environmental Monitoring  
NRB311 Population Ecology  
One of  
NRB370 Invertebrate Biology

#### Year 4, Semester 2

CLB306 Understanding Educational Practices  
EDB433 Primary Professional Practice 4: Beginning Teaching  
KKB914 Visual and Performing Arts Curriculum 1  
SPB002 Psychology of Learning and Teaching

### NOTES

Students with an approved LOTE background in their undergraduate degree who wish to undertake CLB334 Primary LOTE Curriculum Studies in place of CLB413 should contact the Student Affairs office on 3864 3847. CLB334 is offered internally in semester 2.

### Course structure - Major in Geology

#### Year 1, Semester 1

EDB001 Teaching and Learning Studies 1: Teaching in New Times  
MAB100 Mathematical Sciences 1A  
NRB100 Environmental Science  
PCB101 Physical Science



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### Year 1, Semester 2

MAB101	Statistical Data Analysis 1
MDB383	Using Technology In The Curriculum
NRB230	Planet Earth
PCB142	Chemistry 1

### Year 2, Semester 1

CLB376	Studies Of Society And Environment Curriculum
NRB331	Sedimentary Geology
NRB333	Mineralogy
NRB334	Mineral Deposits And Mine Geology

### Year 2, Semester 2

EDB430	Primary Professional Practice 1: Classroom Management
NRB434	Structural Geology
NRB436	Introduction to Igneous and Metamorphic Petrology
NRB633	Hydrogeology
SCB222	Exploration of the Universe

### Year 3, Semester 1

NRB533	Advanced Geological Mapping
NRB534	Geophysics
NRB536	Petrology and Geochemistry One Science Elective

NOTE: The major component in assessment and teaching of NRB533 is conducted as a field program during July.

### Year 3, Semester 2

CLB454	Language And Literacy Curriculum
EDB431	Primary Professional Practice 2: Curriculum Decision Making
MDB384	Science Education
SPB001	Human Development and Education

### Year 4, Semester 1

CLB413	Programming And Assessment In Language And Mathematics
EDB432	Primary Professional Practice 3: Inclusive Curriculum
HMB307	Health and Physical Education Curriculum (Primary)
MDB450	Primary Mathematics Curriculum

### Year 4, Semester 2

CLB306	Understanding Educational Practices
EDB433	Primary Professional Practice 4: Beginning Teaching
KKB914	Visual and Performing Arts Curriculum 1
SPB002	Psychology of Learning and Teaching

In 2002 EDB432 will be available in semester 2

to students who do not successfully complete the requirements of the unit in semester 1. This offering will be in external mode only.

### NOTES

Students with an approved LOTE background in their undergraduate degree who wish to undertake CLB334 Primary LOTE Curriculum Studies in place of CLB413 should contact the Student Affairs office on 3864 3847. CLB334 is offered internally in semester 2.

### Course structure - Major in Mathematics (WITH Maths C)

#### Year 1, Semester 1

EDB001	Teaching and Learning Studies 1: Teaching in New Times
MAB101	Statistical Data Analysis 1
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C

#### Year 1, Semester 2

MAB210	Statistical Modelling 1
MAB220	Computational Mathematics 1
MDB383	Using Technology In The Curriculum
PCB101	Physical Science

#### Year 2, Semester 1

CLB376	Studies Of Society And Environment Curriculum One Science Elective Two Level 2 Mathematics units # - available units are:
MAB311	Advanced Calculus
MAB312	Linear Algebra
MAB313	Mathematics of Finance
MAB314	Statistical Modelling 2

#### Year 2, Semester 2

EDB430	Primary Professional Practice 1: Classroom Management Two Level 2 Mathematics units- available units are:
MAB315	Operations Research 2
MAB413	Differential Equations
MAB414	Applied Statistics 2
MAB420	Computational Mathematics 2
MAB422	Mathematical Modelling One Level 3 Mathematics units - available units are:
MAB621	Discrete Mathematics
MAB623	Financial Mathematics
NOTE:	Students must complete at least one of MAB311, MAB312, MAB413

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### Year 3, Semester 1

One Science Elective

Three Level 3 Mathematics units - available units are:

MAB521	Applied Mathematics 3
MAB522	Computational Mathematics 3
MAB523	Introduction to Quality Management
MAB524	Statistical Inference
MAB525	Operations Research 3A
MAB672	Advanced Mathematical Modelling

### Year 3, Semester 2

CLB454	Language And Literacy Curriculum
EDB431	Primary Professional Practice 2: Curriculum Decision Making
MDB384	Science Education
SPB001	Human Development and Education

### Year 4, Semester 1

CLB413	Programming And Assessment In Language And Mathematics
EDB432	Primary Professional Practice 3: Inclusive Curriculum
HMB307	Health and Physical Education Curriculum (Primary)
MDB450	Primary Mathematics Curriculum

### Year 4, Semester 2

CLB306	Understanding Educational Practices
EDB433	Primary Professional Practice 4: Beginning Teaching
KKB914	Visual and Performing Arts Curriculum 1
SPB002	Psychology of Learning and Teaching

### NOTES

Students with an approved LOTE background in their undergraduate degree who wish to undertake CLB334 Primary LOTE Curriculum Studies in place of CLB413 should contact the Student Affairs office on 3864 3847. CLB334 is offered internally in semester 2.

### Course structure - Major in Mathematics (WITHOUT Maths C)

#### Year 1, Semester 1

EDB001	Teaching and Learning Studies 1: Teaching in New Times
MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1
PCB101	Physical Science

#### Year 1, Semester 2

MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C

MAB210	Statistical Modelling 1
MDB383	Using Technology In The Curriculum

#### Year 2, Semester 1

CLB376	Studies Of Society And Environment Curriculum
MAB220	Computational Mathematics 1
	Three Level 2 Mathematics units - available units are:
MAB311	Advanced Calculus
MAB312	Linear Algebra
MAB313	Mathematics of Finance
MAB314	Statistical Modelling 2

#### Year 2, Semester 2

EDB430	Primary Professional Practice 1: Classroom Management
	Two Level 2 Mathematics units - available units are:
MAB315	Operations Research 2
MAB413	Differential Equations
MAB414	Applied Statistics 2
MAB420	Computational Mathematics 2
MAB422	Mathematical Modelling
	One Level 3 Mathematics units - available units are:
MAB621	Discrete Mathematics
MAB623	Financial Mathematics
NOTE:	Students must complete at least one of MAB311, MAB312, MAB413

#### Year 3, Semester 1

	One Science Elective
	Three Level 3 Mathematics units - available units are:
MAB521	Applied Mathematics 3
MAB522	Computational Mathematics 3
MAB523	Introduction to Quality Management
MAB524	Statistical Inference
MAB525	Operations Research 3A
MAB672	Advanced Mathematical Modelling

#### Year 3, Semester 2

CLB454	Language And Literacy Curriculum
EDB431	Primary Professional Practice 2: Curriculum Decision Making
MDB384	Science Education
SPB001	Human Development and Education

#### Year 4, Semester 1

CLB413	Programming And Assessment In Language And Mathematics
EDB432	Primary Professional Practice 3: Inclusive

## SCIENCE

	Curriculum
HMB307	Health and Physical Education Curriculum (Primary)
MDB450	Primary Mathematics Curriculum

### Year 4, Semester 2

CLB306	Understanding Educational Practices
EDB433	Primary Professional Practice 4: Beginning Teaching
KKB914	Visual and Performing Arts Curriculum 1
SPB002	Psychology of Learning and Teaching

### NOTES

Students with an approved LOTE background in their undergraduate degree who wish to undertake CLB334 Primary LOTE Curriculum Studies in place of CLB413 should contact the Student Affairs office on 3864 3847. CLB334 is offered internally in semester 2.

### Course structure - Major in Microbiology

#### Year 1, Semester 1

LSB118	Life Science
PCB101	Physical Science
PCB142	Chemistry 1
EDB001	Teaching and Learning Studies 1: Teaching in New Times

#### Year 1, Semester 2

LSB238	Cell and Molecular Biology 1
MDB383	Using Technology In The Curriculum
NRB270	Animal and Plant Structure and Function
PCB242	Chemistry 2

#### Year 2, Semester 1

CLB376	Studies Of Society And Environment Curriculum
LSB308	Biochemistry
LSB338	Cell and Molecular Biology 2 Either
MAB101	Statistical Data Analysis 1 Or
NRB100	Environmental Science

#### Year 2, Semester 2

EDB430	Primary Professional Practice 1: Classroom Management
LSB408	Metabolism
LSB428	Microbiology 2
LSB657	Perspectives in Life Science

#### Year 3, Semester 1

LSB528	Environmental Microbiology
LSB547	Bacterial Pathogenesis and Disease Diagnosis

LSB578	Virology
	One Science Elective

### Year 3, Semester 2

CLB454	Language And Literacy Curriculum
EDB431	Primary Professional Practice 2: Curriculum Decision Making
MDB384	Science Education
SPB001	Human Development and Education

### Year 4, Semester 1

CLB413	Programming And Assessment In Language And Mathematics
EDB432	Primary Professional Practice 3: Inclusive Curriculum
HMB307	Health and Physical Education Curriculum (Primary)
MDB450	Primary Mathematics Curriculum

### Year 4, Semester 2

CLB306	Understanding Educational Practices
EDB433	Primary Professional Practice 4: Beginning Teaching
KKB914	Visual and Performing Arts Curriculum 1
SPB002	Psychology of Learning and Teaching

### NOTES

Students with an approved LOTE background in their undergraduate degree who wish to undertake CLB334 Primary LOTE Curriculum Studies in place of CLB413 should contact the Student Affairs office on 3864 3847. CLB334 is offered internally in semester 2.

### Course structure - Major in Physics

#### Year 1, Semester 1

MAB101	Statistical Data Analysis 1
PCB101	Physical Science
PCB107	Physics and Quantitative Techniques Either
MAB131	Engineering Mathematics 1A Or
MAB180	Engineering Mathematics 1B
EDB001	Teaching and Learning Studies 1: Teaching in New Times

#### Year 1, Semester 2

MDB383	Using Technology In The Curriculum
MAB132	Engineering Mathematics 2A
PCB250	Physics 1
PCB260	Physics 1A

#### Year 2, Semester 1

CLB376	Studies Of Society And Environment Curriculum
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## SCIENCE

MAB134	Electrical Engineering Mathematics 3
PCB361	AC Theory and Electronics
PCB362	Physics 2

Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Mathematician, Medical Biotechnologist, Medical Physicist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Physicist, Plant Biotechnologist, Population Ecologist, Primary School Teacher, Programmer, Quantitative Analyst, Statistician, Teacher, Virologist.

### Year 2, Semester 2

EDB430	Primary Professional Practice 1: Classroom Management
PCB404	Scientific Principles of Safety
PCB460	Instrumentation and Computational Methods
PCB462	Thermodynamics and Solid State Physics

### Year 3, Semester 1

One Science Elective unit

PCB561	Quantum and Condensed Matter Physics
PCB562	Physical Methods of Analysis
PCB661	Experimental Physics

### Year 3, Semester 2

CLB454	Language And Literacy Curriculum
EDB431	Primary Professional Practice 2: Curriculum Decision Making
MDB384	Science Education
SPB001	Human Development and Education

### Year 4, Semester 1

CLB413	Programming And Assessment In Language And Mathematics
EDB432	Primary Professional Practice 3: Inclusive Curriculum
HMB307	Health and Physical Education Curriculum (Primary)
MDB450	Primary Mathematics Curriculum

### Year 4, Semester 2

CLB306	Understanding Educational Practices
EDB433	Primary Professional Practice 4: Beginning Teaching
KKB914	Visual and Performing Arts Curriculum 1
SPB002	Psychology of Learning and Teaching

NOTE: In 2002 EDB432 will be available in Semester 2 to students who do not successfully complete the requirements of the unit in Semester 1. This offering will be in external mode only.

### NOTES

Students with an approved LOTE background in their undergraduate degree who wish to undertake CLB334 Primary LOTE Curriculum Studies in place of CLB413 should contact the Student Affairs office on 3864 3847. CLB334 is offered internally in semester 2.

### Potential Careers:

Actuary, Analytical Chemist, Astrophysicist, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Database Manager, Ecologist, Educator, Environmental Scientist,

## Bachelor of Arts/Bachelor of Applied Science (FOR CONTINUING STUDENTS ONLY) (IF86)

**Year offered:** 2008

**Admissions:** No

**Course duration (full-time):** 4 Years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$6,001

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Past rank cut-off:** 72; Dfee: 68

**Past OP cut-off:** 13; Dfee: 15

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or **Total credit points:** 384 (192 cp in the Bachelor of Arts and 192 cp in the Bachelor of Applied Science)

**Standard credit points per full-time semester:** 48

**Course coordinator:** Dr Iraphne Childs (Humanities); Dr Megan Hargreaves (Science)

**Discipline coordinator:** Dr Perry Hartfield (Biochemistry); Dr Marion Bateson (Biotechnology); Dr Robert Johnson (Chemistry); Dr Ian Williamson (Ecology); Dr Robin Thwaites (Environmental Science); Dr Emad Kiriakous (Forensic Science); Dr Gary Huftile (Geoscience); Dr Scott McCue (Mathematics); Dr Christine Knox (Microbiology); Dr Greg Michael (Physics)

**Campus:** Gardens Point and Carseldine

### Career Opportunities

As a graduate of this course you will receive both a Bachelor of Arts degree and a Bachelor of Applied Science degree. This combination of degrees provides a valuable foundation for a wide range of careers in areas such as government, diplomacy, higher education and public service. Opportunities in tourism, translation, and the hospitality industry are open to those with a Language major. Complementary majors chosen from Arts and Science provide an excellent background for careers in environmental management.

### Course Design

A feature of the course design is the flexibility and choice it offers. Students can tailor the double degree to their career interests by combining any one of the 10 majors that are available in the Bachelor of Applied Science (SC01) degree with a specialisation chosen from a wide range of offerings in the humanities.

The program is integrated so that students will study both science and arts units in each semester.

### Professional Recognition

Relevant professional bodies for the Bachelor of Applied Science (SC01) are listed under the separate entry for the course. Eligibility for membership depends on the majors undertaken.

### Contact Details

#### Humanities Coordinator

Dr Iraphne Childs  
Phone: +61 7 3138 4563  
Email: i.childs@qut.edu.au

#### Science Coordinator

Dr Megan Hargreaves  
Phone: +61 7 3138 2244  
Email: m.hargreaves@qut.edu.au

### Discipline Coordinators

#### Biochemistry

Dr Perry Hartfield  
Phone: +61 7 3138 2984  
Email: p.hartfield@qut.edu.au

#### Biotechnology

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

#### Chemistry

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#### Ecology

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#### Environmental Science

Dr Robin Thwaites  
Phone: +61 7 3138 2400  
Email: r.thwaites@qut.edu.au

#### Forensic Science

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#### Geoscience

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Email: g.huftile@qut.edu.au

#### Mathematics

Dr Scott McCue  
Phone: +61 7 3138 4295  
Email: scott.mccue@qut.edu.au

#### Microbiology

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Email: c.knox@qut.edu.au

#### Physics

Dr Greg Michael  
Phone: +61 7 3138 1584  
Email: g.michael@qut.edu.au

**Course is under review**

QUT is currently reviewing the Arts and Social Science programs to ensure they continue to meet the needs of students and employers. As a result these programs may change in 2008 or may not be offered. You can register for updates on the status of these courses by visiting the Humanities and Human Services website.

**(Example of Full-Time Course Structure for Commencing Students)**

**Year 1, Semester 1**

- Core Arts unit (major)
- Core Arts unit (major)
- Two Science units (SC01 Level 1): Foundation units

**Year 1, Semester 2**

- Arts Major unit
- Arts Major unit
- Two Science units (SC01 Level 1): at least one Foundation unit

**Year 2, Semester 1**

- Core Arts unit (major or skills)
- Core Arts unit (major or skills)
- Two Science units (SC01 Levels 1 and 2: Level 2 from Major)

**Year 2, Semester 2**

- Arts Major unit
- Arts Minor unit
- Two Science Units (SC01 Levels 1 and 2: Level 2 from Major)

**Year 3, Semester 1**

- Arts Major unit
- Core Arts unit (research methods)
- Two Science Major units (SC01 Level 2)

**Year 3, Semester 2**

- Arts Minor unit
- Core Arts unit (research methods)
- Two Science Major units (SC01 Level 3)

**Year 4, Semester 1**

- Arts Major unit
- Arts Minor unit
- Two Science Major units (SC01 Level 3)

**Year 4, Semester 2**

- Arts Major unit
- Arts Minor unit
- Two Science Major units (SC01 Level 3)

**Course structure - Major in Biochemistry**

**Year 1, Semester 1**

- SCB111 Chemistry 1
- SCB112 Cellular Basis of Life

**Year 1, Semester 2**

- SCB120 Plant and Animal Physiology
- SCB121 Chemistry 2

**Year 2, Semester 1**

- SCB110 Science Concepts and Global Systems  
Plus either:
- MAB101 Statistical Data Analysis 1  
Or
- MAB104 Introductory Quantitative Methods

**Year 2, Semester 2**

- SCB122 Cell and Molecular Biology
- SCB123 Physical Science Applications

**Year 3, Semester 1**

- LQB381 Biochemistry: Structure and Function
- LQB383 Molecular and Cellular Regulation

**Year 3, Semester 2**

- LQB481 Biochemical Pathways and Metabolism
- LQB483 Molecular Biology Techniques

**Year 4, Semester 1**

- LQB581 Functional Biochemistry
- LQB582 Biomedical Research Technologies

**Year 4, Semester 2**

- LQB681 Biochemical Research Skills
- LQB682 Protein Biochemistry and Bioengineering

**Course structure - Major in Biotechnology**

**Year 1, Semester 1**

- SCB111 Chemistry 1
- SCB112 Cellular Basis of Life

**Year 1, Semester 2**

- SCB120 Plant and Animal Physiology
- SCB121 Chemistry 2

**Year 2, Semester 1**

- SCB110 Science Concepts and Global Systems  
Plus either:
- MAB101 Statistical Data Analysis 1  
Or
- MAB104 Introductory Quantitative Methods

# SCIENCE

## Year 2, Semester 2

SCB122	Cell and Molecular Biology
SCB123	Physical Science Applications

## Year 3, Semester 1

LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulations

## Year 3, Semester 2

LQB483	Molecular Biology Techniques
LQB484	Introduction to Genomics and Bioinformatics

## Year 4, Semester 1

TWO units selected from:

LQB583	Genetic Research Technology
LQB584	Medical Cell Biology
LQB585	Plant Genetic Manipulation

## Year 4, Semester 2

TWO units selected from:

LQB682	Protein Biochemistry and Bioengineering
LQB684	Medical Biotechnology
LQB685	Plant Microbe Interactions

## Course structure - Major in Chemistry

### Year 1, Semester 1

SCB111	Chemistry 1
Plus either:	
MAB101	Statistical Data Analysis 1
Or	
MAB104	Introductory Quantitative Methods

### Year 1, Semester 2

SCB112	Cellular Basis of Life
SCB121	Chemistry 2

### Year 2, Semester 1

MAB100	Mathematical Sciences 1A
SCB110	Science Concepts and Global Systems

### Year 2, Semester 2

SCB123	Physical Science Applications
SCB131	Experimental Chemistry

### Year 3, Semester 1

PQB312	Analytical Chemistry for Scientists and Technology
PQB331	Structure and Bonding

### Year 3, Semester 2

PQB401	Chemical Reactions 1
PQB442	Chemical Spectroscopy

## Year 4, Semester 1

PQB502	Materials Chemistry and Characterisation
PQB531	Chemical Reactions 2

## Year 4, Semester 2

PQB631	Applied Molecular Science
PQB642	Chemical Research

## Course structure - Major in Ecology

### Year 1, Semester 1

SCB111	Chemistry 1
SCB112	Cellular Basis of Life

### Year 1, Semester 2

SCB120	Plant and Animal Physiology
SCB122	Cell and Molecular Biology

### Year 2, Semester 1

SCB110	Science Concepts and Global Systems
Plus either:	
MAB101	Statistical Data Analysis 1
Or	
MAB104	Introductory Quantitative Methods

### Year 2, Semester 2

NQB201	Planet Earth
NQB202	History of Life on Earth

### Year 3, Semester 1

NQB301	Soils and Sedimentation
NQB321	Ecology

### Year 3, Semester 2

NQB421	Experimental Design
NQB422	Genetics and Evolution

### Year 4, Semester 1

NQB502	Field Mapping and Monitoring of Natural Resources
NQB521	Population Genetics and Molecular Ecology

### Year 4, Semester 2

NQB621	Population management
NQB622	Population Genetics

## Course structure - Major in Environmental Science

### Year 1, Semester 1

SCB111	Chemistry 1
SCB112	Cellular Basis of Life

### Year 1, Semester 2

SCB120	Plant and Animal Physiology
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## SCIENCE

SCB121 Chemistry 2

### Year 2, Semester 1

SCB110 Science Concepts and Global Systems

Plus either:

MAB101 Statistical Data Analysis 1

Or

MAB104 Introductory Quantitative Methods

### Year 2, Semester 2

NQB202 History of Life on Earth

SCB123 Physical Science Applications

### Year 3, Semester 1

NQB301 Soils and Sedimentation

NQB321 Ecology

### Year 3, Semester 2

NQB401 Spatial Analysis of Environmental Systems

NQB421 Experimental Design

### Year 4, Semester 1

NQB501 Environmental Modelling

NQB502 Field Mapping and Monitoring of Natural Resources

### Year 4, Semester 2

NQB601 Sustainable Environmental Management

NQB602 Environmental Chemistry

### Course structure - Major in Forensic Science

#### Year 1, Semester 1

SCB111 Chemistry 1

SCB112 Cellular Basis of Life

#### Year 1, Semester 2

SCB121 Chemistry 2

SCB122 Cell and Molecular Biology

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems

Plus either:

MAB101 Statistical Data Analysis 1

Or

MAB104 Introductory Quantitative Methods

#### Year 2, Semester 2

SCB123 Physical Science Applications

SCB131 Experimental Chemistry

#### Year 3, Semester 1

LQB383 Molecular and Cellular Regulation

SCB384 Crime Scene and Forensic Science

#### Year 3, Semester 2

JSB979 Forensic Scientific Evidence

PQB312 Analytical Chemistry for Scientists and Technologists

#### Year 4, Semester 1

PQB513 Instrumental Analysis

PQB584 Forensic Physical Evidence

#### Year 4, Semester 2

LQB680 Forensic DNA Profiling

PQB684 Forensic Analysis

### Course structure - Major in Geoscience

#### Year 1, Semester 1

SCB111 Chemistry 1

SCB112 Cellular Basis of Life

#### Year 1, Semester 2

NQB201 Planet Earth

SCB123 Physical Science Applications

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems

Plus either:

MAB101 Statistical Data Analysis 1

Or

MAB104 Introductory Quantitative Methods

#### Year 2, Semester 2

NQB202 History of Life on Earth

SCB222 Exploration of the Universe

#### Year 3, Semester 1

NQB301 Soils and Sedimentation

NQB311 Mineralogy

#### Year 3, Semester 2

NQB411 Petrology

NQB412 Structural Geology and Field Methods

#### Year 4, Semester 1

NQB502 Field Mapping and Monitoring of Natural Resources

NQB512 Stratigraphy

NQB513 Geophysics

#### Year 4, Semester 2

NQB602 Environmental Chemistry

### Course structure - Major in Mathematics (WITH Mathematics C from Senior)



## SCIENCE

### Year 1, Semester 1

MAB101	Statistical Data Analysis 1
MAB111	Mathematical Sciences 1B

### Year 1, Semester 2

MAB112	Mathematical Sciences 1C
MAB210	Statistical Modelling 1

### Year 2, Semester 1

MAB220	Computational Mathematics 1
	One Science unit - selected from:
SCB110	Science Concepts and Global Systems
SCB112	Cellular Basis of Life

### Year 2, Semester 2

	Science elective unit
	One Science unit - selected from:
SCB110	Science Concepts and Global Systems
SCB112	Cellular Basis of Life

### Year 3, Semester 1

	Two Level 2 Mathematics units* - available units are:
MAB311	Advanced Calculus
MAB312	Linear Algebra
MAB313	Mathematics of Finance
MAB314	Statistical Modelling 2
*	Students must complete at least one of MAB311, MAB312, MAB413

### Year 3, Semester 2

	Two Level 2 Mathematics units* - available units are:
MAB315	Operations Research 2
MAB413	Differential Equations
MAB414	Applied Statistics 2
MAB420	Computational Mathematics 2
MAB422	Mathematical Modelling
MAB480	Introduction to Scientific Computation
*	Students must complete at least one of MAB311, MAB312, MAB413

### Year 4, Semester 1

	Two Level 3 Mathematics units - available units are:
MAB521	Applied Mathematics 3
MAB522	Computational Mathematics 3
MAB523	Introduction to Quality Management
MAB525	Operations Research 3A
MAB526	Statistical Science 3
MAB672	Advanced Mathematical Modelling

### Year 4, Semester 2

	Two Level 3 Mathematics units - available units are
MAB524	Statistical Inference
MAB613	Partial Differential Equations
MAB621	Discrete Mathematics
MAB623	Financial Mathematics
MAB624	Applied Statistics 3
MAB625	Operations Research 3B

### Course structure - Major in Mathematics (WITHOUT Mathematics C from Senior)

#### Year 1, Semester 1

MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1

#### Year 1, Semester 2

MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C

#### Year 2, Semester 1

MAB220	Computational Mathematics 1
	One Science unit - selected from:
SCB110	Science Concepts and Global Systems
SCB112	Cellular Basis of Life

#### Year 2, Semester 2

MAB210	Statistical Modelling 1
	One Science unit - selected from:
SCB110	Science Concepts and Global Systems
SCB112	Cellular Basis of Life

#### Year 3, Semester 1

	Two Level 2 Mathematics units* - available units are:
MAB311	Advanced Calculus
MAB312	Linear Algebra
MAB313	Mathematics of Finance
MAB314	Statistical Modelling 2
*	Students must complete at least one of MAB311, MAB312, MAB413

#### Year 3, Semester 2

	Two Level 2 Mathematics units* - available units are:
MAB315	Operations Research 2
MAB413	Differential Equations
MAB414	Applied Statistics 2
MAB420	Computational Mathematics 2
MAB422	Mathematical Modelling
MAB480	Introduction to Scientific Computation

## SCIENCE

\* Students must complete at least one of MAB311, MAB312, MAB413

LQB586 Clinical Microbiology 2  
LQB587 Applied Microbiology 1: Water, Air and Soil

### Year 4, Semester 1

Two Level 3 Mathematics units - available units are:

MAB521 Applied Mathematics 3  
MAB522 Computational Mathematics 3  
MAB523 Introduction to Quality Management  
MAB525 Operations Research 3A  
MAB526 Statistical Science 3  
MAB672 Advanced Mathematical Modelling

### Year 4, Semester 2

LQB686 Microbial Technology and Immunology  
LQB687 Applied Microbiology 2: Food and Quality Assurance

### Course structure - Major in Physics

#### Year 1, Semester 1

MAB111 Mathematical Sciences 1B  
SCB111 Chemistry 1

#### Year 1, Semester 2

MAB112 Mathematical Sciences 1C  
PQB250 Mechanics and Electromagnetism

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
SCB112 Cellular Basis of Life

#### Year 2, Semester 2

MAB220 Computational Mathematics 1  
PQB251 Waves and Optics

#### Year 3, Semester 1

MAB311 Advanced Calculus  
PQB350 Thermodynamics of Solids and Gases

#### Year 3, Semester 2

PQB450 Energy Fields and Radiation  
PQB451 Electronics and Instrumentation

#### Year 4, Semester 1

PQB550 Quantum and Condensed Matter Physics  
PQB551 Physical Analytical Techniques

#### Year 4, Semester 2

PQB650 Advanced Theoretical Physics  
PQB651 Experimental Physics

### Course structure - Major in Microbiology

#### Year 1, Semester 1

SCB111 Chemistry 1  
SCB112 Cellular Basis of Life

#### Year 1, Semester 2

SCB120 Plant and Animal Physiology  
SCB121 Chemistry 2

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
Plus either:  
MAB101 Statistical Data Analysis 1  
Or  
MAB104 Introductory Quantitative Methods

#### Year 2, Semester 2

SCB122 Cell and Molecular Biology  
SCB123 Physical Science Applications

#### Year 3, Semester 1

LQB381 Biochemistry: Structure and Function  
LQB386 Microbial Structure and Function

#### Year 3, Semester 2

LQB483 Molecular Biology Techniques  
LQB486 Clinical Microbiology 1

#### Year 4, Semester 1

### Potential Careers:

Academic, Actuary, Administrator, Analytical Chemist, Astrophysicist, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Corporate Secretary, Database Manager, Ecologist, Environmental Health Officer, Environmental Scientist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Government Officer, Health Physicist, Higher Education Worker, Hydrogeologist, Immunologist, Industrial Chemist, Information Officer, Laboratory Technician (Chemistry), Manager, Mapping Scientist/Photogrammetrist, Marine Scientist, Mathematician, Medical Biotechnologist, Medical Physicist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Network Administrator, Network

## SCIENCE

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Manager, Physicist, Plant Biotechnologist, Policy Officer,  
Population Ecologist, Programmer, Project Developer,  
Project Manager, Public Servant, Quantitative Analyst,  
Statistician, Virologist.

## Bachelor of Applied Science/Bachelor of Education (Secondary) (IX02)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 020322E

**Course duration (full-time):** 4 years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,252

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 409112

**Past rank cut-off:** 74

**Past OP cut-off:** 13

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 432

**Standard credit points per full-time semester:** 48 (semesters 1, 6-8), 60 (semesters 2-5)

**Course coordinator:** Dr Megan Hargreaves (Science); Dr Mal Shield (Secondary)

**Discipline coordinator:** Dr Perry Hartfield (Biochemistry); Dr Marion Bateson (Biotechnology); Dr Robert Johnson (Chemistry); Dr Ian Williamson (Ecology); Dr Robin Thwaites (Environmental Science); Dr Gary Huftile (Geoscience); Dr Scott McCue (Mathematics); Dr Christine Knox (Microbiology); Dr Greg Michael (Physics)

**Campus:** Gardens Point and Kelvin Grove

### Career Opportunities

The Bachelor of Applied Science allows multidisciplinary programs of study that not only help you position yourself within the broad range of science disciplines but also qualifies you as a competent professional in your chosen field. You are equipped to work as a science professional or undertake research after graduation if you desire.

The Bachelor of Education (Secondary) prepares you to teach in two curriculum areas in secondary school. The science majors that are most relevant to students intending to follow a career in secondary school teaching are Chemistry, Ecology, Geoscience, Mathematics or Physics.

### Recommended Study

At least one of the sciences. For the majors in biochemistry, biotechnology and microbiology - Biological Science and Chemistry are recommended; for the major in physics - Maths C is recommended.

### Course Design

See the Bachelor of Applied Science course information for details of major areas of study. To allow you to complete the double degree in a shorter period of time, co-majors are to be taken from the education technology program.

### Professional Recognition

Graduates are eligible for registration as teachers in Queensland through the Queensland College of Teachers. Graduates looking for employment in other parts of Australia and overseas may be required to meet additional conditions.

Graduates will satisfy the requirements for membership of the relevant professional body for their chosen science major. See the Bachelor of Applied Science (SC01) course for details.

### Working With Children Check

Working With Children Check - As required by the Commission for Children and Young People and Child Guardian Act (2000), student teachers must undergo a criminal history check and be issued with a Suitability Card (Blue Card) by the Commission.

As soon as you enter your enrolment program for the course, you must submit your Blue Card application to the QUT Student Centre immediately. You must hold a Blue Card. to undertake activities in any unit which involves contact with children, including the required field studies blocks.

If you do not apply for a Blue Card. immediately upon enrolment in the course and allow sufficient time for the police check and issuing of the Card, you will be unable to participate in the required activities and may need to be withdrawn from the unit(s) and incur both financial and academic penalty. It may take up to 8 weeks for the Commission to issue the Card. The application form is available at [bluecard.qut.com](http://bluecard.qut.com).

### Contact Details

#### Science Coordinator

Dr Megan Hargreaves

Phone: +61 7 3138 2244

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#### Education Coordinator

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**Deferment**

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

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

Find out more on deferment.

**Computing Requirement**

The increased and more creative use of online teaching technology in this degree requires that you have access to suitable computer facilities with a minimum equivalent of a Pentium 3 processor, 56k modem and internet access.

**Course structure - Major in Biochemistry**

**Year 1, Semester 1**

SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1
SCB112	Cellular Basis of Life
	Plus either:
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

**Year 1, Semester 2**

SCB120	Plant and Animal Physiology
SCB121	Chemistry 2
SCB122	Cell and Molecular Biology
SCB123	Physical Science Applications
SCB222	Exploration of the Universe

**Year 2, Semester 1**

EDB002	Teaching and Learning Studies 2: Development and Learning
EDB031	Secondary Field Studies 1: Development and Learning in the Field
LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulation Curriculum Studies 1X

**Year 2, Semester 2**

LQB481	Biochemical Pathways and Metabolism
LQB483	Molecular Biology Techniques
LQB681	Biochemical Research Skills
LQB682	Protein Biochemistry and Bioengineering
MDB454	Science, Technology and Society

**Year 3, Semester 1**

LQB581	Functional Biochemistry
LQB582	Biomedical Research Technologies
LQB584	Medical Cell Biology
LQB585	Plant Genetic Manipulation Curriculum Studies 1Y

**Year 3, Semester 2**

EDB003	Teaching and Learning Studies 3: Practising Education
EDB032	Secondary Field Studies 2: Practising Education in the Field Curriculum Studies 2X Curriculum Studies 2Y

**Year 4, Semester 1**

EDB004	Teaching and Learning Studies 4: Inclusive Education
EDB033	Secondary Field Studies 3: Inclusive Educational Practices

## SCIENCE

Curriculum Studies 3X  
Curriculum Studies 3Y

EDB003 Teaching and Learning Studies 3: Practising Education  
EDB032 Secondary Field Studies 2: Practising Education in the Field  
Curriculum Studies 2X  
Curriculum Studies 2Y

### Year 4, Semester 2

EDB005 Teaching and Learning Studies 5: Professional Work of Teachers  
EDB034 Secondary Field Studies 4: Professional Work of Teachers - Induction into the Field  
EDB035 Internship (Secondary)  
EDB007 Culture Studies: Indigenous Education

### Course structure - Major in Biotechnology

#### Year 1, Semester 1

SCB110 Science Concepts and Global Systems  
SCB111 Chemistry 1  
SCB112 Cellular Basis of Life  
Plus either:  
MAB101 Statistical Data Analysis 1  
Or  
MAB104 Introductory Quantitative Methods

#### Year 1, Semester 2

SCB120 Plant and Animal Physiology  
SCB121 Chemistry 2  
SCB122 Cell and Molecular Biology  
SCB123 Physical Science Applications  
SCB222 Exploration of the Universe

#### Year 2, Semester 1

EDB002 Teaching and Learning Studies 2: Development and Learning  
EDB031 Secondary Field Studies 1: Development and Learning in the Field  
LQB381 Biochemistry: Structure and Function  
LQB383 Molecular and Cellular Regulation  
Curriculum Studies 1X

#### Year 2, Semester 2

LQB483 Molecular Biology Techniques  
LQB484 Introduction to Genomics and Bioinformatics  
LQB488 Medical Physiology 2  
LQB489 Plant Physiology and Cell Biology  
MDB454 Science, Technology and Society

#### Year 3, Semester 1

LQB582 Biomedical Research Technologies  
LQB583 Genetic Research Technology  
LQB584 Medical Cell Biology  
LQB585 Plant Genetic Manipulation  
Curriculum Studies 1Y

#### Year 3, Semester 2

### Year 4, Semester 1

EDB004 Teaching and Learning Studies 4: Inclusive Education  
EDB033 Secondary Field Studies 3: Inclusive Educational Practices  
Curriculum Studies 3X  
Curriculum Studies 3Y

### Year 4, Semester 2

EDB005 Teaching and Learning Studies 5: Professional Work of Teachers  
EDB034 Secondary Field Studies 4: Professional Work of Teachers - Induction into the Field  
EDB035 Internship (Secondary)  
EDB007 Culture Studies: Indigenous Education

### Course structure - Major in Chemistry

#### Year 1, Semester 1

SCB110 Science Concepts and Global Systems  
SCB111 Chemistry 1  
SCB112 Cellular Basis of Life  
Plus either:  
MAB101 Statistical Data Analysis 1  
Or  
MAB104 Introductory Quantitative Methods

#### Year 1, Semester 2

MAB100 Mathematical Sciences 1A  
SCB121 Chemistry 2  
SCB123 Physical Science Applications  
SCB131 Experimental Chemistry  
SCB222 Exploration of the Universe

#### Year 2, Semester 1

EDB002 Teaching and Learning Studies 2: Development and Learning  
EDB031 Secondary Field Studies 1: Development and Learning in the Field  
PQB312 Analytical Chemistry for Scientists and Technology  
PQB331 Structure and Bonding  
Curriculum Studies IX

#### Year 2, Semester 2

MDB454 Science, Technology and Society  
PQB401 Chemical Reactions 1

## SCIENCE

PQB442	Chemical Spectroscopy
PQB631	Applied Molecular Science
PQB642	Chemical Research

### Year 3, Semester 1

PQB502	Materials Chemistry and Characterisation
PQB513	Instrumental Analysis
PQB525	Unit Operations
PQB531	Chemical Reactions 2 Curriculum Studies 1Y

### Year 3, Semester 2

EDB003	Teaching and Learning Studies 3: Practising Education
EDB032	Secondary Field Studies 2: Practising Education in the Field Curriculum Studies 2X Curriculum Studies 2Y

### Year 4, Semester 1

EDB004	Teaching and Learning Studies 4: Inclusive Education
EDB033	Secondary Field Studies 3: Inclusive Educational Practices Curriculum Studies 3X Curriculum Studies 3Y

### Year 4, Semester 2

EDB005	Teaching and Learning Studies 5: Professional Work of Teachers
EDB034	Secondary Field Studies 4: Professional Work of Teachers - Induction into the Field
EDB035	Internship (Secondary)
EDB007	Culture Studies: Indigenous Education

### Course structure - Major in Ecology

#### Year 1, Semester 1

SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1
SCB112	Cellular Basis of Life Plus either
MAB101	Statistical Data Analysis 1 Or
MAB104	Introductory Quantitative Methods

#### Year 1, Semester 2

NQB201	Planet Earth
NQB202	History of Life on Earth
SCB120	Plant and Animal Physiology
SCB122	Cell and Molecular Biology
SCB222	Exploration of the Universe

#### Year 2, Semester 1

EDB002	Teaching and Learning Studies 2: Development and Learning
EDB031	Secondary Field Studies 1: Development and Learning in the Field
NQB301	Soils and Sedimentation
NQB321	Ecology Curriculum Studies 1X

#### Year 2, Semester 2

MDB454	Science, Technology and Society
NQB421	Experimental Design
NQB422	Genetics and Evolution
NQB621	Population Management
NQB622	Population Genetics

#### Year 3, Semester 1

NQB501	Environmental Modelling
NQB502	Field Mapping and Monitoring of Natural Resources
NQB521	Population Genetics and Molecular Ecology
NQB522	Ecological Systems Curriculum Studies 1Y

#### Year 3, Semester 2

EDB003	Teaching and Learning Studies 3: Practising Education
EDB032	Secondary Field Studies 2: Practising Education in the Field Curriculum Studies 2X Curriculum Studies 2Y

#### Year 4, Semester 1

EDB004	Teaching and Learning Studies 4: Inclusive Education
EDB033	Secondary Field Studies 3: Inclusive Educational Practices Curriculum Studies 3X Curriculum Studies 3Y

#### Year 4, Semester 2

EDB005	Teaching and Learning Studies 5: Professional Work of Teachers
EDB034	Secondary Field Studies 4: Professional Work of Teachers - Induction into the Field
EDB035	Internship (Secondary)
EDB007	Culture Studies: Indigenous Education

### Course structure - Major in Environmental Science

#### Year 1, Semester 1

SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1
SCB112	Cellular Basis of Life

## SCIENCE

	Plus either:	EDB005	Teaching and Learning Studies 5: Professional Work of Teachers
MAB101	Statistical Data Analysis 1	EDB034	Secondary Field Studies 4: Professional Work of Teachers - Induction into the Field
	Or	EDB035	Internship (Secondary)
MAB104	Introductory Quantitative Methods	EDB007	Culture Studies: Indigenous Education
<b>Year 1, Semester 2</b>			
NQB202	History of Life on Earth	<b>Course structure - Major in Geoscience</b>	
SCB120	Plant and Animal Physiology	<b>Year 1, Semester 1</b>	
SCB121	Chemistry 2	SCB110	Science Concepts and Global Systems
SCB123	Physical Science Applications	SCB111	Chemistry 1
SCB222	Exploration of the Universe	SCB112	Cellular Basis of Life
<b>Year 2, Semester 1</b>			
EDB002	Teaching and Learning Studies 2: Development and Learning	Plus either:	
EDB031	Secondary Field Studies 1: Development and Learning in the Field	MAB101	Statistical Data Analysis 1
NQB301	Soils and Sedimentation	Or	
NQB321	Ecology	MAB104	Introductory Quantitative Methods
	Curriculum Studies 1X	<b>Year 1, Semester 2</b>	
<b>Year 2, Semester 2</b>			
MDB454	Science, Technology and Society	NQB201	Planet Earth
NQB401	Spatial Analysis of Environmental Systems	NQB202	History of Life on Earth
NQB421	Experimental Design	SCB120	Plant and Animal Physiology
NQB601	Sustainable Environmental Management	SCB123	Physical Science Applications
NQB602	Environmental Geochemistry	SCB222	Exploration of the Universe
<b>Year 3, Semester 1</b>			
NQB501	Environmental Modelling	<b>Year 2, Semester 1</b>	
NQB502	Field Mapping and Monitoring of Natural Resources	EDB002	Teaching and Learning Studies 2: Development and Learning
NQB521	Population Genetics and Molecular Ecology	EDB031	Secondary Field Studies 1: Development and Learning in the Field
NQB522	Ecological Systems	NQB301	Soils and Sedimentation
	Curriculum Studies 1Y	NQB311	Mineralogy
<b>Year 3, Semester 2</b>			
EDB003	Teaching and Learning Studies 3: Practising Education	<b>Year 2, Semester 2</b>	
EDB032	Secondary Field Studies 2: Practising Education in the Field	MDB454	Science, Technology and Society
	Curriculum Studies 2X	NQB401	Spatial Analysis of the Environment
	Curriculum Studies 2Y	NQB411	Petrology
<b>Year 4, Semester 1</b>			
EDB004	Teaching and Learning Studies 4: Inclusive Education	NQB412	Structural Geology and Field Methods
EDB033	Secondary Field Studies 3: Inclusive Educational Practices	NQB602	Environmental Chemistry
	Curriculum Studies 3X	<b>Year 3, Semester 1</b>	
	Curriculum Studies 3Y	NQB502	Field Mapping and Monitoring of Natural Resources
<b>Year 4, Semester 2</b>			
		NQB511	Petrology and Geochemistry
		NQB512	Stratigraphy
		NQB513	Geophysics
		Curriculum Studies 1Y	
<b>Year 3, Semester 2</b>			
EDB003	Teaching and Learning Studies 3: Practising Education		
EDB032	Secondary Field Studies 2: Practising Education in the Field		



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Curriculum Studies 2X  
Curriculum Studies 2Y

### Year 4, Semester 1

EDB004 Teaching and Learning Studies 4: Inclusive Education  
EDB033 Secondary Field Studies 3: Inclusive Educational Practices  
Curriculum Studies 3X  
Curriculum Studies 3Y

### Year 4, Semester 2

EDB005 Teaching and Learning Studies 5: Professional Work of Teachers  
EDB034 Secondary Field Studies 4: Professional Work of Teachers - Induction into the Field  
EDB035 Internship (Secondary)  
EDB007 Culture Studies: Indigenous Education

### Course structure - Major in Mathematics (WITH Maths C)

#### Year 1, Semester 1

MAB101 Statistical Data Analysis 1  
MAB111 Mathematical Sciences 1B  
MAB112 Mathematical Sciences 1C  
SCB110 Science Concepts and Global Systems

#### Year 1, Semester 2

MAB210 Statistical Modelling 1  
MAB220 Computational Mathematics 1  
SCB112 Cellular Basis of Life  
SCB123 Physical Science Applications  
SCB222 Exploration of the Universe

#### Year 2, Semester 1

EDB002 Teaching and Learning Studies 2: Development and Learning  
EDB031 Secondary Field Studies 1: Development and Learning in the Field  
Two Level 2 Mathematics units \* - available units are:  
MAB311 Advanced Calculus  
MAB312 Linear Algebra  
MAB314 Statistical Modelling 2  
MAB315 Operations Research 2  
Curriculum Studies 1X  
NOTE: Students must complete at least one of MAB311, MAB312, MAB413

#### Year 2, Semester 2

MDB454 Science, Technology and Society  
Two Level 2 Mathematics units \* - available units are:

MAB313 Mathematics of Finance  
MAB413 Differential Equations  
MAB414 Applied Statistics 2  
MAB420 Computational Mathematics 2  
MAB422 Mathematical Modelling  
MAB480 Introduction to Scientific Computation  
Two Level 3 Mathematics units - available units are:  
MAB621 Discrete Mathematics  
MAB623 Financial Mathematics  
NOTE: Students must complete at least one of MAB311, MAB312, MAB413

### Year 3, Semester 1

PCB107 Physics and Quantitative Techniques  
Three Level 3 Mathematics units - available units are:  
MAB521 Applied Mathematics 3  
MAB522 Computational Mathematics 3  
MAB523 Introduction to Quality Management  
MAB525 Operations Research 3A  
MAB526 Statistical Science 3  
MAB672 Advanced Mathematical Modelling  
Curriculum Studies 1Y

### Year 3, Semester 2

EDB003 Teaching and Learning Studies 3: Practising Education  
EDB032 Secondary Field Studies 2: Practising Education in the Field  
Curriculum Studies 2X  
Curriculum Studies 2Y

### Year 4, Semester 1

EDB004 Teaching and Learning Studies 4: Inclusive Education  
EDB033 Secondary Field Studies 3: Inclusive Educational Practices  
Curriculum Studies 3X  
Curriculum Studies 3Y

### Year 4, Semester 2

EDB005 Teaching and Learning Studies 5: Professional Work of Teachers  
EDB034 Secondary Field Studies 4: Professional Work of Teachers - Induction into the Field  
EDB035 Internship (Secondary)  
EDB007 Culture Studies: Indigenous Education

### Course structure - Major in Mathematics (WITHOUT Maths C)

#### Year 1, Semester 1

MAB100 Mathematical Sciences 1A

## SCIENCE

MAB101	Statistical Data Analysis 1
SCB110	Science Concepts and Global Systems
SCB112	Cellular Basis of Life

### Year 1, Semester 2

MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
MAB210	Statistical Modelling 1
SCB111	Chemistry 1
SCB222	Exploration of the Universe

### Year 2, Semester 1

EDB002	Teaching and Learning Studies 2: Development and Learning
EDB031	Secondary Field Studies 1: Development and Learning in the Field
	Two Level 2 Mathematics units* - available units are:
MAB311	Advanced Calculus
MAB312	Linear Algebra
MAB314	Statistical Modelling 2
MAB315	Operations Research 2
	Curriculum Studies 1X

### Year 2, Semester 2

MDB454	Science, Technology and Society
	Two Level 2 Mathematics Units* - available units are:
MAB313	Mathematics of Finance
MAB413	Differential Equations
MAB414	Applied Statistics 2
MAB420	Computational Mathematics 2
MAB422	Mathematical Modelling
MAB480	Introduction to Scientific Computation
	Two Level 3 Mathematics units - available units are:
MAB621	Discrete Mathematics
MAB623	Financial Mathematics
NOTE:	Students must complete at least one of MAB311, MAB312, MAB413

### Year 3, Semester 1

PCB107	Physics and Quantitative Techniques
	Three Level 3 Mathematics units - available units are:
MAB521	Applied Mathematics 3
MAB522	Computational Mathematics 3
MAB523	Introduction to Quality Management
MAB525	Operations Research 3A
MAB526	Statistical Science 3
MAB672	Advanced Mathematical Modelling
	Curriculum Studies 1Y

### Year 3, Semester 2

EDB003	Teaching and Learning Studies 3: Practising Education
EDB032	Secondary Field Studies 2: Practising Education in the Field
	Curriculum Studies 2X
	Curriculum Studies 2Y

### Year 4, Semester 1

EDB004	Teaching and Learning Studies 4: Inclusive Education
EDB033	Secondary Field Studies 3: Inclusive Educational Practices
	Curriculum Studies 3X
	Curriculum Studies 3Y

### Year 4, Semester 2

EDB005	Teaching and Learning Studies 5: Professional Work of Teachers
EDB034	Secondary Field Studies 4: Professional Work of Teachers - Induction into the Field
EDB035	Internship (Secondary)
EDB007	Culture Studies: Indigenous Education

### Course structure - Major in Microbiology

#### Year 1, Semester 1

SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1
SCB112	Cellular Basis of Life
	Plus either:
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

#### Year 1, Semester 2

SCB120	Plant and Animal Physiology
SCB121	Chemistry 2
SCB122	Cell and Molecular Biology
SCB123	Physical Science Applications
SCB222	Exploration of the Universe

#### Year 2, Semester 1

EDB002	Teaching and Learning Studies 2: Development and Learning
EDB031	Secondary Field Studies 1: Development and Learning in the Field
LQB381	Biochemistry: Structure and Function
LQB386	Microbial Structure and Function
	Curriculum Studies 1X

#### Year 2, Semester 2

LQB483	Molecular Biology Techniques
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## SCIENCE

LQB486	Clinical Microbiology 1
LQB686	Microbial Technology and Immunology
LQB687	Applied Microbiology 2: Food and Quality Assurance
MDB454	Science, Technology and Society

### Year 3, Semester 1

LQB582	Biomedical Research Technologies
LQB584	Medical Cell Biology
LQB586	Clinical Microbiology 2
LQB587	Applied Microbiology 1: Water, Air and Soil Curriculum Studies 1Y

### Year 3, Semester 2

EDB003	Teaching and Learning Studies 3: Practising Education
EDB032	Secondary Field Studies 2: Practising Education in the Field Curriculum Studies 2X Curriculum Studies 2Y

### Year 4, Semester 1

EDB004	Teaching and Learning Studies 4: Inclusive Education
EDB033	Secondary Field Studies 3: Inclusive Educational Practices Curriculum Studies 3X Curriculum Studies 3Y

### Year 4, Semester 2

EDB005	Teaching and Learning Studies 5: Professional Work of Teachers
EDB034	Secondary Field Studies 4: Professional Work of Teachers - Induction into the Field
EDB035	Internship (Secondary)
EDB007	Culture Studies: Indigenous Education

### Course structure - Major in Physics

#### Year 1, Semester 1

SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1
SCB112	Cellular Basis of Life
	Plus either:
MAB100	Mathematical Sciences 1A
	Or
MAB111	Mathematical Sciences 1B

#### Year 1, Semester 2

MAB112	Mathematical Sciences 1C
MAB220	Computational Mathematics 1
PQB250	Mechanics and Electromagnetism
PQB251	Waves and Optics

SCB222	Exploration of the Universe
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### Year 2, Semester 1

EDB002	Teaching and Learning Studies 2: Development and Learning
EDB031	Secondary Field Studies 1: Development and Learning in the Field
MAB311	Advanced Calculus
PQB350	Thermodynamics of Solids and Gases Curriculum Studies 1X

### Year 2, Semester 2

MDB454	Science, Technology and Society
PQB450	Energy Fields and Radiation
PQB451	Electronics and instrumentation
PQB650	Advanced Theoretical Physics
PQB651	Experimental Physics null

### Year 3, Semester 1

PCB593	Digital Image Processing
PQB360	Global Energy Balance and Climate Change
PQB550	Quantum and Condensed Matter Physics
PQB551	Physical Analytical Techniques Curriculum Studies 1Y

### Year 3, Semester 2

EDB003	Teaching and Learning Studies 3: Practising Education
EDB032	Secondary Field Studies II: Practising Education in the Field Curriculum Studies 2X Curriculum Studies 2Y

### Year 4, Semester 1

EDB004	Teaching and Learning Studies IV: Inclusive Education
EDB033	Secondary Field Studies III: Immersion in Inclusive Educational Practices Curriculum Studies 3X Curriculum Studies 3Y

### Year 4, Semester 2

EDB005	Teaching and Learning Studies V: Professional Work of Teachers
EDB034	Secondary Field Studies IV: Professional Work of Teachers: Induction into Practice
EDB035	Internship (Secondary)
EDB007	Culture Studies: Indigenous Education

### Science Component

Major in Physics (with Mathematics Studies)

Replace one science unit (not Physics units) with MAB101 Statistical Data Analysis 1.

Optional - replace up to two other science units (not Physics units) with mathematics units from MAB210, MAB220 or Level 2 or Level 3 units.

#### Mathematics Studies for Majors other than Mathematics or Physics

The following four mathematics units should be included:

- MAB100 Mathematical Sciences 1A
- MAB101 Statistical Data Analysis 1
- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C

Up to two other mathematical units may also be selected.

#### List 1: Curriculum Studies 1X & 1Y

Prerequisite: Normally minimum of 24 credit points of relevant discipline. Students undertaking a double Science major will undertake an education elective in addition to MDB031.

- MDB021 Mathematics Curriculum Studies 1
- MDB031 Science Education Curriculum Studies 1

#### List 2: Curriculum Studies 2X & 2Y

Prerequisites: Curriculum Studies 1X & 1Y

- MDB010 Biology Curriculum Studies 2
- MDB013 Chemistry Curriculum Studies 2
- MDB019 Earth Science Curriculum Studies 2
- MDB022 Mathematics Curriculum Studies 2
- MDB025 Physics Curriculum Studies 2
- MDB028 Science Curriculum Studies 2

#### List 3: Curriculum Studies 3X & 3Y

Prerequisites: Curriculum Studies 2X & 2Y. Students undertaking a double Science major will undertake an education elective in addition to MDB033.

- MDB023 Mathematics Curriculum Studies 3
- MDB033 Science Education Curriculum Studies 3

#### Potential Careers:

Actuary, Analytical Chemist, Astrophysicist, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Database Manager, Ecologist, Environmental Scientist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Mathematician, Medical Biotechnologist, Medical Physicist, Microbiologist, Natural Resource Scientist, Physicist, Plant Biotechnologist, Population Ecologist, Programmer, Quantitative Analyst, Statistician, Virologist.

## Bachelor of Applied Science/Bachelor of Education (Primary) (IX14)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 037540M

**Course duration (full-time):** 4 years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$6,722

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 409142

**Past rank cut-off:** 74

**Past OP cut-off:** 13

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 384

**Standard credit points per full-time semester:** 48

**Course coordinator:** Dr Megan Hargreaves (Science); Dr Mary Ryan (Education)

**Discipline coordinator:** Dr Perry Hartfield (Biochemistry); Dr Marion Bateson (Biotechnology); Dr Robert Johnson (Chemistry); Dr Ian Williamson (Ecology); Dr Robin Thwaites (Environmental Science); Dr Gary Huftile (Geoscience); Dr Scott McCue (Mathematics); Dr Christine Knox (Microbiology); Dr Greg Michael (Physics)

**Campus:** Gardens Point and Kelvin Grove

### Career Opportunities

The Bachelor of Applied Science allows multidisciplinary programs of study that not only help you position yourself within the broad range of science disciplines but also qualifies you as a competent professional in your chosen field. You will be equipped to work as a science professional or undertake research after graduation if you desire.

The Bachelor of Education (Primary) prepares you to teach at all levels of primary school. Students may also complete a discipline/content studies major in one of the key learning areas of the Queensland school curriculum.

### Course Design

Graduates from this double degree will have a science degree with the same core support and choice of major study areas as the graduates from the Bachelor of Applied Science (SC01) program. Education studies will comprise the co-major component.

### Professional Recognition

Graduates are eligible for registration as teachers in Queensland through the Queensland College of Teachers.

Graduates looking for employment in other parts of Australia and overseas may be required to meet additional conditions.

Graduates will satisfy the requirements for membership of the relevant professional body for their chosen science major. See the Bachelor of Applied Science course for details.

### Working With Children Check

Working With Children Check - As required by the Commission for Children and Young People and Child Guardian Act (2000), student teachers must undergo a criminal history check and be issued with a Suitability Card (Blue Card) by the Commission.

As soon as you enter your enrolment program for the course, you must submit your Blue Card application to the QUT Student Centre immediately. You must hold a Blue Card. to undertake activities in any unit which involves contact with children, including the required field studies blocks.

If you do not apply for a Blue Card. immediately upon enrolment in the course and allow sufficient time for the police check and issuing of the Card, you will be unable to participate in the required activities and may need to be withdrawn from the unit(s) and incur both financial and academic penalty. It may take up to 12 weeks for the Commission to issue the Card. The application form is available at [bluecard.qut.com](http://bluecard.qut.com).

### Contact Details

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#### Chemistry

## SCIENCE

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### **Deferment**

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

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

Find out more on deferment.

### **Computing Requirement**

The increased and more creative use of online teaching technology in this degree requires that you have access to suitable computer facilities with a minimum equivalent of a Pentium 3 processor, 56k modem and internet access.

### **Course structure - Major in Biochemistry**

#### Year 1, Semester 1

EDB002	Teaching and Learning Studies 2: Development and Learning
SCB111	Chemistry 1
SCB112	Cellular Basis of Life
	Either

MAB101 Statistical Data Analysis 1  
Or

MAB104 Introductory Quantitative Methods

#### Year 1, Semester 2

EDB021 Primary Field Studies 1: Development and Learning in the Field

SCB120 Plant and Animal Physiology

SCB121 Chemistry 2

SCB122 Cell and Molecular Biology

#### Year 2, Semester 1

LQB381 Biochemistry: Structure and Function

LQB383 Molecular and Cellular Regulation

LQB386 Microbial Structure and Function

MDB120 Mathematics Curriculum and Pedagogies

#### Year 2, Semester 2

CLB008 Primary Curriculum and Pedagogies: Studies of Society and Environment

LQB481 Biochemical Pathways and Metabolism

LQB483 Molecular Biology Techniques

LQB682 Protein Biochemistry and Bioengineering

#### Year 3, Semester 1

LQB581 Functional Biochemistry

LQB582 Biomedical Research Technologies

LQB584 Medical Cell Biology

LQB585 Plant Genetic Manipulation

#### Year 3, Semester 2

EDB003 Teaching and Learning Studies 3: Practising Education

EDB022 Primary Field Studies 2: Practising Education in the Field (Primary)

HMB300 Primary Curriculum and Pedagogies: Health and Physical Education

CLB006 Primary Curriculum and Pedagogies: Language and Literacies 1

#### Year 4, Semester 1

EDB004 Teaching and Learning Studies 4: Inclusive Education

EDB023 Primary Field Studies 3: Inclusive Educational Practices

KKB201 Primary Curriculum and Pedagogies: Music, Visual Arts and Media

OR

KKB202 Primary Curriculum and Pedagogies: Dance and Drama

MDB006 Primary Curriculum and Pedagogies: Science

#### Year 4, Semester 2

EDB005 Teaching and Learning Studies 5: Professional Work of Teachers

## SCIENCE

EDB024	Primary Field Studies 4: Professional Work of Teachers - Induction into the Field
EDB025	Internship (Primary)
MDB004	Primary Curriculum and Pedagogies: Information and Communication Technologies

### Course structure - Major in Biotechnology

#### Year 1, Semester 1

EDB002	Teaching and Learning Studies 2: Development and Learning
SCB111	Chemistry 1
SCB112	Cellular Basis of Life Either:
MAB101	Statistical Data Analysis 1 Or
MAB104	Introductory Quantitative Methods

#### Year 1, Semester 2

EDB021	Primary Field Studies 1: Development and Learning in the Field
SCB120	Plant and Animal Physiology
SCB121	Chemistry 2
SCB122	Cell and Molecular Biology

#### Year 2, Semester 1

LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulation
LQB386	Microbial Structure and Function
MDB120	Mathematics Curriculum and Pedagogies

#### Year 2, Semester 2

CLB008	Primary Curriculum and Pedagogies: Studies of Society and Environment
LQB483	Molecular Biology Techniques
LQB484	Introduction to Genomics and Bioinformatics Select ONE unit from the following:
LQB481	Biochemical Pathways and Metabolism
LQB486	Clinical Microbiology 1
LQB488	Physiology 2
LQB489	Plant Physiology and Cell Biology

#### Year 3, Semester 1

LQB582	Biochemical Research Technologies
LQB583	Genetic Research Technology
LQB584	Medical Cell Biology
LQB585	Plant Genetic Manipulation

#### Year 3, Semester 2

EDB003	Teaching and Learning Studies 3: Practising Education
EDB022	Primary Field Studies 2: Practising Education in the Field (Primary)

HMB300	Primary Curriculum and Pedagogies: Health and Physical Education
CLB006	Primary Curriculum and Pedagogies: Language and Literacies 1

#### Year 4, Semester 1

EDB004	Teaching and Learning Studies 4: Inclusive Education
EDB023	Primary Field Studies 3: Inclusive Educational Practices
KKB201	Primary Curriculum and Pedagogies: Music, Visual Arts and Media OR
KKB202	Primary Curriculum and Pedagogies: Dance and Drama
MDB006	Primary Curriculum and Pedagogies: Science

#### Year 4, Semester 2

EDB005	Teaching and Learning Studies 5: Professional Work of Teachers
EDB024	Primary Field Studies 4: Professional Work of Teachers - Induction into the Field
EDB025	Internship (Primary)
MDB004	Primary Curriculum and Pedagogies: Information and Communication Technologies

### Course structure - Major in Chemistry

#### Year 1, Semester 1

EDB002	Teaching and Learning Studies 2: Development and Learning
SCB111	Chemistry 1
SCB112	Cellular Basis of Life Either:
MAB101	Statistical Data Analysis 1 Or
MAB104	Introductory Quantitative Methods

#### Year 1, Semester 2

EDB021	Primary Field Studies 1: Development and Learning in the Field
MAB100	Mathematical Sciences 1A
SCB121	Chemistry 2
SCB131	Experimental Chemistry

#### Year 2, Semester 1

MDB120	Mathematics Curriculum and Pedagogies
PQB312	Analytical Chemistry for Scientists and Technology
PQB313	Analytical Chemistry for Industry
PQB331	Structure and Bonding

#### Year 2, Semester 2

CLB008	Primary Curriculum and Pedagogies: Studies of Society and Environment
PQB401	Chemical Reactions 1

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PQB442 Chemical Spectroscopy  
PQB631 Applied Molecular Science

NQB202 History of Life on Earth  
SCB120 Plant and Animal Physiology

### Year 3, Semester 1

PQB502 Materials Chemistry and Characterisation  
PQB513 Instrumental Analysis  
PQB525 Unit Operations  
PQB531 Chemical Reactions 2

### Year 2, Semester 1

MDB120 Mathematics Curriculum and Pedagogies  
NQB301 Soils and Sedimentation  
NQB321 Ecology  
Either  
NQB322 Invertebrate Biology  
Or  
NQB323 Vertebrate Biology

### Year 3, Semester 2

EDB003 Teaching and Learning Studies 3: Practising Education  
EDB022 Primary Field Studies 2: Practising Education in the Field (Primary)  
HMB300 Primary Curriculum and Pedagogies: Health and Physical Education  
CLB006 Primary Curriculum and Pedagogies: Language and Literacies 1

### Year 2, Semester 2

CLB008 Primary Curriculum and Pedagogies: Studies of Society and Environment  
NQB421 Experimental Design  
NQB422 Genetics and Evolution  
NQB621 Population Management

### Year 4, Semester 1

EDB004 Teaching and Learning Studies 4: Inclusive Education  
EDB023 Primary Field Studies 3: Inclusive Educational Practices  
KKB201 Primary Curriculum and Pedagogies: Music, Visual Arts and Media  
OR  
KKB202 Primary Curriculum and Pedagogies: Dance and Drama  
MDB006 Primary Curriculum and Pedagogies: Science

### Year 3, Semester 1

NQB501 Environmental Modelling  
NQB502 Field Mapping and Monitoring of Natural Resources  
NQB521 Population Genetics and Molecular Ecology  
NQB522 Ecological Systems

### Year 4, Semester 2

EDB005 Teaching and Learning Studies 5: Professional Work of Teachers  
EDB024 Primary Field Studies 4: Professional Work of Teachers - Induction into the Field  
EDB025 Internship (Primary)  
MDB004 Primary Curriculum and Pedagogies: Information and Communication Technologies

### Year 3, Semester 2

EDB003 Teaching and Learning Studies 3: Practising Education  
EDB022 Primary Field Studies 2: Practising Education in the Field (Primary)  
HMB300 Primary Curriculum and Pedagogies: Health and Physical Education  
CLB006 Primary Curriculum and Pedagogies: Language and Literacies 1

## Course structure - Major in Ecology

### Year 1, Semester 1

EDB002 Teaching and Learning Studies 2: Development and Learning  
SCB111 Chemistry 1  
SCB112 Cellular Basis of Life  
MAB101 Statistical Data Analysis 1  
Either  
MAB104 Introductory Quantitative Methods  
Or

### Year 4, Semester 1

EDB004 Teaching and Learning Studies 4: Inclusive Education  
EDB023 Primary Field Studies 3: Inclusive Educational Practices  
KKB201 Primary Curriculum and Pedagogies: Music, Visual Arts and Media  
OR  
KKB202 Primary Curriculum and Pedagogies: Dance and Drama  
MDB006 Primary Curriculum and Pedagogies: Science

### Year 1, Semester 2

EDB021 Primary Field Studies 1: Development and Learning in the Field  
NQB201 Planet Earth

### Year 4, Semester 2

EDB005 Teaching and Learning Studies 5: Professional Work of Teachers  
EDB024 Primary Field Studies 4: Professional Work of Teachers - Induction into the Field  
EDB025 Internship (Primary)  
MDB004 Primary Curriculum and Pedagogies:



Information and Communication Technologies

**Course structure - Major in Environmental Science**

**Year 1, Semester 1**

EDB002	Teaching and Learning Studies 2: Development and Learning
SCB111	Chemistry 1
SCB112	Cellular Basis of Life Either
MAB101	Statistical Data Analysis 1 Or
MAB104	Introductory Quantitative Methods

**Year 1, Semester 2**

EDB021	Primary Field Studies 1: Development and Learning in the Field
NQB202	History of Life on Earth
SCB120	Plant and Animal Physiology
SCB121	Chemistry 2

**Year 2, Semester 1**

MDB120	Mathematics Curriculum and Pedagogies
NQB301	Soils and Sedimentation
NQB321	Ecology Either
NQB322	Invertebrate Biology Or
NQB323	Vertebrate Biology

**Year 2, Semester 2**

CLB008	Primary Curriculum and Pedagogies: Studies of Society and Environment
NQB401	Spatial Analysis of Environmental Systems
NQB421	Experimental Design
NQB601	Sustainable Environmental Management

**Year 3, Semester 1**

NQB501	Environmental Modelling
NQB502	Field Mapping and Monitoring of Natural Resources
NQB521	Population Genetics and Molecular Ecology
NQB522	Ecological Systems

**Year 3, Semester 2**

EDB003	Teaching and Learning Studies 3: Practising Education
EDB022	Primary Field Studies 2: Practising Education in the Field (Primary)
HMB300	Primary Curriculum and Pedagogies: Health and Physical Education
CLB006	Primary Curriculum and Pedagogies: Language and Literacies 1

**Year 4, Semester 1**

EDB004	Teaching and Learning Studies 4: Inclusive Education
EDB023	Primary Field Studies 3: Inclusive Educational Practices
KKB201	Primary Curriculum and Pedagogies: Music, Visual Arts and Media OR
KKB202	Primary Curriculum and Pedagogies: Dance and Drama
MDB006	Primary Curriculum and Pedagogies: Science

**Year 4, Semester 2**

EDB005	Teaching and Learning Studies 5: Professional Work of Teachers
EDB024	Primary Field Studies 4: Professional Work of Teachers - Induction into the Field
EDB025	Internship (Primary)
MDB004	Primary Curriculum and Pedagogies: Information and Communication Technologies

**Course structure - Major in Geoscience**

**Year 1, Semester 1**

EDB002	Teaching and Learning Studies 2: Development and Learning
SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1 Either
MAB101	Statistical Data Analysis 1 Or
MAB104	Introductory Quantitative Methods

**Year 1, Semester 2**

EDB021	Primary Field Studies 1: Development and Learning in the Field
NQB201	Planet Earth
NQB202	History of Life on Earth
SCB222	Exploration of the Universe

**Year 2, Semester 1**

MDB120	Mathematics Curriculum and Pedagogies
NQB301	Soils and Sedimentation
NQB311	Mineralogy
NQB321	Ecology

**Year 2, Semester 2**

CLB008	Primary Curriculum and Pedagogies: Studies of Society and Environment
NQB411	Petrology
NQB412	Structural Geology and Field Methods
NQB602	Environmental Chemistry

**Year 3, Semester 1**

## SCIENCE

NQB502	Field Mapping and Monitoring of Natural Resources		One Science unit - selected from:
NQB511	Petrology and Geochemistry	SCB110	Science Concepts and Global Systems
NQB512	Stratigraphy	SCB112	Cellular Basis of Life
NQB513	Geophysics		Two Level 2 Mathematics units - available units are:
<b>Year 3, Semester 2</b>		MAB311	Advanced Calculus
EDB003	Teaching and Learning Studies 3: Practising Education	MAB312	Linear Algebra
EDB022	Primary Field Studies 2: Practising Education in the Field (Primary)	MAB314	Statistical Modelling 2
HMB300	Primary Curriculum and Pedagogies: Health and Physical Education	MAB315	Operations Research 2
CLB006	Primary Curriculum and Pedagogies: Language and Literacies 1	NOTE:	Students must complete at least one of MAB311, MAB312, MAB413
<b>Year 4, Semester 1</b>		<b>Year 2, Semester 2</b>	
EDB004	Teaching and Learning Studies 4: Inclusive Education	CLB008	Primary Curriculum and Pedagogies: Studies of Society and Environment
EDB023	Primary Field Studies 3: Inclusive Educational Practices		Two Level 2 Mathematics units - available units are:
KKB201	Primary Curriculum and Pedagogies: Music, Visual Arts and Media OR	MAB313	Mathematics of Finance
KKB202	Primary Curriculum and Pedagogies: Dance and Drama	MAB413	Differential Equations
MDB006	Primary Curriculum and Pedagogies: Science	MAB414	Applied Statistics 2
		MAB420	Computational Mathematics 2
		MAB422	Mathematical Modelling
		MAB480	Introduction to Scientific Computation
			One Level 3 Mathematics unit - available units are:
		MAB621	Discrete Mathematics
		MAB623	Financial Mathematics
		NOTE:	Students must complete at least one of MAB311, MAB312, MAB413
<b>Year 4, Semester 2</b>		<b>Year 3, Semester 1</b>	
EDB005	Teaching and Learning Studies 5: Professional Work of Teachers		One Science Elective
EDB024	Primary Field Studies 4: Professional Work of Teachers - Induction into the Field		Three Level 3 Mathematics units - available units are:
EDB025	Internship (Primary)	MAB521	Applied Mathematics 3
MDB004	Primary Curriculum and Pedagogies: Information and Communication Technologies	MAB522	Computational Mathematics 3
		MAB523	Introduction to Quality Management
		MAB525	Operations Research 3A
		MAB526	Statistical Science 3
		MAB672	Advanced Mathematical Modelling
<b>Course structure - Major in Mathematics (WITH Maths C)</b>		<b>Year 3, Semester 2</b>	
<b>Year 1, Semester 1</b>		EDB003	Teaching and Learning Studies 3: Practising Education
EDB002	Teaching and Learning Studies 2: Development and Learning	EDB022	Primary Field Studies 2: Practising Education in the Field (Primary)
MAB101	Statistical Data Analysis 1	HMB300	Primary Curriculum and Pedagogies: Health and Physical Education
MAB111	Mathematical Sciences 1B	CLB006	Primary Curriculum and Pedagogies: Language and Literacies 1
MAB112	Mathematical Sciences 1C		
<b>Year 1, Semester 2</b>		<b>Year 4, Semester 1</b>	
EDB021	Primary Field Studies 1: Development and Learning in the Field	EDB004	Teaching and Learning Studies 4: Inclusive Education
MAB210	Statistical Modelling 1		
MAB220	Computational Mathematics 1		
SCB111	Chemistry 1		

## SCIENCE

EDB023	Primary Field Studies 3: Inclusive Educational Practices
KKB201	Primary Curriculum and Pedagogies: Music, Visual Arts and Media OR
KKB202	Primary Curriculum and Pedagogies: Dance and Drama
MDB006	Primary Curriculum and Pedagogies: Science

### Year 4, Semester 2

EDB005	Teaching and Learning Studies 5: Professional Work of Teachers
EDB024	Primary Field Studies 4: Professional Work of Teachers - Induction into the Field
EDB025	Internship (Primary)
MDB004	Primary Curriculum and Pedagogies: Information and Communication Technologies

### Course structure - Major in Mathematics (WITHOUT Maths C)

#### Year 1, Semester 1

EDB002	Teaching and Learning Studies 2: Development and Learning
MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1
SCB110	Science Concepts and Global Systems

#### Year 1, Semester 2

EDB021	Primary Field Studies 1: Development and Learning in the Field
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
MAB210	Statistical Modelling 1

#### Year 2, Semester 1

MDB120	Mathematics Curriculum and Pedagogies
MAB220	Computational Mathematics 1 Two Level 2 Mathematics units - available units are:
MAB311	Advanced Calculus
MAB312	Linear Algebra
MAB314	Statistical Modelling 2
MAB315	Operations Research 2
NOTE:	Students must complete at least one of MAB311, MAB312, MAB413

#### Year 2, Semester 2

CLB008	Primary Curriculum and Pedagogies: Studies of Society and Environment Two Level 2 Mathematics units - available units are:
MAB313	Mathematics of Finance
MAB413	Differential Equations
MAB414	Applied Statistics 2

MAB420	Computational Mathematics 2
MAB422	Mathematical Modelling
MAB480	Introduction to Scientific Computation One Level 3 Mathematics unit - available units are:
MAB621	Discrete Mathematics
MAB623	Financial Mathematics
NOTE:	Students must complete at least one of MAB311, MAB312, MAB413

### Year 3, Semester 1

	One Science unit - selected from:
SCB110	Science Concepts and Global Systems
SCB112	Cellular Basis of Life
	Three Level 3 Mathematics units - available units are:
MAB521	Applied Mathematics 3
MAB522	Computational Mathematics 3
MAB523	Introduction to Quality Management
MAB525	Operations Research 3A
MAB526	Statistical Science 3
MAB672	Advanced Mathematical Modelling

### Year 3, Semester 2

EDB003	Teaching and Learning Studies 3: Practising Education
EDB022	Primary Field Studies 2: Practising Education in the Field (Primary)
HMB300	Primary Curriculum and Pedagogies: Health and Physical Education
CLB006	Primary Curriculum and Pedagogies: Language and Literacies 1

### Year 4, Semester 1

EDB004	Teaching and Learning Studies 4: Inclusive Education
EDB023	Primary Field Studies 3: Inclusive Educational Practices
KKB201	Primary Curriculum and Pedagogies: Music, Visual Arts and Media OR
KKB202	Primary Curriculum and Pedagogies: Dance and Drama
MDB006	Primary Curriculum and Pedagogies: Science

### Year 4, Semester 2

EDB005	Teaching and Learning Studies 5: Professional Work of Teachers
EDB024	Primary Field Studies 4: Professional Work of Teachers - Induction into the Field
EDB025	Internship (Primary)
MDB004	Primary Curriculum and Pedagogies: Information and Communication Technologies

### Course structure - Major in Microbiology

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### Year 1, Semester 1

EDB002	Teaching and Learning Studies 2: Development and Learning
SCB111	Chemistry 1
SCB112	Cellular Basis of Life Either
MAB101	Statistical Data Analysis 1 Or
MAB104	Introductory Quantitative Methods

### Year 1, Semester 2

EDB021	Primary Field Studies 1: Development and Learning in the Field
SCB120	Plant and Animal Physiology
SCB121	Chemistry 2
SCB122	Cell and Molecular Biology

### Year 2, Semester 1

LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulation
LQB386	Microbial Structure and Function
MDB120	Mathematics Curriculum and Pedagogies

### Year 2, Semester 2

CLB008	Primary Curriculum and Pedagogies: Studies of Society and Environment
LQB483	Molecular Biology Techniques
LQB486	Clinical Microbiology 1 Either
LQB686	Microbial Technology and Immunology Or
LQB687	Applied Microbiology 2: Food and Quality Assurance

### Year 3, Semester 1

LQB582	Biomedical Research Technologies
LQB584	Medical Cell Biology
LQB586	Clinical Microbiology 2
LQB587	Applied Microbiology 1: Water, Air and Soil

### Year 3, Semester 2

EDB003	Teaching and Learning Studies 3: Practising Education
EDB022	Primary Field Studies 2: Practising Education in the Field (Primary)
HMB300	Primary Curriculum and Pedagogies: Health and Physical Education
CLB006	Primary Curriculum and Pedagogies: Language and Literacies 1

### Year 4, Semester 1

EDB004	Teaching and Learning Studies 4: Inclusive Education
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EDB023	Primary Field Studies 3: Inclusive Educational Practices
KKB201	Primary Curriculum and Pedagogies: Music, Visual Arts and Media OR
KKB202	Primary Curriculum and Pedagogies: Dance and Drama
MDB006	Primary Curriculum and Pedagogies: Science

### Year 4, Semester 2

EDB005	Teaching and Learning Studies 5: Professional Work of Teachers
EDB024	Primary Field Studies 4: Professional Work of Teachers - Induction into the Field
EDB025	Internship (Primary)
MDB004	Primary Curriculum and Pedagogies: Information and Communication Technologies

### Course structure - Major in Physics

#### Year 1, Semester 1

EDB002	Teaching and Learning Studies 2: Development and Learning
SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1 Either
MAB100	Mathematical Sciences 1A
MAB111	Mathematical Sciences 1B Or

#### Year 1, Semester 2

EDB021	Primary Field Studies 1: Development and Learning in the Field
MAB112	Mathematical Sciences 1C
PQB250	Mechanics and Electromagnetism
PQB251	Waves and Optics

#### Year 2, Semester 1

MAB311	Advanced Calculus
MDB120	Mathematics Curriculum and Pedagogies
PQB350	Thermodynamics of Solids and Gases
PQB360	Global Energy Balance and Climate Change

#### Year 2, Semester 2

CLB008	Primary Curriculum and Pedagogies: Studies of Society and Environment
PQB450	Energy Fields and Radiation
PQB451	Electronics and Instrumentation
PQB651	Experimental Physics

#### Year 3, Semester 1

MAB312	Linear Algebra
PCB593	Digital Image Processing
PQB550	Quantum and Condensed Matter Physics

PQB551 Physical Analytical Techniques

**Year 3, Semester 2**

- EDB003 Teaching and Learning Studies 3: Practising Education
- EDB022 Primary Field Studies 2: Practising Education in the Field (Primary)
- HMB300 Primary Curriculum and Pedagogies: Health and Physical Education
- CLB006 Primary Curriculum and Pedagogies: Language and Literacies 1

**Year 4, Semester 1**

- EDB004 Teaching and Learning Studies 4: Inclusive Education
- EDB023 Primary Field Studies 3: Inclusive Educational Practices
- KKB201 Primary Curriculum and Pedagogies: Music, Visual Arts and Media  
OR
- KKB202 Primary Curriculum and Pedagogies: Dance and Drama
- MDB006 Primary Curriculum and Pedagogies: Science

**Year 4, Semester 2**

- EDB005 Teaching and Learning Studies 5: Professional Work of Teachers
- EDB024 Primary Field Studies 4: Professional Work of Teachers - Induction into the Field
- EDB025 Internship (Primary)
- MDB004 Primary Curriculum and Pedagogies: Information and Communication Technologies

**Potential Careers:**

Actuary, Analytical Chemist, Astrophysicist, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Database Manager, Ecologist, Environmental Scientist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Mathematician, Medical Biotechnologist, Medical Physicist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Physicist, Plant Biotechnologist, Population Ecologist, Programmer, Quantitative Analyst, Statistician, Virologist.

## Bachelor of Applied Science / Bachelor of Information Technology (IX26)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 020327M

**Course duration (full-time):** 4 years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,260

**International Fees (per semester):** 2008: \$10,080 per semester (*subject to annual review*)

**Domestic Entry:** February

**QTAC code:** 419302

**Past rank cut-off:** 74

**Past OP cut-off:** 13

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Course coordinator:** Dr Megan Hargreaves (Science), Ms Ruth Christie (IT)

**Discipline coordinator:** Dr Perry Hartfield (Biochemistry); Dr Marion Bateson (Biotechnology); Dr Robert Johnson (Chemistry); Dr Ian Williamson (Ecology); Dr Robin Thwaites (Environmental Science); Dr Emad Kiriakous (Forensic Science); Dr Gary Huftile (Geoscience); Dr Christine Knox (Microbiology); Dr Greg Michael (Physics)  
**Campus:** Gardens Point

### Professional Recognition

Graduates will satisfy the requirements for membership in the relevant professional body for their chosen science major. See the Bachelor of Applied Science (SC01) course for details. Graduates are also eligible for membership of the Australian Computer Society (ACS).

### Course Design

The science component of the course offers students a choice of one of nine majors: Biochemistry, Biotechnology, Chemistry, Ecology, Environmental Science, Forensic Science, Geoscience, Microbiology and Physics. See the Bachelor of Applied Science (SC01) course information for more details. So that students can complete the double degree in a shorter period of time, co-majors are to be taken from the information technology program.

The information technology component gives students the opportunity to undertake a combined major in Data Communications and Software Engineering. Theoretical aspects are balanced by strong practical components in both of the science and information technology degrees.

### Recommended Study

At least one of the sciences. For the majors in biochemistry, biotechnology, forensic science and microbiology -

Biological Science and Chemistry are recommended; for the major in physics - Maths C is recommended.

### Cooperative Education Program

An optional one-year period of paid work experience in an area of information technology is available to eligible full-time students. The Cooperative Education Program is a joint venture between employers and educators to better prepare students for employment upon graduation. Companies that QUT's Cooperative Education students have worked with include Energex, Boeing, CITEC, Global Banking and Securities Transaction, various Queensland Government departments, Dialog, TABQ, RACQ and Sun Microsystems.

For more information visit [www.fit.qut.edu.au/courses/undergrad/coop/](http://www.fit.qut.edu.au/courses/undergrad/coop/)

### Deferment

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

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

Find out more on deferment.

### Contact Details

#### Science Coordinator

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#### Discipline Coordinators

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 Email: g.michael@qut.edu.au top

**IX26 - Bachelor of Applied Science/Bachelor of Information Technology Course Structure**

**Year 1, Semester 1**

ITB002 IT Professional Studies  
 ITB005 Systems Architecture  
           Science Core Unit  
           Science Core Unit

**Year 1, Semester 2**

ITB004 Database Systems  
 ITB006 Networks  
           Science Core Unit  
           Science Core Unit

**Year 2, Semester 1**

ITB001 Problem Solving and Programming  
 ITB008 Modelling Analysis and Design  
           Science Core Unit  
           Science Major Unit

**Year 2, Semester 2**

ITB003 Object Oriented Programming  
 ITB007 Web Development  
           Science Core Unit  
           Science Major Unit

**Year 3, Semester 1**

IT Major Unit  
 IT Major Unit  
 Science Major Unit  
 Science Major Unit

**Year 3, Semester 2**

ITB009 Core Project Management  
 IT Major Unit  
 Science Major Unit  
 Science Major Unit

**Year 4, Semester 1**

ITB010 Core Project Implementation  
 IT Major Unit  
 Science Major Unit  
 Science Major Unit

**Year 4, Semester 2**

IT Major Unit  
 IT Major Unit  
 Science Major Unit  
 Science Major Unit

**Information Systems Major**

**Compulsory Units**

ITB228 Enterprise Systems  
 ITB229 Database Design  
 ITB365 Business Analysis

**IS Elective Units**

Select three (3) units from the following list

ITB218 Applications Programming  
 ITB233 Enterprise Systems Applications  
 ITB239 Enterprise Data Mining  
 ITB260 E-Commerce Site Development  
 ITB264 Information Systems Consulting  
 ITB298 Business Process Modelling  
 ITB364 Information Systems Development  
 ITB366 Information Systems Operations

**Network Systems Major**

**Compulsory Units**

ITB720 Internet Protocols and Services  
 ITB721 Unix Network Administration  
 ITB722 Network Planning and Deployment  
 ITB730 Information Security Fundamentals

**Electives**

Choose 2 Electives

ITB233 Enterprise Systems Applications  
 ITB706 Systems Programming  
 ITB732 Cryptology and Protocols

**Software Architecture Major**

**Compulsory Units**

## SCIENCE

ITB229	Database Design
ITB702	Algorithms and Data Structures
ITB712	Software Engineering Studies

### Electives

Choose 3 Electives

ITB218	Applications Programming
ITB223	Software Development with ORACLE
ITB228	Enterprise Systems
ITB233	Enterprise Systems Applications
ITB254	Interaction Design
ITB260	E-Commerce Site Development
ITB264	Information Systems Consulting
ITB298	Business Process Modelling
ITB706	Systems Programming
ITB713	Advanced Java Programming
ITB716	Advanced Web Applications Development
ITB717	Enterprise Software Architecture
ITB746	Modelling and Animation Techniques
ITB747	Real Time Rendering Techniques
ITB749	Scientific Programming
	MAB281 is only to be used as a prereq for ITB746
MAB281	Mathematics for Computer Graphics
	null

### Course structure - Major in Biochemistry

#### Year 1, Semester 1

SCB111	Chemistry 1
SCB112	Cellular Basis of Life

#### Year 1, Semester 2

SCB120	Plant and Animal Physiology
SCB121	Chemistry 2

#### Year 2, Semester 1

SCB110	Science Concepts and Global Systems
	Plus either:
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

#### Year 2, Semester 2

SCB122	Cell and Molecular Biology
SCB123	Physical Science Applications

#### Year 3, Semester 1

LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulation

#### Year 3, Semester 2

LQB481	Biochemical Pathways and Metabolism
LQB483	Molecular Biology Techniques

#### Year 4, Semester 1

LQB581	Functional Biochemistry
LQB582	Biomedical Research Technologies

#### Year 4, Semester 2

LQB681	Biochemical Research Skills
LQB682	Protein Biochemistry and Bioengineering

### Course structure - Major in Biotechnology

#### Year 1, Semester 1

SCB111	Chemistry 1
SCB112	Cellular Basis of Life

#### Year 1, Semester 2

SCB120	Plant and Animal Physiology
SCB121	Chemistry 2

#### Year 2, Semester 1

SCB110	Science Concepts and Global Systems
	Plus either:
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

#### Year 2, Semester 2

SCB122	Cell and Molecular Biology
SCB123	Physical Science Applications

#### Year 3, Semester 1

LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulations

#### Year 3, Semester 2

LQB483	Molecular Biology Techniques
LQB484	Introduction to Genomics and Bioinformatics

#### Year 4, Semester 1

	TWO units selected from:
LQB583	Genetic Research Technology
LQB584	Medical Cell Biology
LQB585	Plant Genetic Manipulation

#### Year 4, Semester 2

	TWO units selected from:
LQB682	Protein Biochemistry and Bioengineering
LQB684	Medical Biotechnology
LQB685	Plant Microbe Interactions

### Course structure - Major in Chemistry



## SCIENCE

### Year 1, Semester 1

SCB111	Chemistry 1
	Plus either:
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

### Year 1, Semester 2

SCB112	Cellular Basis of Life
SCB121	Chemistry 2

### Year 2, Semester 1

MAB100	Mathematical Sciences 1A
SCB110	Science Concepts and Global Systems

### Year 2, Semester 2

SCB123	Physical Science Applications
SCB131	Experimental Chemistry

### Year 3, Semester 1

PQB312	Analytical Chemistry for Scientists and Technology
PQB331	Structure and Bonding

### Year 3, Semester 2

PQB401	Chemical Reactions 1
PQB442	Chemical Spectroscopy

### Year 4, Semester 1

PQB502	Materials Chemistry and Characterisation
PQB531	Chemical Reactions 2

### Year 4, Semester 2

PQB631	Applied Molecular Science
PQB642	Chemical Research

### Course structure - Major in Ecology

#### Year 1, Semester 1

SCB111	Chemistry 1
SCB112	Cellular Basis of Life

#### Year 1, Semester 2

SCB120	Plant and Animal Physiology
SCB122	Cell and Molecular Biology

#### Year 2, Semester 1

SCB110	Science Concepts and Global Systems
	Plus either:
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

#### Year 2, Semester 2

NQB201	Planet Earth
NQB202	History of Life on Earth

#### Year 3, Semester 1

NQB301	Soils and Sedimentation
NQB321	Ecology

#### Year 3, Semester 2

NQB421	Experimental Design
NQB422	Genetics and Evolution

#### Year 4, Semester 1

NQB502	Field Mapping and Monitoring of Natural Resources
NQB521	Population Genetics and Molecular Ecology

#### Year 4, Semester 2

NQB621	Population management
NQB622	Population Genetics

### Course structure - Major in Environmental Science

#### Year 1, Semester 1

SCB111	Chemistry 1
SCB112	Cellular Basis of Life

#### Year 1, Semester 2

SCB120	Plant and Animal Physiology
SCB121	Chemistry 2

#### Year 2, Semester 1

SCB110	Science Concepts and Global Systems
	Plus either:
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

#### Year 2, Semester 2

NQB202	History of Life on Earth
SCB123	Physical Science Applications

#### Year 3, Semester 1

NQB301	Soils and Sedimentation
NQB321	Ecology

#### Year 3, Semester 2

NQB401	Spatial Analysis of Environmental Systems
NQB421	Experimental Design

#### Year 4, Semester 1

NQB501	Environmental Modelling
NQB502	Field Mapping and Monitoring of Natural Resources

**Year 4, Semester 2**

NQB601 Sustainable Environmental Management  
 NQB602 Environmental Chemistry

**Course structure - Major in Forensic Science**

**Year 1, Semester 1**

SCB111 Chemistry 1  
 SCB112 Cellular Basis of Life

**Year 1, Semester 2**

SCB121 Chemistry 2  
 SCB122 Cell and Molecular Biology

**Year 2, Semester 1**

SCB110 Science Concepts and Global Systems  
 Plus either:  
 MAB101 Statistical Data Analysis 1  
 Or  
 MAB104 Introductory Quantitative Methods

**Year 2, Semester 2**

SCB123 Physical Science Applications  
 SCB131 Experimental Chemistry

**Year 3, Semester 1**

LQB383 Molecular and Cellular Regulation  
 SCB384 Crime Scene and Forensic Science

**Year 3, Semester 2**

JSB979 Forensic Scientific Evidence  
 PQB312 Analytical Chemistry for Scientists and Technologists

**Year 4, Semester 1**

PQB513 Instrumental Analysis  
 PQB584 Forensic Physical Evidence

**Year 4, Semester 2**

LQB680 Forensic DNA Profiling  
 PQB684 Forensic Analysis

**Course structure - Major in Geoscience**

**Year 1, Semester 1**

SCB111 Chemistry 1  
 SCB112 Cellular Basis of Life

**Year 1, Semester 2**

NQB201 Planet Earth  
 SCB123 Physical Science Applications

**Year 2, Semester 1**

SCB110 Science Concepts and Global Systems

Plus either:

MAB101 Statistical Data Analysis 1  
 Or  
 MAB104 Introductory Quantitative Methods

**Year 2, Semester 2**

NQB202 History of Life on Earth  
 SCB222 Exploration of the Universe

**Year 3, Semester 1**

NQB301 Soils and Sedimentation  
 NQB311 Mineralogy

**Year 3, Semester 2**

NQB411 Petrology  
 NQB412 Structural Geology and Field Methods

**Year 4, Semester 1**

NQB502 Field Mapping and Monitoring of Natural Resources  
 NQB512 Stratigraphy  
 NQB513 Geophysics

**Year 4, Semester 2**

NQB602 Environmental Chemistry

**Course structure - Major in Microbiology**

**Year 1, Semester 1**

SCB111 Chemistry 1  
 SCB112 Cellular Basis of Life

**Year 1, Semester 2**

SCB120 Plant and Animal Physiology  
 SCB121 Chemistry 2

**Year 2, Semester 1**

SCB110 Science Concepts and Global Systems  
 Plus either:  
 MAB101 Statistical Data Analysis 1  
 Or  
 MAB104 Introductory Quantitative Methods

**Year 2, Semester 2**

SCB122 Cell and Molecular Biology  
 SCB123 Physical Science Applications

**Year 3, Semester 1**

LQB381 Biochemistry: Structure and Function  
 LQB386 Microbial Structure and Function

**Year 3, Semester 2**

LQB483 Molecular Biology Techniques  
 LQB486 Clinical Microbiology 1

**Year 4, Semester 1**

- LQB586 Clinical Microbiology 2
- LQB587 Applied Microbiology 1: Water, Air and Soil

**Year 4, Semester 2**

- LQB686 Microbial Technology and Immunology
- LQB687 Applied Microbiology 2: Food and Quality Assurance

**Course structure - Major in Physics**

**Year 1, Semester 1**

- MAB111 Mathematical Sciences 1B
- SCB111 Chemistry 1

**Year 1, Semester 2**

- MAB112 Mathematical Sciences 1C
- PQB250 Mechanics and Electromagnetism

**Year 2, Semester 1**

- SCB110 Science Concepts and Global Systems
- SCB112 Cellular Basis of Life

**Year 2, Semester 2**

- MAB220 Computational Mathematics 1
- PQB251 Waves and Optics

**Year 3, Semester 1**

- MAB311 Advanced Calculus
- PQB350 Thermodynamics of Solids and Gases

**Year 3, Semester 2**

- PQB450 Energy Fields and Radiation
- PQB451 Electronics and Instrumentation

**Year 4, Semester 1**

- PQB550 Quantum and Condensed Matter Physics
- PQB551 Physical Analytical Techniques

**Year 4, Semester 2**

- PQB650 Advanced Theoretical Physics
- PQB651 Experimental Physics

**Minors Unit Sets**

**You can pick from x of these**

- ASF001 Australian Studies 1
- PYB159 Alcohol & Other Drug Studies
- BSD117 Professional Communication and Negotiation
- HMB317 Outdoor Education
- There is more

**Potential Careers:**

Analytical Chemist, Astrophysicist, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Data Communications Specialist, Ecologist, Environmental Scientist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Medical Biotechnologist, Medical Physicist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Network Administrator, Network Manager, Physicist, Plant Biotechnologist, Population Ecologist, Software Engineer, Systems Analyst, Virologist.

## Bachelor of Information Technology / Bachelor of Mathematics (IX29)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 059226F

**Course duration (full-time):** 4 years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,260

**International Fees (per semester):** 2008: \$10,080 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 419552

**Past rank cut-off:** 76

**Past OP cut-off:** 12

**OP Guarantee:** Yes

**Assumed knowledge:** English (4,SA) and Maths B (4,SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 384

**Course coordinator:** Dr Gary Carter (Mathematics), Ms Ruth Christie (IT)

**Campus:** Gardens Point

### Professional Recognition

On graduation, students will be eligible for membership of the Mathematical Society of Australia, the Statistical Society of Australia Inc and, depending on unit selection, the Australian Society for Operations Research. Graduates of the Bachelor of Information Technology meet the knowledge requirement for admission to the Australian Computer Society.

### Course Design

This double degree comprises 384 credit points with 192 credit points from Information Technology and 192 credit points from Mathematics. All majors in the Bachelor of Information Technology are available.

### Cooperative Education Program

An optional one-year period of paid work experience in an area of information technology is available to eligible full-time students. The Cooperative Education Program is a joint venture between employers and educators to better prepare students for employment upon graduation. Companies that QUT's Cooperative Education students have worked with include Energex, Boeing, CITEC, Global Banking and Securities Transaction, various Queensland Government departments, Dialog, TABQ, RACQ and Sun Microsystems.

For more information visit [www.fit.qut.edu.au/courses/undergrad/coop/](http://www.fit.qut.edu.au/courses/undergrad/coop/)

### Mathematics Bursaries

Students enrolled in this course can apply for industry-sponsored bursaries. These bursaries are awarded to Australian citizens or permanent residents on a competitive basis. Applications should be submitted by 1 December of the year preceding entry to the course. For further information see [www.maths.qut.edu.au](http://www.maths.qut.edu.au)

### Contact Details

#### Information Technology Coordinator

Ms Ruth Christie

Phone: +61 7 3138 2736

Email: [r.christie@qut.edu.au](mailto:r.christie@qut.edu.au)

#### Mathematics Coordinator

Dr Gary Carter

Phone: +61 7 3138 5090

Email: [g.carter@qut.edu.au](mailto:g.carter@qut.edu.au)

### Deferment

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

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

Find out more on deferment.

### Course Structure for students with four semesters of Senior Mathematics B and Senior Mathematics C

For students with four semesters of Senior Mathematics B and Senior Mathematics C (or equivalent) with an exit assessment of at least Sound Achievement in both

#### Year 1, Semester 1

ITB002	IT Professional Studies
ITB005	Systems Architecture
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C

#### Year 1, Semester 2

ITB004	Database Systems
ITB006	Networks
MAB210	Statistical Modelling 1
MAB220	Computational Mathematics 1

#### Year 2, Semester 1

ITB001	Problem Solving and Programming
ITB008	Modelling Analysis and Design
MAB101	Statistical Data Analysis 1
MAB312	Linear Algebra

## SCIENCE

### Year 2, Semester 2

ITB003	Object Oriented Programming
ITB007	Web Development
	Level 2 or 3 Maths Unit
	Level 2 or 3 Maths Unit

### Year 3, Semester 1

	IT Major Unit
	IT Major Unit
MAB311	Advanced Calculus
	Level 2 or 3 Maths unit

### Year 3, Semester 2

ITB009	Core Project Management
	IT Major Unit
	Level 2 or 3 Maths Unit
	Level 2 or 3 Maths Unit

### Year 4, Semester 1

ITB010	Core Project Implementation
	IT Major Unit
	Level 2 or 3 Maths Unit
	Level 2 or 3 Maths Unit

### Year 4, Semester 2

	IT Major Unit
	IT Major Unit
	Level 2 or 3 Maths Unit
	Level 2 or 3 Maths Unit

### Course Structure for students with four semesters of Senior Mathematics B (or equivalent) only

For students with four semesters of Senior Mathematics B (or equivalent) only, with an exit assessment of at least Sound Achievement

### Year 1, Semester 1

ITB002	IT Professional Studies
ITB005	Systems Architecture
MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1

### Year 1, Semester 2

ITB004	Database Systems
ITB006	Networks
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C

### Year 2, Semester 1

ITB001	Problem Solving and Programming
ITB008	Modelling Analysis and Design

MAB220	Computational Mathematics 1
MAB312	Linear Algebra

### Year 2, Semester 2

ITB003	Object Oriented Programming
ITB007	Web Development
MAB210	Statistical Modelling 1
	Level 2 or 3 Maths Unit

### Year 3, Semester 1

	IT Major Unit
	IT Major Unit
MAB311	Advanced Calculus
	Level 2 or 3 Maths unit

### Year 3, Semester 2

ITB009	Core Project Management
	IT Major Unit
	Level 2 or 3 Maths Unit
	Level 2 or 3 Maths Unit

### Year 4, Semester 1

ITB010	Core Project Implementation
	IT Major Unit
	Level 2 or 3 Maths Unit
	Level 2 or 3 Maths Unit

### Year 4, Semester 2

	IT Major Unit
	IT Major Unit
	Level 2 or 3 Maths Unit
	Level 2 or 3 Maths Unit

### Mathematics Units

Students must complete at least 48 credit points from Level 3 Mathematics units

### Level 2 Units

MAB311	Advanced Calculus
MAB312	Linear Algebra
MAB313	Mathematics of Finance
MAB314	Statistical Modelling 2
MAB315	Operations Research 2
MAB413	Differential Equations
MAB414	Applied Statistics 2
MAB420	Computational Mathematics 2
MAB422	Mathematical Modelling
MAB461	Discrete Mathematics
MAB480	Introduction to Scientific Computation
MAB481	Visualisation and Data Analysis

**Level 3 Units**

MAB521	Applied Mathematics 3
MAB522	Computational Mathematics 3
MAB524	Statistical Inference
MAB525	Operations Research 3A
MAB533	Statistical Techniques
MAB536	Time Series Analysis
MAB613	Partial Differential Equations
MAB623	Financial Mathematics
MAB624	Applied Statistics 3
MAB625	Operations Research 3B
MAB640	Industry Project
MAB672	Advanced Mathematical Modelling
MAB681	Advanced Visualisation and Data Analysis

**Notes:**

- MAB681 will not be offered in 2008, but will be offered in Semester 2 2009.
- All Mathematics units have 4 contact hours per week.

**Intelligent Systems Major**

**Compulsory Units**

ITB239	Enterprise Data Mining
ITB740	Agent Based Software Engineering

**Elective Units**

Select two (2) units from the following list

ITB322	Information Resources
ITB742	Computational Intelligence

**Network Systems Major**

**Compulsory Units**

ITB720	Internet Protocols and Services
ITB721	Unix Network Administration
ITB722	Network Planning and Deployment
ITB730	Information Security Fundamentals

**Electives**

Choose 2 Electives

ITB233	Enterprise Systems Applications
ITB706	Systems Programming
ITB732	Cryptology and Protocols

**Software Architecture Major**

**Compulsory Units**

ITB229	Database Design
ITB702	Algorithms and Data Structures
ITB712	Software Engineering Studies

**Electives**

Choose 3 Electives

ITB218	Applications Programming
ITB223	Software Development with ORACLE
ITB228	Enterprise Systems
ITB233	Enterprise Systems Applications
ITB254	Interaction Design
ITB260	E-Commerce Site Development
ITB264	Information Systems Consulting
ITB298	Business Process Modelling
ITB706	Systems Programming
ITB713	Advanced Java Programming
ITB716	Advanced Web Applications Development
ITB717	Enterprise Software Architecture
ITB746	Modelling and Animation Techniques
ITB747	Real Time Rendering Techniques
ITB749	Scientific Programming
	MAB281 is only to be used as a prereq for ITB746
MAB281	Mathematics for Computer Graphics
	null

**Potential Careers:**

Actuary, Computer Game Programmer, Data Communications Specialist, Database Manager, Market Research Manager, Mathematician, Network Administrator, Network Manager, Programmer, Quantitative Analyst, Software Engineer, Statistician, Systems Analyst.

## Bachelor of Applied Science / Bachelor of Business (IX31)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 059594D

**Course duration (full-time):** 4 years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,755

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 419832

**Past rank cut-off:** 76

**Past OP cut-off:** 12

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 384

**Standard credit points per full-time semester:** 48

**Course coordinator:** Dr Megan Hargreaves (Science); Mr Andrew Paltridge (Business)

**Discipline coordinator:** Ms Ros Kent (Accountancy); Ms Gayle Kerr (Advertising); Dr John Chen (Banking & Finance); Dr Radhika Lahiri (Economics); Dr Paul Barnes (Human Resource Management); Mr Simon Ridings (International Business); Dr Paul Barnes (Management); Mr Bill Proud (Marketing); and Ms Robina Xavier (Public Relations). Science Discipline Coordinator details are listed under Contact Details below.

**Campus:** Gardens Point

### Career Opportunities

By combining your science studies with the Bachelor of Business you will develop the entrepreneurial skills necessary to sell your abilities to a range of employers. As a graduate of the Bachelor of Applied Science/Bachelor of Business, you will be able to work at the cutting edge of scientific innovation within a range of public, private and non-profit industries. As well as the range of science-based careers available, you could expect to gain employment as a consultant, marketer, or project manager within firms developing and taking scientific research to the marketplace.

### Course Design

The Bachelor of Applied Science allows multi-disciplinary programs of study to help position you within the broad range of science disciplines and qualify you as a competent professional within your chosen field. You can specialise in one of the major areas of study available in the Bachelor of Applied Science course (Biochemistry, Biotechnology, Chemistry, Ecology, Environmental Science, Forensic

Science, Geoscience, Microbiology or Physics). See the Bachelor of Applied Science (SC01) course for more details.

To allow you to complete the double degree in a shorter period of time, your co-major will be taken from the business program therefore it is not possible to choose any of the co-majors listed under the Bachelor of Applied Science course.

You can specialise in one or more of the following business majors: Accountancy, Advertising, Banking and Finance, Economics, Human Resource Management, International Business, Management, Marketing or Public Relations.

### Professional Recognition

The Bachelor of Business degree may, subject to choice of major, extended major, or specialisation, allow graduates to satisfy the academic requirements for membership as follows:

\*All majors: Chartered Secretaries Australia (CSA) - enrolment in the Graduate Diploma in Applied Corporate Governance.

\*Accountancy: CPA Australia (associate membership & enrolment in the CPA Program), Institute of Chartered Accountants in Australia (ICAA)(enrolment in the CA Program).

\*Advertising - Advertising Federation of Australia, Australian Association of National Advertisers, Australian Direct Marketing Association and the Queensland Commercial Radio Association;

\*Banking and Finance: Financial Services Institute of Australasia (FINSIA).

\*Economics: Economic Society of Australia (Queensland Division).

\*Human Resource Management - Australian Human Resources Institute, Australian Institute of Training and Development, Australian Institute of Management;

\*International Business - Australian Institute of Export;

\*Management - Australian Institute of Management;

\*Marketing: Australian Marketing Institute, Market Research Society of Australia, Australian Institute of Management, Australian Institute of Export (Qld) Ltd, American Marketing Association.

\*Public Relations - Public Relations Institute of Australia.

Graduates will satisfy the requirements for membership of the relevant professional body for their chosen science major. See the Bachelor of Applied Science (SC01) course for details.

### Contact Details

#### Science Coordinator

Dr Megan Hargreaves

Phone: +61 7 3138 2244

Email: [m.hargreaves@qut.edu.au](mailto:m.hargreaves@qut.edu.au)

#### Business Coordinator

Mr Andrew Paltridge

Email: [a.paltridge@qut.edu.au](mailto:a.paltridge@qut.edu.au)

### Science Discipline Coordinators

*Biochemistry*

Dr Perry Hartfield  
 Phone: +61 7 3138 2984  
 Email: p.hartfield@qut.edu.au

*Biotechnology*

Dr Marion Bateson  
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 Email: m.bateson@qut.edu.au

*Chemistry*

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*Ecology*

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*Environmental Science*

Dr Robin Thwaites  
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*Forensic Science*

Dr Emad Kiriakous  
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 Email: e.kiriakous@qut.edu.au

*Geoscience*

Dr Gary Huftile  
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*Microbiology*

Dr Christine Knox  
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 Email: c.knox@qut.edu.au

*Physics*

Dr Greg Michael  
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 Email: g.michael@qut.edu.au

**Deferment**

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

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

Find out more on deferment.

**Full Time Course structure**

**Year 1 Semester 1**

- Business Faculty Core Unit
- Business Faculty Core Unit

- Science Faculty Unit
- Science Faculty Unit

**Year 1 Semester 2**

- Business Faculty Core Unit
- Business Faculty Core Unit
- Science Faculty Unit
- Science Faculty Unit

**Year 2 Semester 1**

- Business Faculty Core Unit
- Business Faculty Core Unit
- Science Faculty Unit
- Science Faculty Unit

**Year 2 Semester 2**

- Business Faculty Core Unit
- Business Faculty Major Unit
- Science Faculty Unit
- Science Faculty Unit

**Year 3 Semester 1**

- Business Faculty Major Unit
- Business Faculty Major Unit
- Science Faculty Unit
- Science Faculty Unit

**Year 3 Semester 2**

- Business Faculty Major Unit
- Business Faculty Major Unit
- Science Faculty Unit
- Science Faculty Unit

**Year 4 Semester 1**

- Business Faculty Major Unit
- Business Faculty Major Unit
- Science Faculty Unit
- Science Faculty Unit

**Year 4 Semester 2**

- Business Faculty Major Unit
- Business Faculty Major Unit
- Science Faculty Unit
- Science Faculty Unit

**Advertising Major**

**Year 1 Semester 1**

- BSB119 International and Electronic Business
- BSB126 Marketing

**Year 1 Semester 2**



BSB110 Accounting  
 BSB115 Management, People and Organisations

**Year 2 Semester 1**

BSB114 Government, Business and Society  
 AMB200 Consumer Behaviour

**Year 2 Semester 2**

BSB111 Business Law and Ethics  
 BSB113 Economics

**Year 3 Semester 1**

AMB230 Internet Promotion  
 AMB220 Advertising Theory and Practice

**Year 3 Semester 2**

AMB221 Advertising Copywriting  
 AMB222 Media Planning

**Year 4 Semester 1**

AMB320 Advertising Management  
 AMB330 Advertising Strategy and Planning

**Year 4 Semester 2**

AMB321 Advertising Campaigns  
 AMB202 Integrated Marketing Communication

**Accountancy Major**

**Year 1 Semester 1**

BSB110 Accounting  
 BSB115 Management, People and Organisations

**Year 1 Semester 2**

BSB114 Government, Business and Society  
 BSB126 Marketing  
 or  
 BSB119 International and Electronic Business

**Year 2 Semester 1**

BSB111 Business Law and Ethics  
 BSB113 Economics

**Year 2 Semester 2**

AYB121 Financial Accounting  
 AYB223 Law of Business Associations

**Year 3 Semester 1**

AYB225 Management Accounting  
 AYB220 Company Accounting

**Year 3 Semester 2**

AYB221 Computerised Accounting Systems  
 AYB325 Taxation Law

**Year 4 Semester 1**

AYB301 Auditing  
 AYB311 Financial Accounting Issues  
 or  
 AYB321 Strategic Management Accounting

**Year 4 Semester 2**

AYB339 Accountancy Capstone  
 EFB210 Finance 1

**Banking and Finance Major**

**Year 1 Semester 1**

BSB113 Economics  
 BSB115 Management, People and Organisations

**Year 1 Semester 2**

BSB114 Government, Business and Society  
 BSB126 Marketing

**Year 2 Semester 1**

BSB110 Accounting  
 BSB111 Business Law and Ethics

**Year 2 Semester 2**

EFB102 Economics 2  
 BSB119 International and Electronic Business

**Year 3 Semester 1**

EFB210 Finance 1  
 EFB201 Financial Markets

**Year 3 Semester 2**

EFB307 Finance 2  
 EFB312 International Finance

**Year 4 Semester 1**

EFB200 Applied Regression Analysis  
 EFB318 Portfolio and Security Analysis

**Year 4 Semester 2**

Any Finance Unit  
 Any Finance Unit

**Economics Major**

**Year 1 Semester 1**

BSB113 Economics  
 BSB115 Management, People and Organisations

**Year 1 Semester 2**

BSB114 Government, Business and Society  
 BSB126 Marketing

**Year 2 Semester 1**

BSB110 Accounting  
 EFB102 Economics 2

**Year 2 Semester 2**

EFB210 Finance 1  
 BSB119 International and Electronic Business

**Year 3 Semester 1**

EFB211 Firms, Markets and Resources  
 EFB202 Business Cycles and Economic Growth

**Year 3 Semester 2**

EFB328 Public Economics and Finance  
 Any Economics unit

**Year 4 Semester 1**

BSB111 Business Law and Ethics  
 EFB200 Applied Regression Analysis

**Year 4 Semester 2**

EFB329 Contemporary Applications of Economics Theory  
 EFB314 International Trade and Economic Competitiveness

**Human Resource Management Major**

**Year 1 Semester 1**

BSB113 Economics  
 BSB115 Management, People and Organisations

**Year 1 Semester 2**

BSB114 Government, Business and Society  
 BSB126 Marketing

**Year 2 Semester 1**

BSB110 Accounting  
 BSB111 Business Law and Ethics

**Year 2 Semester 2**

MGB207 Human Resource Issues and Strategy  
 BSB119 International and Electronic Business

**Year 3 Semester 1**

MGB220 Management Research Methods  
 HRM Option Unit

**Year 3 Semester 2**

MGB200 Leading Organisations  
 HRM Option Unit

**Year 4 Semester 1**

MGB221 Performance and Reward

**HRM Option Unit**

**Year 4 Semester 2**

MGB320 Recruitment and Selection  
 MGB331 Learning and Development in Organisations

**HRM Option Unit List:**

MGB201 Contemporary Employment Relations  
 MGB210 Managing Operations  
 MGB212 Sustainability in a Changing Environment  
 MGB309 Strategic Management  
 MGB314 Organisational Consulting and Change  
 MGB315 Personal and Professional Development  
 MGB335 Project Management

HRM students must choose three from the above list (one must be a Level 3 unit).

**International Business Major**

**Year 1 Semester 1**

BSB126 Marketing  
 BSB119 International and Electronic Business

**Year 1 Semester 2**

BSB110 Accounting  
 BSB115 Management, People and Organisations

**Year 2 Semester 1**

BSB114 Government, Business and Society  
 IBB202 Fundamentals of International Finance

**Year 2 Semester 2**

BSB111 Business Law and Ethics  
 BSB113 Economics

**Year 3 Semester 1**

IBB205 Intercultural Communication and Negotiation  
 IBB217 Asian Business Development  
 or  
 IBB208 European Business Development

**Year 3 Semester 2**

IBB210 Export Management  
 IBB317 Contemporary Business in Asia  
 or  
 IBB308 Contemporary Business in Europe

**Year 4 Semester 1**

IBB300 International Business Strategy  
 IBB304 Global Industry Analysis

**Year 4 Semester 2**

IBB213 International Marketing

IBB303 International Logistics

**Management Major**

**Year 1 Semester 1**

BSB113 Economics  
BSB115 Management, People and Organisations

**Year 1 Semester 2**

BSB114 Government, Business and Society  
BSB126 Marketing

**Year 2 Semester 1**

BSB110 Accounting  
BSB111 Business Law and Ethics

**Year 2 Semester 2**

MGB200 Leading Organisations  
BSB119 International and Electronic Business

**Year 3 Semester 1**

MGB210 Managing Operations  
MGB223 Entrepreneurship and Innovation

**Year 3 Semester 2**

MGB212 Sustainability in a Changing Environment  
Management Option Unit

**Year 4 Semester 1**

MGB309 Strategic Management  
Management Option Unit

**Year 4 Semester 2**

MGB335 Project Management  
Management Option Unit

**Management Option Unit List:**

Management students must choose three from the above list (one must be a Level 3 unit):

MGB201 Contemporary Employment Relations  
MGB218 Managing Business Growth  
MGB314 Organisational Consulting and Change  
IBB205 Intercultural Communication and Negotiation  
MGB315 Personal and Professional Development

**Public Relations Major**

**Year 1 Semester 1**

BSB119 International and Electronic Business  
BSB126 Marketing

**Year 1 Semester 2**

BSB110 Accounting  
BSB115 Management, People and Organisations

**Year 2 Semester 1**

BSB114 Government, Business and Society  
AMB201 Marketing and Audience Research

**Year 2 Semester 2**

BSB111 Business Law and Ethics  
BSB113 Economics

**Year 3 Semester 1**

AMB202 Integrated Marketing Communication  
AMB260 Public Relations Theory and Practice

**Year 3 Semester 2**

AMB261 Media Relations and Publicity  
AMB262 Public Relations Writing

**Year 4 Semester 1**

AMB360 Corporate Communication Management  
AMB370 Public Relations Cases

**Year 4 Semester 2**

AMB361 Public Relations Campaigns  
AMB371 Corporate Communication Strategies

**Marketing Major**

**Year 1 Semester 1**

BSB119 International and Electronic Business  
BSB126 Marketing

**Year 1 Semester 2**

BSB110 Accounting  
BSB115 Management, People and Organisations

**Year 2 Semester 1**

BSB114 Government, Business and Society  
AMB200 Consumer Behaviour

**Year 2 Semester 2**

BSB111 Business Law and Ethics  
BSB113 Economics

**Year 3 Semester 1**

AMB202 Integrated Marketing Communication  
AMB240 Marketing Planning and Management

**Year 3 Semester 2**

AMB201 Marketing and Audience Research  
AMB241 E-Marketing Strategies

**Year 4 Semester 1**

AMB340 Services Marketing  
Any Marketing unit

## SCIENCE

### Year 4 Semester 2

AMB341	Strategic Marketing
AMB352	Marketing Decision Making
	or
IBB213	International Marketing

### Course structure - Major in Biochemistry

#### Year 1, Semester 1

SCB111	Chemistry 1
SCB112	Cellular Basis of Life

#### Year 1, Semester 2

SCB120	Plant and Animal Physiology
SCB121	Chemistry 2

#### Year 2, Semester 1

SCB110	Science Concepts and Global Systems
	Plus either:
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

#### Year 2, Semester 2

SCB122	Cell and Molecular Biology
SCB123	Physical Science Applications

#### Year 3, Semester 1

LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulation

#### Year 3, Semester 2

LQB481	Biochemical Pathways and Metabolism
LQB483	Molecular Biology Techniques

#### Year 4, Semester 1

LQB581	Functional Biochemistry
LQB582	Biomedical Research Technologies

#### Year 4, Semester 2

LQB681	Biochemical Research Skills
LQB682	Protein Biochemistry and Bioengineering

### Course structure - Major in Biotechnology

#### Year 1, Semester 1

SCB111	Chemistry 1
SCB112	Cellular Basis of Life

#### Year 1, Semester 2

SCB120	Plant and Animal Physiology
SCB121	Chemistry 2

#### Year 2, Semester 1

SCB110	Science Concepts and Global Systems
	Plus either:
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

#### Year 2, Semester 2

SCB122	Cell and Molecular Biology
SCB123	Physical Science Applications

#### Year 3, Semester 1

LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulations

#### Year 3, Semester 2

LQB483	Molecular Biology Techniques
LQB484	Introduction to Genomics and Bioinformatics

#### Year 4, Semester 1

	TWO units selected from:
LQB583	Genetic Research Technology
LQB584	Medical Cell Biology
LQB585	Plant Genetic Manipulation

#### Year 4, Semester 2

	TWO units selected from:
LQB682	Protein Biochemistry and Bioengineering
LQB684	Medical Biotechnology
LQB685	Plant Microbe Interactions

### Course structure - Major in Chemistry

#### Year 1, Semester 1

SCB111	Chemistry 1
	Plus either:
MAB101	Statistical Data Analysis 1
	Or
MAB104	Introductory Quantitative Methods

#### Year 1, Semester 2

SCB112	Cellular Basis of Life
SCB121	Chemistry 2

#### Year 2, Semester 1

MAB100	Mathematical Sciences 1A
SCB110	Science Concepts and Global Systems

#### Year 2, Semester 2

SCB123	Physical Science Applications
SCB131	Experimental Chemistry

#### Year 3, Semester 1

PQB312	Analytical Chemistry for Scientists and
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## SCIENCE

Technology  
PQB331 Structure and Bonding

### Year 3, Semester 2

PQB401 Chemical Reactions 1  
PQB442 Chemical Spectroscopy

### Year 4, Semester 1

PQB502 Materials Chemistry and Characterisation  
PQB531 Chemical Reactions 2

### Year 4, Semester 2

PQB631 Applied Molecular Science  
PQB642 Chemical Research

### Course structure - Major in Ecology

#### Year 1, Semester 1

SCB111 Chemistry 1  
SCB112 Cellular Basis of Life

#### Year 1, Semester 2

SCB120 Plant and Animal Physiology  
SCB122 Cell and Molecular Biology

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
Plus either:  
MAB101 Statistical Data Analysis 1  
Or  
MAB104 Introductory Quantitative Methods

#### Year 2, Semester 2

NQB201 Planet Earth  
NQB202 History of Life on Earth

#### Year 3, Semester 1

NQB301 Soils and Sedimentation  
NQB321 Ecology

#### Year 3, Semester 2

NQB421 Experimental Design  
NQB422 Genetics and Evolution

#### Year 4, Semester 1

NQB502 Field Mapping and Monitoring of Natural Resources  
NQB521 Population Genetics and Molecular Ecology

#### Year 4, Semester 2

NQB621 Population management  
NQB622 Population Genetics

### Course structure - Major in Environmental Science

#### Year 1, Semester 1

SCB111 Chemistry 1  
SCB112 Cellular Basis of Life

#### Year 1, Semester 2

SCB120 Plant and Animal Physiology  
SCB121 Chemistry 2

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
Plus either:  
MAB101 Statistical Data Analysis 1  
Or  
MAB104 Introductory Quantitative Methods

#### Year 2, Semester 2

NQB202 History of Life on Earth  
SCB123 Physical Science Applications

#### Year 3, Semester 1

NQB301 Soils and Sedimentation  
NQB321 Ecology

#### Year 3, Semester 2

NQB401 Spatial Analysis of Environmental Systems  
NQB421 Experimental Design

#### Year 4, Semester 1

NQB501 Environmental Modelling  
NQB502 Field Mapping and Monitoring of Natural Resources

#### Year 4, Semester 2

NQB601 Sustainable Environmental Management  
NQB602 Environmental Chemistry

### Course structure - Major in Forensic Science

#### Year 1, Semester 1

SCB111 Chemistry 1  
SCB112 Cellular Basis of Life

#### Year 1, Semester 2

SCB121 Chemistry 2  
SCB122 Cell and Molecular Biology

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
Plus either:  
MAB101 Statistical Data Analysis 1  
Or  
MAB104 Introductory Quantitative Methods

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### Year 2, Semester 2

SCB123 Physical Science Applications

SCB131 Experimental Chemistry

### Year 3, Semester 1

LQB383 Molecular and Cellular Regulation

SCB384 Crime Scene and Forensic Science

### Year 3, Semester 2

JSB979 Forensic Scientific Evidence

PQB312 Analytical Chemistry for Scientists and Technologists

### Year 4, Semester 1

PQB513 Instrumental Analysis

PQB584 Forensic Physical Evidence

### Year 4, Semester 2

LQB680 Forensic DNA Profiling

PQB684 Forensic Analysis

### Course structure - Major in Geoscience

#### Year 1, Semester 1

SCB111 Chemistry 1

SCB112 Cellular Basis of Life

#### Year 1, Semester 2

NQB201 Planet Earth

SCB123 Physical Science Applications

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems

Plus either:

MAB101 Statistical Data Analysis 1

Or

MAB104 Introductory Quantitative Methods

#### Year 2, Semester 2

NQB202 History of Life on Earth

SCB222 Exploration of the Universe

#### Year 3, Semester 1

NQB301 Soils and Sedimentation

NQB311 Mineralogy

#### Year 3, Semester 2

NQB411 Petrology

NQB412 Structural Geology and Field Methods

#### Year 4, Semester 1

NQB502 Field Mapping and Monitoring of Natural Resources

NQB512 Stratigraphy

NQB513 Geophysics

### Year 4, Semester 2

NQB602 Environmental Chemistry

### Course structure - Major in Microbiology

#### Year 1, Semester 1

SCB111 Chemistry 1

SCB112 Cellular Basis of Life

#### Year 1, Semester 2

SCB120 Plant and Animal Physiology

SCB121 Chemistry 2

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems

Plus either:

MAB101 Statistical Data Analysis 1

Or

MAB104 Introductory Quantitative Methods

#### Year 2, Semester 2

SCB122 Cell and Molecular Biology

SCB123 Physical Science Applications

#### Year 3, Semester 1

LQB381 Biochemistry: Structure and Function

LQB386 Microbial Structure and Function

#### Year 3, Semester 2

LQB483 Molecular Biology Techniques

LQB486 Clinical Microbiology 1

#### Year 4, Semester 1

LQB586 Clinical Microbiology 2

LQB587 Applied Microbiology 1: Water, Air and Soil

#### Year 4, Semester 2

LQB686 Microbial Technology and Immunology

LQB687 Applied Microbiology 2: Food and Quality Assurance

### Course structure - Major in Physics

#### Year 1, Semester 1

MAB111 Mathematical Sciences 1B

SCB111 Chemistry 1

#### Year 1, Semester 2

MAB112 Mathematical Sciences 1C

PQB250 Mechanics and Electromagnetism

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems

SCB112 Cellular Basis of Life

**Year 2, Semester 2**

MAB220 Computational Mathematics 1

PQB251 Waves and Optics

**Year 3, Semester 1**

MAB311 Advanced Calculus

PQB350 Thermodynamics of Solids and Gases

**Year 3, Semester 2**

PQB450 Energy Fields and Radiation

PQB451 Electronics and Instrumentation

**Year 4, Semester 1**

PQB550 Quantum and Condensed Matter Physics

PQB551 Physical Analytical Techniques

**Year 4, Semester 2**

PQB650 Advanced Theoretical Physics

PQB651 Experimental Physics

**Potential Careers:**

Academic, Account Executive, Accountant, Advertising Professional, Analytical Chemist, Astrophysicist, Banker, Banking and Finance Professional, Biochemist, Biologist, Biomechanical Engineer, Biomedical Engineer, Biotechnologist, Business Analyst, Chemist, Chemist Industrial, Clinical Laboratory Scientist, Coastal Scientist, Conservation Biologist, Ecologist, Economist, Environmental Scientist, Estimator, Exchange Student, Financial Advisor/Analyst, Financial Project Manager, Forensic Scientist, Funds Manager, Geologist, Geophysicist, Geoscientist, Government Officer, Health Physicist, Home Economist, Human Resource Developer, Human Resource Manager, Hydrogeologist, Immunologist, Industrial Chemist, International Business Specialist, Investment Manager, Laboratory Technician (Chemistry), Manager, Marine Scientist, Marketing Officer/Manager, Medical Biotechnologist, Medical Physicist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Physicist, Plant Biotechnologist, Policy Officer, Population Ecologist, Programmer, Public Relations Officer/Consultant, Public Servant, Stockbroker, Virologist.

## Bachelor of Business / Bachelor of Mathematics (IX37)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 059601K

**Course duration (full-time):** 4 years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,697

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 419212

**Past rank cut-off:** 76

**Past OP cut-off:** 12

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 384

**Standard credit points per full-time semester:** 48

**Course coordinator:** Mr Andrew Paltridge (Business); Prof Erhan Kozan (Mathematics); Dr Helen Johnson (Assistant Course Coordinator - Mathematics)

**Discipline coordinator:** Ms Ros Kent (Accountancy); Ms Gayle Kerr (Advertising); Dr John Chen (Banking & Finance); Dr Radhika Lahiri (Economics); Dr Paul Barnes (Human Resource Management); Mr Simon Ridings (International Business); Dr Paul Barnes (Management); Mr Bill Proud (Marketing); and Ms Robina Xavier (Public Relations).

**Campus:** Gardens Point

### Career Opportunities

Graduates are equipped to undertake sophisticated economic and financial modelling which is important in business and government decision making. Quantitative analysts are employed by the financial sector in order to optimise returns both in the short and long-term. Graduates may also become actuarial trainees in the insurance and superannuation area although further study is required in order to qualify as an actuary.

Graduates may find employment as Accountants, Advertising Professionals, Banking and Finance Consultants, Economists, Human Resource Managers, International Business Specialists, Managers, Marketing Officers, Public Relations Officers.

### Professional Recognition

The Bachelor of Business degree may, subject to choice of major, extended major, or specialisation, allow graduates to satisfy the academic requirements for membership as follows:

\*All majors: Chartered Secretaries Australia (CSA) - enrolment in the Graduate Diploma in Applied Corporate Governance.

\*Accountancy: CPA Australia (associate membership & enrolment in the CPA Program), Institute of Chartered Accountants in Australia (ICAA)(enrolment in the CA Program).

\*Advertising - Advertising Federation of Australia, Australian Association of National Advertisers, Australian Direct Marketing Association and the Queensland Commercial Radio Association;

\*Banking and Finance: Financial Services Institute of Australasia (FINSIA).

\*Economics: Economic Society of Australia (Queensland Division).

\*Human Resource Management - Australian Human Resources Institute, Australian Institute of Training and Development, Australian Institute of Management;

\*International Business - Australian Institute of Export;

\*Management - Australian Institute of Management;

\*Marketing: Australian Marketing Institute, Market Research Society of Australia, Australian Institute of Management, Australian Institute of Export (Qld) Ltd, American Marketing Association.

\*Public Relations - Public Relations Institute of Australia.

Graduates of the Bachelor of Mathematics degree will be eligible for membership of the Mathematical Society of Australia, the Statistical Society of Australia, and depending on unit selection, the Australian Society of Operations Research.

### Course Design

The course offers the opportunity to combine Mathematics with a business course.

This course is made up of 384 credit points. Each component (i.e. Business and Mathematics) comprises 192 credit points.

### Deferment

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

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

Find out more on deferment.

### Mathematics Bursaries

Students enrolled in this course can apply for industry-sponsored bursaries. These bursaries are awarded to Australian citizens or permanent residents on a competitive basis. Applications should be submitted by 1 December of the year preceding entry to the course. For further information see [www.maths.qut.edu.au](http://www.maths.qut.edu.au)



**Contact Details**

**Business Coordinator**

Mr Andrew Paltridge  
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**Mathematics Coordinator**

Prof Erhan Kozan  
 Phone: +61 7 3138 1029  
 Email: e.kozan@qut.edu.au

**Mathematics Assistant Course Coordinator**

Dr Helen Johnson  
 Phone: +61 7 3138 2890  
 Email: h.johnson@qut.edu.au

**Full Time Course structure**

**Year 1 Semester 1**

Business Faculty Core Unit  
 Business Faculty Core Unit  
 Mathematics Unit  
 Mathematics Unit

**Year 1 Semester 2**

Business Faculty Core Unit  
 Business Faculty Core Unit  
 Mathematics Unit  
 Mathematics Unit

**Year 2 Semester 1**

Business Faculty Core Unit  
 Business Faculty Core Unit  
 Mathematics Unit  
 Mathematics Unit

**Year 2 Semester 2**

Business Faculty Core Unit  
 Business Faculty Major Unit  
 Mathematics Unit  
 Mathematics Unit

**Year 3 Semester 1**

Business Faculty Major Unit  
 Business Faculty Major Unit  
 Mathematics Unit  
 Mathematics Unit

**Year 3 Semester 2**

Business Faculty Major Unit  
 Business Faculty Major Unit  
 Mathematics Unit  
 Mathematics Unit

**Year 4 Semester 1**

Business Faculty Major Unit  
 Business Faculty Major Unit  
 Mathematics Unit  
 Mathematics Unit

**Year 4 Semester 2**

Business Faculty Major Unit  
 Business Faculty Major Unit  
 Mathematics Unit  
 Mathematics Unit

**Advertising Major Course Structure for Students with Maths B and C**

**Year 1 Semester 1**

BSB119 International and Electronic Business  
 BSB126 Marketing

**Year 1 Semester 2**

BSB110 Accounting  
 BSB115 Management, People and Organisations

**Year 2 Semester 1**

BSB114 Government, Business and Society  
 AMB200 Consumer Behaviour

**Year 2 Semester 2**

BSB111 Business Law and Ethics  
 BSB113 Economics

**Year 3 Semester 1**

AMB230 Internet Promotion  
 AMB220 Advertising Theory and Practice

**Year 3 Semester 2**

AMB221 Advertising Copywriting  
 AMB222 Media Planning

**Year 4 Semester 1**

AMB320 Advertising Management  
 AMB330 Advertising Strategy and Planning

**Year 4 Semester 2**

AMB321 Advertising Campaigns  
 AMB202 Integrated Marketing Communication

**Management Major Course Structure for Students with Maths B and C**

**Year 1 Semester 1**

BSB113 Economics  
 BSB115 Management, People and Organisations

## SCIENCE

### Year 1 Semester 2

BSB114 Government, Business and Society

BSB126 Marketing

### Year 2 Semester 1

BSB110 Accounting

BSB111 Business Law and Ethics

### Year 2 Semester 2

MGB200 Leading Organisations

BSB119 International and Electronic Business

### Year 3 Semester 1

MGB210 Managing Operations

MGB223 Entrepreneurship and Innovation

### Year 3 Semester 2

MGB212 Sustainability in a Changing Environment  
Management Option Unit

### Year 4 Semester 1

MGB309 Strategic Management

Management Option Unit

### Year 4 Semester 2

MGB335 Project Management

Management Option Unit

### Management Option Unit List:

Management students must choose three from the above list (one must be a Level 3 unit):

MGB201 Contemporary Employment Relations

MGB218 Managing Business Growth

MGB314 Organisational Consulting and Change

MGB315 Personal and Professional Development

IBB205 Intercultural Communication and Negotiation

### International Business Major Course Structure for Students with Maths B and C

#### Year 1 Semester 1

BSB126 Marketing

BSB119 International and Electronic Business

#### Year 1 Semester 2

BSB110 Accounting

BSB115 Management, People and Organisations

#### Year 2 Semester 1

BSB114 Government, Business and Society

IBB202 Fundamentals of International Finance

#### Year 2 Semester 2

BSB111 Business Law and Ethics

BSB113 Economics

### Year 3 Semester 1

IBB205 Intercultural Communication and Negotiation

IBB217 Asian Business Development

or

IBB208 European Business Development

### Year 3 Semester 2

IBB210 Export Management

IBB317 Contemporary Business in Asia

or

IBB308 Contemporary Business in Europe

### Year 4 Semester 1

IBB300 International Business Strategy

IBB304 Global Industry Analysis

### Year 4 Semester 2

IBB213 International Marketing

IBB303 International Logistics

### Human Resource Management Major Course Structure for Students with Maths B and C

#### Year 1 Semester 1

BSB113 Economics

BSB115 Management, People and Organisations

#### Year 1 Semester 2

BSB114 Government, Business and Society

BSB126 Marketing

#### Year 2 Semester 1

BSB110 Accounting

BSB111 Business Law and Ethics

#### Year 2 Semester 2

MGB207 Human Resource Issues and Strategy

BSB119 International and Electronic Business

#### Year 3 Semester 1

MGB220 Management Research Methods  
HRM Option Unit

#### Year 3 Semester 2

MGB200 Leading Organisations

HRM Option Unit

#### Year 4 Semester 1

MGB221 Performance and Reward

HRM Option Unit

#### Year 4 Semester 2

- MGB320 Recruitment and Selection
- MGB331 Learning and Development in Organisations

**HRM Option Unit List:**

- MGB201 Contemporary Employment Relations
- MGB210 Managing Operations
- MGB212 Sustainability in a Changing Environment
- MGB309 Strategic Management
- MGB314 Organisational Consulting and Change
- MGB315 Personal and Professional Development
- MGB335 Project Management

HRM students must choose three from the above list (one must be a Level 3 unit).

**Accountancy Major Course Structure for Students with Maths B and C**

**Year 1 Semester 1**

- BSB110 Accounting
- BSB115 Management, People and Organisations

**Year 1 Semester 2**

- BSB114 Government, Business and Society
- BSB126 Marketing
- or
- BSB119 International and Electronic Business

**Year 2 Semester 1**

- BSB111 Business Law and Ethics
- BSB113 Economics

**Year 2 Semester 2**

- AYB121 Financial Accounting
- AYB223 Law of Business Associations

**Year 3 Semester 1**

- AYB225 Management Accounting
- AYB220 Company Accounting

**Year 3 Semester 2**

- AYB221 Computerised Accounting Systems
- AYB325 Taxation Law

**Year 4 Semester 1**

- AYB301 Auditing
- AYB311 Financial Accounting Issues
- or
- AYB321 Strategic Management Accounting

**Year 4 Semester 2**

- AYB339 Accountancy Capstone
- EFB210 Finance 1

**Banking and Finance Major Course Structure for**

**Students with Maths B and C**

**Year 1 Semester 1**

- BSB113 Economics
- BSB115 Management, People and Organisations

**Year 1 Semester 2**

- BSB114 Government, Business and Society
- BSB126 Marketing

**Year 2 Semester 1**

- BSB110 Accounting
- BSB111 Business Law and Ethics

**Year 2 Semester 2**

- EFB102 Economics 2
- BSB119 International and Electronic Business

**Year 3 Semester 1**

- EFB210 Finance 1
- EFB201 Financial Markets

**Year 3 Semester 2**

- EFB307 Finance 2
- EFB312 International Finance

**Year 4 Semester 1**

- EFB200 Applied Regression Analysis
- EFB318 Portfolio and Security Analysis

**Year 4 Semester 2**

- Any Finance Unit
- Any Finance Unit

**Economics Major Course Structure for Students with Maths B and C**

**Year 1 Semester 1**

- BSB113 Economics
- BSB115 Management, People and Organisations

**Year 1 Semester 2**

- BSB114 Government, Business and Society
- BSB126 Marketing

**Year 2 Semester 1**

- BSB110 Accounting
- EFB102 Economics 2

**Year 2 Semester 2**

- EFB210 Finance 1
- BSB119 International and Electronic Business

**Year 3 Semester 1**

## SCIENCE

EFB211 Firms, Markets and Resources  
 EFB202 Business Cycles and Economic Growth

### Year 3 Semester 2

EFB328 Public Economics and Finance  
 Any Economics unit

### Year 4 Semester 1

BSB111 Business Law and Ethics  
 EFB200 Applied Regression Analysis

### Year 4 Semester 2

EFB329 Contemporary Applications of Economics Theory  
 EFB314 International Trade and Economic Competitiveness

### Public Relations Major Course Structure for Students with Maths B and C

#### Year 1 Semester 1

BSB119 International and Electronic Business  
 BSB126 Marketing

#### Year 1 Semester 2

BSB110 Accounting  
 BSB115 Management, People and Organisations

#### Year 2 Semester 1

BSB114 Government, Business and Society  
 AMB201 Marketing and Audience Research

#### Year 2 Semester 2

BSB111 Business Law and Ethics  
 BSB113 Economics

#### Year 3 Semester 1

AMB202 Integrated Marketing Communication  
 AMB260 Public Relations Theory and Practice

#### Year 3 Semester 2

AMB261 Media Relations and Publicity  
 AMB262 Public Relations Writing

#### Year 4 Semester 1

AMB360 Corporate Communication Management  
 AMB370 Public Relations Cases

#### Year 4 Semester 2

AMB361 Public Relations Campaigns  
 AMB371 Corporate Communication Strategies

### Marketing Major Course Structure for Students with Maths B and C

#### Year 1 Semester 1

BSB119 International and Electronic Business  
 BSB126 Marketing

#### Year 1 Semester 2

BSB110 Accounting  
 BSB115 Management, People and Organisations

#### Year 2 Semester 1

BSB114 Government, Business and Society  
 AMB200 Consumer Behaviour

#### Year 2 Semester 2

BSB111 Business Law and Ethics  
 BSB113 Economics

#### Year 3 Semester 1

AMB202 Integrated Marketing Communication  
 AMB240 Marketing Planning and Management

#### Year 3 Semester 2

AMB201 Marketing and Audience Research  
 AMB241 E-Marketing Strategies

#### Year 4 Semester 1

AMB340 Services Marketing  
 Any Marketing unit

#### Year 4 Semester 2

AMB341 Strategic Marketing  
 AMB352 Marketing Decision Making  
 or  
 IBB213 International Marketing

### Accountancy Course Structure for Students with Maths B

#### Year 1 Semester 1

BSB110 Accounting  
 BSB115 Management, People and Organisations

#### Year 1 Semester 2

BSB126 Marketing  
 or  
 BSB119 International and Electronic Business

#### Year 2 Semester 1

BSB111 Business Law and Ethics  
 BSB113 Economics

#### Year 2 Semester 2

AYB121 Financial Accounting  
 AYB223 Law of Business Associations

BSB114 Government, Business and Society

Competitiveness

**Year 3 Semester 1**

AYB225 Management Accounting

AYB220 Company Accounting

**Year 3 Semester 2**

AYB221 Computerised Accounting Systems

AYB325 Taxation Law

**Year 4 Semester 1**

AYB301 Auditing

AYB311 Financial Accounting Issues

or

AYB321 Strategic Management Accounting

**Year 4 Semester 2**

AYB339 Accountancy Capstone

EFB210 Finance 1

**Economics Course Structure for Students with Maths B**

**Year 1 Semester 1**

BSB113 Economics

BSB115 Management, People and Organisations

**Year 1 Semester 2**

BSB114 Government, Business and Society

**Year 2 Semester 1**

BSB110 Accounting

EFB102 Economics 2

**Year 2 Semester 2**

BSB119 International and Electronic Business

EFB210 Finance 1

BSB126 Marketing

**Year 3 Semester 1**

EFB211 Firms, Markets and Resources

EFB202 Business Cycles and Economic Growth

**Year 3 Semester 2**

Any Economics Unit

EFB328 Public Economics and Finance

**Year 4 Semester 1**

BSB111 Business Law and Ethics

EFB200 Applied Regression Analysis

**Year 4 Semester 2**

EFB329 Contemporary Applications of Economics Theory

EFB314 International Trade and Economic

**Advertising Course Structure for Students with Maths B**

**Year 1 Semester 1**

BSB119 International and Electronic Business

BSB126 Marketing

**Year 1 Semester 2**

BSB115 Management, People and Organisations

**Year 2 Semester 1**

BSB114 Government, Business and Society

AMB200 Consumer Behaviour

**Year 2 Semester 2**

BSB111 Business Law and Ethics

BSB113 Economics

BSB110 Accounting

**Year 3 Semester 1**

AMB220 Advertising Theory and Practice

AMB230 Internet Promotion

**Year 3 Semester 2**

AMB221 Advertising Copywriting

AMB222 Media Planning

**Year 4 Semester 1**

AMB320 Advertising Management

AMB330 Advertising Strategy and Planning

**Year 4 Semester 2**

AMB321 Advertising Campaigns

AMB202 Integrated Marketing Communication

**Banking & Finance Course Structure for Students with Maths B**

**Year 1 Semester 1**

BSB113 Economics

BSB115 Management, People and Organisations

**Year 1 Semester 2**

BSB114 Government, Business and Society

**Year 2 Semester 1**

BSB110 Accounting

BSB111 Business Law and Ethics

**Year 2 Semester 2**

EFB102 Economics 2

BSB119 International and Electronic Business

BSB126 Marketing

**Year 3 Semester 1**

EFB210 Finance 1  
EFB201 Financial Markets

**Year 3 Semester 2**

EFB307 Finance 2  
EFB312 International Finance

**Year 4 Semester 1**

EFB200 Applied Regression Analysis  
EFB318 Portfolio and Security Analysis

**Year 4 Semester 2**

Any Finance Unit  
Any Finance Unit

**Human Resource Management Course Structure for Students with Maths B**

**Year 1 Semester 1**

BSB113 Economics  
BSB115 Management, People and Organisations

**Year 1 Semester 2**

BSB114 Government, Business and Society

**Year 2 Semester 1**

BSB110 Accounting  
BSB111 Business Law and Ethics

**Year 2 Semester 2**

MGB207 Human Resource Issues and Strategy  
BSB119 International and Electronic Business  
BSB126 Marketing

**Year 3 Semester 1**

MGB220 Management Research Methods  
HRM Option Unit

**Year 3 Semester 2**

MGB200 Leading Organisations  
HRM Option Unit

**Year 4 Semester 1**

MGB221 Performance and Reward  
HRM Option Unit

**Year 4 Semester 2**

MGB320 Recruitment and Selection  
MGB331 Learning and Development in Organisations

**HRM Option Unit List:**

MGB201 Contemporary Employment Relations  
MGB210 Managing Operations

MGB212 Sustainability in a Changing Environment  
MGB309 Strategic Management  
MGB314 Organisational Consulting and Change  
MGB315 Personal and Professional Development  
MGB335 Project Management

HRM students must choose two units from the above list (one must be a Level 3 unit).

**International Business Course Structure for Students with Maths B**

**Year 1 Semester 1**

BSB119 International and Electronic Business  
BSB126 Marketing

**Year 1 Semester 2**

BSB110 Accounting

**Year 2 Semester 1**

BSB114 Government, Business and Society  
IBB202 Fundamentals of International Finance

**Year 2 Semester 2**

BSB111 Business Law and Ethics  
BSB113 Economics  
BSB115 Management, People and Organisations

**Year 3 Semester 1**

IBB205 Intercultural Communication and Negotiation  
IBB217 Asian Business Development  
or  
IBB208 European Business Development

**Year 3 Semester 2**

IBB210 Export Management  
IBB317 Contemporary Business in Asia  
or  
IBB308 Contemporary Business in Europe

**Year 4 Semester 1**

IBB300 International Business Strategy  
IBB304 Global Industry Analysis

**Year 4 Semester 2**

IBB213 International Marketing  
IBB303 International Logistics

**Marketing Course Structure for Students with Maths B**

**Year 1 Semester 1**

BSB119 International and Electronic Business  
BSB126 Marketing

**Year 1 Semester 2**

## SCIENCE

BSB110 Accounting

### Year 2 Semester 1

BSB114 Government, Business and Society

AMB200 Consumer Behaviour

### Year 2 Semester 2

BSB111 Business Law and Ethics

BSB113 Economics

BSB115 Management, People and Organisations

### Year 3 Semester 1

AMB202 Integrated Marketing Communication

AMB240 Marketing Planning and Management

### Year 3 Semester 2

AMB201 Marketing and Audience Research

AMB241 E-Marketing Strategies

### Year 4 Semester 1

AMB340 Services Marketing  
Any Marketing Unit

### Year 4 Semester 2

AMB341 Strategic Marketing

AMB352 Marketing Decision Making  
or

IBB213 International Marketing

### Public Relations Course Structure for Students with Maths B

#### Year 1 Semester 1

BSB119 International and Electronic Business

BSB126 Marketing

#### Year 1 Semester 2

BSB110 Accounting

#### Year 2 Semester 1

BSB114 Government, Business and Society

AMB201 Marketing and Audience Research

#### Year 2 Semester 2

BSB111 Business Law and Ethics

BSB113 Economics

BSB115 Management, People and Organisations

#### Year 3 Semester 1

AMB202 Integrated Marketing Communication

AMB260 Public Relations Theory and Practice

#### Year 3 Semester 2

AMB261 Media Relations and Publicity

AMB262 Public Relations Writing

### Year 4 Semester 1

AMB360 Corporate Communication Management

AMB370 Public Relations Cases

### Year 4 Semester 2

AMB361 Public Relations Campaigns

AMB371 Corporate Communication Strategies

### Management Course Structure for Students with Maths B

#### Year 1 Semester 1

BSB113 Economics

BSB115 Management, People and Organisations

#### Year 1 Semester 2

BSB114 Government, Business and Society

#### Year 2 Semester 1

BSB110 Accounting

BSB111 Business Law and Ethics

#### Year 2 Semester 2

MGB200 Leading Organisations

BSB119 International and Electronic Business

BSB126 Marketing

#### Year 3 Semester 1

MGB210 Managing Operations

MGB223 Entrepreneurship and Innovation

#### Year 3 Semester 2

MGB212 Sustainability in a Changing Environment  
Management Option List

#### Year 4 Semester 1

MGB309 Strategic Management  
Management Option List

#### Year 4 Semester 2

MGB335 Project Management  
Management Option List

#### Management Option Unit List:

Management students must choose three from the above list (one must be a Level 3 unit):

MGB201 Contemporary Employment Relations

MGB218 Managing Business Growth

MGB314 Organisational Consulting and Change

MGB315 Personal and Professional Development

IBB205 Intercultural Communication and Negotiation

### Course structure - For students with four semesters of

**Senior Mathematics B and Senior Mathematics C**

For students with four semesters of Senior Mathematics B and Senior Mathematics C, at a level of Sound Achievement or better, (or equivalent)

**Year 1, Semester 1**

- MAB101 Statistical Data Analysis 1
- MAB111 Mathematical Sciences 1B

**Year 1, Semester 2**

- MAB112 Mathematical Sciences 1C
- MAB210 Statistical Modelling 1

**Year 2, Semester 1**

- MAB311 Advanced Calculus  
Mathematics Elective

**Year 2, Semester 2**

- MAB220 Computational Mathematics 1  
Mathematics Elective

**Year 3, Semester 1**

- MAB312 Linear Algebra  
Mathematics Elective

**Year 3, Semester 2**

- Mathematics Elective
- Mathematics Elective

**Year 4, Semester 1**

- Mathematics Elective
- Mathematics Elective

**Year 4, Semester 2**

- Mathematics Elective
- Mathematics Elective

**Course structure - For students with four semester of Senior Maths B**

For students with four semesters of Senior Mathematics B (or equivalent) only, at a level of Sound Achievement or better

**Year 1, Semester 1**

- MAB100 Mathematical Sciences 1A
- MAB101 Statistical Data Analysis 1

**Year 1, Semester 2**

- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- MAB210 Statistical Modelling 1

**Year 2, Semester 1**

- MAB220 Computational Mathematics 1
- MAB311 Advanced Calculus

**Year 2, Semester 2**

- Business Faculty Core Unit
- Mathematics Elective

**Year 3, Semester 1**

- MAB312 Linear Algebra  
Mathematics Elective

**Year 3, Semester 2**

- Mathematics Elective
- Mathematics Elective

**Year 4, Semester 1**

- Mathematics Elective
- Mathematics Elective

**Year 4, Semester 2**

- Mathematics Elective
- Mathematics Elective

**Mathematics Units**

**Level 1 Units:**

- MAB100 Mathematical Sciences 1A
- MAB101 Statistical Data Analysis 1
- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- MAB210 Statistical Modelling 1
- MAB220 Computational Mathematics 1

**Level 2 Units - You must complete:**

- MAB311 Advanced Calculus
- MAB312 Linear Algebra

**Level 2 Units - Select from:**

- MAB313 Mathematics of Finance
- MAB314 Statistical Modelling 2
- MAB315 Operations Research 2
- MAB413 Differential Equations
- MAB414 Applied Statistics 2
- MAB420 Computational Mathematics 2
- MAB422 Mathematical Modelling
- MAB461 Discrete Mathematics
- MAB480 Introduction to Scientific Computation
- MAB481 Visualisation and Data Analysis

**Level 3 Units: You must complete at least 4 units from:**

- MAB521 Applied Mathematics 3
- MAB522 Computational Mathematics 3



MAB524	Statistical Inference
MAB525	Operations Research 3A
MAB533	Statistical Techniques
MAB536	Time Series Analysis
MAB613	Partial Differential Equations
MAB623	Financial Mathematics
MAB624	Applied Statistics 3
MAB625	Operations Research 3B
MAB640	Industry Project
MAB672	Advanced Mathematical Modelling
MAB681	Advanced Visualisation and Data Analysis

NOTE: - MAB681 not offered in 2008, but will be offered in Semester 2 2009

- Units MAB523 Introduction to Quality Management and MAB621 Discrete Mathematics cannot be included in the minimum of 48 credit points from Level 3 units.

**Potential Careers:**

Account Executive, Accountant, Actuary, Banker, Banking and Finance Professional, Business Analyst, Certified Practising Accountant, Computer Game Programmer, Corporate Secretary, Economist, Financial Advisor/Analyst, Financial Project Manager, Funds Manager, Government Officer, Investment Manager, Market Research Manager, Mathematician, Quantitative Analyst, Risk Manager, Statistician, Stockbroker.

## Bachelor of Games and Interactive Entertainment/Bachelor of Mathematics (IX64)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 063031E

**Course duration (full-time):** 4 years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,260

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 419672

**Past rank cut-off:** 76

**Past OP cut-off:** 12

**Assumed knowledge:** English (4,SA), Maths B (4,SA)

**Total credit points:** 384

**Standard credit points per full-time semester:** 48

**Course coordinator:** Associate Professor Ruth Christie (Information Technology); Dr Gary Carter (Mathematics)

**Campus:** Gardens Point

### Course overview

In this double degree students complete the requirements for two separate degrees in four years. The course consists of units in both games and interactive entertainment and mathematics. In the games and interactive entertainment component students complete core units in introductory design, games studies, professional skills and basic programming and then choose a major from the list below. In final year, students participate in a major group project to produce a significant piece of work using PC, mobile devices, consoles or virtual reality. Full time students can take part in the Cooperative Education Program, offering one year paid industry placement and credit towards their degree (subject to satisfying eligibility requirements). In mathematics, students complete core units that provide a foundation for both study and future work in mathematics and games and interactive entertainment, and then select units from the strands in applicable mathematics, mathematical modelling, computational mathematics, operations research, statistics and financial mathematics. Students are assisted throughout their course with choices to match their career aspirations and abilities. All these strands involve project work and real-world applications.

Majors: Animation and computational arts; digital media; game design; and software technologies.

### Cooperative Education Program

The Faculty of IT's Cooperative Education Program gives you the opportunity of 10-12 months paid industry placement during your course where you can integrate real experience with what you're learning in your degree. Companies that QUT's Coop Ed students have worked with include Energex, Boeing, CITEC, CSC Mining, Environmental Protection Agency, Dialog, UNiTAB, RACQ and many Queensland Government departments. The Coop Ed Program is available to Australian citizens and

permanent residents only.

Find out more about the Cooperative Education Program.

### Contact Details

#### Mathematics Coordinator

Dr Gary Carter

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Email: g.carter@qut.edu.au

### Bachelor of Games and Interactive Entertainment (Study Area A)/ Bachelor of Mathematics

#### Year 1, Semester 1

ITB750	Computer Game Studies
DEB101	Introducing Design
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C

#### Year 1, Semester 2

ITB751	Games Production
ITB002	IT Professional Studies
MAB210	Statistical Modelling 1
MAB220	Computational Mathematics 1

#### Year 2, Semester 1

ITB001	Problem Solving and Programming Games & Interactive Entertain Major Unit
MAB101	Statistical Data Analysis 1
MAB312	Linear Algebra

#### Year 2, Semester 2

	Games & Interactive Entertain Major Unit
	Games & Interactive Entertain Major Unit
	Level 2 or 3 Maths Unit
	Level 2 or 3 Maths Unit

#### Year 3, Semester 1

	Games & Interactive Entertain Major
	Games & Interactive Entertain Major
MAB311	Advanced Calculus Level 2 or 3 Maths Unit

#### Year 3, Semester 2

	Games & Interactive Entertain Major
	Games & Interactive Entertain Major
	Level 2 or 3 Maths Unit
	Level 2 or 3 Maths Unit

#### Year 4, Semester 1

ITB009	Core Project Management Games & Interactive Entertain Major Level 2 or 3 Maths Unit
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## SCIENCE

Level 2 or 3 Maths Unit  
Students who choose to complete the Cooperative Education Program replace ITB009 with ITS010

ITB009 Core Project Management  
Students who choose to complete the Cooperative Education Program replace ITB009 with ITS010

### Year 4, Semester 4

ITB020 Project  
Level 2 or 3 Maths Unit  
Level 2 or 3 Maths Unit

### Completed Maths B Year 4, Sem 2

ITB020 Project  
Level 2 or 3 Maths Unit  
Level 2 or 3 Maths Unit

### Proposed structure for students entering who have completed Maths B

#### Completed Maths B Year 1, Sem 1

ITB750 Computer Game Studies  
DEB101 Introducing Design  
MAB100 Mathematical Sciences 1A  
MAB101 Statistical Data Analysis 1

#### Completed Maths B Year 1, Sem 2

ITB002 IT Professional Studies  
MAB111 Mathematical Sciences 1B  
ITB751 Games Production  
MAB112 Mathematical Sciences 1C

#### Completed Maths B Year 2, Sem 1

Games & Interactive Entertainment Major Unit  
Games & Interactive Entertainment Major Unit  
MAB220 Computational Mathematics 1  
MAB312 Linear Algebra

#### Completed Maths B Year 2, Sem 2

Games & Interactive Entertainment Major Unit  
Games & Interactive Entertainment Major Unit  
MAB210 Statistical Modelling 1  
Level 2 or 3 Maths Unit

#### Completed Maths B Year 3, Sem 1

Games & Interactive Entertainment Major Unit  
Games & Interactive Entertainment Major Unit  
MAB311 Advanced Calculus  
Level 2 or 3 Maths Unit

#### Completed Maths B Year 3, Sem 2

Games & Interactive Entertainment Major  
Games & Interactive Entertainment Major  
Level 2 or 3 Maths Unit  
Level 2 or 3 Maths Unit

#### Completed Maths B Year 4, Sem 1

Games & Interactive Entertainment Major  
Level 2 or 3 Maths Unit  
Level 2 or 3 Maths Unit

### Bachelor of Games & Interactive Entertainment Majors Course structure

#### Block B Majors (8 units)

##### Animation and Computational Arts

KIB105 Animation and Motion Graphics  
KIB106 Character Development, Conceptual Design and Animation Layout  
KIB107 Introduction to Programming for 3D  
KIB108 Animation Practices  
KVB105 Foundations of Drawing for Animation 1  
KVB106 Foundations of Drawing for Animation 2  
KKB210 Computational Arts 1  
KKB211 Computational Arts 2

##### Digital Media

KIB101 Foundations of Communication Design 1  
KIB102 Foundations of Communication Design 2  
KIB103 Media Technology 1  
ITB254 Interaction Design  
ITB257 Multimedia Systems  
ITB259 Advanced Multimedia Systems  
2 more units as per discussion with course coordinator

##### Game Design

ITB016 Fundamentals of Games Design  
ITB017 Advanced Games Design  
KIB201 Interactive Writing  
KIB202 Enabling Immersion  
KIB310 Design Studio 3: Virtual Environments  
Two units selected from the following  
DEB201 Digital Communication  
DEB102 Introducing Design History  
DAB110 Introductory Architectural Design 1  
DTB101 Interior Design 1  
DNB101 Industrial Design 1

##### Software Technologies\*

\* This Major assumes students have obtained a SA or better in Queensland Maths B (or equivalent)

ITB003	Object Oriented Programming
ITB004	Database Systems
ITB005	Systems Architecture
ITB702	Algorithms and Data Structures
ITB746	Modelling and Animation Techniques
ITB747	Real Time Rendering Techniques
ITB749	Scientific Programming
MAB281	Mathematics for Computer Graphics

**Potential Careers:**

Actuary, Computer Game Programmer, Market Research Manager, Mathematician, Quantitative Analyst, Statistician.

## Bachelor of Applied Science/Bachelor of Games and Interactive Entertainment (IX65)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 063032D

**Course duration (full-time):** 4 years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (subject to annual review)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,260

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 419682

**Past rank cut-off:** 74

**Past OP cut-off:** 13

**Assumed knowledge:** English (4,SA), Maths B (4,SA)

**Total credit points:** 384

**Standard credit points per full-time semester:** 48

**Course coordinator:** Dr Megan Hargreaves (Science)

**Discipline coordinator:** Dr Perry Hartfield (Biochemistry); Dr Marion Bateson (Biotechnology); Dr Robert Johnson (Chemistry); Dr Ian Williamson (Ecology); Dr Robin Thwaites (Environmental Science); Dr Emad Kiriakous (Forensic Science); Dr Gary Huftile (Geoscience); Dr Christine Knox (Microbiology); Dr Greg Michael (Physics)

**Campus:** Gardens Point

### Course overview

In this double degree students complete the requirements for two separate degrees in four years. The course consists of units in both applied science and games and interactive entertainment. In the science component students complete a set of core units in science to support advanced level studies in specialist areas. Students select a science major as outlined below and undertake laboratory work and may participate in fieldwork. In the games and interactive entertainment component students complete core units in introductory design, games studies, professional skills and basic programming and then choose a major from the list below. In final year, students participate in a major group project to produce a significant piece of work using PC, mobile devices, consoles or virtual reality. Full time students can take part in the Cooperative Education Program, offering one year paid industry placement and credit towards their degree (subject to satisfying eligibility requirements).

### Majors:

**Science:** biochemistry; biotechnology; chemistry; ecology; environmental science; forensic science; geoscience; microbiology; and physics.

**Games and Interactive Entertainment:** animation and computational arts; digital media; game design; and software technologies.

### Cooperative Education Program

The Faculty of IT's Cooperative Education Program gives you the opportunity of 10-12 months paid industry placement during your course where you can integrate real

experience with what you're learning in your degree. Companies that QUT's Coop Ed students have worked with include Energex, Boeing, CITEC, CSC Mining, Environmental Protection Agency, Dialog, UNiTAB, RACQ and many Queensland Government departments. The Coop Ed Program is available to Australian citizens and permanent residents only.

Find out more about the Cooperative Education Program.

### Contact Details

#### Science Coordinator

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### Discipline Coordinators

#### Biochemistry

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#### Biotechnology

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#### Chemistry

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#### Ecology

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#### Environmental Science

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**Games and Interactive Entertainment Coordinator**

Assoc Prof Ruth Christie  
 Phone: +61 7 3138 2782  
 Email: fit.enquiry@qut.edu.au

Applied Science Unit

Applied Science Unit

ITB020 Project

**Bachelor of Applied Science(Study Area A)/Bachelor of Games and Interactive Entertain (Study Area A**

**Year 1, Semester 1**

Applied Science Unit

Applied Science Unit

ITB750 Computer Games Studies

DEB101 Introducing Design

**Year 1, Semester 2**

Applied Science Unit

Applied Science Unit

ITB751 Games Production

ITB002 IT Professional Studies

**Year 2, Semester 1**

Applied Science Unit

Applied Science Unit

ITB001 Problem Solving and Programming

Games & Interactive Entertainment Major Unit

**Year 2, Semester 2**

Applied Science Unit

Applied Science Unit

Games & Interactive Entertainment Major Unit

Games & Interactive Entertainment Major Unit

**Year 3, Semester 1**

Applied Science Unit

Applied Science Unit

Games & Interactive Entertainment Major Unit

Games & Interactive Entertainment Major Unit

**Year 3, Semester 2**

Applied Science Unit

Applied Science Unit

Games & Interactive Entertainment Major Unit

Games & Interactive Entertainment Major Unit

**Year 4, Semester 1**

Applied Science Unit

Applied Science Unit

ITB009 Core Project Management

Students who choose to complete the Cooperative Education Program replace ITB009 with ITS010

**Year 4, Semester 2**

**Course structure - Major in Biochemistry**

**Year 1, Semester 1**

SCB111 Chemistry 1

SCB112 Cellular Basis of Life

**Year 1, Semester 2**

SCB120 Plant and Animal Physiology

SCB121 Chemistry 2

**Year 2, Semester 1**

SCB110 Science Concepts and Global Systems

Plus either:

MAB101 Statistical Data Analysis 1

Or

MAB104 Introductory Quantitative Methods

**Year 2, Semester 2**

SCB122 Cell and Molecular Biology

SCB123 Physical Science Applications

**Year 3, Semester 1**

LQB381 Biochemistry: Structure and Function

LQB383 Molecular and Cellular Regulation

**Year 3, Semester 2**

LQB481 Biochemical Pathways and Metabolism

LQB483 Molecular Biology Techniques

**Year 4, Semester 1**

LQB581 Functional Biochemistry

LQB582 Biomedical Research Technologies

**Year 4, Semester 2**

LQB681 Biochemical Research Skills

LQB682 Protein Biochemistry and Bioengineering

**Course structure - Major in Biotechnology**

**Year 1, Semester 1**

SCB111 Chemistry 1

SCB112 Cellular Basis of Life

**Year 1, Semester 2**

SCB120 Plant and Animal Physiology

SCB121 Chemistry 2

**Year 2, Semester 1**

SCB110 Science Concepts and Global Systems

Plus either:

# SCIENCE

MAB101 Statistical Data Analysis 1

Or

MAB104 Introductory Quantitative Methods

## Year 2, Semester 2

SCB122 Cell and Molecular Biology

SCB123 Physical Science Applications

## Year 3, Semester 1

LQB381 Biochemistry: Structure and Function

LQB383 Molecular and Cellular Regulations

## Year 3, Semester 2

LQB483 Molecular Biology Techniques

LQB484 Introduction to Genomics and Bioinformatics

## Year 4, Semester 1

TWO units selected from:

LQB583 Genetic Research Technology

LQB584 Medical Cell Biology

LQB585 Plant Genetic Manipulation

## Year 4, Semester 2

TWO units selected from:

LQB682 Protein Biochemistry and Bioengineering

LQB684 Medical Biotechnology

LQB685 Plant Microbe Interactions

## Course structure - Major in Chemistry

### Year 1, Semester 1

SCB111 Chemistry 1

Plus either:

MAB101 Statistical Data Analysis 1

Or

MAB104 Introductory Quantitative Methods

### Year 1, Semester 2

SCB112 Cellular Basis of Life

SCB121 Chemistry 2

### Year 2, Semester 1

MAB100 Mathematical Sciences 1A

SCB110 Science Concepts and Global Systems

### Year 2, Semester 2

SCB123 Physical Science Applications

SCB131 Experimental Chemistry

### Year 3, Semester 1

PQB312 Analytical Chemistry for Scientists and Technology

PQB331 Structure and Bonding

### Year 3, Semester 2

PQB401 Chemical Reactions 1

PQB442 Chemical Spectroscopy

### Year 4, Semester 1

PQB502 Materials Chemistry and Characterisation

PQB531 Chemical Reactions 2

### Year 4, Semester 2

PQB631 Applied Molecular Science

PQB642 Chemical Research

## Course structure - Major in Environmental Science

### Year 1, Semester 1

SCB111 Chemistry 1

SCB112 Cellular Basis of Life

### Year 1, Semester 2

SCB120 Plant and Animal Physiology

SCB121 Chemistry 2

### Year 2, Semester 1

SCB110 Science Concepts and Global Systems

Plus either:

MAB101 Statistical Data Analysis 1

Or

MAB104 Introductory Quantitative Methods

### Year 2, Semester 2

NQB202 History of Life on Earth

SCB123 Physical Science Applications

### Year 3, Semester 1

NQB301 Soils and Sedimentation

NQB321 Ecology

### Year 3, Semester 2

NQB401 Spatial Analysis of Environmental Systems

NQB421 Experimental Design

### Year 4, Semester 1

NQB501 Environmental Modelling

NQB502 Field Mapping and Monitoring of Natural Resources

### Year 4, Semester 2

NQB601 Sustainable Environmental Management

NQB602 Environmental Chemistry

## Course structure - Major in Ecology

### Year 1, Semester 1

SCB111 Chemistry 1

## SCIENCE

SCB112 Cellular Basis of Life

### Year 1, Semester 2

SCB120 Plant and Animal Physiology

SCB122 Cell and Molecular Biology

### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
Plus either:

MAB101 Statistical Data Analysis 1  
Or

MAB104 Introductory Quantitative Methods

### Year 2, Semester 2

NQB201 Planet Earth

NQB202 History of Life on Earth

### Year 3, Semester 1

NQB301 Soils and Sedimentation

NQB321 Ecology

### Year 3, Semester 2

NQB421 Experimental Design

NQB422 Genetics and Evolution

### Year 4, Semester 1

NQB502 Field Mapping and Monitoring of Natural Resources

NQB521 Population Genetics and Molecular Ecology

### Year 4, Semester 2

NQB621 Population management

NQB622 Population Genetics

### Course structure - Major in Forensic Science

#### Year 1, Semester 1

SCB111 Chemistry 1

SCB112 Cellular Basis of Life

#### Year 1, Semester 2

SCB121 Chemistry 2

SCB122 Cell and Molecular Biology

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
Plus either:

MAB101 Statistical Data Analysis 1  
Or

MAB104 Introductory Quantitative Methods

#### Year 2, Semester 2

SCB123 Physical Science Applications

SCB131 Experimental Chemistry

#### Year 3, Semester 1

LQB383 Molecular and Cellular Regulation

SCB384 Crime Scene and Forensic Science

#### Year 3, Semester 2

JSB979 Forensic Scientific Evidence

PQB312 Analytical Chemistry for Scientists and Technologists

#### Year 4, Semester 1

PQB513 Instrumental Analysis

PQB584 Forensic Physical Evidence

#### Year 4, Semester 2

LQB680 Forensic DNA Profiling

PQB684 Forensic Analysis

### Course structure - Major in Geoscience

#### Year 1, Semester 1

SCB111 Chemistry 1

SCB112 Cellular Basis of Life

#### Year 1, Semester 2

NQB201 Planet Earth

SCB123 Physical Science Applications

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
Plus either:

MAB101 Statistical Data Analysis 1  
Or

MAB104 Introductory Quantitative Methods

#### Year 2, Semester 2

NQB202 History of Life on Earth

SCB222 Exploration of the Universe

#### Year 3, Semester 1

NQB301 Soils and Sedimentation

NQB311 Mineralogy

#### Year 3, Semester 2

NQB411 Petrology

NQB412 Structural Geology and Field Methods

#### Year 4, Semester 1

NQB502 Field Mapping and Monitoring of Natural Resources

NQB512 Stratigraphy

NQB513 Geophysics

#### Year 4, Semester 2



## SCIENCE

NQB602 Environmental Chemistry

### Course structure - Major in Microbiology

#### Year 1, Semester 1

SCB111 Chemistry 1  
SCB112 Cellular Basis of Life

#### Year 1, Semester 2

SCB120 Plant and Animal Physiology  
SCB121 Chemistry 2

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
Plus either:  
MAB101 Statistical Data Analysis 1  
Or  
MAB104 Introductory Quantitative Methods

#### Year 2, Semester 2

SCB122 Cell and Molecular Biology  
SCB123 Physical Science Applications

#### Year 3, Semester 1

LQB381 Biochemistry: Structure and Function  
LQB386 Microbial Structure and Function

#### Year 3, Semester 2

LQB483 Molecular Biology Techniques  
LQB486 Clinical Microbiology 1

#### Year 4, Semester 1

LQB586 Clinical Microbiology 2  
LQB587 Applied Microbiology 1: Water, Air and Soil

#### Year 4, Semester 2

LQB686 Microbial Technology and Immunology  
LQB687 Applied Microbiology 2: Food and Quality Assurance

### Course structure - Major in Physics

#### Year 1, Semester 1

MAB111 Mathematical Sciences 1B  
SCB111 Chemistry 1

#### Year 1, Semester 2

MAB112 Mathematical Sciences 1C  
PQB250 Mechanics and Electromagnetism

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
SCB112 Cellular Basis of Life

#### Year 2, Semester 2

MAB220 Computational Mathematics 1  
PQB251 Waves and Optics

#### Year 3, Semester 1

MAB311 Advanced Calculus  
PQB350 Thermodynamics of Solids and Gases

#### Year 3, Semester 2

PQB450 Energy Fields and Radiation  
PQB451 Electronics and Instrumentation

#### Year 4, Semester 1

PQB550 Quantum and Condensed Matter Physics  
PQB551 Physical Analytical Techniques

#### Year 4, Semester 2

PQB650 Advanced Theoretical Physics  
PQB651 Experimental Physics

### Bachelor of Games & Interactive Entertainment Majors Course structure

#### Block B Majors (8 units)

#### Animation and Computational Arts

KIB105 Animation and Motion Graphics  
KIB106 Character Development, Conceptual Design and Animation Layout  
KIB107 Introduction to Programming for 3D  
KIB108 Animation Practices  
KVB105 Foundations of Drawing for Animation 1  
KVB106 Foundations of Drawing for Animation 2  
KKB210 Computational Arts 1  
KKB211 Computational Arts 2

#### Digital Media

KIB101 Foundations of Communication Design 1  
KIB102 Foundations of Communication Design 2  
KIB103 Media Technology 1  
ITB254 Interaction Design  
ITB257 Multimedia Systems  
ITB259 Advanced Multimedia Systems  
2 more units as per discussion with course coordinator

#### Game Design

ITB016 Fundamentals of Games Design  
ITB017 Advanced Games Design  
KIB201 Interactive Writing  
KIB202 Enabling Immersion  
KIB310 Design Studio 3: Virtual Environments  
Two units selected from the following  
DEB201 Digital Communication

DEB102	Introducing Design History
DAB110	Introductory Architectural Design 1
DTB101	Interior Design 1
DNB101	Industrial Design 1

**Software Technologies\***

\* This Major assumes students have obtained a SA or better in Queensland Maths B (or equivalent)

ITB003	Object Oriented Programming
ITB004	Database Systems
ITB005	Systems Architecture
ITB702	Algorithms and Data Structures
ITB746	Modelling and Animation Techniques
ITB747	Real Time Rendering Techniques
ITB749	Scientific Programming
MAB281	Mathematics for Computer Graphics

**Potential Careers:**

Air Traffic Controller, Analytical Chemist, Astrophysicist, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Ecologist, Environmental Scientist, Exploration Geologist, Forensic Biologist, Forensic Chemist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, Laboratory Technician (Chemistry), Marine Scientist, Medical Biotechnologist, Medical Physicist, Microbiologist, Mine Geologist, Molecular Biologist, Natural Resource Scientist, Pharmaceutical Research Scientist, Physicist, Plant Biotechnologist, Population Ecologist, Research and Development Chemist, Virologist.

## Graduate Certificate In Research Commercialisation (IX97)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** External

**Course duration (full-time):** 1 semesters. The course must be completed within a maximum time period of 4 years.

**Course duration (part-time):** 2 semesters. The course must be completed within a maximum period of 8 years.

**Course duration (external):** 2 semesters. The course must be completed within a maximum period of 8 years.

**Domestic fees (per credit point):** 2008: \$2,200 per unit  
(*subject to annual review*)

**Domestic fees (indicative):** 2008: \$8,000

**International Fees (per semester):** 2008: \$3,300 per unit  
(*subject to annual review*)

**Domestic Entry:** 2 entry points per year

**International Entry:** 2 entry points per year

**Course coordinator:** Professor Rod Wissler

**Campus:** Internet

### course structure

#### Course Structure

IFP100	Knowledge Transfer and Research Commercialisation (Core Unit)
IFP101	Leadership and Workplace Communication
IFP102	Project Management and Research
IFP103	Public Policy and Research
IFP104	Entrepreneurial Foundations
IFP105	Principles and Practice of Research Management
IFP106	Managing Research Careers

### Potential Careers:

Academic, Administrator, Arts Administrator, Biochemist, Bioengineer, Bioinformatician, Biologist, Biomechanical Engineer, Biomedical Engineer, Biotechnologist, Biotechnologist, Biotechnology Business/Investment Analyst, Business Analyst, Business Development Officer, Cell Biologist, Civil Engineer, Contract Administrator, Financial Advisor/Analyst, Government Officer, International Business Specialist, Marine Scientist, Market Research Manager, Marketing Officer/Manager, Mathematician, Microbiologist, Policy Officer, Public Servant, Scientist, Social Scientist, Urban Designer, Visual Artist, Web Designer.

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

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 020331D

**Course duration (full-time):** 3 Years

**Course duration (part-time):** 6 Years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,248

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February and July (Conditions apply for July entry)

**QTAC code:** 418201

**Past rank cut-off:** 76

**Past OP cut-off:** 12

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA), Maths B (4, SA) and Chemistry (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. CHEMISTRY: QUT unit Introductory Chemistry as a visiting student or QUT Continuing Professional Chemistry Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 300

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Mr Robert Dow

**Campus:** Gardens Point

### Career Opportunities

This course can provide a range of exciting opportunities in the field of medical science.

The degree is the preferred qualification for employment in the pathology industry as a scientist. Scientists in the pathology industry perform tests on human blood or tissue and other forms of testing in the areas of immunology, haematology, microbiology, histopathology, cytology and biochemistry. You may decide to specialise in areas such as leukaemia diagnosis, cytogenetics, stem cell manipulation, tumour diagnosis, cytological diagnosis, DNA testing or forensic testing, or proceed to a managerial position within a pathology laboratory or hospital.

The course also provides a first degree for students wishing to undertake postgraduate studies in medicine. Graduates also have the opportunity to proceed to postgraduate studies leading to a career in medical research. Graduates are currently working as researchers in areas such as malaria, virology, stem cells, immunology and molecular biology.

### Special Course 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 and in a suitable vacation period during the part-time program. Proof of successful vaccination against Hepatitis B must be provided by students at the end of first semester of year two of the program.

### Professional Recognition

Graduates are immediately eligible for graduate membership of the Australian Institute of Medical Scientists and will have completed the academic requirements for admission as Members.

### Why Choose this Course?

This is the only medical science degree in southern Queensland which is accredited with the Australian Institute of Medical Scientists (AIMS). In recent years more than 90 per cent of graduates seeking employment were successful within four months of graduation.

The course is designed in consultation with senior staff in pathology laboratories, so you'll gain advanced knowledge of new diagnostic techniques used in the workplace. QUT has state-of-the-art laboratories, allowing you to graduate with extensive experience using equipment found in industry. Medical Science students also undertake clinical placements in pathology laboratories during the course giving you a chance to use your skills in a real workplace.

### Contact Details

#### Course Coordinator

Mr Robert Dow

Phone: +61 7 3138 1828

Email: [r.dow@qut.edu.au](mailto:r.dow@qut.edu.au)

### Deferment

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

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

Find out more on deferment.

### Course structure - Full-time

#### Year 1, Semester 1

MAB141	Mathematics and Statistics for Medical Science
PCB150	Physics 1H
SCB112	Cellular Basis of Life
SCB113	Chemistry for Health and Medical Science

#### Year 1, Semester 2

LSB250	Human Physiology
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## SCIENCE

LSB255	Human Anatomy
SCB122	Cell and Molecular Biology
SCB131	Experimental Chemistry

### Year 2, Semester 1

LQB383	Molecular and Cellular Regulation
LQB386	Microbial Structure and Function
LSB325	Biochemistry
LSB365	Pathology

### Year 2, Semester 2

LSB425	Quantitative Medical Science
LSB435	Diagnostic Microbiology 1
LSB438	Immunology 1
LSB465	Histopathology 1

### Year 2, Summer Semester

LSB480	Professional Practice
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### Year 3, Semester 1

LSB525	Clinical Biochemistry 1
LSB535	Microbial Immunology
LSB555	Haematology 1
LSB565	Histopathology 2

### Year 3, Semester 2

LSB625	Clinical Biochemistry 2
LSB635	Diagnostic Microbiology 2
LSB655	Haematology 2
LSB665	Immunohaematology

### Course structure - Part-time

#### Year 1, Semester 1

SCB112	Cellular Basis of Life
SCB113	Chemistry for Health and Medical Science

#### Year 1, Semester 2

SCB122	Cell and Molecular Biology
SCB131	Experimental Chemistry

#### Year 2, Semester 1

MAB141	Mathematics and Statistics for Medical Science
PCB150	Physics 1H

#### Year 2, Semester 2

LSB250	Human Physiology
LSB255	Human Anatomy

#### Year 3, Semester 1

LQB386	Microbial Structure and Function
LSB365	Pathology

### Year 3, Semester 2

LSB435	Diagnostic Microbiology 1
LSB438	Immunology 1

### Year 4, Semester 1

LQB383	Molecular and Cellular Regulation
LSB325	Biochemistry

### Year 4, Semester 2

LSB425	Quantitative Medical Science
LSB465	Histopathology 1

### Year 5, Semester 1

LSB525	Clinical Biochemistry 1
LSB535	Microbial Immunology

### Year 5, Semester 2

LSB625	Clinical Biochemistry 2
LSB635	Diagnostic Microbiology 2

### Year 5, Summer Semester

LSB480	Professional Practice
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### Year 6, Semester 1

LSB555	Haematology 1
LSB565	Histopathology 2

### Year 6, Semester 2

LSB655	Haematology 2
LSB665	Immunohaematology

### Potential Careers:

Biochemist, Clinical Laboratory Scientist, Medical Scientist, Microbiologist, Operations Manager, Pathology Scientist.

## Bachelor of Biotechnology Innovation (LS50)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 037681J

**Course duration (full-time):** 4 years

**Course duration (part-time):** 8 years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,552

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February and July

**QTAC code:** 418311

**Past rank cut-off:** 76

**Past OP cut-off:** 12

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA), Maths B (4, SA) and Chemistry (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. CHEMISTRY: QUT unit Introductory Chemistry as a visiting student or QUT Continuing Professional Chemistry Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 384

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Associate Professor Chris Collet

**Campus:** Gardens Point

### Career Opportunities

The Bachelor of Biotechnology Innovation is training the next generation of bioentrepreneurs to translate research outcomes into business opportunities. Graduates can be business-savvy scientists, or operate in the world of commercialisation and technology transfer or start up their own biotechnology-based enterprise bringing their own products to market. The emphasis on innovation and entrepreneurship means that graduates are comfortable working in a start up company environment or on new projects in established enterprises. Traditional roles in research-focussed organisations are also available.

Graduates are taking up key positions in the biotechnology industry sector as scientists, business development officers building new businesses from emerging technologies and as commercialisation officers evaluating and financing the commercialisation of new biotechnology products.

Biotechnology is a global industry with many countries promoting the sector as a major pillar of future economic development. Career opportunities exist internationally and graduates are encouraged to think beyond Australia.

### Recommended Study

Biological Science is recommended.

### Course Design

The Bachelor of Biotechnology Innovation, a degree with Honours, was the first degree of its type in Australia and aims to provide highly trained and motivated graduates skilled in the science and business and biotechnology. Graduates undertake the same basic and advanced biotechnology science as students in other science-based courses, gaining requisite theoretical and practical skills. In this course, however, basic and advanced business units are undertaken highlighting entrepreneurial skills and biotechnology commercialisation. Integration and synthesis of the disparate disciplines is an essential component of the course.

Unique to the course is the Student BioEnterprise Scheme, a proactive project-based learning exercise promoting the integration of theory and practice in business and science. Students form companies and operate in the company environment over the entire duration of their course. Companies invent biotechnology-oriented products or processes and formulate strategies to bring them from laboratory to the marketplace under the guidance of industry and academic mentors. Students have many opportunities to network with industry through the Student BioEnterprise Scheme and numerous Ausbiotech functions, events and conferences. Companies can also undertake industry-based or consultancy projects with an industry partner in the final year of the course.

### Professional Recognition

On graduation, students are immediately eligible for graduate membership of AusBiotech Ltd and the Australian Society for Biochemistry and Molecular Biology.

### Why Choose this Course?

If you'd like to work in the dynamic world of translating science discoveries into money-making enterprises, meeting people, evaluating projects, picking winners and running with them, then this course is for you!

While research innovation is critical to the future of Australian industry, and that of many other nations, it is the commercialisation of innovations that will realise any potential and serve to build and strengthen local biotechnology industry. Australia already produces many competent and highly regarded scientists but has a poor history and capitalising on research outcomes. The Federal and various State Governments are investing hundreds of millions of dollars in research innovation and commercialisation and the emphasis has moved to bringing emerging technologies into the marketplace. There is an increasing demand for skilled professionals who can drive research commercialisation in the science and technology sector in Australia and in the global marketplace. The Bachelor of Biotechnology Innovation has created a new rapid pathway into the high-flying world of commercialisation and technology transfer.

Graduates of the Bachelor of Biotechnology Innovation have realised outstanding job outcomes and continue to be

quickly employed by industry, often successfully competing against graduates with PhDs and MBAs.

**Contact Details**

**Course Coordinator**

Associate Professor Chris Collet  
Phone: +61 7 3138 5173  
Email: c.collet@qut.edu.au

**Deferment**

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

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

Find out more on deferment.

**Course structure - Full-time**

**Year 1 - Semester 1**

BSB110	Accounting
MAB101	Statistical Data Analysis 1
SCB111	Chemistry 1
SCB112	Cellular Basis of Life

**Year 1, Semester 2**

BSB115	Management, People and Organisations
LSB258	Principles of Human Physiology
SCB121	Chemistry 2
SCB122	Cell and Molecular Biology

**Year 2, Semester 1**

BSB113	Economics
BSB126	Marketing
LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulation

**Year 2, Semester 2**

LQB481	Biochemical Pathways and Metabolism
LQB483	Molecular Biology Techniques
LQB484	Introduction to Genomics and Bioinformatics
MGB212	Sustainability in a Changing Environment

**Year 3, Semester 1**

LQB386	Microbial Structure and Function
LQB583	Genetic Research Technologies
LQB584	Medical Cell Biology
MGB312	Negotiation Skills

**Year 3, Semester 2**

AMB251	Innovation and Market Development
LQB682	Protein Biochemistry and Bioengineering
LQB684	Medical Biotechnology
MGB218	Managing Business Growth

**Year 4, Semester 1**

BSB310	Business and Biotechnology
LSB309	Introduction to Intellectual Property Law
LSB709-1	Biotechnology Research Project
EITHER	null
LQB582	Biomedical Research Technologies
OR	null
LQB585	Plant Genetic Manipulation

**Year 4, Semester 2**

BSB311	Research, Development and Commercialisation Strategies
LSB709-2	Biotechnology Research Project
LSB709-3	Biotechnology Research Project
EITHER	null
LQB681	Biochemical Research Skills
OR	null
LQB685	Plant Microbe Interactions
OR	null
LQB686	Microbial Technology and Immunology

**Course structure - Part-time**

**Year 1, Semester 1**

MAB101	Statistical Data Analysis 1
SCB112	Cellular Basis of Life

**Year 1, Semester 2**

LSB258	Principles of Human Physiology
SCB122	Cell and Molecular Biology

**Year 2, Semester 1**

BSB110	Accounting
SCB111	Chemistry 1

**Year 2, Semester 2**

BSB115	Management, People and Organisations
SCB121	Chemistry 2

**Year 3, Semester 1**

BSB113	Economics
LQB383	Molecular and Cellular Regulation

**Year 3, Semester 2**

LQB483	Molecular Biology Techniques
MGB212	Sustainability in a Changing Environment

**Year 4, Semester 1**

BSB126 Marketing  
 LQB381 Biochemistry: Structure and Function

**Year 4, Semester 2**

LQB481 Biochemical Pathways and Metabolism  
 LQB484 Introduction to Genomics and Bioinformatics

**Year 5, Semester 1**

LQB386 Microbial Structure and Function  
 LQB584 Medical Cell Biology

**Year 5, Semester 2**

AMB251 Innovation and Market Development  
 LQB684 Medical Biotechnology

**Year 6, Semester 1**

LQB583 Genetic Research Technologies  
 MGB312 Negotiation Skills

**Year 6, Semester 2**

LQB682 Protein Biochemistry and Bioengineering  
 MGB218 Managing Business Growth

**Year 7, Semester 1**

BSB310 Business and Biotechnology  
 EITHER  
 LQB582 Biomedical Research Technologies  
 OR null  
 LQB585 Plant Genetic Manipulation

**Year 7, Semester 2**

BSB311 Research, Development and Commercialisation Strategies  
 EITHER  
 LQB681 Biochemical Research Skills  
 OR null  
 LQB685 Plant Microbe Interactions  
 OR null  
 LQB686 Microbial Technology and Immunology

**Year 8, Semester 1**

LSB309 Introduction to Intellectual Property Law  
 LSB709-1 Biotechnology Research Project

**Year 8, Semester 2**

LSB709-2 Biotechnology Research Project  
 LSB709-3 Biotechnology Research Project

**Potential Careers:**

Biotechnologist, Biotechnology Business/Investment Analyst, Business Development Officer, Cell Biologist, Commercialisation Officer, Medical Biotechnologist, Molecular Biologist, Plant Biotechnologist, Technology Transfer Officer.



## Graduate Certificate in Biotechnology (LS66)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 054278A

**Course duration (full-time):** 1 semester (0.5 year)

**Course duration (part-time):** 2 semesters (1 year)

**Domestic fees (per credit point):** 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** July (Note: Students commencing in July, enrol in Semester 2 units first) (Students are NOT able to commence LS66 in February)

**International Entry:** July (Students are NOT able to commence LS66 in February)

**Total credit points:** 48

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Mark O'Brien

**Campus:** Gardens Point

### Entry Requirements

A bachelor degree or equivalent, preferably but not necessarily in science, is advised. Please contact the course coordinator for further information on the entry requirements for this course.

### Career Outcomes

Career opportunities include employment as research and support staff in the biotechnology industry - private or public biotechnology companies, universities, CSIRO, research institutes, government departments, pathology laboratories and hospitals.

### Professional Recognition

Graduates are eligible to join the AusBiotech, the Australian Society for Biochemistry and Molecular Biology, and the Australian Society for Microbiology.

### Course Design

LS66 Graduate Certificate in Biotechnology is a foundation program for those people without a science degree or for those who do not have a recent background in the biomolecular sciences. Fundamental aspects of cell and molecular biology, biochemistry and microbiology are covered in this first program which comprises 48 credit points of assessed coursework. Successful completion of this program allows students to then specialise in more advanced aspects of biotechnology. The Graduate Certificate in Biotechnology also allows students to gain essential generic skills and attributes for successful postgraduate research and learning. Students must commence in July and enrol in Semester 2 units first. Advanced standing may be given for this foundation program if the student has a bachelor degree or equivalent with a recent and appropriate undergraduate-level knowledge and practical experience in the key areas of molecular biology, cell biology, biochemistry and/or microbiology at an advanced level. If advanced standing is

granted, students can enrol directly in any of the more advanced biotechnology programs (LS76, LS86 or LS96) in their first semester.

### Overview

LS66 Graduate Certificate in Biotechnology is the first of four nested postgraduate coursework programs in biotechnology offered by the School of Life Sciences. This particular course will suit anyone who has a recent undergraduate degree (preferably, but not necessarily in science) and who wishes to gain training in general biotechnology. LS66 Graduate Certificate in Biotechnology, a 6-month full-time foundation program, provides those students without a sound background in the biomolecular sciences the opportunity for direct entry into more advanced biotechnology streams. Science-based biomolecular science units emphasise both theoretical and laboratory skills and cover contemporary fundamental techniques underpinning the science of biotechnology.

### Contact Details

#### Course Coordinator

Dr Mark O'Brien

Phone: +61 7 3138 2568

Email: m.obrien@qut.edu.au

### Course structure - Full-time

#### Year 1, Semester 2 (MODULE 1)

LSN101	Molecular Biosciences
LSN102	Cellular Biosciences
LSN103	Postgraduate Learning and Research Skills
LSB468	Molecular Biology

### Course structure - Part-time

#### Year 1, Semester 2 (MODULE 1)

LSN101	Molecular Biosciences
LSN102	Cellular Biosciences

#### Year 2, Semester 1 (MODULE 1)

LSN103	Postgraduate Learning and Research Skills
LSB468	Molecular Biology

### Potential Careers:

Biochemist, Biotechnologist, Medical Biotechnologist, Microbiologist, Molecular Biologist, Plant Biotechnologist, Research Assistant, Scientist, Virologist.

## Graduate Diploma in Biotechnology (LS76)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 016975B

**Course duration (full-time):** 2 semesters (1 year)

**Course duration (part-time):** 4 semesters (2 years)

**Domestic fees (per credit point):** 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** July (Note: Students commencing in July, enrol in Semester 2 units first) \*Also see "ENTRY REQUIREMENTS" below

**International Entry:** July (Note: Students commencing in July, enrol in Semester 2 units first) \*Also see "ENTRY REQUIREMENTS" below

**Total credit points:** 96

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Mark O'Brien

**Campus:** Gardens Point

### Entry Requirements

A bachelor degree or equivalent, preferably but not necessarily in science, is required. Please contact the course coordinator for further information on the entry requirements for this course.

*\*LS76 commences in July (Module 1 entry). Students with advanced standing for Module 1 should commence in February as the Faculty does not offer sufficient units in Module 2 in second semester. Note especially that the February entry point for this course is for students with advanced standing for Module 1. It is not possible to commence Module 1 in February.*

*For students with advanced standing for Module 1 and who wish to enter LS76 in July, a modified program will be required and this should be discussed with the course coordinator prior to enrolment. Students should note that this may require them to study business electives only in their first semester and could lead to them having to take an additional semester to complete the requirements of their program.*

### Professional Recognition

Graduates are eligible to join the AusBiotech, the Australian Society for Biochemistry and Molecular Biology, and the Australian Society for Microbiology.

### Career Outcomes

Career opportunities include employment as research and support staff in the biotechnology industry - private or public biotechnology companies, universities, CSIRO, research institutes, government departments, pathology laboratories and hospitals.

### Course Design

The program of study for an individual student will be decided in consultation with the course coordinator and will take into account the student's background in the biomolecular sciences and area of interest in biotechnology. The LS76 Graduate Diploma in Biotechnology builds upon concepts covered in the foundation program, LS66 Graduate Certificate in Biotechnology. The Graduate Diploma in Biotechnology not only offers students opportunities to pursue study in several relevant focus areas including the theoretical and practical aspects of biotechnology, but also the business of biotechnology, marketing, commercialisation, as well as the legal and ethical aspects of biotechnological applications. The Graduate Diploma in Biotechnology is comprised of 96 credit points of assessed coursework. Advanced standing may be given for the suite of units offered in the foundation program, LS66 Graduate Certificate in Biotechnology, if the student has a bachelor degree or equivalent with a recent and appropriate undergraduate-level knowledge and practical experience in the key areas of molecular biology, cell biology, biochemistry and/or microbiology at an advanced level. If advanced standing is granted, students can enrol directly in LS76 in their first semester.

### Overview

LS76 Graduate Diploma in Biotechnology is one of four nested postgraduate coursework programs in biotechnology offered by the School of Life Sciences. The Graduate Diploma in Biotechnology will suit anyone who has a recent undergraduate degree (preferably, but not necessarily in science) and who wishes to gain training and advanced specialisation in general, medical and/or plant biotechnology. The program also caters for working scientists, support staff, or students involved in commercial aspects of biotechnology, who wish to update their theoretical and practical biotechnology skills for a current or future position. Science-based biotechnology units emphasise laboratory skills and hands-on laboratory experimentation feature prominently in the program, which covers contemporary techniques in biotechnology. New technology is incorporated as it becomes available. The program also offers students opportunities to pursue studies related to the business of biotechnology, marketing, commercialisation, as well as the legal and ethical aspects of biotechnological applications. LS76 Graduate Diploma in Biotechnology, a one year full-time program, builds upon the knowledge and skills base developed in the Graduate Certificate in Biotechnology and allows the student to stream into either medical or plant biotechnology or both.

### Contact Details

#### Course Coordinator

Dr Mark O'Brien

Phone: +61 7 3138 2568

Email: m.obrien@qut.edu.au

### Course structure - Full-time

#### Year 1, Semester 2 (MODULE 1)

LSN101 Molecular Biosciences

LSN102 Cellular Biosciences

## SCIENCE

LSN103 Postgraduate Learning and Research Skills  
LSB468 Molecular Biology

### Year 2, Semester 1 (MODULE 2)

LSP127 Business Aspects of Biotechnology  
Either  
LSB509 Medical Biotechnology 1  
Or  
LSB577 Plant Biotechnology 1  
null  
In consultation with the course coordinator,  
choose 24 credit points from the following  
units:  
LSB509 Medical Biotechnology 1  
LSB527 Biomedical Research Technologies  
LSB577 Plant Biotechnology 1  
GSN408 Fundamentals of Marketing Management  
GSN418 Marketing Strategy Development  
HHB270 Gene Technology And Ethics  
IBN408 Global Business Operations  
LWN135 Law, Justice and New Genetic Technologies  
MAB523 Introduction to Quality Management

### Course structure - Part-time

#### Year 1, Semester 2 (MODULE 1)

LSN101 Molecular Biosciences  
LSN102 Cellular Biosciences

#### Year 2, Semester 1 (MODULE 1)

LSB468 Molecular Biology  
in consultation with the course coordinator,  
choose 12 credit points from the following units  
LSB509 Medical Biotechnology 1  
LSB527 Biomedical Research Technologies  
LSB577 Plant Biotechnology 1  
GSN408 Fundamentals of Marketing Management  
GSN418 Marketing Strategy Development  
HHB270 Gene Technology And Ethics  
IBN408 Global Business Operations  
LWN135 Law, Justice and New Genetic Technologies  
MAB523 Introduction to Quality Management

#### Year 2, Semester 2 (MODULE 3)

LSN103 Postgraduate Learning and Research Skills  
In consultation with the course coordinator,  
choose 12 credit points from the following  
units:  
LSB469 Introduction to Genomics and Bioinformatics  
LSB605 Protein Engineering and Bioprocessing  
LSB607 Protein Purification  
LSB608 Protein Science

GSN408 Fundamentals of Marketing Management  
GSN418 Marketing Strategy Development  
MGN409 Introduction to Management  
MGN428 Creating New Businesses

### Year 3, Semester 1 (MODULE 2)

LSP127 Business Aspects of Biotechnology  
Either  
LSB509 Medical Biotechnology 1  
Or  
LSB577 Plant Biotechnology 1

### Potential Careers:

Biochemist, Biotechnologist, Medical Biotechnologist,  
Microbiologist, Molecular Biologist, Plant Biotechnologist,  
Research Assistant, Scientist, Virologist.

## Master of Biotechnology (LS86)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 018479B

**Course duration (full-time):** 3 semesters (1.5 years)

**Course duration (part-time):** 6 semesters (3 years)

**Domestic fees (per credit point):** 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** July (Note: Students commencing in July, enrol in Semester 2 units first) \*Also see "ENTRY REQUIREMENTS" below

**International Entry:** July (Note: Students commencing in July, enrol in Semester 2 units first) \*Also see "ENTRY REQUIREMENTS" below

**Total credit points:** 144

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Mark O'Brien

**Campus:** Gardens Point

### Entry Requirements

A bachelor degree or equivalent, preferably but not necessarily in science, is required. Please contact the course coordinator for further information on the entry requirements for this course.

*\*LS86 commences in July (Module 1 entry). Students with advanced standing for Module 1 should commence in February as the Faculty does not offer sufficient units in Module 2 in second semester. Note especially that the February entry point for this course is for students with advanced standing for Module 1. It is not possible to commence Module 1 in February.*

*For students with advanced standing for Module 1 and who wish to enter LS86 in July, a modified program will be required and this should be discussed with the course coordinator prior to enrolment. Students should note that this may require them to study business electives only in their first semester and could lead to them having to take an additional semester to complete the requirements of their program.*

### Career Outcomes

Career opportunities include employment as research and support staff in the biotechnology industry - private or public biotechnology companies, universities, CSIRO, research institutes, government departments, pathology laboratories and hospitals.

### Professional Recognition

Graduates are eligible to join the AusBiotech, the Australian Society for Biochemistry and Molecular Biology, and the Australian Society for Microbiology.

### Course Design

The program of study for an individual student will be decided in consultation with the course coordinator and will

take into account the student's background in the biomolecular sciences and area of interest in biotechnology. The LS86 Master of Biotechnology program follows on from successful completion of core and elective units offered in both LS66 Graduate Certificate in Biotechnology and LS76 Graduate Diploma in Biotechnology. The program not only offers students opportunities to pursue study in several relevant focus areas including the theoretical and practical aspects of biotechnology, but also the business of biotechnology, marketing, commercialisation, as well as the legal and ethical aspects of biotechnological applications. LS86 Master of Biotechnology is comprised of 144 credit points of assessed coursework and is designed to give students further training and specialisation in general, medical and/or plant biotechnology. Advanced standing may be given for the suite of units offered in the foundation program, LS66 Graduate Certificate in Biotechnology, if the student has a bachelor degree or equivalent with a recent and appropriate undergraduate-level knowledge and practical experience in the key areas of molecular biology, cell biology, biochemistry and/or microbiology at an advanced level. If advanced standing is granted, students can enrol directly in LS86 in their first semester.

### Overview

LS86 Master of Biotechnology is one of four nested postgraduate coursework programs in biotechnology offered by the School of Life Sciences. LS86 Master of Biotechnology extends the LS76 Graduate Diploma in Biotechnology program by providing additional training and specialisation in either medical or plant biotechnology or both. The program can be completed in 1.5 years full-time. The Master of Biotechnology program will suit anyone who has a recent undergraduate degree (preferably, but not necessarily in science) and who wishes to gain training and advanced specialisation in general, medical and/or plant biotechnology. The program also caters for working scientists, support staff, or students involved in commercial aspects of biotechnology, who wish to update their theoretical and practical biotechnology skills for a current or future position. Science-based biotechnology units emphasise laboratory skills and hands-on laboratory experimentation feature prominently in the program, which covers contemporary techniques in biotechnology. New technology is incorporated as it becomes available. The program also offers students opportunities to pursue studies related to the business of biotechnology, marketing, commercialisation, as well as the legal and ethical aspects of biotechnological applications.

### Contact Details

#### Coordinator

Dr Mark O'Brien

Phone: +61 7 3138 2568

Email: m.obrien@qut.edu.au

### Course structure - Full-time

#### Year 1, Semester 2 (MODULE 1)

LSN101 Molecular Biosciences

LSN102 Cellular Biosciences

## SCIENCE

LSN103 Postgraduate Learning and Research Skills  
 LSB468 Molecular Biology

### Year 2, Semester 1 (MODULE 2)

LSP127 Business Aspects of Biotechnology  
 Either  
 LSB509 Medical Biotechnology 1  
 Or  
 LSB577 Plant Biotechnology 1  
 null  
 In consultation with the course coordinator,  
 choose 24 credit points from the following  
 units:  
 LSB509 Medical Biotechnology 1  
 LSB527 Biomedical Research Technologies  
 LSB577 Plant Biotechnology 1  
 GSN408 Fundamentals of Marketing Management  
 GSN418 Marketing Strategy Development  
 HHB270 Gene Technology And Ethics  
 IBN408 Global Business Operations  
 LWN135 Law, Justice and New Genetic Technologies  
 MAB523 Introduction to Quality Management

### Year 2, Semester 2 (MODULE 3)

BSB311 Research, Development and  
 Commercialisation Strategies  
 Either  
 LSB609 Medical Biotechnology 2  
 Or  
 LSB677 Plant Biotechnology 2  
 null  
 In consultation with the course coordinator,  
 choose 24 credit points from the following  
 units:  
 LSB469 Introduction to Genomics and Bioinformatics  
 LSB605 Protein Engineering and Bioprocessing  
 LSB607 Protein Purification  
 LSB608 Protein Science  
 LSB609 Medical Biotechnology 2  
 LSB619 Genomics and Bioinformatics  
 LSB677 Plant Biotechnology 2  
 GSN408 Fundamentals of Marketing Management  
 GSN418 Marketing Strategy Development  
 MGN409 Introduction to Management  
 MGN428 Creating New Businesses

### Course structure - Part-time

#### Year 1, Semester 2 (MODULE 1)

LSN101 Molecular Biosciences  
 LSN102 Cellular Biosciences

#### Year 2, Semester 1 (MODULE 1)

LSB468 Molecular Biology  
 In consultation with the course coordinator,  
 choose 12 credit points from the following  
 units:  
 LSB509 Medical Biotechnology 1  
 LSB527 Biomedical Research Technologies  
 LSB577 Plant Biotechnology 1  
 GSN408 Fundamentals of Marketing Management  
 GSN418 Marketing Strategy Development  
 HHB270 Gene Technology And Ethics  
 IBN408 Global Business Operations  
 LWN135 Law, Justice and New Genetic Technologies  
 MAB523 Introduction to Quality Management

#### Year 2, Semester 2 (MODULE 3)

LSN103 Postgraduate Learning and Research Skills  
 In consultation with the course coordinator,  
 choose 12 credit points from the following  
 units:  
 LSB469 Introduction to Genomics and Bioinformatics  
 LSB605 Protein Engineering and Bioprocessing  
 LSB607 Protein Purification  
 LSB608 Protein Science  
 GSN408 Fundamentals of Marketing Management  
 GSN418 Marketing Strategy Development  
 MGN409 Introduction to Management  
 MGN428 Creating New Businesses

#### Year 3, Semester 1 (MODULE 2)

LSP127 Business Aspects of Biotechnology  
 Either  
 LSB509 Medical Biotechnology 1  
 Or  
 LSB577 Plant Biotechnology 1

#### Year 3, Semester 2 (MODULE 3)

BSB311 Research, Development and  
 Commercialisation Strategies  
 Either  
 LSB609 Medical Biotechnology 2  
 Or  
 LSB677 Plant Biotechnology 2

#### Year 4, Semester 1 (MODULE 2)

In consultation with the course coordinator,  
 choose 24 credit points from the following  
 units:  
 LSB509 Medical Biotechnology 1  
 LSB527 Biomedical Research Technologies  
 LSB537 Genetic Engineering  
 LSB577 Plant Biotechnology 1

- GSN408 Fundamentals of Marketing Management
- GSN418 Marketing Strategy Development
- HHB270 Gene Technology And Ethics
- IBN408 Global Business Operations
- LWN135 Law, Justice and New Genetic Technologies
- MAB523 Introduction to Quality Management

**Potential Careers:**

Biochemist, Biotechnologist, Medical Biotechnologist, Microbiologist, Molecular Biologist, Plant Biotechnologist, Research Assistant, Scientist, Virologist.

## Master of Medical Science (LS87)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 063660J

**Course duration (full-time):** 3 semesters (1.5 years)

**International Fees (indicative):** 2008: \$9,600 per semester

**International Entry:** July. IELTS of 6.5 with no sub-band less than 6.0 (quota applies)

**Assumed knowledge:** Bachelor of Applied Science or equivalent qualification, and relevant work experience in the pathology industry.

**Total credit points:** 144

**Standard credit points per full-time semester:** 48

**Course coordinator:** Dr Mark O'Brien

**Campus:** Gardens Point

### Course Design

This course will provide high quality, multi-skilled graduates to work as diagnostic scientists in the pathology industry for the international market.

On completion of this Masters Degree, students should be able to:

- Demonstrate advanced theoretical knowledge, analytical and laboratory diagnostic skills in the Medical Science fields covered in the program.
- Apply advanced information processing skills and knowledge of methodological and problem-solving skills pertinent to the Medical Science fields covered in the program.
- Demonstrate high level communication skills appropriate to leaders in a health care setting.
- Display characteristics of self-reliance and leadership in the field of Medical Science.

### Entry Requirements

The course is currently offered to International students only. International applicants must possess a Bachelor of Applied Science with a major in biochemistry, microbiology, physiology or anatomy or equivalent qualification, in addition to relevant work experience in the pathology industry.

### Early Exit Options

- Graduate Certificate of Medical Science (LS67) - 48 CP (core units only)
- Graduate Diploma of Medical Science (LS77) - 96 CP (including minimum 72 CP core units)

### Contact Details

#### Course Coordinator

Dr Mark O'Brien

Phone: +61 7 3138 2568

Email: m.obrien@qut.edu.au

### Course structure

#### Year 1, Semester 2 (MODULE 1)

LSN425 Quantitative Medical Science

LSN438 Immunology 1  
 LSN465 Histopathology 1  
 LSN468 Molecular Biology

#### Year 2, Semester 1 (MODULE 2)

LSN509 Medical Biotechnology1  
 LSN555 Haematology 1  
 LSN565 Histopathology 2  
 Either  
 LSN435 Diagnostic Microbiology 1  
 Or  
 LSN525 Clinical Biochemistry 1

#### Year 2, Semester 2 (MODULE 3)

LSN609 Medical Biotechnology 2  
 LSN655 Haematology 2  
 LSN665 Immunohaematology  
 Either  
 LSN625 Clinical Biochemistry 2  
 Or  
 LSN635 Diagnostic Microbiology 2

### Potential Careers:

Biochemist, Clinical Laboratory Scientist, Medical Scientist, Microbiologist, Operations Manager, Pathology Scientist.

## Graduate Diploma in Medical Science (Anatomical Pathology) (LS90)

**Year offered:** 2008

**Admissions:** Yes

**Course duration (part-time):** 4 semesters (13 months)

**Domestic fees (per credit point):** 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960

**Total credit points:** 96

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Trevor Forster

**Campus:** Gardens Point

### Objective

This course aims to:

- Formalise advancement of knowledge and skills of medical scientists in the specialist discipline of Anatomical Pathology.
- To promote teamwork and effective communications between scientists and pathologists.
- To enable scientists to undertake some of the surgical cut-up procedures normally assigned to pathologists.

### Course Design

This course is designed to make use of learning that takes place in the workplace. It provides close collaboration between QUT, the pathology industry and pathology professionals.

As a special feature, this course avoids the traditional mode of study ie weekly attendance at lectures, practical sessions and tutorials by: intensive study mode in the form of one week modules; on-line discussion forums; work-based learning; tele & video conferencing.

### Entry Requirements

A Bachelor Applied Science (Medical Science) or equivalent degree incorporating human anatomy, histology and pathology with recent work experience in a histology laboratory and currently working in an appropriate capacity in an accredited pathology laboratory.

### Contact Details

#### Course Coordinator

Dr Trevor Forster

Phone: +61 7 3138 2559

Email: t.forster@qut.edu.au

### Course structure

#### First Semester (January to February)

LSN220 Surgical Anatomy

LSN223-1 Surgical Grossing

#### Second Semester (March to June)

LSN221-1 Pathology

LSN223-2 Surgical Grossing

#### Third Semester (July to November)

LSN221-2 Pathology

LSN223-3 Surgical Grossing

#### Fourth Semester (January to February following year)

JSN014 Law, Justice and New Genetic Technologies

LSN223-4 Surgical Grossing

### Potential Careers:

Biochemist, Clinical Laboratory Scientist, Medical Scientist, Microbiologist, Operations Manager, Pathology Scientist.



## Master of Biotechnology (Advanced) (LS96)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 054279M

**Course duration (full-time):** 4 semesters (2 years)

**Course duration (part-time):** 8 semesters (4 years)

**Domestic fees (per credit point):** 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** July (Note: Students commencing in July, enrol in Semester 2 units first) \*Also see "ENTRY REQUIREMENTS" below

**International Entry:** July (Note: Students commencing in July, enrol in Semester 2 units first) \*Also see "ENTRY REQUIREMENTS" below

**Total credit points:** 192

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Mark O'Brien

**Campus:** Gardens Point

### Entry Requirements

A bachelor degree or equivalent, preferably but not necessarily in science, is required. Please contact the course coordinator for further information on the entry requirements for this course.

*\*LS96 commences in July (Module 1 entry). Students with advanced standing for Module 1 should commence in February as the Faculty does not offer sufficient units in Module 2 in second semester. Note especially that the February entry point for this course is for students with advanced standing for Module 1. It is not possible to commence Module 1 in February.*

*For students with advanced standing for Module 1 and who wish to enter LS96 in July, a modified program will be required and this should be discussed with the course coordinator prior to enrolment. Students should note that this may require them to study business electives only in their first semester and could lead to them having to take an additional semester to complete the requirements of their program. Also, students may not be able to undertake the project component of LS96.*

### Career Outcomes

Career opportunities include employment as research and support staff in the biotechnology industry - private or public biotechnology companies, universities, CSIRO, research institutes, government departments, pathology laboratories and hospitals.

### Professional Recognition

Graduates are eligible to join the AusBiotech, the Australian Society for Biochemistry and Molecular Biology, and the Australian Society for Microbiology.

### Course Design

The program of study for an individual student will be decided in consultation with the course coordinator and will take into account the student's background in the biomolecular sciences and area of interest in biotechnology. LS96 Master of Biotechnology (Advanced) completes the comprehensive training of students and follows successful completion of core and elective units offered in LS66, LS76 and LS86. It is comprised of 192 credit points of assessed coursework in general, medical and/or plant biotechnology. In their final semester of the program, students may undertake a supervised research project either at QUT or in the workplace. Students must discuss research project areas prior to enrolment in this course to select both a suitable project and a project supervisor(s) prior to entry (or as soon as possible thereafter). While the School of Life Sciences has a wide range of research project areas available, it may not always be possible for students to conduct a research project exactly in the area they desire. Part-time students may also elect to do a research project at their place of work, with both a workplace supervisor and a QUT supervisor. Alternative options are available. For students not undertaking a research project, additional coursework must be completed. Students will need to consult with the course coordinator in selecting additional coursework units. The LS96 Master of Biotechnology (Advanced) program not only offers students opportunities to pursue study in several relevant focus areas including the theoretical and practical aspects of biotechnology, but also the business of biotechnology, marketing, commercialisation, as well as the legal and ethical aspects of biotechnological applications. Advanced standing may be given for the suite of units offered in the foundation program, LS66 Graduate Certificate in Biotechnology, if the student has a bachelor degree or equivalent with a recent and appropriate undergraduate-level knowledge and practical experience in the key areas of molecular biology, cell biology, biochemistry and/or microbiology at an advanced level. If advanced standing is granted, students can enrol directly in LS96 in their first semester.

### Overview

LS96 Master of Biotechnology (Advanced) is one of four nested postgraduate coursework programs in biotechnology offered by the School of Life Sciences. The LS96 Master of Biotechnology (Advanced) program offers students a complete and comprehensive training in biotechnology by extending the suite of units offered within the LS86 Master of Biotechnology program or by giving students the opportunity in their final semester of study to pursue a research project. The Master of Biotechnology (Advanced) is a two year full-time program of study commencing with the foundation suite of core units, where appropriate. The LS96 Master of Biotechnology (Advanced) program will suit anyone who has a recent undergraduate degree (preferably, but not necessarily in science) and who wishes to gain training and advanced specialisation in general, medical and/or plant biotechnology. The program also caters for working scientists, support staff, or students involved in commercial aspects of biotechnology, who wish to update their theoretical and practical biotechnology skills for a current or future position. Science-based biotechnology

units emphasise laboratory skills and hands-on laboratory experimentation feature prominently in the program, which covers contemporary techniques in biotechnology. New technology is incorporated as it becomes available. The program also offers students opportunities to pursue studies related to the business of biotechnology, marketing, commercialisation, as well as the legal and ethical aspects of biotechnological applications.

**Contact Details**

**Course Coordinator**

Dr Mark O'Brien  
 Phone: +61 7 3138 2568  
 Email: m.obrien@qut.edu.au

**Course structure - Full-time**

**Year 1, Semester 2 (MODULE 1)**

- LSN101 Molecular Biosciences
- LSN102 Cellular Biosciences
- LSN103 Postgraduate Learning and Research Skills
- LSB468 Molecular Biology

**Year 2, Semester 1 (MODULE 2)**

- LSP127 Business Aspects of Biotechnology  
Either
- LSB509 Medical Biotechnology 1  
Or
- LSB577 Plant Biotechnology 1  
null  
In consultation with the course coordinator, choose 24 credit points from the following units:
- LSB509 Medical Biotechnology 1
- LSB527 Biomedical Research Technologies
- LSB577 Plant Biotechnology 1
- GSN408 Fundamentals of Marketing Management
- GSN418 Marketing Strategy Development
- HHB270 Gene Technology And Ethics
- IBN408 Global Business Operations
- LWN135 Law, Justice and New Genetic Technologies
- MAB523 Introduction to Quality Management

**Year 2, Semester 2 (MODULE 3)**

- BSB311 Research, Development and Commercialisation Strategies  
Either
- LSB609 Medical Biotechnology 2  
Or
- LSB677 Plant Biotechnology 2  
null  
In consultation with the course coordinator, choose 24 credit points from the following units:

- LSB469 Introduction to Genomics and Bioinformatics
- LSB605 Protein Engineering and Bioprocessing
- LSB607 Protein Purification
- LSB608 Protein Science
- LSB609 Medical Biotechnology 2
- LSB619 Genomics and Bioinformatics
- LSB677 Plant Biotechnology 2
- GSN408 Fundamentals of Marketing Management
- GSN418 Marketing Strategy Development
- MGN409 Introduction to Management
- MGN428 Creating New Businesses

**Year 3, Semester 1 (MODULE 4)**

- LSN710 Project  
null  
For those students NOT undertaking LSN710 Project, in consultation with the course coordinator, choose 48 credit points from the following units:
- LSB509 Medical Biotechnology 1
- LSB527 Biomedical Research Technologies
- LSB577 Plant Biotechnology 1
- GSN408 Fundamentals of Marketing Management
- GSN418 Marketing Strategy Development
- HHB270 Gene Technology And Ethics
- IBN408 Global Business Operations
- LWN135 Law, Justice and New Genetic Technologies
- MAB523 Introduction to Quality Management

**Course structure - Part-time**

**Year 1, Semester 2 (MODULE 1)**

- LSN101 Molecular Biosciences
- LSN102 Cellular Biosciences

**Year 2, Semester 1 (MODULE 1)**

- LSB468 Molecular Biology  
In consultation with the course coordinator, choose 12 credit points from the following units:
- LSB509 Medical Biotechnology 1
- LSB527 Biomedical Research Technologies
- LSB577 Plant Biotechnology 1
- GSN408 Fundamentals of Marketing Management
- GSN418 Marketing Strategy Development
- HHB270 Gene Technology And Ethics
- IBN408 Global Business Operations
- LWN135 Law, Justice and New Genetic Technologies
- MAB523 Introduction to Quality Management

**Year 2, Semester 2 (MODULE 3)**

- LSN103 Postgraduate Learning and Research Skills

## SCIENCE

In consultation with the course coordinator, choose 12 credit points from the following units:

LSB469	Introduction to Genomics and Bioinformatics
LSB605	Protein Engineering and Bioprocessing
LSB607	Protein Purification
LSB608	Protein Science
GSN408	Fundamentals of Marketing Management
GSN418	Marketing Strategy Development
MGN409	Introduction to Management
MGN428	Creating New Businesses

### Year 3, Semester 1 (MODULE 2)

LSP127	Business Aspects of Biotechnology Either
LSB509	Medical Biotechnology 1 Or
LSB577	Plant Biotechnology 1

### Year 3, Semester 2 (MODULE 3)

BSB311	Research, Development and Commercialisation Strategies Either
LSB609	Medical Biotechnology 2 Or
LSB677	Plant Biotechnology 2

### Year 4, Semester 1 (MODULE 2)

In consultation with the course coordinator, choose 24 credit points from the following units:

LSB509	Medical Biotechnology 1
LSB527	Biomedical Research Technologies
LSB577	Plant Biotechnology 1
GSN408	Fundamentals of Marketing Management
GSN418	Marketing Strategy Development
HHB270	Gene Technology And Ethics
IBN408	Global Business Operations
LWN135	Law, Justice and New Genetic Technologies
MAB523	Introduction to Quality Management

### Year 4, Semester 2 (MODULE 4)

LSN711	Project 1  For those students NOT undertaking LSN711 Project 1, in consultation with the course coordinator, choose 24 credit points from the following units:
LSB469	Introduction to Genomics and Bioinformatics
LSB605	Protein Engineering and Bioprocessing
LSB607	Protein Purification
LSB608	Protein Science
LSB609	Medical Biotechnology 2

LSB619	Genomics and Bioinformatics
LSB677	Plant Biotechnology 2
GSN408	Fundamentals of Marketing Management
GSN418	Marketing Strategy Development
MGN409	Introduction to Management
MGN428	Creating New Businesses

### Year 5, Semester 1 (MODULE 4)

LSN712	Project 2  For those students NOT undertaking LSN712 Project 2, in consultation with the course coordinator, choose 48 credit points from the following units:
LSB509	Medical Biotechnology 1
LSB527	Biomedical Research Technologies
LSB577	Plant Biotechnology 1
GSN408	Fundamentals of Marketing Management
GSN418	Marketing Strategy Development
HHB270	Gene Technology And Ethics
IBN408	Global Business Operations
LWN135	Law, Justice and New Genetic Technologies
MAB523	Introduction to Quality Management

### Potential Careers:

Biochemist, Biotechnologist, Medical Biotechnologist, Microbiologist, Molecular Biologist, Plant Biotechnologist, Research Assistant, Scientist, Virologist.

## Bachelor of Mathematics (MA54)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 049433D

**Course duration (full-time):** 3 Years

**Course duration (part-time):** 6 Years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,370

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February and July

**QTAC code:** 418701

**Past rank cut-off:** 76

**Past OP cut-off:** 12

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 288

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Glenn Fulford

**Discipline coordinator:** Dr Dann Mallet - Assistant Course Coordinator

**Campus:** Gardens Point

### Career Opportunities

Mathematics graduates are employed across a wide range of areas. These include, but are not limited to, finance, investment, information technology, environmental management, health, marketing, logistics, defence, media, education and research. In addition to their knowledge and skills in mathematics, graduates are also highly valued for their analytical and problem-solving skills. Development of skills in communication, problem-solving, critical thinking and teamwork form an integral part of the course.

Favourable career outcomes for Bachelor of Mathematics graduates are likely due to the current demand for qualified statisticians and mathematicians.

### Recommended Study

Maths C is recommended.

### Course Design

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.

In the first year you will study core units in mathematics and statistics. These core units include studies in calculus, algebra, vectors and matrices, computational mathematics, data analysis and statistical modelling.

You will be able to design your program to suit your interests and career aspirations by combining advanced units from a number of the following areas of specialisation:

#### *Applied Mathematics*

Mathematical techniques that can be used to solve real-world problems.

#### *Computational Mathematics*

Computers and numerical techniques used to find solutions to complex problems which cannot be solved analytically.

#### *Discrete Mathematics*

The mathematics of numbers, including study of sets, fields, ring and groups.

#### *Financial Mathematics*

A wide variety of mathematical techniques used in applications within the financial area.

#### *Mathematical Modelling*

The utilisation of mathematical techniques to develop a model or explanation of a real-world problem which can then be tested.

#### *Operations Research*

Optimising complex systems including queuing, scheduling or allocation of resources.

#### *Scientific Computation and Visualisation*

Supercomputing, large-scale scientific modelling and creating graphical representations using visualisation techniques.

#### *Statistics*

Collecting data in an appropriate format, experimental design, analysis of data and using data to make predictions.

#### *Statistical Modelling*

Building and analysing models of systems involving probability and variables.

### Professional Recognition

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

### Mathematics Bursaries

Students enrolled in this course can apply for industry-sponsored bursaries. These bursaries are awarded to Australian citizens or permanent residents on a competitive basis. Applications should be submitted by 1 December of the year preceding entry to the course. For further information see [www.maths.qut.edu.au](http://www.maths.qut.edu.au)

### Contact Details

#### **Course Coordinator**

Dr Glenn Fulford

Phone: +61 7 3138 5196

Email: [g.fulford@qut.edu.au](mailto:g.fulford@qut.edu.au)

**Assistant Course Coordinator**

Dr Dann Mallet  
 Phone: +61 7 3138 2354  
 Email: dg.mallet@qut.edu.au

**Deferment**

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

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

Find out more on deferment.

**Course structure - Bachelor of Mathematics**

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

**Level 1 Mathematics Units**

Students must complete the following Level 1 Mathematics units:

- MAB100 Mathematical Sciences 1A
- MAB101 Statistical Data Analysis 1
- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- MAB210 Statistical Modelling 1
- MAB220 Computational Mathematics 1

Note: MAB100 is for students who do not have an exit assessment of at least Sound Achievement in four semesters of both Senior Mathematics B and Senior Mathematics C

**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 (4 twelve credit point units) from Level 3 mathematics units

Students must complete:

- MAB311 Advanced Calculus
- MAB312 Linear Algebra

**Other Units**

Up to a maximum of 96 credit points may be taken as electives with not more than 48 credit points from first level units.

Note: A first level unit is classified as a unit that is normally taken in the first year of a single degree. Examples of first level units are BSB1xx, ITB001-ITB008, SCB1xx units, PQB2xx units. Please check with your Course Coordinator if you would like to make language units or units from faculties other than Business, Information Technology or Science so that you can be advised on the correct

unit(s) in which to enrol.

**Suggested Program for February Entry**

STUDENTS WITH AN EXIT ASSESSMENT OF AT LEAST SOUND ACHIEVEMENT IN BOTH SENIOR MATHEMATICS B AND SENIOR MATHEMATICS C (OR EQUIVALENT)

**Year 1, Semester 1**

- MAB101 Statistical Data Analysis 1
- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- ONE additional unit from:
  - BSB110 Accounting
  - MAB220 Computational Mathematics 1
  - SCB110 Science Concepts and Global Systems
- Other first level unit (see below and later in document for other suggestions)

**Year 1, Semester 2**

- MAB210 Statistical Modelling 1
- THREE additional units from:
  - MAB220 Computational Mathematics 1
  - MAB281 Mathematics for Computer Graphics
  - MAB313 Mathematics of Finance
  - MAB422 Mathematical Modelling
  - MAB480 Introduction to Scientific Computation
  - BSB113 Economics
  - PQB250 Mechanics and Electromagnetism
  - SCB112 Cellular Basis of Life
  - PQB251 Waves and Optics
- Other first level elective units (see later in document for other suggestions)

**Year 2, Semester 1**

- MAB311 Advanced Calculus
- MAB312 Linear Algebra
- TWO additional units from mathematics units or elective units

**Year 2, Semester 2**

FOUR units from mathematics units or elective units (see course structure)

**Year 3, Semester 1**

FOUR units from mathematics units or elective units (see course structure)

**Year 3, Semester 2**

FOUR units from mathematics units or elective units (see course structure)

STUDENTS WITH AN EXIT ASSESSMENT

**OF AT LEAST SOUND ACHIEVEMENT IN SENIOR MATHEMATICS B ONLY (OR EQUIVALENT)**

**Year 1, Semester 1**

- MAB100 Mathematical Sciences 1A
- MAB101 Statistical Data Analysis 1
- TWO additional units from:
  - BSB110 Accounting
  - BSB113 Economics
  - SCB110 Science Concepts and Global Systems
  - SCB111 Chemistry 1
  - SCB112 Cellular Basis of Life
- Other first level elective unit (see later in document for other suggestions)

**Year 1, Semester 2**

- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- MAB210 Statistical Modelling 1
- MAB220 Computational Mathematics 1
- Or
- Other first level elective unit

**Year 2, Semester 1**

- MAB311 Advanced Calculus
- MAB312 Linear Algebra
- TWO additional units from mathematics units or elective units

**Year 2, Semester 2**

FOUR units from mathematics units or elective units (see course structure)

**Year 3, Semester 1**

FOUR units from mathematics units or elective units (see course structure)

**Year 3, Semester 2**

FOUR units from mathematics units or elective units (see course structure)

**Mathematics Units**

**Mathematics Units**

Students should not enrol in Mathematics units other than those listed below:

**Level 1 Mathematics Units**

- MAB100 Mathematical Sciences 1A
- MAB101 Statistical Data Analysis 1
- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- MAB210 Statistical Modelling 1
- MAB220 Computational Mathematics 1

**Level 2 Mathematics Units**

- MAB311 Advanced Calculus
- MAB312 Linear Algebra
- MAB313 Mathematics of Finance
- MAB314 Statistical Modelling 2
- MAB315 Operations Research 2
- MAB413 Differential Equations
- MAB414 Applied Statistics 2
- MAB420 Computational Mathematics 2
- MAB422 Mathematical Modelling
- MAB461 Discrete Mathematics
- MAB480 Introduction to Scientific Computation
- MAB481 Visualisation and Data Analysis

**Level 3 Mathematics Units**

- MAB521 Applied Mathematics 3
- MAB522 Computational Mathematics 3
- MAB524 Statistical Inference
- MAB525 Operations Research 3A
- MAB533 Statistical Techniques
- MAB536 Time Series Analysis
- MAB613 Partial Differential Equations
- MAB623 Financial Mathematics
- MAB624 Applied Statistics 3
- MAB625 Operations Research 3B
- MAB640 Industry Project
- MAB672 Advanced Mathematical Modelling
- MAB681 Advanced Visualisation and Data Analysis

**Other Units**

Up to a maximum of 96 credit points (8 twelve credit point units) can be taken from other units, with not more than 48 credit points (4 twelve credit point units) from first level units. A first level unit is classified as a unit that is normally taken in the first year of a single degree.

**OTHER UNIT - FIRST LEVEL:** This unit can only be taken in MA54 after recommendation from the Course Coordinator. This unit cannot be included in the minimum of 16 mathematics units required for the course.

- MAB105 Preparatory Mathematics

**OTHER UNIT - ADVANCED LEVEL:** This unit cannot be included in the minimum of 16 mathematics units required for the course, but can be counted as an elective.

- MAB281 Mathematics for Computer Graphics

**Potential Careers:**

Actuary, Computer Game Programmer, Market Research Manager, Mathematician, Quantitative Analyst, Statistician.

## Graduate Certificate in Mathematical Science (MA65)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 046044G

**Course duration (full-time):** 1 semester (0.5 year)

**Course duration (part-time):** 2 semesters (1 year)

**Domestic fees (per credit point):** 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February, July or Summer Program

**International Entry:** February and July

**Total credit points:** 48

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Troy Farrell

**Campus:** Gardens Point

### Entry Requirements

To be eligible to enrol an applicant will normally have completed an undergraduate degree in any discipline. Applicants who do not meet the normal entry requirement may be permitted to enrol subject to the approval of the Head of the School of Mathematical Sciences. Applicants should provide details of their relevant industry experience and prior learning.

### Career Outcomes

Knowledge and skills in mathematics and/or statistical techniques are increasingly in demand in many different areas. For example, quantitative analysis in the finance area; statistical and mathematical modelling in natural resources and health management; operations research in transport management. Mathematics teachers are in high demand.

### Course Design

The program of study for an individual student will be decided in consultation with the course coordinator and will take into account the student's background and area of interest within the mathematical sciences.

In the Graduate Certificate, at least 36 credit points must be taken from mathematics units and up to 12 credit points can be taken from units other than mathematics units.

### Overview

This course enables graduates from any discipline to develop their knowledge and skills in one or more areas of the mathematical sciences. Strands available include mathematical modelling/applied mathematics, computational mathematics, statistics/statistical modelling, quantitative analysis/financial mathematics, operations research and scientific computation and visualisation. It is also suitable for graduates who wish to obtain the mathematics units required for mathematics as a teaching area for secondary schools. It recognises that students may not have studied mathematics for some time.

### Contact Details

#### Course Coordinator

Dr Troy Farrell

Phone: +61 7 3138 2364

Email: t.farrell@qut.edu.au

### Course structure

- At least 36 credit points must be taken from mathematics units.

- Up to 12 credit points can be taken from units other than mathematics units.

- The units recommended will depend upon your mathematics background from secondary school or tertiary studies, length of time since you have studied mathematics, and your areas of interest.

- Students must contact the course Coordinator prior to commencing.

#### Units available:

MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1
MAB105	Preparatory Mathematics
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
MAB210	Statistical Modelling 1
MAB220	Computational Mathematics 1
MAB281	Mathematics for Computer Graphics null null
MAB313	Mathematics of Finance
MAB314	Statistical Modelling 2 null
MAB413	Differential Equations
MAB414	Applied Statistics 2
MAB420	Computational Mathematics 2 null
MAB461	Discrete Mathematics
MAB480	Introduction to Scientific Computation null null
MAB522	Computational Mathematics 3 null
MAB525	Operations Research 3A
MAB533	Statistical Techniques
MAB613	Partial Differential Equations
MAB623	Financial Mathematics
MAB625	Operations Research 3B
MAB672	Advanced Mathematical Modelling
MAN200	Mathematical Foundations

MAN201	Mathematics
MAN536	Time Series Analysis
MAN624	Applied Statistics
MAN681	Advanced Visualisation and Data Analysis
MAN700	Project
MAN717	Minor Project
MAN761	Analysis
MAN764	Applied Mathematical Modelling
MAN765	Bayesian Data Analysis
MAN766	Applied Time Series Analysis
MAN768	Advanced Techniques in Operations Research
MAN769	Mathematics of Finance
MAN771	Computational Mathematics 4
MAN774	Perturbation Methods
MAN775	Statistical Modelling of Financial Processes
MAN777	Mathematics of Fluid Flow
MAN778	Applications of Discrete Mathematics
MAN787-1	Project
MAN787-2	Project
MAN787-3	Project

**Potential Careers:**

Actuary, Mathematician, Quantitative Analyst, Statistician.



## Graduate Diploma in Mathematical Science (MA75)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 046041M

**Course duration (full-time):** 2 semesters (1 year)

**Course duration (part-time):** 4 semesters (2 years)

**Domestic fees (per credit point):** 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February, July or Summer Program

**International Entry:** February and July

**Total credit points:** 96

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Troy Farrell

**Campus:** Gardens Point

### Entry Requirements

To be eligible to enrol an applicant will normally have completed an undergraduate degree in any discipline. Students who do not have sufficient background in introductory calculus may be advised to enrol in MA65 Graduate Certificate in Mathematical Sciences first.

### Prior to Enrolment

Potential applicants for this course are advised to contact the Course Coordinator prior to submitting their application to discuss their plans. International students in particular, should be aware that full-time enrolment of at least 36 credit points per semester may not be possible. This is due to the need to meet unit prerequisites. Units are not offered externally although units do have varying amounts of on-line material available. Lectures, tutorials and computer-based practicals may be timetabled during the day or early evening.

### Career Outcomes

Knowledge and skills in mathematics and/or statistical techniques are increasingly in demand in many different areas. For example, quantitative analysis in the finance area; statistical and mathematical modelling in natural resources and health management; operations research in transport management.

### Course Design

The program of study for an individual student will be decided in consultation with the course coordinator and will take into account the student's background and area of interest within the mathematical sciences.

In the Graduate Diploma, at least 24 credit points must be taken from postgraduate mathematics units other than Mathematical Foundations and/or Mathematics. Up to 24 credit points can be taken from units other than mathematics units and there is a limit of 36 credit points from project units.

### Overview

This course enables graduates from any discipline to develop their knowledge and skills in one or more areas of the mathematical sciences. Strands available include mathematical modelling/applied mathematics, computational mathematics, statistics/statistical modelling, quantitative analysis/financial mathematics, operations research and scientific computation and visualisation. It recognises that students may not have studied mathematics for some time.

### Contact Details

#### Course Coordinator

Dr Troy Farrell

Phone: +61 7 3138 2364

Email: t.farrell@qut.edu.au

### Course structure

- At least 24 credit points must be taken from postgraduate mathematics units other than MAN200 Mathematical Foundations and/or MAN201 Mathematics.
  - Up to 24 credit points can be taken from units other than mathematics units.
  - Limit of 36 credit points from project units.
- A planned program of study should be decided in consultation with the Course Coordinator. It will take into account the student's background and area of interest within the mathematical sciences. Strands represent areas of the mathematical sciences which may be of interest to students and the units listed under each strand can guide students in developing their planned program. Students will usually select units from one or two strands only. The unit MAN700 project can be used to satisfy the rule requiring at least 24 credit points from postgraduate mathematics units other than MAN200 and/or MAN201.
- The following postgraduate mathematics units are available in all strands (subject to the limit on credit points from project units):
- |          |                          |
|----------|--------------------------|
| MAN200   | Mathematical Foundations |
| MAN201   | Mathematics              |
| MAN700   | Project                  |
| MAN717   | Minor Project            |
| MAN787-1 | Project                  |
| MAN787-2 | Project                  |
| MAN787-3 | Project                  |
- To undertake any of the project units, permission from the Course Coordinator is required. If students wish to take any of the above units they will need to discuss their plans and the proposed content with the Course Coordinator.

### Strand Information

The following strand information is to assist students with unit selection. Students do not have to enrol in all units listed for a strand. The

prerequisite units are given as a guide. Depending on a student's background, they may have already covered some of the units listed (or equivalent units) in their undergraduate studies. If students have not studied any mathematics for some time, they may need to undertake one or two units prior to commencing those listed in the strand information.

**Mathematical Modelling/Applied Mathematics**

Postgraduate Mathematics Units:

- MAN761 Analysis
- MAN764 Applied Mathematical Modelling
- MAN774 Perturbation Methods
- MAN777 Mathematics of Fluid Flow
- Prerequisite Units:
- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- MAB220 Computational Mathematics 1
- MAB311 Advanced Calculus
- MAB312 Linear Algebra
- MAB413 Differential Equations
- MAB422 Mathematical Modelling
- MAB521 Applied Mathematics 3
- MAB613 Partial Differential Equations
- MAB672 Advanced Mathematical Modelling

**Computational Mathematics**

Postgraduate Mathematics Unit:

- MAN771 Computational Mathematics 4
- Prerequisite Units:
- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- MAB220 Computational Mathematics 1
- MAB311 Advanced Calculus
- MAB312 Linear Algebra
- MAB420 Computational Mathematics 2
- MAB480 Introduction to Scientific Computation
- MAB522 Computational Mathematics 3

**Operations Research**

Postgraduate Mathematics Units:

- MAN768 Advanced Techniques in Operations Research
- Prerequisite Units:
- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- MAB210 Statistical Modelling 1
- MAB315 Operations Research 2
- MAB525 Operations Research 3A
- MAB625 Operations Research 3B

**Statistics/Statistical Modelling**

Postgraduate Mathematics Units:

- MAN536 Time Series Analysis
- MAN624 Applied Statistics
- MAN765 Bayesian Data Analysis
- MAN766 Applied Time Series Analysis
- MAN775 Statistical Modelling of Financial Processes

Prerequisite Units:

- MAB101 Statistical Data Analysis 1
- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- MAB210 Statistical Modelling 1
- MAB314 Statistical Modelling 2
- MAB414 Applied Statistics 2
- MAB524 Statistical Inference
- MAB533 Statistical Techniques

**Quantitative Analysis/Financial Mathematics**

Postgraduate Mathematics Units:

- MAN536 Time Series Analysis
- MAN624 Applied Statistics
- MAN765 Bayesian Data Analysis
- MAN766 Applied Time Series Analysis
- MAN769 Mathematics of Finance
- MAN775 Statistical Modelling of Financial Processes

Prerequisite Units:

- MAB101 Statistical Data Analysis 1
- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- MAB210 Statistical Modelling 1
- MAB313 Mathematics of Finance
- MAB314 Statistical Modelling 2
- MAB413 Differential Equations
- MAB414 Applied Statistics 2
- MAB524 Statistical Inference
- MAB533 Statistical Techniques
- MAB623 Financial Mathematics

**Scientific Computation and Visualisation**

- MAN681 Advanced Visualisation and Data Analysis

Prerequisite Mathematics Units:

- MAB101 Statistical Data Analysis 1
- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- MAB281 Mathematics for Computer Graphics
- MAB480 Introduction to Scientific Computation
- MAB481 Visualisation and Data Analysis

**Discrete Mathematics**

Postgraduate Mathematics Unit:

MAN778 Applications of Discrete Mathematics

Prerequisite Units:

MAB111 Mathematical Sciences 1B

MAB112 Mathematical Sciences 1C

MAB461 Discrete Mathematics

### **Mathematics for Secondary Teaching**

Postgraduate mathematics units:

MAN700 Project

Or other postgraduate mathematics units totalling 24 credit points.

null

Other mathematics units:

Students would usually select across a range of areas of mathematics and statistics.

null

Non-mathematics units:

Students could select up to 24 credit points from units offered by the Faculty of Education related to the teaching of mathematics.

### **Potential Careers:**

Actuary, Mathematician, Quantitative Analyst, Statistician.

## Master of Mathematical Science (MA85)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 046042K

**Course duration (full-time):** 3 semesters (1.5 years)

**Course duration (part-time):** 6 semesters (3 years)

**Domestic fees (per credit point):** 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February, July or Summer Program

**International Entry:** February and July

**Total credit points:** 144

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Troy Farrell

**Campus:** Gardens Point

### Entry Requirements

To be eligible to enrol an applicant will normally have completed an undergraduate degree in any discipline. Students who do not have sufficient background in introductory calculus may be advised to enrol in MA65 Graduate Certificate in Mathematical Sciences first.

### Prior to Enrolment

Potential applicants for this course are advised to contact the Course Coordinator prior to submitting their application to discuss their plans. International students in particular, should be aware that full-time enrolment of at least 36 credit points per semester may not be possible. This is due to the need to meet unit prerequisites. Units are not offered externally although units do have varying amounts of on-line material available. Lectures, tutorials and computer-based practicals may be timetabled during the day or early evening.

### Career Outcomes

Knowledge and skills in mathematics and/or statistical techniques are increasingly in demand in many different areas. For example, quantitative analysis in the finance area; statistical and mathematical modelling in natural resources and health management; operations research in transport management.

### Course Design

The program of study for an individual student will be decided in consultation with the course coordinator and will take into account the student's background and area of interest within the mathematical sciences.

For the Masters program, at least 36 credit points must be taken from postgraduate mathematics units other than Mathematical Foundations and/or Mathematics. Up to 24 credit points can be taken from units other than mathematics units and there is a limit of 48 credit points from project units.

### Overview

This course enables graduates from any discipline to develop their knowledge and skills in one or more areas of the mathematical sciences. Strands available include mathematical modelling/applied mathematics, computational mathematics, statistics/statistical modelling, quantitative analysis/financial mathematics, operations research and scientific computation and visualisation. It recognises that students may not have studied mathematics for some time.

### Contact Details

#### Course Coordinator

Dr Troy Farrell

Phone: +61 7 3138 2364

Email: t.farrell@qut.edu.au

### Course structure

- At least 36 credit points must be taken from postgraduate mathematics units other than MAN200 Mathematical Foundations and/or MAN201 Mathematics.
- Up to 24 credit points can be taken from other than mathematics units.
- Limit of 48 credit points can be taken from project units.

A planned program of study should be decided in consultation with the Course Coordinator. It will take into account the student's background and area of interest within the mathematical sciences. Strands represent areas of the mathematical sciences which may be of interest to students and the units listed under each strand can guide students in developing their planned program. Students will usually select units from one or two strands only.

The following postgraduate mathematics units are available in all strands (subject to the limit on credit points from project units):

MAN200	Mathematical Foundations
MAN201	Mathematics
MAN700	Project
MAN717	Minor Project
MAN787-1	Project
MAN787-2	Project
MAN787-3	Project

To undertake any of the project units, permission from the Course Coordinator is required. If students wish to take any of the above units they will need to discuss their plans and the proposed content with the Course Coordinator.

### Strand Information

The following strand information is to assist students with unit selection. Students do not have to enrol in all units listed for a strand. The prerequisite units are given as a guide. Depending on a student's background, they may have already covered some of the units listed (or equivalent units) in their

## SCIENCE

undergraduate studies. If students have not studied any mathematics for some time, they may need to undertake one or two units prior to commencing those listed in the strand information.

### Mathematical Modelling/Applied Mathematics

Postgraduate Mathematics Units:

MAN761	Analysis
MAN764	Applied Mathematical Modelling
MAN774	Perturbation Methods
MAN777	Mathematics of Fluid Flow
	Prerequisite Units:
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
MAB220	Computational Mathematics 1
MAB311	Advanced Calculus
MAB312	Linear Algebra
MAB413	Differential Equations
MAB422	Mathematical Modelling
MAB521	Applied Mathematics 3
MAB613	Partial Differential Equations
MAB672	Advanced Mathematical Modelling

### Computational Mathematics

Postgraduate Mathematics Unit:

MAN771	Computational Mathematics 4
	Prerequisite Units:
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
MAB220	Computational Mathematics 1
MAB311	Advanced Calculus
MAB312	Linear Algebra
MAB420	Computational Mathematics 2
MAB480	Introduction to Scientific Computation
MAB522	Computational Mathematics 3

### Operations Research

Postgraduate Mathematics Units:

MAN768	Advanced Techniques in Operations Research
	Prerequisite Units:
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
MAB210	Statistical Modelling 1
MAB315	Operations Research 2
MAB525	Operations Research 3A
MAB625	Operations Research 3B

### Statistics/Statistical Modelling

Postgraduate Mathematics Units:

MAN536	Time Series Analysis
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MAN624	Applied Statistics
MAN765	Bayesian Data Analysis
MAN766	Applied Time Series Analysis
MAN775	Statistical Modelling of Financial Processes
	Prerequisite Units:

MAB101	Statistical Data Analysis 1
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
MAB210	Statistical Modelling 1
MAB314	Statistical Modelling 2
MAB414	Applied Statistics 2
MAB524	Statistical Inference
MAB533	Statistical Techniques

### Quantitative Analysis/Financial Mathematics

Postgraduate Mathematics Units:

MAN536	Time Series Analysis
MAN624	Applied Statistics
MAN765	Bayesian Data Analysis
MAN766	Applied Time Series Analysis
MAN769	Mathematics of Finance
MAN775	Statistical Modelling of Financial Processes
	Prerequisite Units:

MAB101	Statistical Data Analysis 1
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
MAB210	Statistical Modelling 1
MAB313	Mathematics of Finance
MAB314	Statistical Modelling 2
MAB413	Differential Equations
MAB414	Applied Statistics 2
MAB524	Statistical Inference
MAB533	Statistical Techniques
MAB623	Financial Mathematics

### Scientific Computation and Visualisation

MAN681	Advanced Visualisation and Data Analysis
	Prerequisite Mathematics Units:
MAB101	Statistical Data Analysis 1
MAB111	Mathematical Sciences 1B
MAB112	Mathematical Sciences 1C
MAB281	Mathematics for Computer Graphics
MAB480	Introduction to Scientific Computation
MAB481	Visualisation and Data Analysis

### Discrete Mathematics

Postgraduate Mathematics Unit:

MAN778	Applications of Discrete Mathematics
	Prerequisite Units:

MAB111 Mathematical Sciences 1B

MAB112 Mathematical Sciences 1C

MAB461 Discrete Mathematics

### **Mathematics for Secondary Teaching**

Postgraduate mathematics unit:

MAN700 Project

Plus at least one other postgraduate mathematics unit (or other combination to give at least 36 credit points from appropriate postgraduate mathematics units)

null

Other mathematics units:

Students would usually select across a range of areas of mathematics and statistics

null

Non-mathematics units:

Students can select up to 24 credit points from units offered by the Faculty of Education related to the teaching of mathematics

### **Potential Careers:**

Actuary, Mathematician, Quantitative Analyst, Statistician.

## **International Visiting Students (NA05)**

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** Holders of valid visas

**International Fees (per semester):** 2008: \$2796 per unit  
*(subject to annual review)*

**International Entry:** February, July and November

**Campus:** Gardens Point, Kelvin Grove, Carseldine and External

## **International Visiting Students (NA06)**

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** Holders of valid visas only

**International Fees (per semester):** 2008: \$2796 per unit  
*(subject to annual review)*

**International Entry:** February July and November

**Campus:** Gardens Point, Kelvin Grove and Carseldine



## Bachelor of Applied Science - Medical Radiation Technology (Medical Imaging Technology) (PH38)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 037588F

**Course duration (full-time):** 3 Years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$6,470

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 418182

**Past rank cut-off:** 94

**Past OP cut-off:** 4

**Assumed knowledge:** English (4, SA), Maths B (4, SA) and Physics (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. PHYSICS: QUT unit Introductory Physics 1H as a visiting student or QUT Continuing Professional Education course Physics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 288

**Standard credit points per full-time semester:** 48

**Course coordinator:** Associate Professor Pam Rowntree

**Discipline coordinator:** Debbie Starkey

**Campus:** Gardens Point

### Career Opportunities

After graduating from the Medical Imaging Technology major, you may be employed as a medical imaging technologist or diagnostic radiographer. As a radiographer you will play a key role within the health care industry 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.

### OP Guarantee

The OP Guarantee does not apply to this program.

### Other Majors

See also the separate entry for the following major in this course: Bachelor of Applied Science - Medical Radiation Technology (Radiotherapy Technology).

### Special Requirements

Students are required to undertake clinical experience in hospital departments and private practices during the course and, as a result, will have direct patient contact during their clinical placement, and may be exposed to

blood and body fluids of patients. Students must be vaccinated for Hepatitis B and must provide a post-vaccination pathological report or similar certification showing proof of immunity, prior to undertaking their first clinical placement. CPR certification is also required to undertake clinical placements.

### Other Course Requirements

Students in this course should satisfy criteria related to health status. Students must declare height, physical disabilities, treatment of nervous condition and/or drug/alcohol disorder, and a current immunisation status (specifically Hepatitis B) as part of the online enrolment process.

### Professional Recognition

On graduation, students 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.

The Medical Radiation Technologists Board of Queensland (MRTBQ) has introduced English language proficiency requirements for applicants for whom English is not the primary language who wish to be registered in Queensland. Refer MRTBQ website for current policy details - <http://www.mrtboard.qld.gov.au/>.

The Australian Institute of Radiography (AIR) has specific language requirements for international students seeking accreditation in Australia - see [www.air.asn.au](http://www.air.asn.au) for further details.

### Why Choose this Course?

QUT is the only university to offer a Medical Imaging Technology degree in Queensland. Excellent employment prospects can be expected as QUT works closely with the health industry to ensure that the number of graduates is in line with industry demand. In recent years, over 95 per cent of graduates have been employed within four months of graduation.

This course is designed in consultation with clinical staff from radiology departments, so you'll 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.

### Deferment

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

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

Find out more on deferment.

**Contact Details**

**Course Coordinator**

Associate Professor Pam Rowntree  
 Phone: +61 7 3138 2346  
 Email: p.rowntree@qut.edu.au

**Discipline Coordinator**

Debbie Starkey  
 Phone: +61 7 3138 2596  
 Email: d.starkey@qut.edu.au

**Domestic student tuition fee (Dfee) places**

**Undergraduate domestic full fee places (Dfee) are not available in this course.** Tuition fees are only applicable to currently enrolled students who were unable to comply with regulations regarding their original Commonwealth Supported place (ie failure to lodge an eCAF, has consumed all of their Student Learning Entitlement, etc) and who have been invited and accepted to continue as a fee-paying student.

**Course structure - Medical Imaging Technology**

**Year 1, Semester 1**

- LSB145 Anatomy 1
- PCB007 Patient Care in Professional Practice
- PCB107 Physics and Quantitative Techniques
- PCB178 Principles of Medical Radiations

**Year 1, Semester 2**

- LSB245 Anatomy 2 and Introductory Pathology
- PCB272 Radiation Physics
- PCB276 General Radiography 1
- PCB277 Radiographic Practice

**Year 2, Semester 1**

- LSB321 Systematic Pathology
- LSB345 Regional & Imaging Anatomy 1
- PCB375-1 Radiographic Equipment
- PCB377 General Radiography 2
- PCB379 Clinical Radiography 1

**Year 2, Semester 2**

- LSB445 Regional and Imaging Anatomy 2
- PCB375-2 Radiographic Equipment
- PCB476 Special Procedures
- PCB477 Complementary Imaging Techniques
- PCB479 Clinical Radiography 2

**Year 3, Semester 1**

- PCB567 Advanced Radiographic Technique 1
- PCB580-1 Clinical Radiography 3
- PCB593 Digital Image Processing

- PCB672-1 Project
- PCB681 Computed Tomography Imaging

**Year 3, Semester 2**

- PCB580-2 Clinical Radiography 3
- PCB667 Advanced Radiographic Technique 2
- PCB672-2 Project
- PCB675 Radiation Safety and Biology
- PCB682 Magnetic Resonance Imaging

**Potential Careers:**

Medical Imaging Technologist, Radiographer.

## Bachelor of Applied Science - Medical Radiation Technology (Radiotherapy Technology) (PH38)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 037588F

**Course duration (full-time):** 3 Years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$6,470

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February: Fixed Closing Date- 30 November 2007.

**QTAC code:** 418192

**Past rank cut-off:** 88 and a successful questionnaire (see Additional Entry Requirements)

**Past OP cut-off:** 7 and a successful questionnaire (see Additional Entry Requirements)

**Assumed knowledge:** English (4, SA), Maths B (4, SA) and Physics (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. PHYSICS: QUT unit Introductory Physics 1H as a visiting student or QUT Continuing Professional Education course Physics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 288

**Standard credit points per full-time semester:** 48

**Course coordinator:** Associate Professor Pam Rowntree

**Discipline coordinator:** Cathy Hargrave

**Campus:** Gardens Point

### Career Opportunities

As a graduate, you may be employed as a radiation therapist in a radiotherapy department of a major hospital or private institution. You may become a member of a team which treats cancer and is responsible for planning and delivering prescribed radiation doses.

### Other Majors

See also the separate entry for the following major in this course: Bachelor of Applied Science - Medical Radiation Technology (Medical Imaging Technology).

### Additional Entry Requirements

Radiotherapy Technology applicants are required to complete an online questionnaire which will be available at [addentry.qut.com](http://addentry.qut.com) in late August.

**The due date to submit the questionnaire is 28 September 2007.** Late submissions will be accepted up until 30 November. Submissions after 30 November will not be accepted.

### Fixed Closing Date

Applications for this program closed on **30 November**.

### OP Guarantee

The OP Guarantee does not apply to this course.

### Other Course Requirements

Students in this course should satisfy criteria related to health status. Students must declare height, physical disabilities, treatment of nervous condition and/or drug/alcohol disorder, and a current immunisation status (specifically Hepatitis B) as part of the online enrolment process.

### Special Course Requirements

Students are required to undertake clinical experience in hospital departments and private practices during the course and, as a result, will have direct patient contact during their placement, and may be exposed to blood and body fluids of patients. Students must be vaccinated for Hepatitis B and must provide a post-vaccination pathological report or similar certification showing proof of immunity, prior to undertaking their first clinical placement. CPR certification is also required to undertake clinical placements.

### Professional Recognition

On graduation, students 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.

The Medical Radiation Technologists Board of Queensland (MRTBQ) has introduced English language proficiency requirements for applicants for whom English is not the primary language who wish to be registered in Queensland. Refer MRTBQ website for current policy details - <http://www.mrtboard.qld.gov.au/>.

The Australian Institute of Radiography (AIR) has specific language requirements for international students seeking accreditation in Australia - see [www.air.asn.au](http://www.air.asn.au) for further details.

### Why Choose this Course?

QUT is the only university to offer a Radiotherapy Technology degree in Queensland. Excellent employment prospects can be expected as QUT works closely with the health industry to ensure that the number of graduates is in line with industry demand. In recent years, over 95 per cent of graduates have been employed within four months of graduation.

This course is designed in consultation with clinical staff from radiation oncology departments, so you'll gain advanced knowledge of new treatment techniques and equipment used in the workplace. QUT's well equipped laboratories allow you to graduate with experience using equipment and techniques similar to those used in industry. Close links with local oncology departments allow students to complete practical work and clinical placements using specialised, state-of-the-art radiotherapy equipment.

**Contact Details**

**Course Coordinator**

Associate Professor Pam Rowntree  
 Phone: +61 7 3138 2346  
 Email: p.rowntree@qut.edu.au

**Discipline Coordinator**

Cathy Hargrave  
 Phone: +61 7 3138 8367  
 Email: c.hargrave@qut.edu.au

**Deferment**

QUT's deferment policy does not apply to this course.

**Domestic student tuition fee (Dfee) places**

**Undergraduate domestic full fee places (Dfee) are not available in this course.** Tuition fees are only applicable to currently enrolled students who were unable to comply with regulations regarding their original Commonwealth Supported place (ie failure to lodge an eCAF, has consumed all of their Student Learning Entitlement, etc) and who have been invited and accepted to continue as a fee-paying student.

**Course structure - Major in Radiotherapy Technology**

**Year 1, Semester 1**

- LSB145 Anatomy 1
- PCB007 Patient Care in Professional Practice
- PCB107 Physics and Quantitative Techniques
- PCB178 Principles of Medical Radiations

**Year 1, Semester 2**

- LSB245 Anatomy 2 and Introductory Pathology
- PCB272 Radiation Physics
- PCB286 Treatment Planning 1
- PCB287 Megavoltage Therapy 1

**Year 2, Semester 1**

- LSB321 Systematic Pathology
- LSB345 Regional & Imaging Anatomy 1
- PCB389 Clinical Radiotherapy 1
- PCB396 Radiotherapy Planning and Physics
- PCB397-1 Megavoltage Therapy 2

**Year 2, Semester 2**

- LSB445 Regional and Imaging Anatomy 2
- PCB397-2 Megavoltage Therapy 2
- PCB489 Clinical Radiotherapy 2
- PCB495 Computer Assisted Treatment Planning 1
- PCB496 Radiotherapy Equipment

**Year 3, Semester 1**

- PCB587 Specialised Radiotherapy Technique 1

- PCB590-1 Clinical Radiotherapy 3
- PCB593 Digital Image Processing
- PCB595 Computer Assisted Treatment Planning 2
- PCB672-1 Project

**Year 3, Semester 2**

- PCB590-2 Clinical Radiotherapy 3
- PCB672-2 Project
- PCB675 Radiation Safety and Biology
- PCB687 Specialised Radiotherapy Technique 2
- PCB695 Advanced Treatment Planning Topics

**Potential Careers:**

Radiation Therapist.

## Graduate Certificate in Applied Science (Breast Ultrasound) (PH60)

**Year offered:** 2008

**Admissions:** Yes

**Course duration (part-time):** 2 semesters (1 year)

**Domestic fees (per credit point):** 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960

**Domestic Entry:** February

**Total credit points:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Associate Professor Pam Rowntree

**Discipline coordinator:** Natasha Kazich

**Campus:** Gardens Point

### Entry requirements

To be eligible to enrol, an applicant will normally be qualified as a medical imaging technologist (diagnostic radiographer) at degree or diploma level and have a minimum of two years experience in a clinical medical imaging practice. Students must give written proof of access to suitable clinical experience for the duration of the course.

Applicants with other qualifications and appropriate experience may be permitted to enrol subject to the approval of the Head of School of Physical and Chemical Sciences.

### Professional Recognition

This course is accredited with the Australasian Sonographer Accreditation Registry (ASAR).

### Course Design

Students must be employed in a suitable clinical practice with adequate access to clinical experience for the duration of the course. Formal lectures are conducted in an intensive one-week block of classes at the beginning of each semester. Further academic requirements can be met without requiring on-campus attendance. If students are not based in Brisbane, this structure allows attendance by offering the formal classroom component in an intensive one-week block in each semester.

### Overview

The Graduate Certificate in Applied Science (Breast Ultrasound) course offers studies specifically in breast ultrasound techniques. Students are given the scientific basis for understanding, using and evaluating relevant equipment and techniques. The course particularly suits radiographers, medical imaging technologists and sonographers who are interested in an in-depth study of this rapidly developing speciality area of ultrasound.

### Contact Details

#### Course Coordinator

Associate Professor Pam Rowntree

Phone: +61 7 3138 2346

Email: p.rowntree@qut.edu.au

#### Discipline Coordinator

Natasha Kazich

Phone: +61 7 3138 2490

Email: n.kazich@qut.edu.au

### Course structure

To complete the Graduate Certificate in Applied Science (Breast Ultrasound) students must complete the units listed below (total 48 credit points)

#### Semester 1

PCN162 Principles of Medical Ultrasound

PCN187 Specialist Studies - Breast Ultrasound Strand

PCN397-1 Clinical Attachment

#### Semester 2

PCN184 Breast Imaging

PCN397-2 Clinical Attachment

NOTE: The PCN397 clinical attachment unit is a 2 semester unit

### Potential Careers:

Sonographer.

## Graduate Certificate in Lighting (on-shore) (PH62)

**Year offered:** 2008

**Admissions:** Yes

**Course duration (part-time):** 2 semesters (1 year) (Internal and External)

**Domestic fees (per credit point):** 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960

**Domestic Entry:** July

**Total credit points:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Associate Professor Ian Cowling

**Campus:** Gardens Point

### Overview

The Graduate Certificate in Lighting (PH62) is designed primarily for people working in all areas of the lighting industry and engineers or architects whose work includes some aspects of lighting.

The Graduate Certificate in Lighting (PH62) provides an overview of all aspects of lighting, including light measurement, lamp properties and luminaire design, design of lighting installations, daylighting and the human factors associated with lighting.

The Graduate Diploma (PH72) then provides, through electives, the opportunity for some degree of specialisation appropriate to the student's needs and interests.

Finally the Master of Lighting (PH82) provides the opportunity for graduates of the above programs to undertake a Masters in the form of a project with some coursework.

### Entry Requirements

(a) Bachelor level degree in an appropriate field

### OR

(b) Demonstrated minimum of 3 years of relevant experience in the lighting industry and successful completion of one or more recognised Introductory Courses in Lighting as determined by the Course Coordinator. (Note: Students entering without a Bachelor degree can only enrol initially in PH62, and must successfully complete this program before they can enrol in PH72 or PH82.)

*Note:* Students with relevant experience in the lighting industry or recognised educational qualifications in lighting may be granted credit in PH62/PH63 to a maximum of 24 credit points.

### Course Design

Graduate Certificate students will undertake four units (12 credit points each) covering the perception, specification and measurement of light, lamp and luminaire design, lighting design, sustainability issues and human factors.

### Contact Details

#### Course Coordinator

Associate Professor Ian Cowling

Phone: +61 7 3138 2592

Email: i.cowling@qut.edu.au

### Course structure - Part-time

#### Year 1, Semester 2 (July to October)

PCN121 Vision Colour and Photometry

PCN124 Lamps and Luminaires

#### Year 2, Semester 1 (February to June)

PCN122 Lighting Design

PCN123 Sustainability and Human Factors

**NOTES:** PH62 is offered part-time comprising a lecture/tutorial format, and where appropriate practical and field work. Some units will have a significant computer-design type component and all units will incorporate learning through assignment work, all of which will be incorporated into the assessment program. Most units in the internal mode will be offered in block format on weekends. External students are required to spend one week per semester at QUT for block teaching and tutorial work.

Domestic students in the Graduate Certificate in Lighting (PH62) will be invited, on successful completion of 48 credit points, to continue with studies in the Graduate Diploma in Lighting (PH72), or can enrol directly in Master of Lighting (PH82).

International students wishing to change courses should consult International Student Business Services.

### Potential Careers:

Architect, Electrical Contractor, Electrical Engineer, Energy Consultant, Industrial Designer, Landscape Architect, Lighting Designer, Lighting Technician, Luminaire Designer, Physicist, Sales Person, Scientist, Theatre Lighting.

## Graduate Certificate in Lighting (off-shore) (PH63)

**Year offered:** 2008

**Admissions:** Yes

**Course duration (external):** 2 semesters part-time (Hong Kong)

**Domestic fees (per credit point):** Off-shore Course (subject to annual review)

**International Entry:** September

**Total credit points:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Associate Professor Ian Cowling

**Campus:** City University of Hong Kong

### Overview

The Graduate Certificate in Lighting (PH63) is designed primarily for people working in any area of lighting, whether it be design or application, sales or installation, purpose directed or just entertainment.

The Graduate Certificate in Lighting (PH63) is designed to provide an overview of all aspects of lighting, including light measurement, luminaire design, design of lighting installations, sustainability, daylighting and the human aspects associated with providing good lighting.

The Graduate Diploma (PH73) then provides, through electives, the opportunity for some degree of specialisation appropriate to the student's needs and interests.

Finally the Master of Lighting (PH83) provides the opportunity for graduates of the above programs to undertake a Masters in the form of a project with some coursework.

### Entry Requirements

(a) Bachelor level degree in an appropriate field

### OR

(b) Demonstrated minimum of 3 years of relevant experience in the lighting industry and successful completion of one or more recognised Introductory Courses in Lighting as determined by the Course Coordinator. (Note: Students entering without a Bachelor degree can only enrol initially in PH63, and must successfully complete this program before they can enrol in PH73 or PH83.)

*Note:* Students with relevant experience in the lighting industry or recognised educational qualifications in lighting may be granted credit in PH62/PH63 to a maximum of 24 credit points.

### Course Design

Graduate Certificate students will undertake four units (12 credit points each) covering the perception, specification and measurement of light, lamp and luminaire design, lighting design, daylighting and the human factors of lighting.

### Course Details

#### Course Coordinator

Associate Professor Ian Cowling

Phone: +61 7 3138 2592

Email: i.cowling@qut.edu.au

#### Course structure - Part-time

##### Year 1, Semester 2 (September to December)

PCZ121	Vision Colour and Photometry
PCZ124	Lamps and Luminaires

##### Year 2, Semester 1 (January to April)

PCZ122	Lighting Design
PCZ123	Sustainability and Human Factors

**NOTES:** PH63 is offered part-time in a combination of face-to-face lecture/tutorial/practical format, and on-line. Some units will have a computer-design type component and all units will incorporate learning through assignment work, all of which will be incorporated into the assessment program. The two units offered each semester will be presented sequentially. The face-to-face teaching component will be offered in block form over a weekend, usually on the first weekend of the teaching period assigned to that unit. There will then be a follow-up face-to-face session about three weekends later.

Students in the Graduate Certificate in Lighting (PH63) wishing to continue their studies in the Graduate Diploma of Lighting (PH73), on successful completion of 48 credit points, are required to seek admission using an International Student Degree Program Application (F) Form.

### Potential Careers:

Architect, Electrical Contractor, Electrical Engineer, Energy Consultant, Industrial Designer, Landscape Architect, Lighting Designer, Lighting Technician, Luminaire Designer, Physicist, Sales Person, Scientist, Theatre Lighting.

## Graduate Diploma in Applied Science (Medical Physics) (PH71)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 020315D

**Course duration (full-time):** 2 semesters (1 year)

**Course duration (part-time):** 4 semesters (2 years)

**Domestic fees (per credit point):** 2008: \$135 per credit point (limited CSP places available) Tuition Fee applies after CSP places have been filled (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$12,960; CSP \$7,251

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February and July

**International Entry:** February and July

**Total credit points:** 96

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Andrew Fielding

**Campus:** Gardens Point

### Entry Requirements

Applicants must possess an acceptable tertiary course with a major in physics. Applicants with other qualifications (eg engineering) may enrol with the approval of the Head of the School of Physical and Chemical Sciences. In some instances, a modified program may be necessary.

### Course Design

This degree comprises assessed coursework such as advanced lectures, seminars, reading courses or independent study. If undertaken full-time, students will need an average of 14 hours a week of formal contact.

Students who have completed the Graduate Diploma may enter Stage 2 of the Master of Applied Science - PH80 where they undertake a program of supervised research and investigation that can be completed at QUT, or in a suitable external institution.

### Professional Recognition

On graduation, students will be eligible for provisional accreditation by the Australian College of Physical Scientists and Engineers in Medicine (ACPSEM).

### Overview

The Graduate Diploma/Master of Applied Science (Medical Physics) deals with well-established and emerging areas of medical and health physics and includes the following topics: clinical measurement, computing, health physics, instrumentation, medical electronics, medical imaging, physiological monitoring, physics of radiotherapy, radiobiology, radiological imaging sciences.

The coursework also contains an introduction to the clinical sciences. From this, prospective medical physicists learn to appreciate the clinical nature of medical situations and how to communicate better with other clinical staff.

Graduates can seek employment in hospitals, health

departments, mining companies, tertiary institutions and medical instrumentation companies. Depending on the field of employment, graduates may be known as a medical physicist, health physicist or bio-engineer. Duties as a professional medical physicist include:

- applying electronics, ultrasonics, radiation and computers to clinical and environmental problems
- monitoring the environment to maintain acceptable standards in the workplace and the community
- applying fundamental physical research in development programs
- responsibility for calibration, care and maintenance of instruments and apparatus.

### Contact Details

#### Course Coordinator

Dr Andrew Fielding

Phone: +61 7 3138 5325

Email: a.fielding@qut.edu.au

### Course structure - First Semester Entry

#### First Semester (February to June)

LSB142	Human Anatomy and Physiology
PCN113	Radiation Physics
PCN114	Microprocessors and Instrumentation
PCN211	Physics of Medical Imaging

#### Second Semester (July to October)

PCN112	Medical Imaging Science
PCN212	Radiotherapy
PCN214	Health and Occupational Physics
PCN218	Research Methodology and Professional Studies

### Course structure - Mid-Year Entry

#### First Semester (July to October)

LSB258	Principles of Human Physiology
PCN112	Medical Imaging Science
PCN212	Radiotherapy
PCN214	Health and Occupational Physics

#### Second Semester (February to June)

PCN113	Radiation Physics
PCN114	Microprocessors and Instrumentation
PCN218	Research Methodology and Professional Studies
PCN211	Physics of Medical Imaging

### Potential Careers:

Health Physicist, Medical Equipment Sales, Medical Physicist.



## Graduate Diploma in Applied Science (Medical Ultrasound) (PH71)

**Year offered:** 2008

**Admissions:** Yes

**Course duration (part-time):** 4 semesters (2 years)

**Domestic fees (per credit point):** 2008: \$135 per credit point (limited CSP places available) Tuition Fee applies after CSP places have been filled (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$12,960; CSP \$7,251

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February. Applications are to be made by 1 December in the preceding year.

**Total credit points:** 96

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Andrew Fielding

**Discipline coordinator:** Natasha Kazich

**Campus:** Gardens Point

### Entry Requirements

Students will normally be qualified diagnostic radiographers or medical imaging technologists at degree or diploma level, or degree qualified nurses, and have at least two years of experience in a clinical practice. Students must give written proof of access to suitable clinical experience for the duration of the course.

### Overview

The Graduate Diploma and Master of Applied Science courses offer studies in medical ultrasound. Students are given the scientific basis for understanding, using and evaluating relevant equipment and techniques. The course particularly suits radiographers, medical imaging technologists and nuclear medicine technologists who are interested in an in-depth study of this rapidly developing area.

### Professional Recognition

This course is accredited with the Australasian Sonographer Accreditation Registry (ASAR).

### Course Design

This degree consists of two stages. Stage 1 (Graduate Diploma - PH71) takes four semesters of part-time study to complete. Students must show that they have access to suitable clinical experience for the duration of Stage 1 before beginning the degree. Lectures are conducted in intensive 4-5 week blocks in each semester. Students undertake clinical experience throughout the semester.

Stage 2 (Master of Applied Science - PH80) involves completion of a research project and submission of a thesis. Students can undertake this project externally under QUT staff supervision on appointment of a suitable external supervisor. This stage takes two semesters part-time to complete after successful completion of Stage 1.

### Contact Details

#### Course Coordinator

Dr Andrew Fielding

Phone: +61 7 3138 5325

Email: a.fielding@qut.edu.au

#### Discipline Coordinator

Natasha Kazich

Phone: +61 7 3138 2490

Email: n.kazich@qut.edu.au

### Course structure - Part-time

Students must complete the units listed below (total 96 credit points)

#### Year 1, Semester 1

PCN159	Ultrasonic Examination 1
PCN162	Principles of Medical Ultrasound
PCN197-1	Clinical Attachment 1

#### Year 1, Semester 2

PCN197-2	Clinical Attachment 1
PCN356	Ultrasonic Examinations 2

#### Year 2, Semester 1

PCN297-1	Clinical Attachment 2
PCN355	Vascular Ultrasound
PCN357	Advanced Ultrasound Topics

#### Year 2, Semester 2

PCN218	Research Methodology and Professional Studies
PCN297-2	Clinical Attachment 2
NOTES	The PCN197 and PCN297 clinical attachment units are 2 semester units
	Each clinical attachment unit (ie PCN197 and PCN297) involves clinical experience in the order of 3 days per week or equivalent.

### Potential Careers:

Sonographer.

## Graduate Diploma in Lighting (on-shore) (PH72)

**Year offered:** 2008

**Admissions:** Yes

**Course duration (part-time):** 4 semesters (2 years) (Internal and External)

**Domestic fees (per credit point):** Full fee tuition 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$12,960; CSP Rate available July 07

**Domestic Entry:** July

**Total credit points:** 96

**Standard credit points per part-time semester:** 24

**Course coordinator:** Associate Professor Ian Cowling

**Campus:** Gardens Point

### Overview

The Graduate Diploma in Lighting (PH72) is designed primarily for people working in all areas of the lighting industry and engineers or architects whose work includes some aspects of lighting.

The Graduate Certificate in Lighting (PH62) provides an overview of all aspects of lighting, including light measurement, lamp properties and luminaire design, design of lighting installations, daylighting and the human factors associated with lighting.

The Graduate Diploma (PH72) then provides, through electives, the opportunity for some degree of specialisation appropriate to the student's needs and interests.

Finally the Master of Lighting (PH82) provides the opportunity for graduates of the above programs to undertake a Masters in the form of a project with some coursework.

### Entry Requirements

(a) Bachelor level degree in an appropriate field

OR

(b) Successful completion of PH62/PH63 Graduate Certificate in Lighting or equivalent.

*Note:* Students with relevant experience in the lighting industry or recognised educational qualifications in lighting may be granted credit to a maximum of 36 credit points.

### Course Design

Graduate Diploma students will undertake 24 credit points (two units) of advanced lighting design and applications studies and two other units (24 credit points) which could include at least one unit in Project Management, Project Cost and Risk Management or Quality Management.

### Contact Details

#### Course Coordinator

Associate Professor Ian Cowling  
Phone: +61 7 3138 2592

Email: i.cowling@qut.edu.au

### Course structure - Part-time

#### Year 1, Semester 2 (July to October)

PCN121	Vision Colour and Photometry
PCN124	Lamps and Luminaires

#### Year 2, Semester 1 (February to June)

PCN122	Lighting Design
PCN123	Sustainability and Human Factors

#### Year 2, Semester 2 (July to October)

PCN223	Lighting Applications
	Elective - One unit from:
MEN272	Enterprise Resources Planning
PCN222	Advanced Lighting Design
PCN224	Applied Lighting

#### Year 3, Semester 1 (February to June)

PCN221	Best Practices in Lighting
	Elective - One unit from:
CNP520	Project Management
CNP521	Project Cost and Risk Management
MEN177	Total Quality Management
PCN224	Applied Lighting

**NOTES:** PH72 is offered part-time internally and externally. The course comprises a lecture/tutorial format, and where appropriate practical and field work. Some units will have a significant computer-design type component and all units will incorporate learning through assignment work, all of which will be incorporated into the assessment program. Most units in the internal mode will be offered in block format on weekends. Students enrolling in the external mode will be required to attend QUT for 4 to 5 days per semester for intensive practical and tutorial work

Domestic students in the Graduate Diploma in Lighting (PH72) will be invited, on successful completion of 96 credit points, to continue with studies in the Master of Lighting (PH82).

Students in the Graduate Diploma in Lighting (PH72) wishing to exit with the Graduate Certificate in Lighting (PH62) are required to submit an Application to Graduate Early with an Approved Exit Course (SRX) Form in their final semester of study.

International students wishing to change courses should consult International Student Business Services.

### Potential Careers:

Architect, Electrical Contractor, Electrical Engineer, Energy Consultant, Industrial Designer, Landscape Architect, Lighting Designer, Lighting Technician, Luminaire Designer, Physicist, Sales Person, Scientist, Theatre Lighting.

## Graduate Diploma in Cardiac Ultrasound (PH75)

**Year offered:** 2008

**Admissions:** Yes

**Course duration (part-time):** 4 semesters (2 years) (External only)

**Domestic fees (per credit point):** 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960

**Domestic Entry:** February: Early Closing Date - 1 December 2007. Early closing date for PH75 and PH85 Semester 1 2008 entry, pending quota being filled. Beyond this date, late applicants should contact the course coordinator for admission advice.

**Total credit points:** 96

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Bonita Anderson

**Campus:** Gardens Point

### Entry Requirements

To be eligible to enrol an applicant will normally have a degree or diploma level qualification in a relevant science or allied health field, and access to suitable clinical experience for the duration of the course.

Students who do not meet the normal entry requirements may be permitted to enrol subject to the approval of the Head of the School of Physical and Chemical Sciences. Applicants should submit as much detail as possible about previous studies and prior learning experiences that may be relevant. In some cases a bridging program may be required.

### Professional Recognition

This course is accredited with the Australasian Sonographer Accreditation Registry (ASAR).

### Course Design

This course consists of two stages. Stage 1 (Graduate Diploma in Cardiac Ultrasound - PH75) takes two years of part-time study to complete. Students must be employed in a suitable clinical practice with adequate access to clinical cardiac ultrasound experience for the duration of the course. If students are not based in Brisbane, this structure allows attendance by offering the formal classroom component in an intensive one-week block in each semester.

Stage 2 (Master of Cardiac Ultrasound - PH85) involves the completion of a research project and submission of a thesis. Students can undertake this project internally at QUT, or externally under QUT staff supervision and the guidance of a suitable external supervisor. This stage would normally take one year part-time to complete.

### Overview

The Graduate Diploma in Cardiac Ultrasound program offers studies for practicing Cardiac Sonographers. The course is conducted using a combination of block classes of approximately one week's duration in each semester, web-based modules and clinical practice modules.

### Contact Details

#### Course Coordinator

Bonita Anderson

Phone: +61 7 3138 2585

Email: b.anderson@qut.edu.au

### Course structure

#### Year 1, Semester 1

PCN155 Cardiac Ultrasound 1

PCN162 Principles of Medical Ultrasound

PCN497-1 Clinical Attachment 4

#### Year 1, Semester 2

PCN259 Cardiac Ultrasound 2

PCN497-2 Clinical Attachment 4

#### Year 2, Semester 1

PCN218 Research Methodology and Professional Studies

PCN359 Cardiac Ultrasound 3

PCN597-1 Clinical Attachment 5

#### Year 2, Semester 2

PCN459 Advanced Cardiac Ultrasound

PCN597-2 Clinical Attachment 5

**NOTES:** The PCN497 and PCN597 clinical attachment units are 2 semester units.

Domestic students in the Graduate Diploma in Cardiac Ultrasound (PH75) will be invited, on successful completion of 96 credit points, to continue with studies in the Master of Cardiac Ultrasound (PH85).

### Potential Careers:

Sonographer.

## Master of Applied Science (Medical Physics) (PH80)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 043548G

**Course duration (full-time):** 3 semesters (1.5 years)

**Course duration (part-time):** 6 semesters (3 years)

**Domestic fees (per credit point):** 2008: \$135 per credit point (limited CSP places available) Tuition Fees apply after CSP places have been filled (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$12,960; CSP \$7,252

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February and July

**International Entry:** February and July

**Total credit points:** 144

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Andrew Fielding

**Campus:** Gardens Point

### Other Majors

See also the separate entry for the following major in this course: Master of Applied Science (Medical Ultrasound).

### Entry Requirements

Applicants must possess an acceptable tertiary course with a major in physics. Applicants with other qualifications (eg engineering) may enrol with the approval of the Head of the School of Physical and Chemical Sciences. In some instances, a modified program may be necessary.

### Course Design

This degree consists of two stages. Stage 1 (which is equivalent to the Graduate Diploma - PH71) comprises assessed coursework such as advanced lectures, seminars, reading courses or independent study. If undertaken full-time, students will need an average of 14 hours a week of formal contact.

In Stage 2 (Master of Applied Science - PH80) students undertake a program of supervised research and investigation that can be completed at QUT, or in a suitable external institution. Students can graduate with a Graduate Diploma in Medical Physics after satisfactory completion of Stage 1.

### Professional Recognition

On graduation, students will be eligible for provisional accreditation by the Australian College of Physical Scientists and Engineers in Medicine (ACPSEM).

### Overview

The Graduate Diploma/Master of Applied Science (Medical Physics) deals with well-established and emerging areas of medical and health physics and includes the following topics: clinical measurement, computing, health physics, instrumentation, medical electronics, medical imaging, physiological monitoring, physics of radiotherapy, radiobiology, radiological imaging sciences.

The coursework also contains an introduction to the clinical sciences. From this, prospective medical physicists learn to appreciate the clinical nature of medical situations and how to communicate better with other clinical staff.

Graduates can seek employment in hospitals, health departments, mining companies, tertiary institutions and medical instrumentation companies. Depending on the field of employment, graduates may be known as a medical physicist, health physicist or bio-engineer. Duties as a professional medical physicist include:

- applying electronics, ultrasonics, radiation and computers to clinical and environmental problems
- monitoring the environment to maintain acceptable standards in the workplace and the community
- applying fundamental physical research in development programs
- responsibility for calibration, care and maintenance of instruments and apparatus.

### Contact Details

#### Course Coordinator

Dr Andrew Fielding

Phone: +61 7 3138 5325

Email: a.fielding@qut.edu.au

### Course structure - First Semester Entry

: STAGE 1: Students must complete units from the list below, totalling 96 credit points:

#### Year 1, Semester 1 (February to June)

LSB142	Human Anatomy and Physiology
PCN113	Radiation Physics
PCN114	Microprocessors and Instrumentation
PCN211	Physics of Medical Imaging

#### Year 1, Semester 2 (July to October)

PCN112	Medical Imaging Science
PCN212	Radiotherapy
PCN214	Health and Occupational Physics
PCN218	Research Methodology and Professional Studies

: STAGE 2: (Project units in Stage 2 are offered in all semesters)

#### Project Over One Semester or Summer Program

PCN520	Project (Full-time)
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#### Project Over Two Semesters

PCN540-1	Project (Part-time)
PCN540-2	Project (Part-time)

NOTE: A student may request an extension of time in which to submit the project report for assessment. A request for an extension of time up to a maximum of six months shall be made

in writing through the Head of School to the Dean. Any request for a further extension, or any request for an extension to a date later than six months after the original due date, should be made in writing to the Academic Board. The Academic Board may grant the extension under such conditions as it may consider appropriate, or may award the student a "Fail" result in the project unit. A student who has received a "Fail" result in the project unit may re-enrol in the unit only in exceptional circumstances and with the express permission of the Academic Board.

**Course structure - Mid-Year Entry**

: STAGE 1: Students must complete units from the list below, totalling 96 credit points:

**First Semester (July to October)**

- LSB258 Principles of Human Physiology
- PCN112 Medical Imaging Science
- PCN212 Radiotherapy
- PCN214 Health and Occupational Physics

**Second Semester (February to June)**

- PCN113 Radiation Physics
- PCN114 Microprocessors and Instrumentation
- PCN211 Physics of Medical Imaging
- PCN218 Research Methodology and Professional Studies

: STAGE 2: (Project units in Stage 2 are offered in all semesters)

**Project Over One Semester or Summer Program**

- PCN520 Project (Full-time)

**Project Over Two Semesters**

- PCN540-1 Project (Part-time)
- PCN540-2 Project (Part-time)

A student may request an extension of time in which to submit the project report for assessment. A request for an extension of time up to a maximum of six months shall be made in writing through the Head of School to the Dean. Any request for a further extension, or any request for an extension to a date later than six months after the original due date, should be made in writing to the Academic Board. The Academic Board may grant the extension under such conditions as it may consider appropriate, or may award the student a "Fail" result in the project unit. A student who has received a "Fail" result in the project unit may re-enrol in the unit only in exceptional circumstances and with the express permission of the Academic Board.

**Potential Careers:**

Health Physicist, Medical Equipment Sales, Medical Physicist, Medical Scientist.

## Master of Applied Science (Medical Ultrasound) (PH80)

**Year offered:** 2008

**Admissions:** Yes

**Course duration (part-time):** 6 semesters (3 years)

**Domestic fees (per credit point):** 2008: \$135 per credit point (limited CSP places available) Tuition Fees apply after CSP places have been filled (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$12,960; CSP \$7,252

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February. Applications are to be made by 1 December in the preceding year.

**Total credit points:** 144

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Andrew Fielding

**Discipline coordinator:** Natasha Kazich

**Campus:** Gardens Point

### Other Majors

See also the separate entry for the following major in this course: Master of Applied Science (Medical Physics).

### Entry requirements

Students will normally be qualified diagnostic radiographers or medical imaging technologists at degree or diploma level, or degree qualified nurses, and have at least two years of experience in a clinical practice. Students must give written proof of access to suitable clinical experience for the duration of the course.

### Professional Recognition

This course is accredited with the Australasian Sonographer Accreditation Registry (ASAR).

### Course Design

This degree consists of two stages. Stage 1 (Graduate Diploma - PH71) takes four semesters of part-time study to complete. Students must show that they have access to suitable clinical experience for the duration of Stage 1 before beginning the degree. Lectures are conducted in intensive four to five week blocks in each semester. Students undertake clinical experience throughout the semester.

Stage 2 (Master of Applied Science - PH80) involves completion of a research project and submission of a thesis. Students can undertake this project externally under QUT staff supervision on appointment of a suitable external supervisor. This stage takes two semesters part-time to complete after successful completion of Stage 1.

### Overview

The Master of Applied Science (PH80) course offers studies in medical ultrasound. Students are given the scientific basis for understanding, using and evaluating relevant equipment and techniques. The course particularly suits radiographers, medical imaging technologists and nuclear medicine technologists who are interested in an in-depth

study of this rapidly developing area.

### Contact Details

#### Course Coordinator

Dr Andrew Fielding

Phone: +61 7 3138 5325

Email: a.fielding@qut.edu.au

#### Discipline Coordinator

Natasha Kazich

Phone: +61 7 3138 2490

Email: n.kazich@qut.edu.au

### Course structure

STAGE 1: Students must complete the units listed below (total 96 credit points)

#### Semester 1

PCN159 Ultrasonic Examination 1

PCN162 Principles of Medical Ultrasound

PCN197-1 Clinical Attachment 1

#### Semester 2

PCN197-2 Clinical Attachment 1

PCN356 Ultrasonic Examinations 2

#### Semester 3

PCN297-1 Clinical Attachment 2

PCN355 Vascular Ultrasound

PCN357 Advanced Ultrasound Topics

#### Semester 4

PCN218 Research Methodology and Professional Studies

PCN297-2 Clinical Attachment 2

NOTES - The PCN197 and PCN297 clinical attachment units are 2 semester units

- Each clinical attachment unit (ie PCN197 and PCN297) involves clinical experience in the order of 3 days per week or equivalent.

STAGE 2: null

#### Project Over One Semester or Summer Program

PCN520 Project (Full-time)

#### Project Over Two Semesters

PCN540-1 Project (Part-time)

PCN540-2 Project (Part-time)

NOTE A student may request an extension of time in which to submit the project report for assessment. A request for an extension of time up to a maximum of six months shall be made in writing through the Head of School to the Dean. Any request for a further extension, or any request for an extension to a date later

than six months after the original due date, shall be made in writing to the Academic Board. The Academic Board may grant the extension under such conditions as it may consider appropriate, or may award the student a "Fail" result in the project unit. A student who has received a "Fail" result in the project unit may re-enrol in the unit only in exceptional circumstances and with the express permission of the Academic Board.

**Potential Careers:**

Sonographer.

**Master of Lighting (on-shore) (PH82)****Year offered:** 2008**Admissions:** Yes**CRICOS code:** 058287A**Course duration (full-time):** 3 semesters (1.5 years)  
(Internal only)**Course duration (part-time):** 6 semesters (3 years)  
(Internal and External)**Domestic fees (per credit point):** 2008: \$135 per credit point  
(subject to annual review)**Domestic fees (indicative):** 2008: \$12,960**International Fees (per semester):** 2008: \$9,600 per semester  
(subject to annual review)**Domestic Entry:** July**International Entry:** July**Total credit points:** 144**Standard credit points per part-time semester:** 24**Course coordinator:** Associate Professor Ian Cowling**Campus:** Gardens Point**Overview**

The Master of Lighting (PH82) is designed primarily for people working in all areas of the lighting industry and engineers or architects whose work includes some aspects of lighting. It provides the opportunity for graduates of the Graduate Certificate in Lighting (PH62) and the Graduate Diploma in Lighting (PH72) to undertake a Masters in the form of a project with some coursework.

**Entry Requirements**

(a) Bachelor level degree in an appropriate field

**OR**

(b) Successful completion of PH62/PH63 Graduate Certificate in Lighting, or PH72/PH73 Graduate Diploma in Lighting, or equivalent.

*Note:* Students with relevant experience in the lighting industry or recognised educational qualifications in lighting may be granted credit to a maximum of 36 credit points.

**Course Design**

Masters students will undertake a 24 credit point research project, which may be based within their place of employment and two units (24 credit points) of coursework which may be reading topics associated with their project or other electives taken from any relevant units within the University, on approval of the Course Coordinator.

**Contact Details****Course Coordinator**

Associate Professor Ian Cowling

Phone: +61 7 3138 2592

Email: i.cowling@qut.edu.au

**Course structure - Full-time****Year 1, Semester 2 (July to October)**

PCN121 Vision Colour and Photometry

PCN123 Sustainability and Human Factors

PCN124 Lamps and Luminaires

Elective - One unit from:

CNP521 Project Cost and Risk Management

MEN177 Total Quality Management

PCN224 Applied Lighting

**Year 2, Semester 1 (February to June)**

PCN122 Lighting Design

PCN221 Best Practices in Lighting

Electives - Two units from:

CNP520 Project Management

MEN272 Enterprise Resources Planning

PCN321 Reading Topic 1

PCN322 Reading Topic 2

**Year 2, Semester 2 (July to October)**

PCN223 Lighting Applications

PCN320 Lighting Project

Elective - One unit from:

CNP521 Project Cost and Risk Management

MEN177 Total Quality Management

PCN222 Advanced Lighting Design

**Course structure - Part-time****Year 1, Semester 2 (July to October)**

PCN121 Vision Colour and Photometry

PCN124 Lamps and Luminaires

**Year 2, Semester 1 (February to June)**

PCN122 Lighting Design

PCN123 Sustainability and Human Factors

**Year 2, Semester 2 (July to October)**

PCN223 Lighting Applications

Elective - One unit from:

MEN272 Enterprise Resources Planning

PCN222 Advanced Lighting Design

PCN224 Applied Lighting

**Year 3, Semester 1 (February to June)**

PCN221 Best Practices in Lighting

Elective - One unit from:

CNP520 Project Management

CNP521 Project Cost and Risk Management

MEN177 Total Quality Management

PCN224 Applied Lighting

**Year 3, Semester 2\* (July to October)**

PCN321 Reading Topic 1



or approved elective

PCN322 Reading Topic 2

or approved elective

**Year 4, Semester 1\* (February to June)**

PCN320 Lighting Project

\* The Fifth and Sixth semesters can be taken concurrently in full-time mode.

PH82 is offered full-time internally and part-time internally and externally. The course comprises a lecture/tutorial format, and where appropriate practical and field work. Some units will have a significant computer-design type component and all units will incorporate learning through assignment work, all of which will be incorporated into the assessment program. Most units in the internal mode will be offered in block format on evenings and weekends. Students enrolling in the external mode will be required to attend QUT for 4 to 5 days per semester for intensive practical and tutorial work.

Students in the Master of Lighting (PH82) wishing to exit with the Graduate Certificate in Lighting (PH62) or Graduate Diploma in Lighting (PH72) are required to submit an Application to Graduate Early with an Approved Exit Course (SRX) Form in their final semester of study.

International students wishing to change courses should consult International Student Business Services.

**Potential Careers:**

Architect, Electrical Contractor, Electrical Engineer, Energy Consultant, Industrial Designer, Landscape Architect, Lighting Designer, Lighting Technician, Luminaire Designer, Physicist, Sales Person, Scientist, Theatre Lighting.

**Master of Lighting (off-shore) (PH83)**

Year offered: 2008

Admissions: Yes

**Course duration (external):** 3 semesters (1 year) full-time and 6 semesters (2 years) part-time (Hong Kong)**Domestic fees (per credit point):** Off-shore course (*subject to annual review*)**International Entry:** September**Total credit points:** 144**Standard credit points per part-time semester:** 24**Course coordinator:** Associate Professor Ian Cowling**Campus:** City University of Hong Kong**Overview**

The Master of Lighting (PH83) is designed primarily for people working in all areas of the lighting industry and engineers or architects whose work includes some aspects of lighting. It provides the opportunity for graduates of the Graduate Certificate in Lighting (PH63) and the Graduate Diploma in Lighting (PH73) to undertake a Masters in the form of a project with some coursework.

**Entry Requirements**

(a) Bachelor level degree in an appropriate field

**OR**

(b) Successful completion of the PH72/PH73 Graduate Diploma in Lighting or equivalent.

*Note:* Students with relevant experience in the lighting industry or recognised educational qualifications in lighting may be granted credit to a maximum of 36 credit points.

**Course Design**

Masters students will undertake a 24 credit point research project, which may be based within their place of employment and two units (24 credit points) of coursework which may be reading topics associated with their project or other electives taken from any relevant units within the University, on approval of the Course Coordinator.

**Contact Details****Course Coordinator**

Associate Professor Ian Cowling

Phone: +61 7 3138 2592

Email: i.cowling@qut.edu.au

**Course structure - Part-time****First Semester (September to December)**

PCZ121 Vision Colour and Photometry

PCZ124 Lamps and Luminaires

**Second Semester (January to April)**

PCZ122 Lighting Design

PCZ123 Sustainability and Human Factors

**Third Semester (May to August)**

PCZ222 Advanced Lighting Design

PCZ223 Lighting Applications

**Fourth Semester (September to December)**

PCZ221 Best Practices in Lighting

PCZ224 Applied Lighting

**Fifth Semester (January to April)**

PCZ321 Reading Topic 1

Or approved elective

PCZ322 Reading Topic 2

Or approved elective

**Sixth Semester (May to August)**

PCZ320 Lighting Project

**NOTE:** PH83 will be offered part-time in a combination of face-to-face lecture/tutorial/practical format, and on-line. Some units will have a computer-design type component and all units will incorporate learning through assignment work, all of which will be incorporated into the assessment program. For the first three semesters the two units offered each semester will be presented sequentially. The face-to-face teaching component will be offered in block form over a weekend, usually on the first weekend of the teaching period assigned to that unit. There will then be a follow-up face-to-face session about three weekends later. For the fourth and fifth semesters both units will commence together at the start of the semester.

Students in the Master of Lighting (PH83) wishing to exit with the Graduate Certificate in Lighting (PH63) or Graduate Diploma in Lighting (PH73) are required to submit an Application to Graduate Early with an Approved Exit Course (SRX) Form in their final semester of study.

**Potential Careers:**

Architect, Electrical Contractor, Electrical Engineer, Energy Consultant, Industrial Designer, Landscape Architect, Lighting Designer, Lighting Technician, Luminaire Designer, Physicist, Sales Person, Scientist, Theatre Lighting.

## Master of Cardiac Ultrasound (PH85)

**Year offered:** 2008

**Admissions:** Yes

**Course duration (part-time):** 6 semesters (3 years)  
(External only)

**Domestic fees (per credit point):** 2008: \$135 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960

**Domestic Entry:** February: Early Closing Date - 1 December 2007. Early closing date for PH75 and PH85 Semester 1 2008 entry, pending quota being filled. Beyond this date, late applicants should contact the course coordinator for admission advice. Stage 1 of this course commences in February and July (students with advanced standing). Stage 2 commences in February and July.

**Total credit points:** 144

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Bonita Anderson

**Campus:** Gardens Point

### Entry Requirements

To be eligible to enrol an applicant will normally have a degree or diploma level qualification in a relevant science or allied health field, and access to suitable clinical experience for the duration of the course.

Students who do not meet the normal entry requirements may be permitted to enrol subject to the approval of the Head of the School of Physical and Chemical Sciences. Applicants should submit as much detail as possible about previous studies and prior learning experiences that may be relevant. In some cases a bridging program may be required.

Second semester enrolments for PH85 will only be accepted under the following circumstances:

1. Students who have successfully completed PH75 Graduate Diploma in Cardiac Ultrasound may enrol into the Masters project (PCN640-1) in second semester.

2. Students who have completed the Cardiac DMU and who are eligible to apply for advanced standing may enrol into PH85 in second semester\*.

\* Under university rules and regulations, these students are required to undertake 50% of the coursework for PH85. Therefore, in addition to the Masters project, students will be required to complete two other units (PCN218 Research Methodology and Professional Studies and PCN459 Advanced Cardiac Ultrasound).

### Professional Recognition

This course is accredited with the Australasian Sonographer Accreditation Registry (ASAR).

### Course Design

This course consists of two stages. Stage 1 (Graduate Diploma in Cardiac Ultrasound - PH75) takes two years of part-time study to complete. Students must be employed in a suitable clinical practice with adequate access to clinical

cardiac ultrasound experience for the duration of the course. If students are not based in Brisbane, this structure allows attendance by offering the formal classroom component in an intensive one-week block in each semester.

Stage 2 (Master of Cardiac Ultrasound - PH85) involves the completion of a research project and submission of a thesis. Students can undertake this project internally at QUT, or externally under QUT staff supervision and the guidance of a suitable external supervisor. This stage would normally take one year part-time to complete.

### Overview

The Master of Cardiac Ultrasound program offers studies for practicing Cardiac Sonographers. The course is conducted using a combination of block classes of approximately one week's duration in each semester, web-based modules and clinical practice modules.

### Contact Details

#### Course Coordinator

Bonita Anderson

Phone: +61 7 3138 2585

Email: b.anderson@qut.edu.au

### Course structure

STAGE 1: To complete Stage 1, students must complete the units listed below (total 96 credit points):

#### Year 1, Semester 1

PCN155	Cardiac Ultrasound 1
PCN162	Principles of Medical Ultrasound
PCN497-1	Clinical Attachment 4

#### Year 1, Semester 2

PCN259	Cardiac Ultrasound 2
PCN497-2	Clinical Attachment 4

#### Year 2, Semester 1

PCN218	Research Methodology and Professional Studies
PCN359	Cardiac Ultrasound 3
PCN597-1	Clinical Attachment 5

#### Semester 2, Semester 2

PCN459	Advanced Cardiac Ultrasound
PCN597-2	Clinical Attachment 5

NOTE: The PCN497 and PCN597 clinical attachment units are 2 semester units.

STAGE 2:\* To complete Stage 2, students must complete the units listed below (48 credit points):

#### First Semester \*\* (Project Over Two Semesters)

PCN640-1	Project
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**PCN640-2 Project**

Notes: A student may request an extension of time in which to submit the project report for assessment. A request for an extension of time up to a maximum of six months should be made in writing through the Head of School to the Dean. Any request for a further extension, or any request for an extension to a date later than six months after the original due date, should be made to the Academic Board. The Academic Board may grant the extension under such conditions as it may consider appropriate, or may award the student a "Fail" result in the project unit.

A student who has received a 'Fail' result in the project unit may re-enrol in the unit only in exceptional circumstances and with the express permission of the Academic Board.

\* Masters project units are offered in both semesters.

\*\* Second Semester enrolments for PH85 will only be accepted under the following circumstances:

1. Students who have successfully completed PH75 Graduate Diploma in Cardiac Ultrasound may enrol into the Masters project (PCN640-1) in second semester.

2. Students who have completed the Cardiac DMU and who are eligible to apply for advanced standing may enrol into PH85 in second semester#

# Under university rules and regulations, these students are required to undertake 50% of the coursework for PH85. Therefore, in addition to the Masters project, students will be required to complete two other units (PCN218 Research Methodology and Professional Studies and PCN459 Advanced Cardiac Ultrasound).

Students in the Master of Cardiac Ultrasound (PH85) wishing to exit with the Graduate Diploma in Cardiac Ultrasound (PH75) are required to submit an Application to Graduate Early with an Approved Exit Course (SRX) Form in their final semester of study.

**Potential Careers:**

Sonographer.

## Bachelor of Applied Science (SC01)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 003502J

**Course duration (full-time):** 3 Years

**Course duration (part-time):** 6 Years

**Domestic fees (per credit point):** Commonwealth supported place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,206

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February and July\* (\*Gardens Point campus only)

**International Entry:** February and July\* (Conditions apply for July entry)

**QTAC code:** 418011

**Past rank cut-off:** 74

**Past OP cut-off:** 13

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 288

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Megan Hargreaves

**Discipline coordinator:** Dr Perry Hartfield (Biochemistry); Dr Marion Bateson (Biotechnology); Dr Robert Johnson (Chemistry); Dr Ian Williamson (Ecology); Dr Robin Thwaites (Environmental Science); Dr Emad Kiriakous (Forensic Science); Dr Gary Huftile (Geoscience); Dr Scott McCue (Mathematics); Dr Christine Knox (Microbiology); Dr Greg Michael (Physics)

**Campus:** Gardens Point and Carseldine

### Campus

This course is offered at Gardens Point and Carseldine campuses. At Carseldine students study the first semester and then complete remaining five semesters at Gardens Point. (Note: the mathematics and physics majors are only available at Gardens Point Campus.)

### Recommended Study

At least one of the sciences. For the majors in biochemistry, biotechnology, forensic science, and microbiology - Biological Science and Chemistry are recommended; for the majors in mathematics and physics - Maths C is recommended.

### Course Design

The flexibility of QUT's Bachelor of Applied Science allows you to tailor the qualification to your needs and career aspirations. Can you see yourself as a forensic scientist, geologist, chemist, physicist, microbiologist or environmental scientist? Perhaps you would like to be at the

forefront of the latest discoveries in genetic engineering, or improve the lives of others by researching new diagnostic techniques and treatments for diseases, or monitor a community's water supply ensuring it is safe to drink. You could even help save an endangered species, investigate renewable energy sources, advise world leaders on the causes and effects of global warming, or discover a new star in a far away galaxy.

You will graduate with specialised knowledge of cutting-edge technologies and extensive practical experience using the latest techniques. You choose your career direction and QUT's Bachelor of Applied Science will set you on the right path by ensuring you are employment-ready when you graduate.

You have a broad range of options to choose from and the flexibility to create your own personal science degree program. If you are not sure of your career direction, don't worry because this decision can be delayed until after you have sampled a range of science disciplines during your first semester of study. QUT staff are available to advise on how best to structure your degree to suit your personal and career aspirations. When you have decided on a preferred career direction, you can be sure that you will graduate with the necessary specialist theoretical knowledge and well-developed practical skills. As QUT courses are designed in close consultation with industry you will receive the relevant professional accreditation when you graduate.

You will choose an area of specialisation (major) from the list below and this will form the basis for your qualification, for example Bachelor of Applied Science (Forensic Science). You will also choose a secondary specialisation (co-major) to complement your major studies. This secondary specialisation may be one of the other majors, a science co-major, or an area outside the science disciplines. Several elective units allow you to broaden your knowledge and skills.

### Science Majors, Science Co-majors and Non-Science Co-majors:

#### Science Majors:

Biochemistry  
Biotechnology  
Chemistry  
Ecology  
Environmental Science  
Forensic Science\*  
Geoscience  
Mathematics  
Microbiology  
Physics

\* The Forensic Science major must be taken as a double major with another science area eg Chemistry or Biotechnology.

#### Science Co-majors:

One of the majors listed above or:  
Applied Geology  
Astrophysics

Biodiversity  
 Chemistry for Industry  
 Life Science Technologies  
 Or a non-science co-major

*Examples of Non-Science Co-majors:*

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

**Major Areas of Study**

**Biochemistry:**

Biochemistry is the study of the chemical processes that occur in living organisms including the chemical structure, function and properties and energy flows. Biochemistry is an essential and very successful area of study for many practitioners in the life sciences industry. Biochemistry students at QUT gain both the theoretical knowledge to understand biochemical problems and formulate solutions, and the practical skills to carry out the necessary laboratory investigations that test these solutions for real-world application. Students gain hands-on practical laboratory experience from their first year of study.

*Career Opportunities*

Strong employment opportunities exist around the world in both the private and government sectors of industry for biochemists. QUT graduates skilled in biochemistry can find career opportunities in research, diagnostic and analytical laboratories, universities, hospitals and health departments, pharmaceutical companies, primary and agricultural industries and departments, food industry laboratories, environmental agencies, veterinary pathology laboratories and in the area of marketing, sales, commercialisation and management of biological products and processes.

*Professional Recognition*

Graduates are eligible for membership of the Australian Society for Biochemistry and Molecular Biology, and possibly the Australasian Association of Clinical Biochemists.

**Biotechnology:**

Biotechnology is the application of molecular biology and biochemical principles to create a new generation of products and processes for the benefit of society. Biotechnology is one of the fastest growing areas of science and business in the world today. Modern biotechnology uses the techniques of genetic engineering to enable faster, cheaper and more reliable production of an ever-increasing range of engineered products. The integration of biotechnology research into QUT Biotechnology courses

ensures that you will receive access to the latest information and hands-on laboratory experience in contemporary molecular technologies. All students receive hands-on practical laboratory experience from your first year of study in Queensland's newest biotechnology teaching laboratories.

*Career Opportunities*

Globally and locally the developing biotechnology industry demands highly skilled graduates. As a 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; while existing career opportunities in hospitals and diagnostic laboratories continue to expand.

*Professional Recognition*

Graduates are eligible for membership of AusBiotech Ltd, Australian Society for Biochemistry and Molecular Biology, and possibly the Australian Society for Medical Research, and the Australian Society for Microbiology.

**Chemistry:**

Chemistry is the study of the structure, properties, synthesis and reactions of materials. Chemistry is one of the central sciences since its results are used in almost all areas of science - including life sciences, the environment, geosciences, biology, and food science. The Chemistry major at QUT allows you to gain an appreciation of the fundamental discipline - covering physical, organic and inorganic chemistry - but with an additional focus on modern applications such as drug discovery, analytical and environmental chemistry, polymer science and surface science. All theory is complemented with a comprehensive laboratory program, particularly with hands-on experience with modern computer-based analytical instruments.

*Career Opportunities*

Chemists are key professionals in industries that manufacture goods such as paints, paper, textiles, glass, plastics and rubber, metals and alloys, gases and fuels, foodstuffs and chemicals. Government agencies depend on chemists to develop and monitor standards for meat research, animal health pest control, preservation of timber, environmental chemistry, forensic analysis and coal chemistry. You can expect to find employment as an industrial chemist, material scientist, environmental chemist, quality control analyst, production supervisor, food chemist, organic chemist and inorganic chemist.

*Professional Recognition*

Students completing the Chemistry major with the Industrial Chemistry or Forensic Science co-major are eligible for membership of the Royal Australian Chemical Institute.

**Ecology**

Ecology is the study of relationships between organisms and their environment. Ecology helps us to understand the distribution and abundance of organisms. As an applied

science it is used to design strategies for the management of populations of organisms (both natural and commercial). The Ecology major at QUT will allow you to gain a broad range of scientific skills including the specialist techniques required for conserving and managing endangered animals, controlling pests, managing exploited populations and evaluating issues associated with the management of our natural resources.

#### *Career Opportunities*

Ecologists find rewarding careers in research science for government departments responsible for pest management, national park and wildlife, primary industries, fisheries, forestry and museums. They also find work in private firms engaged in research and consultancy work. Positions include fisheries biologist, wildlife manager, scientific or technical officer, teacher or lecturer and research scientist. Employment in more specialised areas is available, usually requiring study beyond the first degree.

#### *Professional Recognition*

Professional recognition is achieved through a scientific society (ie Ecological Society of Australia) and participation in its meetings.

#### **Environmental Science:**

Environmental Science at QUT is the application of fundamental, core science disciplines to problems encountered in the management and understanding of our environment. Studies will allow you to gain both the strong scientific base and the generic skills to apply your scientific knowledge to a wide range of environmental problems. Rather than learning simply to describe the different environmental systems, you will gain an understanding of the mechanisms that control these systems, and the interaction between the various components. All environmental science units include laboratory and fieldwork with an emphasis on problem-solving through project work. You will be introduced to standardised methods and principles for environmental modelling and monitoring that can be applied across all disciplines.

#### *Career Opportunities*

Environmental scientists are needed in a wide variety of government departments and agencies, in consultancy and in manufacturing and mining companies. Graduates are equipped to assess resources, design and implement environmental impact programs, analyse and interpret environmental data and formulate contingency plans in a wide variety of areas including strategic land-use planning, waste disposal, pollution measurement and control, coastal protection, environmental impact of mining, tourism and development, rehabilitation and reforestation of contaminated land sites, groundwater assessment and modelling, waterway and floodplain drainage planning, erosion control in waterways, and marine science.

#### *Professional Recognition*

Graduates are eligible for membership of the Environment Institute of Australia and New Zealand.

#### **Forensic Science**

Forensic Science involves the application of chemical and biological principles and laboratory processes to identify and quantify matter within a legal context. Areas that are relevant to forensic science are wide ranging, and include: the detection and identification of illicit drugs, explosive and gunshot residues, accelerants used in arson cases, and trace evidence (eg paint, glass, fibres, soil); DNA profiling, where it is possible to distinguish between individuals on the basis of samples involving blood, saliva, hair or semen; toxicology studies to identify illicit and pharmaceutical drugs and poisons and interpret toxicity levels and their effect on the human body; and fingerprinting.

#### *Career Opportunities*

Employment opportunities exist for trained forensic scientists who work in laboratories handling criminal casework in areas including forensic biology, forensic chemistry, and forensic toxicology. QUT graduates in Forensic Science not only receive a strong grounding in core areas of both forensic biology and forensic chemistry but complement their major in Forensic Science with a full major in Biotechnology or Chemistry. This course structure gives QUT Forensic Science graduates an enhanced qualification for careers in either Forensic Biology or Forensic Chemistry. In addition, the second major adds flexibility to future career paths by enabling Forensic Science graduates to gain employment either as a chemist or a biotechnologist if they prefer.

#### *Professional Recognition*

Graduates who complete the Forensic Science major in conjunction with the Biotechnology major are eligible for membership of the Australian and New Zealand Forensic Science Society, AusBiotech Ltd, and the Australian Society for Biochemistry and Molecular Biology.

Graduates who complete the Forensic Science major in conjunction with the Chemistry major are eligible for membership of the Australian and New Zealand Forensic Science Society and the Royal Australian Chemical Institute.

#### **Geoscience:**

Geoscience is the systematic study of the earth and the dynamic interactions of its systems. Geoscience incorporates a study of the materials of the earth, the natural processes acting in and upon the earth, and its history. The Geoscience major at QUT allows you to gain the skills needed to become a professional geologist and emphasises hands-on experience through laboratory work and field studies. It provides a broad range of geological skills as well as training in the specialist techniques required for field mapping and geological interpretation.

#### *Career Opportunities*

Geoscientists work in a range of areas including environmental geology, hydrogeology, hazard and pollution control, and coastal zone management. Employment opportunities exist within mining and exploration companies which may involve underground geological mapping, evaluation of ore reserves, production control, or exploration for new mineral deposits; petroleum companies working on

offshore drilling rigs; and a variety of government organisations working as field geologists or research scientists. Other graduates work in computing, data modelling, and remote sensing. An honours degree is required by many employers, including the larger mining and exploration companies.

*Professional Recognition*

Graduates are eligible for membership of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists, and the Geological Society of Australia.

**Mathematics:**

This major concentrates on applied mathematics or financial mathematics and operations research or on statistics. Students who wish to cover a range of areas of mathematics should consider enrolling in MA54 Bachelor of Mathematics. This course focuses on applications and includes an emphasis on developing communication skills.

*Career Opportunities*

Mathematicians enjoy a wide range of career options, working for major corporations including banks and insurance companies, industry, information technology companies, consultancy groups, research organisations, universities, schools and various government departments. You will be able to use your mathematical and statistical techniques in analysis, modelling, experimental design and operations research. Employers value the generic skills also gained throughout the degree in problem-solving, analytical thinking, team and independent work, oral and written communication.

*Professional Recognition*

Graduates are eligible for membership of the Australian Mathematical Society, Australian Society for Operations Research and the Statistical Society of Australia.

**Microbiology:**

Microbiology is the study of living organisms of microscopic size. The principal components are bacteriology, virology and mycology, and areas of fundamental importance in the applied sciences of pathology and immunology. You will develop skills and knowledge in the handling and study of micro-organisms and investigation of their properties. Advanced studies allow you to expand your knowledge and expertise in your specialised area such as human pathology, animal and plant diseases, food technologies, environmental testing (soil, air and water) and bioremediation, and molecular applications of microbiological principles.

*Career Opportunities*

Microbiologists are employed in a variety of careers including human pathology testing in bacteriology, immunology, mycology, parasitology and virology, animal and plant disease, treatment of inorganic waste, food fermentations and microbiological testing of goods for pathogens or spoilage organisms, water and soil microbiology and research. Employment opportunities exist in private and government research and analytical

laboratories, such as the CSIRO, universities, hospitals, health departments, primary industry departments, food industry laboratories, environmental agencies, and in the marketing of biological products.

*Professional Recognition*

Graduates are eligible for membership of the Australian Society for Microbiology.

**Physics:**

Physics is the science discipline dealing with the natural laws and processes, with the states and properties of matter and energy. Physics also underlies many of the recent advances in information technology, medicine and biotechnology. Areas of specialisation include mechanics, electromagnetism, lasers and modern optics, computational physics, nuclear and radiation physics, quantum mechanics and relativity.

*Career Opportunities*

Physicists are an asset to almost every industry. They are broadly-educated professionals who are trained in applied and experimental physics, instrumentation and a range of other specific methods required for traditional and newly-developed avenues of scientific employment. QUT Physics graduates work in large manufacturing companies, often as members of research and development teams, supervising the testing and production of raw materials and finished articles. Increasing opportunities for graduates with appropriate studies exist in noise measurement and control, environmental monitoring, meteorology, lasers, computing, technical equipment sales, teaching and research. Graduates work in large hospitals and medical institutions such as the Queensland Radium Institute. Broad training in data analysis and problem-solving skills also makes physicists well suited to management roles in a range of technology-based industries.

*Professional Recognition*

Graduates are eligible for membership of the Australian Institute of Physics.

**Science Co-Major Areas of Study**

**Applied Geology:**

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

**Astrophysics:**

The Astrophysics co-major is an exciting blend of astrophysics, geophysics, cosmology, digital image processing and remote sensing units, designed to be taken with a major in Physics, Mathematics or Geoscience. The co-major is relevant to many real-world problems, for example, satellite technology, telecommunications, minerals exploration and global warming. By taking this co-major you



will develop interdisciplinary skills in computing, instrumentation, image processing, geodesy and materials science that will be useful for a wide variety of careers in industry and the public sector.

**Biodiversity:**

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

**Chemistry for Industry:**

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

**Life Science Technologies:**

The many and varied disciplines which are characteristic of research and development activities in the life sciences are reflected in employer demand for a broad range of graduates with different specialisations. To accommodate this demand a Biomolecular Sciences co-major is available in the Bachelor of Applied Science. In this co-major, students may compose a combination of six approved units from the Biotechnology, Biochemistry and Microbiology majors. You will benefit from a broad range of biomolecular theory and skills, closely aligned to personal interests, for application in an ever-increasing variety of niche employment opportunities.

Or a non-science co-major: Aviation, Corporate IT Systems, Environmental Engineering Studies, Ethics and Human Rights, Foreign Languages, Games Technology, Geography, Journalism, Management, Marketing, Music, Psychology, Spatial Science.

**Professional Recognition**

For graduates with approved study: AusBiotech Ltd, Australasian Association of Clinical Biochemists, Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists, Australian Institute of Physics, Australian Mathematical Society, Australian Society for Biochemistry and Molecular Biology, Australian Society for

Medical Research, Australian Society for Microbiology, Australian Society for Microbiology, Australian Society for Operations Research, Ecological Society of Australia, Environment Institute of Australia and New Zealand, Geological Society of Australia, Royal Australian Chemical Institute, Statistical Society of Australia.

**Course Rules**

1. To fulfil the requirements for the award of the Bachelor of Applied Science degree, a student must complete a total of at least 288 credit points, comprising at least 192 credit points in units offered by the Faculty of Science. The units completed for the award of the degree must include:

- (a) the first year program as outlined in the course summary sheet.
- (b) a major study
- (c) a co-major study.

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

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

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

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

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

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

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

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

*Notes on the Rules*

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

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

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

**Contact Details**

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**Deferment**

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

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

Find out more on deferment.

**Course structure - Major in Biochemistry**

**Year 1, Semester 1**

SCB110 Science Concepts and Global Systems  
SCB111 Chemistry 1  
SCB112 Cellular Basis of Life

Plus ONE of:

MAB100 Mathematical Sciences 1A  
MAB101 Statistical Data Analysis 1  
MAB104 Introductory Quantitative Methods  
MAB111 Mathematical Sciences 1B

NOTE: 1. Students without a Sound Achievement (4 semesters) in Maths B should enrol in MAB104.

2. Students with a Sound Achievement in Maths B and NOT wishing to major in Mathematics or Physics should enrol in MAB101

3. Students with a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB111.

4. Students without a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB100.

**Year 1, Semester 2**

SCB120 Plant and Animal Physiology  
SCB121 Chemistry 2  
SCB122 Cell and Molecular Biology  
SCB123 Physical Science Applications

**Year 2, Semester 1**

## SCIENCE

LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulation
	Plus TWO other units selected according to the co-major requirements

### Year 2 Semester 2 \*

LQB481	Biochemistry Pathways and Metabolism
LQB483	Molecular Biology Techniques
	Plus TWO other units selected according to the co-major requirements

### Year 3, Semester 1 \*

LQB581	Functional Biochemistry
LQB582	Biomedical Research Technologies
	Plus TWO other units selected according to the co-major requirements

### Year 3, Semester 2 \*

LQB681	Biochemical Research Skills
LQB682	Protein Biochemistry and Bioengineering
	Plus TWO other units selected according to the co-major requirements

### Recommended Co-majors:

Biotechnology, Chemistry, Forensic Science, Life Science Technologies, Microbiology

### \* Elective Unit for all Majors:

SCB500	Industry Project
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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.

### Course structure - Major in Biotechnology

#### Year 1, Semester 1

SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1
SCB112	Cellular Basis of Life

Plus ONE of:

MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1
MAB104	Introductory Quantitative Methods
MAB111	Mathematical Sciences 1B

NOTE: 1. Students without a Sound Achievement (4 semesters) in Maths B should enrol in MAB104.

2. Students with a Sound Achievement in Maths B and NOT wishing to major in Mathematics or Physics should enrol in MAB101.

4. Students without a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB100.

3. Students with a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB111.

#### Year 1, Semester 2

SCB120	Plant and Animal Physiology
SCB121	Chemistry 2
SCB122	Cell and Molecular Biology
SCB123	Physical Science Applications

#### Year 2, Semester 1

LQB381	Biochemistry: Structure and Function
LQB383	Molecular and Cellular Regulation
	Plus TWO other units selected according to the co-major requirements

#### Year 2, Semester 2 \*

LQB483	Molecular Biology Techniques
LQB484	Introduction to Genomics and Bioinformatics
	Plus TWO other units selected according to the co-major requirements

#### Year 3, Semester 1 \*

Select TWO units from:

LQB583	Genetic Research Technology
LQB584	Medical Cell Biology
LQB585	Plant Genetic Manipulation

Plus TWO other units selected according to the co-major requirements

#### Year 3, Semester 2 \*

Select TWO units from:

LQB682	Protein Biochemistry and Bioengineering
LQB684	Medical Biotechnology
LQB685	Plant Microbe Interactions

Plus TWO other units selected according to the co-major requirements

### Recommended Co-majors:

Biochemistry, Forensic Science, Life Science Technologies, Microbiology

### \* Elective Unit for all Majors:

SCB500	Industry Project
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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.

### Course structure - Major in Chemistry

#### Year 1, Semester 1

SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1

## SCIENCE

SCB112	Cellular Basis of Life Plus ONE of:
MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1
MAB104	Introductory Quantitative Methods
MAB111	Mathematical Sciences 1B
NOTE:	<p>1. Students without a Sound Achievement (4 semesters) in Maths B should enrol in MAB104.</p> <p>2. Students with a Sound Achievement in Maths B and NOT wishing to major in Mathematics or Physics should enrol in MAB101.</p> <p>3. Students with a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB111.</p> <p>4. Students without a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB100.</p>

### Year 1, Semester 2

MAB100	Mathematical Sciences 1A
SCB121	Chemistry 2
SCB123	Physical Science Applications
SCB131	Experimental Chemistry

### Year 2, Semester 1

PQB312	Analytical Chemistry for Scientists and Technology
PQB331	Structure and Bonding
	Plus TWO other units selected according to the co-major requirements

### Year 2, Semester 2 \*

PQB401	Chemical Reactions 1
PQB442	Chemical Spectroscopy
	Plus TWO other units selected according to the co-major requirements

### Year 3, Semester 1 \*

PQB502	Materials Chemistry and Characterisation
PQB531	Chemical Reactions 2
	Plus TWO other units selected according to the co-major requirements

### Year 3, Semester 2 \*

PQB631	Applied Molecular Science
PQB642	Chemical Research
	Plus TWO other units selected according to the co-major requirements

### Recommended Co-majors:

Biochemistry, Biotechnology, Chemistry for Industry, Forensic Science

### \* Elective Unit for all Majors:

SCB500	Industry 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.

### Course structure - Major in Ecology

#### Year 1, Semester 1

SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1
SCB112	Cellular Basis of Life

Plus ONE of:

MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1
MAB104	Introductory Quantitative Methods
MAB111	Mathematical Sciences 1B

NOTE: 1. Students without a Sound Achievement (4 semesters) in Maths B should enrol in MAB104.

2. Students with a Sound Achievement in Maths B and NOT wishing to major in Mathematics or Physics should enrol in MAB101.

3. Students with a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB111.

4. Students without a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB100.

#### Year 1, Semester 2

NQB202	History of Life on Earth
SCB120	Plant and Animal Physiology
SCB123	Physical Science Applications
	Plus either
SCB121	Chemistry 2
	Or
NQB201	Planet Earth

#### Year 2, Semester 1

NQB301	Soils and Sedimentation
NQB321	Ecology
	Plus TWO other units selected according to the co-major requirements

#### Year 2, Semester 2 \*

NQB421	Experimental Design
NQB422	Genetics and Evolution
	Plus TWO other units selected according to the co-major requirements

#### Year 3, Semester 1 \*

NQB502	Field Mapping and Monitoring of Natural Resources
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## SCIENCE

NQB521 Population Genetics and Molecular Ecology  
Plus TWO other units selected according to the co-major requirements

### Year 3, Semester 2 \*

NQB621 Population Management  
NQB622 Population Genetics  
Plus TWO other units selected according to the co-major requirements

### Recommended Co-majors:

Biodiversity, Environmental Science

### \* Elective Unit for all Majors:

SCB500 Industry 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.

### Course structure - Major in Environmental Science

#### Year 1, Semester 1

SCB110 Science Concepts and Global Systems

SCB111 Chemistry 1

SCB112 Cellular Basis of Life

Plus ONE of:

MAB100 Mathematical Sciences 1A

MAB101 Statistical Data Analysis 1

MAB104 Introductory Quantitative Methods

MAB111 Mathematical Sciences 1B

NOTE: 1. Students without a Sound Achievement (4 semesters) in Maths B should enrol in MAB104.

2. Students with a Sound Achievement in Maths B and NOT wishing to major in Mathematics or Physics should enrol in MAB101.

3. Students with a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB111.

4. Students without a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB100.

#### Year 1, Semester 2

NQB202 History of Life on Earth

SCB120 Plant and Animal Physiology

SCB123 Physical Science Applications

Plus either

SCB121 Chemistry 2

Or

NQB201 Planet Earth

#### Year 2, Semester 1

NQB301 Soils and Sedimentation

NQB321 Ecology

Plus TWO other units selected according to the co-major requirements

### Year 2, Semester 2 \*

NQB401 Spatial Analysis of Environmental Systems

NQB421 Experimental Design

Plus TWO other units selected according to the co-major requirements

### Year 3, Semester 1 \*

NQB501 Environmental Modelling

NQB502 Field Mapping and Monitoring of Natural Resources

Plus TWO other units selected according to the co-major requirements

### Year 3, Semester 2 \*

NQB601 Sustainable Environmental Management

NQB602 Environmental Chemistry

Plus TWO other units selected according to the co-major requirements

### Recommended Co-majors:

Biodiversity, Ecology, Geoscience

### \* Elective Unit for all Majors:

SCB500 Industry 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.

### Course structure - Major in Forensic Science

Note: Must be taken as a double major with Biochemistry, Biotechnology, Chemistry or Microbiology

#### Year 1, Semester 1

SCB110 Science Concepts and Global Systems

SCB111 Chemistry 1

SCB112 Cellular Basis of Life

Plus ONE of:

MAB100 Mathematical Sciences 1A

MAB101 Statistical Data Analysis 1

MAB104 Introductory Quantitative Methods

MAB111 Mathematical Sciences 1B

NOTE: 1. Students without a Sound Achievement (4 semesters) in Maths B should enrol in MAB104.

2. Students with a Sound Achievement in Maths B and NOT wishing to major in Mathematics or Physics should enrol in MAB101.

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3. Students with a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB111.

4. Students without a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB100.

MAB104 Introductory Quantitative Methods

MAB111 Mathematical Sciences 1B

NOTE: 1. Students without a Sound Achievement (4 semesters) in Maths B should enrol in MAB104.

2. Students with a Sound Achievement in Maths B and NOT wishing to major in Mathematics or Physics should enrol in MAB101.

3. Students with a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB111.

4. Students without a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB100.

### Year 1, Semester 2

SCB121	Chemistry 2
SCB122	Cell and Molecular Biology
SCB123	Physical Science Applications
SCB131	Experimental Chemistry

### Year 2, Semester 1

LQB383	Molecular and Cellular Regulation
SCB384	Crime Scene and Forensic Science
	Plus TWO other units selected according to the second-major requirements

### Year 2, Semester 2 \*

JSB979	Forensic Scientific Evidence
PQB312	Analytical Chemistry for Scientists and Technologists
	Plus TWO other units selected according to the second-major requirements

### Year 3, Semester 1 \*

PQB513	Instrumental Analysis
PQB584	Forensic Physical Evidence
	Plus TWO other units selected according to the second-major requirements

### Year 3, Semester 2 \*

LQB680	Forensic DNA Profiling
PQB684	Forensic Analysis
	Plus TWO other units selected according to the second-major requirements

### \* Elective Unit for all Majors:

SCB500 Industry 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.

### Course structure - Major in Geoscience

#### Year 1, Semester 1

SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1
SCB112	Cellular Basis of Life
	Plus ONE of:
MAB100	Mathematical Sciences 1A
MAB101	Statistical Data Analysis 1

### Year 1, Semester 2

NQB201	Planet Earth
NQB202	History of Life on Earth
SCB123	Physical Science Applications
SCB222	Exploration of the Universe

### Year 2, Semester 1

NQB301	Soils and Sedimentation
NQB311	Mineralogy
	Plus TWO other units selected according to the co-major requirements

### Year 2, Semester 2 \*

NQB411	Petrology
NQB412	Structural Geology and Field Methods
	Plus TWO other units selected according to the co-major requirements

### Year 3, Semester 1 \*

NQB502	Field Mapping and Monitoring of Natural Resources
NQB512	Stratigraphy
NQB513	Geophysics
	Plus ONE other unit selected according to the co-major requirements

### Year 3, Semester 2 \*

NQB602	Environmental Chemistry
	Plus THREE other units selected according to the co-major requirements

### Recommended Co-majors:

Applied Geology, Environmental Science, Physics

### \* Elective Unit for all Majors:

SCB500 Industry 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.

3.

**Course structure - Major in Mathematics (Applied Mathematics)**

**Year 1, Semester 1**

- SCB110 Science Concepts and Global Systems
- SCB111 Chemistry 1
- SCB112 Cellular Basis of Life
- Plus either:
- MAB100 Mathematical Sciences 1A
- Or
- MAB101 Statistical Data Analysis 1

**Year 1, Semester 2**

- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- Select TWO units from the following:
- MAB101 Statistical Data Analysis 1
- MAB210 Statistical Modelling 1
- MAB220 Computational Mathematics 1
- PQB250 Mechanics and Electromagnetism
- PQB251 Waves and Optics

**Year 2, Semester 1**

- MAB311 Advanced Calculus
- MAB312 Linear Algebra
- Plus TWO other units selected according to the co-major requirements

**Year 2, Semester 2 \***

- MAB413 Differential Equations
- MAB422 Mathematical Modelling
- Plus TWO other units selected according to the co-major requirements

**Year 3, Semester 1 \***

- MAB521 Applied Mathematics 3
- MAB672 Advanced Mathematical Modelling
- Plus TWO other units selected according to the co-major requirements

**Year 3, Semester 2 \***

- MAB613 Partial Differential Equations
- Plus ONE level 3 mathematics unit
- Plus TWO other units selected according to the co-major requirements

**Recommended Co-majors:**

Maths, Physics

**\* Elective Unit for all Majors:**

- SCB500 Industry 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.

**Course structure - Major in Mathematics (Financial and Operations Research)**

**Year 1, Semester 1**

- SCB110 Science Concepts and Global Systems
- SCB111 Chemistry 1
- SCB112 Cellular Basis of Life
- Plus either:
- MAB100 Mathematical Sciences 1A
- Or
- MAB101 Statistical Data Analysis 1

**Year 1, Semester 2**

- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- Select TWO units from the following:
- MAB101 Statistical Data Analysis 1
- MAB210 Statistical Modelling 1
- MAB220 Computational Mathematics 1

**Year 2, Semester 1**

- MAB311 Advanced Calculus
- MAB315 Operations Research 2
- Plus TWO other units selected according to the co-major requirements

**Year 2, Semester 2 \***

- EFB210 Finance 1
- MAB313 Mathematics of Finance
- Plus TWO other units selected according to the co-major requirements

**Year 3, Semester 1 \***

- MAB525 Operations Research 3A
- MAB533 Statistical Techniques
- Plus TWO other units selected according to the co-major requirements

**Year 3, Semester 2 \***

- MAB623 Financial Mathematics
- MAB625 Operations Research 3B
- Plus TWO other units selected according to the co-major requirements

**Recommended Co-majors:**

Maths

**\* Elective Unit for all Majors:**

- SCB500 Industry Project

## SCIENCE

**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:** 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.

### Course structure - Major in Mathematics (Statistics)

#### Year 1, Semester 1

SCB110 Science Concepts and Global Systems  
 SCB111 Chemistry 1  
 SCB112 Cellular Basis of Life  
 Plus either:  
 MAB100 Mathematical Sciences 1A  
 Or  
 MAB101 Statistical Data Analysis 1

#### Year 1, Semester 2

MAB111 Mathematical Sciences 1B  
 MAB112 Mathematical Sciences 1C  
 Select TWO units from the following:  
 MAB101 Statistical Data Analysis 1  
 MAB210 Statistical Modelling 1  
 MAB220 Computational Mathematics 1

#### Year 2, Semester 1

MAB311 Advanced Calculus  
 MAB314 Statistical Modelling 2  
 Plus TWO other units selected according to the co-major requirements

#### Year 2, Semester 2 \*

MAB414 Applied Statistics 2  
 MAB480 Introduction to Scientific Computation  
 Plus TWO other units selected according to the co-major requirements

#### Year 3, Semester 1 \*

MAB533 Statistical Techniques  
 MAB536 Time Series Analysis  
 Plus TWO other units selected according to the co-major requirements

#### Year 3, Semester 2 \*

MAB524 Statistical Inference  
 MAB624 Applied Statistics 3  
 Plus TWO other units selected according to the co-major requirements

#### Recommended Co-majors:

Maths

#### \* Elective Unit for all Majors:

SCB500 Industry Project

### Course structure - Major in Microbiology

#### Year 1, Semester 1

SCB110 Science Concepts and Global Systems  
 SCB111 Chemistry 1  
 SCB112 Cellular Basis of Life  
 Plus ONE of:  
 MAB100 Mathematical Sciences 1A  
 MAB101 Statistical Data Analysis 1  
 MAB104 Introductory Quantitative Methods  
 MAB111 Mathematical Sciences 1B

**NOTE:**

1. Students without a Sound Achievement (4 semesters) in Maths B should enrol in MAB104.
2. Students with a Sound Achievement in Maths B and NOT wishing to major in Mathematics or Physics should enrol in MAB101.
3. Students with a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB111.
4. Students without a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB100.

#### Year 1, Semester 2

SCB120 Plant and Animal Physiology  
 SCB121 Chemistry 2  
 SCB122 Cell and Molecular Biology  
 SCB123 Physical Science Applications

#### Year 2, Semester 1

LQB381 Biochemistry: Structure and Function  
 LQB386 Microbial Structure and Function  
 Plus TWO other units selected according to the co-major requirements

#### Year 2, Semester 2 \*

LQB483 Molecular Biology Techniques  
 LQB486 Clinical Microbiology 1  
 Plus TWO other units selected according to the co-major requirements

#### Year 3, Semester 1 \*

LQB586 Clinical Microbiology 2  
 LQB587 Applied Microbiology 1: Water, Air and Soil  
 Plus TWO other units selected according to the co-major requirements

#### Year 3, Semester 2 \*



LQB686 Microbial Technology and Immunology  
 LQB687 Applied Microbiology 2: Food and Quality Assurance  
 Plus TWO other units selected according to the co-major requirements

**Recommended Co-majors:**

Biochemistry, Biotechnology, Forensic Science, Life Science Technologies

**\* Elective Unit for all Majors:**

SCB500 Industry 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.

**Course structure - Major in Physics**

**Year 1, Semester 1**

SCB110 Science Concepts and Global Systems  
 SCB111 Chemistry 1  
 SCB112 Cellular Basis of Life  
 Plus either:

MAB100 Mathematical Sciences 1A  
 Or

MAB111 Mathematical Sciences 1B

NOTE: 1. Students with a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB111.  
 2. Students without a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB100.

**Year 1, Semester 2**

MAB112 Mathematical Sciences 1C  
 PQB250 Mechanics and Electromagnetism  
 PQB251 Waves and Optics  
 Plus either:

MAB111 Mathematical Sciences 1B  
 Or

MAB220 Computational Mathematics 1

**Year 2, Semester 1**

MAB311 Advanced Calculus  
 PQB350 Thermodynamics of Solids and Gases  
 Plus TWO other unit selected according to the co-major requirements

**Year 2, Semester 2 \***

PQB450 Energy Fields and Radiation  
 PQB451 Electronics and Instrumentation  
 Plus TWO other units selected according to the co-major requirements

**Year 3, Semester 1 \***

PQB550 Quantum and Condensed Matter Physics  
 PQB551 Physical Analytical Techniques  
 Plus TWO other units selected according to the co-major requirements

**Year 3, Semester 2 \***

PQB650 Advanced Theoretical Physics  
 PQB651 Experimental Physics  
 Plus TWO other units selected according to the co-major requirements

**Recommended Co-majors:**

Astrophysics, Mathematics

**\* Elective Unit for all Majors:**

SCB500 Industry 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.

**Course structure - Co-major in Applied Geology (Compatible with Geoscience Major only)**

**Year 1, Semester 1**

Units as per Geoscience major

**Year 1, Semester 2**

Units as per Geoscience major

**Year 2, Semester 1**

Elective  
 Plus TWO other units selected according to the major requirements

**Year 2, Semester 2**

NQB401 Spatial Analysis of Environmental Systems  
 NQB614 Hydrogeology  
 Plus TWO other units selected according to the major requirements

**Year 3, Semester 1**

NQB511 Petrology and Geochemistry  
 Plus THREE other units selected according to the major requirements

**Year 3, Semester 2**

NQB611 Economic Geology  
 NQB612 Basin Analysis and Petroleum Geology  
 NQB613 Plate Tectonics and Advanced Structural Geology  
 Plus ONE other units selected according to the major requirements

**Recommended Majors:**

This co-major is compatible with Geoscience Major only

**Course structure - Co-major in Astrophysics (Compatible with Physics major only)**

**Year 1, Semester 1**

Units as per Physics major

**Year 1, Semester 2**

Units as per Physics major

**Year 2, Semester 1**

PCB593 Digital Image Processing  
PQB360 Global Energy Balance and Climate Change

**Year 2, Semester 2**

PQB460 Astrophysics 1  
Plus Elective

**Year 3, Semester 1**

MAB312 Linear Algebra  
Plus Elective

**Year 3, Semester 2**

PQB661 Lasers and Photonics  
Plus either:  
MMB451 Energy Management  
Or  
PQB660 Astrophysics 2

**Recommended Majors:**

This co-major is compatible with Physics major only

**Course structure - Co-major in Biodiversity (compatible with any Science major)**

**Year 1, Semester 1**

Units as per selected Major

**Year 1, Semester 2**

Units as per selected Major

**Year 2, Semester 1**

NQB322 Invertebrate Biology  
NQB323 Vertebrate Biology

**Year 2, Semester 2**

NQB401 Spatial Analysis of Environmental Systems  
NQB423 Plant Biology

**Year 3, Semester 1**

NQB522 Ecological Systems

Plus Elective

**Year 3, Semester 2**

NQB601 Sustainable Environmental Management  
Or can be replaced by:  
LQB489 Plant Physiology and Cell Biology  
Plus Elective

**Recommended Majors:**

This co-major is compatible with any Science major

**Course structure - Co-major in Chemistry for Industry (compatible with Chemistry major only)**

**Year 1, Semester 1**

Units as per Chemistry major

**Year 1, Semester 2**

Units as per Chemistry major

**Year 2, Semester 1**

PQB313 Analytical Chemistry for Industry  
Plus Elective

**Year 2, Semester 2**

PQB404 Nanotechnology and Nanoscience  
PQB423 Process Principles

**Year 3, Semester 1**

PQB513 Instrumental Analysis  
PQB525 Unit Operations

**Year 3, Semester 2**

PQB623 Chemistry in Industry and Technology  
Plus Elective

**Recommended Majors:**

This co-major is compatible with Chemistry major only

**Course structure - Co-major in Life Science Technologies (compatible with any Life Science major)**

**Year 1, Semester 1**

Units as per selected major

**Year 1, Semester 2**

Units as per selected major

**Year 2, Semester 1**

LQB388 Physiology 1  
Plus either:  
LQB383 Molecular and Cellular Regulation  
Or

LQB386 Microbial Structure and Function

**Year 2, Semester 2**

LQB488 Physiology 2  
Or

LQB489 Plant Physiology and Cell Biology

**Year 3, Semesters 1 and 2**

Select THREE units per semester from:

- LQB582 Biomedical Research Technologies
  - LQB584 Medical Cell Biology
  - LQB585 Plant Genetic Manipulation
  - LQB588 Applied Physiology
  - LQB681 Biochemical Research Skills
  - LQB684 Medical Biotechnology
  - LQB685 Plant Microbe Interactions
  - LQB686 Microbial Technology and Immunology
- Plus Elective (per semester)

**Recommended Majors:**

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

**Course structure - Co-major in Aviation (Subject to Timetable availability)**

Suitable aviation studies (an approved Associate Diploma in aviation or equivalent) can be accepted as a co-major within the Bachelor of Applied Science course SC01. A total of 96 credit points can be credited for the aviation studies; this is based on 72 credit points for the co-major plus an additional 24 credit points generally required to underpin a co-major.

In the BAppSc with aviation, students can either (a) study for the BAppSc degree and the aviation Associate Diploma concurrently, or (b) obtain credit for the SC01 course for an approved Associate Diploma in aviation that had been completed prior to gaining entry to the SC01 course.

(a) Students who wish to study for the BAppSc and the aviation Associate Diploma concurrently are required to apply to an accredited flying school or TAFE college for entry to the Associate Diploma. The aviation studies are undertaken at the same time as the SC01 course. This joint program generally requires at least four years.

(b) Students who have already completed an approved Associate Diploma prior to admission to the SC01 course will be granted 96 credit points towards the BAppSc degree.

**Course structure - Co-major in Corporate IT Systems (Subject to Timetable availability)**

**Year 1, Semester 1**

Units as per selected major

**Year 1, Semester 2**

Units as per selected major

**Years 2 and 3, Semester 1**

- ITB255 Knowledge Management
  - ITB266 Information Management
  - ITB361 Socio-technical Systems
- null

**Years 2 and 3, Semester 2**

- ITB002 IT Professional Studies
- ITB363 Project Management Practice

**Recommended Majors:**

This co-major is recommended for any Science major

**Course structure - Co-major in Environmental Engineering Studies (Subject to Timetable availability)**

**Year 1, Semester 1**

Units as per selected major

**Year 1, Semester 2**

Units as per selected major

**Years 2 and 3, Semester 1**

- ENB380 Environmental Law and Assessment
- Plus TWO units in consultation with Course Coordinator

**Years 2 and 3, Semester 2**

- BEB200 Introducing Sustainability
- ENB274 Design of Environmentally Sustainable Systems
- ENB383 Environmental Resource Management

**Recommended Majors:**

This co-major is recommended for any Science major

**Course structure - Co-major in Ethics and Human Rights (Subject to Timetable availability)**

**Year 1, Semester 1**

Units as per selected major

**Year 1, Semester 2**

Units as per selected major

**Years 2 and 3, Semester 1**

- HHB114 Introduction To Human Rights And Ethics
- HHB270 Gene Technology And Ethics
- HHB272 Composing Identities: The Artistry Of Living

**Years 2 and 3, Semester 2**

HHB114	Introduction To Human Rights And Ethics
HHB266	Ethical Decision Making
HHB269	Ethics, Technology And The Environment
HHB271	Ethical Theory

Units as per selected major

**Recommended Major:**

This co-major is recommended for any Science major

**Course structure - Co-major in Foreign Languages (Subject to Timetable availability)**

**Year 1, Semester 1**

Units as per selected major

**Year 1, Semester 2**

Units as per selected major

**Years 2 and 3, Semester 1**

SIX units in French, German, Indonesian or Japanese

**Recommended Majors:**

This co-major is recommended for any Science major

**Course structure - Co-major in Games Technology (Subject to Timetable availability)**

**Year 1, Semester 1**

Units as per selected major

**Year 1, Semester 2**

Units as per selected major

**Years 2 and 3, Semester 1**

ITB003	Object Oriented Programming
ITB711	Programming Abstraction
ITB747	Real Time Rendering Techniques
ITB749	Scientific Programming

**Years 2 and 3, Semester 2**

ITB003	Object Oriented Programming
ITB711	Programming Abstraction
ITB743	Artificial Intelligence
ITB746	Modelling and Animation Techniques
MAB281	Mathematics for Computer Graphics

**Recommended Majors:**

This co-major is recommended for any Science major

**Course structure - Co-major in Geography (Subject to Timetable availability)**

**Year 1, Semester 1**

**Year 1, Semester 2**

Units as per selected major

**Years 2 and 3, Semester 1**

HHB127	Environment And Society
HHB232	Survey Methods
HHB250	Australian Geographical Studies

**Years 2 and 3, Semester 2**

HHB228	Environmental Hazards
HHB251	Australian Resource Management
HHB269	Ethics, Technology And The Environment

**Recommended Majors:**

This co-major is recommended for any Science major

**Course structure - Co-major in Journalism (Subject to Timetable availability)**

**Year 1, Semester 1**

Units as per selected major

**Year 1, Semester 2**

Units as per selected major

**Years 2 and 3, Semester 1**

KJB101	Digital Journalism
KJB120	Newswriting
KJB239	Journalism Ethics and Issues

**Years 2 and 3, Semester 2**

KFB205	Fashion and Style Journalism
KJB224	Feature Writing
KJB280	International Journalism

**Recommended Majors:**

This co-major is recommended for any Science major

**Course structure - Co-major in Management (Subject to Timetable availability)**

**Year 1, Semester 1**

Units as per selected major

**Year 1, Semester 2**

Units as per selected major

**Years 2 and 3, Semesters 1 and 2**

SIX units from:

BSB115	Management, People and Organisations
MGB210	Managing Operations

MGB211	Organisational Behaviour
MGB220	Management Research Methods
MGB222	Managing Organisations
MGB309	Strategic Management
MGB334	Managing in a Changing Environment

**Recommended Majors:**

This co-major is recommended for any Science major

**Course structure - Co-major in Marketing (Subject to Timetable availability)**

**Year 1, Semester 1**

Units as per selected major

**Year 1, Semester 2**

Units as per selected major

**Years 2 and 3, Semesters 1 and 2**

BSB126	Marketing
AMB200	Consumer Behaviour
AMB201	Marketing and Audience Research
AMB202	Integrated Marketing Communication
AMB240	Marketing Planning and Management
AMB341	Strategic Marketing

**Recommended Majors:**

This co-major is recommended for any Science major

**Course structure - Co-major Music (Subject to Timetable availability)**

**Year 1, Semester 1**

Units as per selected major

**Year 1, Semester 2**

Units as per selected major

**Years 2 and 3, Semester 1**

KMB003	Sex Drugs Rock 'n' roll
KMB004	World Music
KMB105	Music and Sound Technology

**Years 2 and 3, Semester 2**

KMB106	Music and Sound for Multimedia
KMB107	Sound, Image, Text
KMB108	Sound Recording and Acoustics

**Recommended Majors:**

This co-major is recommended for any Science major

**Course structure - Co-major in Psychology (Subject to Timetable availability)**

**Year 1, Semester 1**

Units as per selected major

**Year 1, Semester 2**

Units as per selected major

**Years 2 and 3, Semester 1**

PYB101	Introduction to Psychology 1A
PYB205	Social Psychology
PYB304	Physiological Psychology

**Years 2 and 3, Semester 2**

PYB007	Interpersonal Processes and Skills
PYB203	Developmental Psychology
PYB204	Perception and Cognition

**Recommended Majors:**

This co-major is recommended for any Science major

**Course structure - Co-major in Spatial Science (Subject to Timetable availability)**

**Year 1, Semester 1**

Units as per selected major

**Year 1, Semester 2**

Units as per selected major

**Years 2 and 3, Semester 1**

UDB181	Geospatial Positioning and GPS
UDB281	Geographic Information Systems
UDB381	Geospatial Mapping
	Plus either:
UDB387	Spatial and Land Information Management
	Or
UDB388	Spatial Analysis Practice

**Years 2 and 3, Semester 2**

UDB182	Surveying
UDB282	Remote Sensing
UDB388	Spatial Analysis Practice

**Recommended Majors:**

This co-major is recommended for any Science majors

**Course structure - Additional Co-majors - you may choose your co-major from one of the Majors**

**Biochemistry**

SIX of the units in the Biochemistry major

**Biotechnology**

SIX of the units in the Biotechnology major

**Chemistry**

SIX of the units in the Chemistry major

**Ecology**

SIX of the units in the Ecology major

**Environmental Science**

SIX of the units in the Environmental Science major

**Forensic Science**

SIX of the units in the Forensic Science major

**Geoscience**

SIX of the units in the Geoscience major

**Mathematics**

SIX of the units in the Mathematics majors

**Microbiology**

SIX of the units in the Microbiology major

**Physics**

SIX of the units in the Physics major

**Potential Careers:**

Actuary, Air Traffic Controller, Analytical Chemist, Astrophysicist, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Database Manager, Ecologist, Environmental Scientist, Exploration Geologist, Forensic Biologist, Forensic Chemist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Mathematician, Medical Biotechnologist, Medical Physicist, Microbiologist, Mine Geologist, Molecular Biologist, Natural Resource Scientist, Pharmaceutical Research Scientist, Physicist, Plant Biotechnologist, Population Ecologist, Programmer, Quantitative Analyst, Research and Development Chemist, Statistician, Virologist.

## Bachelor of Applied Science (Carseldine First-year Experience Program) (SC01)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 003502J

**Course duration (full-time):** 1st semester at Carseldine and then 5 semesters at Gardens Point

**Course duration (part-time):** 1 year at Carseldine and then 5 years at Gardens Point

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,206

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February and July

**QTAC code:** 448021

**Past rank cut-off:** 69

**Past OP cut-off:** 15

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 96

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Megan Hargreaves

**Discipline coordinator:** Dr Habib Yezdani (Science Carseldine Coordinator); Dr Perry Hartfield (Biochemistry); Dr Marion Bateson (Biotechnology); Dr Serge Kokot (Chemistry); Dr Ian Williamson (Ecology); Dr Robin Thwaites (Environmental Science); Dr Serge Kokot (Forensic Science); Dr Gary Huftile (Geoscience); Dr Scott McCue (Mathematics); Dr Christine Knox (Microbiology); Dr Greg Michael (Physics)

**Campus:** Carseldine

### null

All major areas of study in the Bachelor of Applied Science are available at Gardens Point campus. However, the opportunity also exists for students to undertake Year 1 Semester 1 at Carseldine Campus.

The first year core units in the Bachelor of Applied Science develop a strong basis on which the more advanced units in each of the major areas of study are based. First year units include laboratory and fieldwork, with an emphasis on problem-solving through project work.

A relaxed bushland setting at Carseldine Campus provides an ideal environment for students to make the transition to university. Small class sizes, block teaching and access to computer-based information resources ensure that students have the opportunity to gain maximum advantage from

QUT's winning blend of theory and practice. On-campus parking is available and the campus is well serviced by bus and rail.

Upon successful completion of the first semester at Carseldine, students are transferred to Gardens Point campus to complete the course.

For further details of the major areas of study offered, see the Bachelor of Applied Science (SC01) course offered at Gardens Point Campus

[http://www.studentservices.qut.edu.au/pdfs/css\\_docs/SC01.pdf](http://www.studentservices.qut.edu.au/pdfs/css_docs/SC01.pdf)

### Recommended Study:

At least one of the sciences. For the majors in biochemistry, biotechnology, forensic science, and microbiology - Biological Science and Chemistry are recommended; for the major in Mathematics - Maths C is recommended.

### Major Areas of Study

#### Biochemistry:

Biochemistry is the study of the chemical processes that occur in living organisms including the chemical structure, function and properties and energy flows. Biochemistry is an essential and very successful area of study for many practitioners in the life sciences industry. Biochemistry students at QUT gain both the theoretical knowledge to understand biochemical problems and formulate solutions, and the practical skills to carry out the necessary laboratory investigations that test these solutions for real-world application. Students gain hands-on practical laboratory experience from their first year of study.

#### Career Opportunities

Strong employment opportunities exist around the world in both the private and government sectors of industry for biochemists. QUT graduates skilled in biochemistry can find career opportunities in research, diagnostic and analytical laboratories, universities, hospitals and health departments, pharmaceutical companies, primary and agricultural industries and departments, food industry laboratories, environmental agencies, veterinary pathology laboratories and in the area of marketing, sales, commercialisation and management of biological products and processes.

#### Professional Recognition

Graduates are eligible for membership of the Australian Society for Biochemistry and Molecular Biology, and possibly the Australasian Association of Clinical Biochemists.

#### Biotechnology:

Biotechnology is the application of molecular biology and biochemical principles to create a new generation of products and processes for the benefit of society. Biotechnology is one of the fastest growing areas of science and business in the world today. Modern biotechnology uses the techniques of genetic engineering to enable faster, cheaper and more reliable production of an ever-increasing range of engineered products. The integration of

biotechnology research into QUT Biotechnology courses ensures that you will receive access to the latest information and hands-on laboratory experience in contemporary molecular technologies. All students receive hands-on practical laboratory experience from your first year of study in Queensland's newest biotechnology teaching laboratories.

*Career Opportunities*

Globally and locally the developing biotechnology industry demands highly skilled graduates. As a 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; while existing career opportunities in hospitals and diagnostic laboratories continue to expand.

*Professional Recognition*

Graduates are eligible for membership of AusBiotech Ltd, Australian Society for Biochemistry and Molecular Biology, and possibly the Australian Society for Medical Research, and the Australian Society for Microbiology.

**Chemistry:**

Chemistry is the study of the structure, properties, synthesis and reactions of materials. Chemistry is one of the central sciences since its results are used in almost all areas of science - including life sciences, the environment, geosciences, biology, and food science. The Chemistry major at QUT allows you to gain an appreciation of the fundamental discipline - covering physical, organic and inorganic chemistry - but with an additional focus on modern applications such as drug discovery, analytical and environmental chemistry, polymer science and surface science. All theory is complemented with a comprehensive laboratory program, particularly with hands-on experience with modern computer-based analytical instruments.

*Career Opportunities*

Chemists are key professionals in industries that manufacture goods such as paints, paper, textiles, glass, plastics and rubber, metals and alloys, gases and fuels, foodstuffs and chemicals. Government agencies depend on chemists to develop and monitor standards for meat research, animal health pest control, preservation of timber, environmental chemistry, forensic analysis and coal chemistry. You can expect to find employment as an industrial chemist, material scientist, environmental chemist, quality control analyst, production supervisor, food chemist, organic chemist and inorganic chemist.

*Professional Recognition*

Students completing the Chemistry major with the Industrial Chemistry or Forensic Science co-major are eligible for membership of the Royal Australian Chemical Institute.

**Ecology**

Ecology is the study of relationships between organisms and their environment. Ecology helps us to understand the

distribution and abundance of organisms. As an applied science it is used to design strategies for the management of populations of organisms (both natural and commercial). The Ecology major at QUT will allow you to gain a broad range of scientific skills including the specialist techniques required for conserving and managing endangered animals, controlling pests, managing exploited populations and evaluating issues associated with the management of our natural resources.

*Career Opportunities*

Ecologists find rewarding careers in research science for government departments responsible for pest management, national park and wildlife, primary industries, fisheries, forestry and museums. They also find work in private firms engaged in research and consultancy work. Positions include fisheries biologist, wildlife manager, scientific or technical officer, teacher or lecturer and research scientist. Employment in more specialised areas is available, usually requiring study beyond the first degree.

*Professional Recognition*

Professional recognition is achieved through a scientific society (ie Ecological Society of Australia) and participation in its meetings.

**Environmental Science:**

Environmental Science at QUT is the application of fundamental, core science disciplines to problems encountered in the management and understanding of our environment. Studies will allow you to gain both the strong scientific base and the generic skills to apply your scientific knowledge to a wide range of environmental problems. Rather than learning simply to describe the different environmental systems, you will gain an understanding of the mechanisms that control these systems, and the interaction between the various components. All environmental science units include laboratory and fieldwork with an emphasis on problem-solving through project work. You will be introduced to standardised methods and principles for environmental modelling and monitoring that can be applied across all disciplines.

*Career Opportunities*

Environmental scientists are needed in a wide variety of government departments and agencies, in consultancy and in manufacturing and mining companies. Graduates are equipped to assess resources, design and implement environmental impact programs, analyse and interpret environmental data and formulate contingency plans in a wide variety of areas including strategic land-use planning, waste disposal, pollution measurement and control, coastal protection, environmental impact of mining, tourism and development, rehabilitation and reforestation of contaminated land sites, groundwater assessment and modelling, waterway and floodplain drainage planning, erosion control in waterways, and marine science.

*Professional Recognition*

Graduates are eligible for membership of the Environment Institute of Australia and New Zealand.



**Forensic Science**

Forensic Science involves the application of chemical and biological principles and laboratory processes to identify and quantify matter within a legal context. Areas that are relevant to forensic science are wide ranging, and include: the detection and identification of illicit drugs, explosive and gunshot residues, accelerants used in arson cases, and trace evidence (eg paint, glass, fibres, soil); DNA profiling, where it is possible to distinguish between individuals on the basis of samples involving blood, saliva, hair or semen; toxicology studies to identify illicit and pharmaceutical drugs and poisons and interpret toxicity levels and their effect on the human body; and fingerprinting.

*Career Opportunities*

Employment opportunities exist for trained forensic scientists who work in laboratories handling criminal casework in areas including forensic biology, forensic chemistry, and forensic toxicology. QUT graduates in Forensic Science not only receive a strong grounding in core areas of both forensic biology and forensic chemistry but complement their major in Forensic Science with a full major in Biotechnology or Chemistry. This course structure gives QUT Forensic Science graduates an enhanced qualification for careers in either Forensic Biology or Forensic Chemistry. In addition, the second major adds flexibility to future career paths by enabling Forensic Science graduates to gain employment either as a chemist or a biotechnologist if they prefer.

*Professional Recognition*

Graduates who complete the Forensic Science major in conjunction with the Biotechnology major are eligible for membership of the Australian and New Zealand Forensic Science Society, AusBiotech Ltd, and the Australian Society for Biochemistry and Molecular Biology.

Graduates who complete the Forensic Science major in conjunction with the Chemistry major are eligible for membership of the Australian and New Zealand Forensic Science Society and the Royal Australian Chemical Institute.

**Geoscience:**

Geoscience is the systematic study of the earth and the dynamic interactions of its systems. Geoscience incorporates a study of the materials of the earth, the natural processes acting in and upon the earth, and its history. The Geoscience major at QUT allows you to gain the skills needed to become a professional geologist and emphasises hands-on experience through laboratory work and field studies. It provides a broad range of geological skills as well as training in the specialist techniques required for field mapping and geological interpretation.

*Career Opportunities*

Geoscientists work in a range of areas including environmental geology, hydrogeology, hazard and pollution control, and coastal zone management. Employment opportunities exist within mining and exploration companies which may involve underground geological mapping, evaluation of ore reserves, production control, or exploration

for new mineral deposits; petroleum companies working on offshore drilling rigs; and a variety of government organisations working as field geologists or research scientists. Other graduates work in computing, data modelling, and remote sensing. An honours degree is required by many employers, including the larger mining and exploration companies.

*Professional Recognition*

Graduates are eligible for membership of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists, and the Geological Society of Australia.

**Mathematics:**

This major concentrates on applied mathematics or financial mathematics and operations research or on statistics. Students who wish to cover a range of areas of mathematics should consider enrolling in MA54 Bachelor of Mathematics. This course focuses on applications and includes an emphasis on developing communication skills.

*Career Opportunities*

Mathematicians enjoy a wide range of career options, working for major corporations including banks and insurance companies, industry, information technology companies, consultancy groups, research organisations, universities, schools and various government departments. You will be able to use your mathematical and statistical techniques in analysis, modelling, experimental design and operations research. Employers value the generic skills also gained throughout the degree in problem-solving, analytical thinking, team and independent work, oral and written communication.

*Professional Recognition*

Graduates are eligible for membership of the Australian Mathematical Society, Australian Society for Operations Research and the Statistical Society of Australia.

**Microbiology:**

Microbiology is the study of living organisms of microscopic size. The principal components are bacteriology, virology and mycology, and areas of fundamental importance in the applied sciences of pathology and immunology. You will develop skills and knowledge in the handling and study of micro-organisms and investigation of their properties. Advanced studies allow you to expand your knowledge and expertise in your specialised area such as human pathology, animal and plant diseases, food technologies, environmental testing (soil, air and water) and bioremediation, and molecular applications of microbiological principles.

*Career Opportunities*

Microbiologists are employed in a variety of careers including human pathology testing in bacteriology, immunology, mycology, parasitology and virology, animal and plant disease, treatment of inorganic waste, food fermentations and microbiological testing of goods for pathogens or spoilage organisms, water and soil microbiology and research. Employment opportunities exist

in private and government research and analytical laboratories, such as the CSIRO, universities, hospitals, health departments, primary industry departments, food industry laboratories, environmental agencies, and in the marketing of biological products.

#### *Professional Recognition*

Graduates are eligible for membership of the Australian Society for Microbiology.

#### **Physics:**

Physics is the science discipline dealing with the natural laws and processes, with the states and properties of matter and energy. Physics also underlies many of the recent advances in information technology, medicine and biotechnology. Areas of specialisation include mechanics, electromagnetism, lasers and modern optics, computational physics, nuclear and radiation physics, quantum mechanics and relativity.

#### *Career Opportunities*

Physicists are an asset to almost every industry. They are broadly-educated professionals who are trained in applied and experimental physics, instrumentation and a range of other specific methods required for traditional and newly-developed avenues of scientific employment. QUT Physics graduates work in large manufacturing companies, often as members of research and development teams, supervising the testing and production of raw materials and finished articles. Increasing opportunities for graduates with appropriate studies exist in noise measurement and control, environmental monitoring, meteorology, lasers, computing, technical equipment sales, teaching and research. Graduates work in large hospitals and medical institutions such as the Queensland Radium Institute. Broad training in data analysis and problem-solving skills also makes physicists well suited to management roles in a range of technology-based industries.

#### *Professional Recognition*

Graduates are eligible for membership of the Australian Institute of Physics.

#### **Co-Major Areas of Study**

##### **Applied Geology:**

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

##### **Astrophysics:**

The Astrophysics co-major is an exciting blend of astrophysics, geophysics, cosmology, digital image processing and remote sensing units, designed to be taken with a major in Physics, Mathematics or Geoscience. The

co-major is relevant to many real-world problems, for example, satellite technology, telecommunications, minerals exploration and global warming. By taking this co-major you will develop interdisciplinary skills in computing, instrumentation, image processing, geodesy and materials science that will be useful for a wide variety of careers in industry and the public sector.

##### **Biodiversity:**

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

##### **Chemistry for Industry:**

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

##### **Life Science Technologies:**

The many and varied disciplines which are characteristic of research and development activities in the life sciences are reflected in employer demand for a broad range of graduates with different specialisations. To accommodate this demand a Biomolecular Sciences co-major is available in the Bachelor of Applied Science. In this co-major, students may compose a combination of six approved units from the Biotechnology, Biochemistry and Microbiology majors. You will benefit from a broad range of biomolecular theory and skills, closely aligned to personal interests, for application in an ever-increasing variety of niche employment opportunities.

##### **Professional Recognition**

For graduates with approved study: Australian Society for Biochemistry and Molecular Biology, Australasian Association of Clinical Biochemists, AusBiotech Ltd, Australian Society for Biochemistry and Molecular Biology, Australian Society for Medical Research, Australian Society for Microbiology, Royal Australian Chemical Institute, Ecological Society of Australia, Environment Institute of Australia and New Zealand, Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists,

Geological Society of Australia, Australian Society for Microbiology.

**Contact Details**

**Course Coordinator**

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**Discipline Coordinators**

*Biochemistry*

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*Biotechnology*

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*Physics*

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**Deferment**

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

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

Find out more on deferment.

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**Semester 1**

MAB104	Introductory Quantitative Methods
SCB110	Science Concepts and Global Systems
SCB111	Chemistry 1
SCB112	Cellular Basis of Life

NOTE: If you have attained an SA or better in Maths B you should consult the course coordinator regarding what unit to enrol in instead of MAB104

**Potential Careers:**

Analytical Chemist, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Ecologist, Environmental Scientist, Exploration Geologist, Forensic Biologist, Forensic Chemist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Hydrogeologist, Immunologist, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Medical Biotechnologist, Microbiologist, Mine Geologist, Molecular Biologist, Natural Resource Scientist, Pharmaceutical Research Scientist, Plant Biotechnologist, Population Ecologist, Research and Development Chemist, Virologist.

## Bachelor of Applied Science & Bachelor of Applied Science (Honours) - Dean's Scholars Accelerated Honours Program (SC01 + SC60)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 003502J

**Course duration (full-time):** 3 Years (plus initial summer term)

**Domestic fees (per credit point):** Commonwealth supported place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February: Fixed Closing Date- 30 November 2007.

**International Entry:** February: Fixed Closing Date- 30 November 2007. This course is only available to international students completing Year 12 in Australia.

**QTAC code:** 418042

**Past rank cut-off:** 99 plus successful interview. Please refer to Additional Entry Requirements.

**Past OP cut-off:** 1 plus successful interview. Please refer to Additional Entry Requirements.

**Assumed knowledge:** English (4, SA) and Maths B (4, VHA) plus two (2) of Biological Science, Chemistry, Earth Science, Maths C or Physics (4, VHA)

**Total credit points:** 384 [BAppSc 288 cp and BAppSc(Hons) 96 cp]

**Course coordinator:** Dr Dann Mallet

**Discipline coordinator:** Associate Professor John Aaskov (Life Sciences); Dr Scott McCue (Mathematics); Associate Professor David Gust (Natural Resource Sciences); Dr John McMurtrie (Physical and Chemical Sciences - Chemistry); Dr Dmitri Gramotnev (Physical and Chemical Sciences - Physics)

**Campus:** Gardens Point

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The Dean's Scholars Accelerated Honours Program is an accelerated program designed specifically for outstanding current, or returning from a gap year, Year 12 students who completed their Year 12 education in Australia. It also offers an accelerated pathway that enables students to complete both the Bachelor of Applied Science and the Bachelor of Applied Science (Honours) courses in just three years. A scholarship is offered to students in the Dean's Scholars Accelerated Honours Program. Students are accepted into the program on the basis of outstanding academic ability and an interest in scientific research.

### Additional Entry Requirements

Successful interview.

Applicants will be sent interview information by QUT Faculty of Science progressively from late October.

### Fixed Closing Date

Applications for this program will close on **30 November**.

### Professional Recognition

As a graduate of the Dean's Scholars Accelerated Honours Program you will qualify for professional recognition and employment in fields relevant to the specialisations that you have chosen. It is expected that many Dean's Scholars will proceed to Doctor of Philosophy studies.

### Scholarships

Students who are accepted into the Dean's Scholars Honours Program are eligible for a \$9,000 scholarship paid over three years.

### Career Outcomes

As a student in the Dean's Scholars Accelerated Honours Program you will choose one of the following ten majors. You will also choose a co-major to accompany your major area of study. The co-major may be one of the other majors, or it could be one of the co-majors listed below:

**Majors:** Biochemistry, Biotechnology, Chemistry, Ecology, Environmental Science, Forensic Science, Geoscience, Mathematics, Microbiology, Physics.

**Co-majors:** Applied Geology, Astrophysics, Biodiversity, Chemistry for Industry, Life Science Technologies.

### Course Structure

As a student in the Dean's Scholars Accelerated Honours Program you will choose one of the majors available through the Bachelor of Applied Science (SC01) course. You will also choose a co-major to accompany your major area of study.

To allow the Dean's Scholars Program to be completed in an accelerated format some changes are made to the first year of the standard Bachelor of Applied Science (SC01) degree. The core units normally studied in first year are replaced by an enriched course of study which includes the following units:

#### SCB301 Science for Dean's Scholars

An intensive preparatory program immediately preceding the commencement of the first semester. This preparatory program commences mid-January and requires attendance for approximately 18 hours per week for six weeks.

#### SCB303 Tutorial Program for Dean's Scholars

An individually-tailored tutorial program during the first semester, under the guidance of an academic mentor. This unit is designed in a consultative process involving the student, the academic mentor, and the Dean.

#### SCB401 Research Methods for Dean's Scholars

The unit allows research skills to be developed through a literature review, experimental design considerations, research proposal formulation and writing, and the presentation of a research proposal.

#### SCB501 Research Project for Dean's Scholars

An individually tailored research project is carried out under

the supervision of a research mentor.

**Honours Program**

Following the successful completion of the coursework and your initial research project in the first two years of the program, you will then commence the Bachelor of Applied Science (Honours) course. The Honours program continues the study of your chosen scientific major and also provides the opportunity to undertake a large research project. The Honours degree provides an excellent preparation to continue onto postgraduate research.

**Contact Details**

**Course Coordinator**

Dr Dann Mallet  
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**Discipline Coordinators**

*Life Sciences*

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*Mathematical Sciences*

Dr Scott McCue  
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*Natural Resource Sciences:*

Associate Professor David Gust  
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 Email: d.gust@qut.edu.au

*Physical & Chemical Sciences - Chemistry*

Dr John McMurtrie  
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*Physical & Chemical Sciences - Physics*

Dr Dmitri Gramotnev  
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**OP Guarantee**

The OP Guarantee does not apply to this course.

**Deferment**

QUT's deferment policy does not apply to this course.

**Domestic student tuition fee (Dfee) places**

**Undergraduate domestic full fee places (Dfee) are not available in this course.** Tuition fees are only applicable to currently enrolled students who were unable to comply regulations regarding their original Commonwealth Supported place (i.e. failure to lodge an eCAF, has consumed of other their Student Learning Entitlement etc.) and who have been invited and accepted to continue as a fee-paying student.

**Course structure - Majors in Biochemistry,**

**Biotechnology and Microbiology**

**Year 1, Summer Term (24 cp)**

Dean's Scholars Program enrichment unit:  
 SCB301 Science for Dean's Scholars

**Year 1, Semester 1 (60 cp)**

Dean's Scholars Program enrichment unit:  
 SCB303 Tutorial Program for Dean's Scholars  
 Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (48 cp)

**Year 1, Semester 2 (60 cp)**

Dean's Scholars Program enrichment unit:  
 SCB401 Research Methods for Dean's Scholars  
 Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (48 cp)

**Year 2, Semester 1 (72 cp)**

Dean's Scholars Program enrichment unit:  
 SCB501-1 Research Project for Dean's Scholars  
 Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (48 cp)

**Year 2, Semester 2 (60 cp)**

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (48 cp)  
 Normal BAppSc and BAppSc(Hons) unit:  
 LSB657 Perspectives in Life Science

**Year 3, Semester 1 (60 cp) and Semester 2 (48 cp)**

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc + BAppSc(Hons) Coursework (12cp +  
 36 cp respectively)  
 Normal BAppSc and BAppSc(Hons) units:  
 BAppSc(Hons) Research (60 cp)

**Course structure - Major in Chemistry**

**Year 1, Summer Term (24 cp)**

Dean's Scholars Program enrichment unit:  
 SCB301 Science for Dean's Scholars

**Year 1, Semester 1 (60 cp)**

Dean's Scholars Program enrichment unit:  
 SCB303 Tutorial Program for Dean's Scholars  
 Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (48 cp)

**Year 1, Semester 2 (60 cp)**

Dean's Scholars Program enrichment unit:  
 Elective (12 cp)  
 Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (48 cp)

**Year 2, Semester 1 (60 cp)**

## SCIENCE

Dean's Scholars Program enrichment unit:  
 SCB401 Research Methods for Dean's Scholars  
 Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (48 cp)

### Year 2, Semester 2 (72 cp)

Dean's Scholars Program enrichment unit:  
 SCB501-1 Research Project for Dean's Scholars  
 Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (48 cp)

### Year 3, Semester 1 (60 cp) and Semester 2 (48 cp)

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc + BAppSc(Hons) Coursework (12 cp +  
 36 cp respectively)

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc(Hons) Research (60 cp)

### Course structure - Major in Mathematics

#### Year 1, Summer Term (24 cp)

Dean's Scholars Program enrichment unit (MS  
 module + MA module + one of the PH, CH, and  
 LS modules):

SCB301 Science for Dean's Scholars

#### Year 1, Semester 1 (60 cp)

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (60 cp)

#### Year 1, Semester 2 (60 cp)

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (60 cp)

#### Year 2, Semester 1 (60 cp)

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (60 cp)

#### Year 2, Semester 2 (60 cp)

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (36 cp)

Dean's Scholars Program enrichment unit:

SCB501-1 Research Project for Dean's Scholars

#### Year 3, Semester 1 (60 cp) and Semester 2 (60 cp)

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc + BAppSc(Hons) Coursework (24 cp +  
 60 cp respectively)

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc(Hons) Research (36 cp)

### Course structure - Major in Physics

#### Year 1, Summer Term (24 cp)

Dean's Scholars Program enrichment unit:

SCB301 Science for Dean's Scholars

#### Year 1, Semester 1 (60 cp)

Dean's Scholars Program enrichment unit:  
 SCB303 Tutorial Program for Dean's Scholars  
 Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (48 cp)

### Year 1, Semester 2 (60 cp)

Dean's Scholars Program enrichment unit:  
 Elective (12 cp)

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (48 cp)

### Year 2, Semester 1 (60 cp)

Dean's Scholars Program enrichment unit  
 (approved Physics elective)

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (48 cp)

### Year 2, Semester 2 (72 cp)

Dean's Scholars Program enrichment unit:

SCB501-1 Research Project for Dean's Scholars

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc Coursework (24 cp)

### Year 3, Semester 1 (60 cp) and Semester 2 (48 cp)

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc + BAppSc(Hons) Coursework (12 cp +  
 36 cp respectively)

Normal BAppSc and BAppSc(Hons) units:  
 BAppSc(Hons) Research (60 cp)

### Potential Careers:

Actuary, Air Traffic Controller, Analytical Chemist, Astrophysicist, Biochemist, Biologist, Biotechnologist, Cell Biologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Database Manager, Ecologist, Environmental Scientist, Exploration Geologist, Forensic Chemist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Mathematician, Medical Biotechnologist, Medical Physicist, Microbiologist, Mine Geologist, Molecular Biologist, Natural Resource Scientist, Pharmaceutical Research Scientist, Physicist, Plant Biotechnologist, Population Ecologist, Programmer, Quantitative Analyst, Research and Development Chemist, Statistician, Virologist.

## Bachelor of Applied Science/Bachelor of Mathematics (SC20)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 049434C

**Course duration (full-time):** 4 years

**Domestic fees (per credit point):** Commonwealth supported place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,252

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February and July

**QTAC code:** 418712

**Past rank cut-off:** 76

**Past OP cut-off:** 12

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA) and Maths B (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3138 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 384

**Standard credit points per full-time semester:** 48

**Course coordinator:** Dr Megan Hargreaves (Science); Associate Professor Graeme Pettet (Mathematics)

**Campus:** Gardens Point

### Recommended Study

Maths C and knowledge of at least one of the sciences. For the majors in biochemistry, biotechnology, forensic science, and microbiology - Biological Science and Chemistry are recommended.

### Career Opportunities

This four-year double degree provides students with the opportunity to integrate studies in a science area with mathematics. This combination will lead to enhanced job opportunities for graduates and also provide a very sound background for students proceeding to postgraduate research studies in either a science discipline or mathematics.

Mathematics is vital for much scientific research and it is also becoming increasingly important for employees in many science-based careers to have a good background in mathematics and statistics. There are many jobs advertised where employers are ideally looking for applicants with skills and knowledge in science and mathematics. Some examples are:

*Natural resource management* - obtaining an accurate estimate of fish populations and predicting sustainable fishing limits requires complex mathematical and statistical modelling

*Agriculture management* - from climate modelling down to

the individual paddock level, the interaction between forecast crop yields and prices, crop and harvest scheduling and environmental impacts

*Genetics* - including gene sequencing and quantitative genetics

*Chemistry and Biochemistry* - operations research (scheduling) and quality management techniques benefit management of a chemical testing laboratory or chemicals business; computational and applied mathematics and scientific computation and visualisation relate to research areas such as drug design using combinatorial chemistry

*Infection and disease control* - uses statistics and mathematical modelling

*Bioinformatics* - involves analysing and modelling data arising in molecular biology, genome sequencing and gene networks

*Developing new physical measurement and imaging techniques* - needs applied and computational mathematics

### Course Structure

Mathematics provides a very precise way of describing our world and activities within it. It is used to understand and formulate current knowledge, to develop new products and processes and to assist with predicting changes which may occur under various scenarios. Mathematical techniques are used extensively in conjunction with all areas of science.

Graduates will have well-developed analytical and problem-solving skills and also practical hands-on experience in the science area of their choice. They will have the ability to use mathematical and statistical techniques across a wide range of applications and to communicate effectively with others.

This four year double degree course integrates studies in one of the science majors with studies in mathematics. The science majors available are Biochemistry, Biotechnology, Chemistry, Ecology, Environmental Science, Forensic Science, Geoscience, Microbiology and Physics.

The Mathematics component offers studies in core mathematics, applied mathematics, computational mathematics, discrete mathematics, financial mathematics, mathematical modelling, operations research, statistics, statistical modelling, scientific computation and data visualisation.

### Professional Recognition

Membership of the Australian Mathematical Society, the Statistical Society of Australia Inc and the Australian Society for Operations Research is available. For professional recognition relating to the science majors refer to Bachelor of Applied Science (SC01).

### Contact Details

#### Science Coordinator

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**Mathematics Coordinator**

Associate Professor Graeme Pettet

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**Deferment**

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

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

Find out more on deferment.

**Course structure**

Students must complete at least (a) 192 credit points (16 twelve credit point units) of Mathematics units and (b) 192 credit points (16 twelve credit point units) of Science units, according to the requirements as follows:

**Level 1 Units:**

Students must complete the following Level 1 Mathematics units:

- MAB100 Mathematical Sciences 1A
- MAB101 Statistical Data Analysis 1
- MAB111 Mathematical Sciences 1B
- MAB112 Mathematical Sciences 1C
- MAB210 Statistical Modelling 1
- MAB220 Computational Mathematics 1

NOTE: MAB100 is for students who do not have an exit assessment of at least Sound Achievement in four semesters of both Senior Mathematics B and Senior Mathematics C (or equivalent).

Students must complete the following Level 1 Science Foundation units:

- SCB110 Science Concepts and Global Systems
- SCB111 Chemistry 1
- SCB112 Cellular Basis of Life

In addition, students are required to complete any mandatory units - and should complete all recommended units, specified for the science major selected.

**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 (4 twelve credit point units) from Level 3 Mathematics units:

Students must complete:

- MAB311 Advanced Calculus

MAB312 Linear Algebra

**Level 2 and 3 Science Units:**

At least 96 credit points (8 twelve-credit point units) must be taken from Level 2 and Level 3 Science units with at least 48 credit points (4 twelve credit point units) from Level 3 Science units. The science units must meet the advanced level requirements of one of the following majors of the SC01 Bachelor of Applied Science course: Biochemistry; Biotechnology; Chemistry; Ecology; Environmental Science; Forensic Science; Geoscience: Microbiology or Physics.

**Science Elective Units:**

The Mathematics unit (or units) normally undertaken in the first year of SC01 Bachelor of Applied Science is replaced by a Science elective unit (or units). This Science elective unit can be from any level. The level 2 Mathematics unit in the Physics major is replaced by a level 2 Science elective unit.

**Science Units: Biochemistry Major (Mandatory units)**

**Year 1, Semester 1**

- SCB111 Chemistry 1
- SCB112 Cellular Basis of Life
- TWO Mathematics Units

**Year 1, Semester 2**

- SCB120 Plant and Animal Physiology
- SCB121 Chemistry 2
- TWO Mathematics units

**Year 2, Semester 1**

- SCB110 Science Concepts and Global Systems
- Science Elective unit
- TWO Mathematics units

**Year 3, Semester 1**

- LQB381 Biochemistry: Structure and Function
- LQB383 Molecular and Cellular Regulation
- TWO Mathematics units

**Year 2, Semester 2**

- SCB122 Cell and Molecular Biology
- SCB123 Physical Science Applications
- TWO Mathematics units

**Year 3, Semester 2**

- LQB481 Biochemical Pathways and Metabolism
- LQB483 Molecular Biology Techniques
- TWO Mathematics units

**Year 4, Semester 1**

- LQB581 Functional Biochemistry



LQB582 Biomedical Research Technologies  
TWO Mathematics units

TWO Mathematics units

**Year 4, Semester 2**

LQB681 Biochemical Research Skills  
LQB682 Protein Biochemistry and Bioengineering  
TWO Mathematics units

**Science Units: Chemistry Major (Mandatory units)**

**Year 1, Semester 2**

SCB121 Chemistry 2  
SCB123 Physical Science Applications  
TWO Mathematics units

**Science Units: Biotechnology Major (Mandatory units)**

**Year 1, Semester 1**

SCB111 Chemistry 1  
SCB112 Cellular Basis of Life  
TWO Mathematics units

**Year 1, Semester 1**

SCB111 Chemistry 1  
SCB112 Cellular Basis of Life  
TWO Mathematics units

**Year 1, Semester 2**

SCB121 Chemistry 2  
SCB120 Plant and Animal Physiology  
TWO Mathematics units

**Year 2, Semester 1**

SCB110 Science Concepts and Global Systems  
Science Elective unit  
TWO Mathematics units

**Year 2, Semester 1**

SCB110 Science Concepts and Global Systems  
Science Elective unit  
TWO Mathematics units

**Year 2, Semester 2**

SCB131 Experimental Chemistry  
Science Elective unit  
TWO Mathematics units

**Year 2, Semester 2**

SCB122 Cell and Molecular Biology  
SCB123 Physical Science Applications  
TWO Mathematics units

**Year 3, Semester 1**

PQB312 Analytical Chemistry for Scientists and Technologists  
PQB331 Structure and Bonding  
TWO Mathematics units

**Year 3, Semester 1**

LQB381 Biochemistry: Structure and Function  
LQB383 Molecular and Cellular Regulation  
TWO Mathematics units

**Year 3, Semester 2**

PQB401 Chemical Reactions 1  
PQB442 Chemical Spectroscopy  
TWO Mathematics units

**Year 3, Semester 2**

LQB483 Molecular Biology Techniques  
LQB484 Introduction to Genomics and Bioinformatics  
TWO Mathematics units

**Year 4, Semester 1**

PQB502 Materials Chemistry and Characterisation  
PQB531 Chemical Reactions 2  
TWO Mathematics units

**Year 4, Semester 1**

TWO units from:  
LQB583 Genetic Research Technology  
LQB584 Medical Cell Biology  
LQB585 Plant Genetic Manipulation  
TWO Mathematics units

**Year 4, Semester 2**

PQB631 Applied Molecular Science  
PQB642 Chemical Research  
TWO Mathematics units

**Science Units: Ecology Major (Mandatory units)**

**Year 4, Semester 2**

TWO units from:  
LQB682 Protein Biochemistry and Bioengineering  
LQB684 Medical Biotechnology  
LQB685 Plant Microbe Interactions

**Year 1, Semester 1**

SCB111 Chemistry 1  
SCB112 Cellular Basis of Life  
TWO Mathematics units

**Year 1, Semester 2**

SCB120 Plant and Animal Physiology

## SCIENCE

SCB122 Cell and Molecular Biology  
TWO Mathematics units

### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
Science Elective unit  
TWO Mathematics units

### Year 2, Semester 2

NQB201 Planet Earth  
NQB202 History of Life on Earth  
TWO Mathematics units

### Year 3, Semester 1

NQB301 Soils and Sedimentation  
NQB321 Ecology  
TWO Mathematics units

### Year 3, Semester 2

NQB421 Experimental Design  
NQB422 Genetics and Evolution  
TWO Mathematics units

### Year 4, Semester 1

NQB502 Field Mapping and Monitoring of Natural Resources  
NQB521 Population Genetics and Molecular Ecology  
TWO Mathematics units

### Year 4, Semester 2

NQB621 Population Management  
NQB622 Population Genetics  
TWO Mathematics units

### Science Units: Environmental Science Major (Mandatory units)

#### Year 1, Semester 1

SCB111 Chemistry 1  
SCB112 Cellular Basis of Life  
TWO Mathematics units

#### Year 1, Semester 2

SCB120 Plant and Animal Physiology  
SCB121 Chemistry 2  
TWO Mathematics units

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
SCB123 Physical Science Applications  
TWO Mathematics units

#### Year 2, Semester 2

NQB202 History of Life on Earth  
Science Elective unit  
TWO Mathematics units

### Year 3, Semester 1

NQB301 Soils and Sedimentation  
NQB321 Ecology  
TWO Mathematics units

### Year 3, Semester 2

NQB401 Spatial Analysis of Environmental Systems  
NQB421 Experimental Design  
TWO Mathematics units

### Year 4, Semester 1

NQB501 Environmental Modelling  
NQB502 Field Mapping and Monitoring of Natural Resources  
TWO Mathematics units

### Year 4, Semester 2

NQB601 Sustainable Environmental Management  
NQB602 Environmental Chemistry  
TWO Mathematics units

### Science Units: Forensic Science Major (Mandatory units)

#### Year 1, Semester 1

SCB111 Chemistry 1  
SCB112 Cellular Basis of Life  
TWO Mathematics units

#### Year 1, Semester 2

SCB121 Chemistry 2  
SCB122 Cell and Molecular Biology  
TWO Mathematics units

#### Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
Science Elective unit  
TWO Mathematics units

#### Year 2, Semester 2

SCB123 Physical Science Applications  
SCB131 Experimental Chemistry  
TWO Mathematics units

#### Year 3, Semester 1

LQB383 Molecular and Cellular Regulation  
SCB384 Crime Scene and Forensic Science  
TWO Mathematics units

# SCIENCE

## Year 3, Semester 2

JSB979 Forensic Scientific Evidence  
PQB312 Analytical Chemistry for Scientists and Technologists  
TWO Mathematics units

## Year 4, Semester 1

PQB513 Instrumental Analysis  
PQB584 Forensic Physical Evidence  
TWO Mathematics units

## Year 4, Semester 2

LQB680 Forensic DNA Profiling  
PQB684 Forensic Analysis  
TWO Mathematics units

### Science Units: Geoscience Major (Mandatory units)

## Year 1, Semester 1

SCB111 Chemistry 1  
SCB112 Cellular Basis of Life  
TWO Mathematics units

## Year 1, Semester 2

NQB201 Planet Earth  
SCB123 Physical Science Applications  
TWO Mathematics units

## Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
Science Elective unit  
TWO Mathematics units

## Year 2, Semester 2

NQB202 History of Life on Earth  
SCB222 Exploration of the Universe  
TWO Mathematics units

## Year 3, Semester 1

NQB301 Soils and Sedimentation  
NQB311 Mineralogy  
TWO Mathematics units

## Year 3, Semester 2

NQB411 Petrology  
NQB412 Structural Geology and Field Methods  
TWO Mathematics units

## Year 4, Semester 1

NQB502 Field Mapping and Monitoring of Natural Resources  
NQB512 Stratigraphy  
NQB513 Geophysics

ONE Mathematics unit

## Year 4, Semester 2

NQB602 Environmental Chemistry  
THREE Mathematics units

### Science Units: Microbiology Major (Mandatory units)

## Year 1, Semester 1

SCB111 Chemistry 1  
SCB112 Cellular Basis of Life  
TWO Mathematics units

## Year 1, Semester 2

SCB120 Plant and Animal Physiology  
SCB121 Chemistry 2  
TWO Mathematics units

## Year 2, Semester 1

SCB110 Science Concepts and Global Systems  
Science Elective unit  
TWO Mathematics units

## Year 2, Semester 2

SCB122 Cell and Molecular Biology  
SCB123 Physical Science Applications  
TWO Mathematics units

## Year 3, Semester 1

LQB381 Biochemistry: Structure and Function  
LQB386 Microbial Structure and Function  
TWO Mathematics units

## Year 3, Semester 2

LQB483 Molecular Biology Techniques  
LQB486 Clinical Microbiology 1  
TWO Mathematics units

## Year 4, Semester 1

LQB586 Clinical Microbiology 2  
LQB587 Applied Microbiology 1: Water, Air and Soil  
TWO Mathematics units

## Year 4, Semester 1

LQB686 Microbial Technology and Immunology  
LQB687 Applied Microbiology 2: Food and Quality Assurance  
TWO Mathematics units

### Science Units: Physics Major (Mandatory units)

## Year 1, Semester 1

SCB110 Science Concepts and Global Systems  
SCB111 Chemistry 1

## SCIENCE

TWO Mathematics units

MAB101 Statistical Data Analysis 1

MAB111 Mathematical Sciences 1B

Plus TWO units selected according to the Science major requirements

### Year 1, Semester 2

PQB250 Mechanics and Electromagnetism

Science Elective unit

TWO Mathematics units

### Year 1, Semester 2 - STUDENTS WITH AT LEAST SOUND ACHIEVEMENT IN BOTH SENIOR MATHEMATICS B AND C

MAB112 Mathematical Sciences 1C

MAB210 Statistical Modelling 1

Plus TWO units selected according to the Science major requirements

### Year 2, Semester 1

SCB112 Cellular Basis of Life

Science Elective unit

TWO Mathematics units

### Year 2, Semester 2

PQB251 Waves and Optics

Science Elective unit

TWO Mathematics units

### Year 1, Semester 1 - STUDENTS WITH SOUND ACHIEVEMENT OR BETTER IN SENIOR MATHEMATICS B ONLY

MAB100 Mathematical Sciences 1A

MAB101 Statistical Data Analysis 1

Plus TWO units selected according to the Science major requirements

### Year 3, Semester 1

PQB350 Thermodynamics of Solids and Gases

Level 2 Science Elective unit

TWO Mathematics units

### Year 1, Semester 2 - STUDENTS WITH SOUND ACHIEVEMENT OR BETTER IN SENIOR MATHEMATICS B ONLY

MAB111 Mathematical Sciences 1B

MAB112 Mathematical Sciences 1C

Plus TWO units selected according to the Science major requirements

### Year 3, Semester 2

PQB450 Energy Fields and Radiation

PQB451 Electronics and Instrumentation

TWO Mathematics units

### Year 4, Semester 1

PQB550 Quantum and Condensed Matter Physics

PQB551 Physical Analytical Techniques

TWO Mathematics units

### Year 2, Semester 1

MAB220 Computational Mathematics 1

MAB311 Advanced Calculus

Plus TWO units selected according to the Science major requirements

### Year 4, Semester 2

PQB650 Advanced Theoretical Physics

PQB651 Experimental Physics

TWO Mathematics units

### Year 2, Semester 2

MAB210 Statistical Modelling 1

Or Mathematics unit

Mathematics unit

Plus TWO units selected according to the Science major requirements

### Course structure - Mathematics Major (Mandatory units)

#### TO BE USED IN CONJUNCTION WITH THE FOLLOWING MAJORS:

BIOCHEMISTRY

BIOTECHNOLOGY

CHEMISTRY

ECOLOGY

ENVIRONMENTAL SCIENCE

FORENSIC SCIENCE

GEOSCIENCE

MICROBIOLOGY

### Year 3, Semester 1

MAB312 Linear Algebra

ONE Mathematics unit

Plus TWO units selected according to the Science major requirements

### Year 3, Semester 2

TWO Mathematics units

Plus TWO units selected according to the Science major requirements

### Year 1 Semester 1 - STUDENTS WITH AT LEAST SOUND ACHIEVEMENT IN BOTH SENIOR MATHEMATICS B AND C

### Year 4, Semester 1

TWO Mathematics units

## SCIENCE

Plus TWO units selected according to the Science major requirements

Plus TWO units selected according to the Science major requirements

### Year 4, Semester 2

TWO Mathematics units

Plus TWO units selected according to the Science major requirements

**TO BE USED IN CONJUNCTION WITH THE FOLLOWING MAJOR:**

PHYSICS

### Year 1, Semester 1 - STUDENTS WITH AT LEAST SOUND ACHIEVEMENT IN BOTH SENIOR MATHEMATICS B AND C

MAB101 Statistical Data Analysis 1

MAB111 Mathematical Sciences 1B

Plus TWO units selected according to the Science major requirements

### Year 1, Semester 2 - STUDENTS WITH AT LEAST SOUND ACHIEVEMENT IN BOTH SENIOR MATHEMATICS B AND C

MAB112 Mathematical Sciences 1C

MAB220 Computational Mathematics 1

Plus TWO units selected according to the Science major requirements

### Year 1, Semester 1 - STUDENTS WITH SOUND ACHIEVEMENT OR BETTER IN SENIOR MATHEMATICS B ONLY

MAB100 Mathematical Sciences 1A

MAB101 Statistical Data Analysis 1

Plus TWO units selected according to the Science major requirements

### Year 1, Semester 2 - STUDENTS WITH SOUND ACHIEVEMENT OR BETTER IN SENIOR MATHEMATICS B ONLY

MAB111 Mathematical Sciences 1B

MAB112 Mathematical Sciences 1C

Plus TWO units selected according to the Science major requirements

### Year 2, Semester 1

MAB311 Advanced Calculus

Plus either:

MAB220 Computational Mathematics 1

Or

MAB312 Linear Algebra

Plus TWO units selected according to the Science major requirements

### Year 2, Semester 2

MAB210 Statistical Modelling 1

ONE Mathematics unit

### Year 3, Semester 1

MAB312 Linear Algebra

Or Mathematics unit

ONE Mathematics unit

Plus TWO units selected according to the Science major requirements

### Year 3, Semester 2

TWO Mathematics units

Plus TWO units selected according to the Science major requirements

### Year 4, Semester 1

TWO Mathematics units

Plus TWO units selected according to the Science major requirements

### Year 4, Semester 2

TWO Mathematics units

Plus TWO units selected according to the Science major requirements

## Mathematics Units

### Level 1

MAB100 Mathematical Sciences 1A

MAB101 Statistical Data Analysis 1

MAB111 Mathematical Sciences 1B

MAB112 Mathematical Sciences 1C

MAB210 Statistical Modelling 1

MAB220 Computational Mathematics 1

### Level 2

MAB311 Advanced Calculus

MAB312 Linear Algebra

MAB313 Mathematics of Finance

MAB314 Statistical Modelling 2

MAB315 Operations Research 2

MAB413 Differential Equations

MAB414 Applied Statistics 2

MAB420 Computational Mathematics 2

MAB422 Mathematical Modelling

MAB461 Discrete Mathematics

MAB480 Introduction to Scientific Computation

MAB481 Visualisation and Data Analysis

### Level 3

You must complete at least four units from:

MAB521 Applied Mathematics 3

MAB522 Computational Mathematics 3

MAB524	Statistical Inference
MAB525	Operations Research 3A
MAB533	Statistical Techniques
MAB536	Time Series Analysis
MAB613	Partial Differential Equations
MAB623	Financial Mathematics
MAB624	Applied Statistics 3
MAB625	Operations Research 3B
MAB640	Industry Project
MAB672	Advanced Mathematical Modelling
MAB681	Advanced Visualisation and Data Analysis

**Elective Units**

If you add up the units required from Mathematics units (16) and the units required from Science Foundation units and the units needed for your Science major, you should have one or more units available to be taken as electives in order for the total number of units to total 32 (384 credit points). The number of electives will depend upon the major selected. These electives can be selected from Faculty of Science units - make sure you meet any prerequisites and don't take an incompatible unit. Some majors include alternative units and you could select an additional unit(s) from these.

Information on some possible elective units not previously mentioned in this document

NQB201	Planet Earth
NQB202	History of Life on Earth
SCB120	Plant and Animal Physiology
SCB121	Chemistry 2
SCB122	Cell and Molecular Biology
SCB123	Physical Science Applications
SCB131	Experimental Chemistry
SCB222	Exploration of the Universe

NOTE: Other elective units may be found in the co-majors listed in the SC01 Course Summary Sheet.

**Potential Careers:**

Actuary, Analytical Chemist, Astrophysicist, Biochemist, Bioinformatician, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Database Manager, Ecologist, Environmental Scientist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Mathematician, Medical Biotechnologist, Medical Physicist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Physicist, Plant Biotechnologist, Population Ecologist, Programmer, Quantitative Analyst, Statistician, Virologist.

## Bachelor of Biomedical Science (SC40)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 052768K

**Course duration (full-time):** 3 Years

**Course duration (part-time):** 6 Years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$6,728

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February

**QTAC code:** 418401

**Past rank cut-off:** 74

**Past OP cut-off:** 13

**OP Guarantee:** Yes

**Assumed knowledge:** English (4, SA), Maths B (4, SA) and Chemistry (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. CHEMISTRY: QUT unit Introductory Chemistry as a visiting student or QUT Continuing Professional Chemistry Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3864 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 288

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Dr Catherine Dallemagne

**Campus:** Gardens Point

### Career Opportunities

The Bachelor of Biomedical Science is a highly relevant and appropriate qualification for entry into postgraduate medicine. This course provides a solid foundation for the areas tested in GAMSAT, the entrance examination for postgraduate medicine. Many opportunities are also available for postgraduate study in science at QUT, including Honours and postgraduate courses in Life Sciences.

The Bachelor of Biomedical Science is also designed for students seeking a science-based qualification that will lead to career opportunities in medical biotechnology, medical microbiology, and clinical biochemistry fields.

### Recommended Study

Biological Science is recommended.

### Course Design

The Bachelor of Biomedical Science comprises first-year studies in chemistry, physics, anatomy, physiology and cell biology, providing a solid knowledge base for GAMSAT. Units in the second and third years combine advanced studies with theoretical, practical, and problem-solving skills. Several units in the area of humanities and applied health are an integral part of the course.

Students will be well prepared to sit GAMSAT which is designed to evaluate mastery and use of concepts in basic science as well as the acquisition of more general skills in problem solving, critical thinking and writing. The Bachelor of Biomedical Science provides a solid grounding in GAMSAT testing areas: reasoning in humanities and social sciences, written communication, reasoning in biological and physical sciences (including chemistry, biology and physics).

### 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.

### Contact Details

#### Course Coordinator

Dr Catherine Dallemagne

Phone: +61 7 3138 2561

Email: [c.dallemagne@qut.edu.au](mailto:c.dallemagne@qut.edu.au)

### Deferment

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

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

Find out more on deferment.

### Course structure - Full-time

#### Year 1, Semester 1

MAB141	Mathematics and Statistics for Medical Science
PYB007	Interpersonal Processes and Skills
SCB111	Chemistry 1
SCB112	Cellular Basis of Life

#### Year 1, Semester 2

LSB255	Human Anatomy
PCB150	Physics 1H
SCB121	Chemistry 2
SCB122	Cell and Molecular Biology

#### Year 2, Semester 1

LQB383	Molecular and Cellular Regulation
LQB386	Microbial Structure and Function
LQB388	Physiology 1
LSB325	Biochemistry

#### Year 2, Semester 2

## SCIENCE

HHB114	Introduction To Human Rights And Ethics
LQB483	Molecular Biology Techniques
LQB486	Clinical Microbiology 1
LSB425	Quantitative Medical Science

### Year 3, Semester 1

LQB583	Genetic Research Technology
LQB584	Medical Cell Biology
LQB586	Clinical Microbiology 2
LSB525	Clinical Biochemistry 1

### Year 3, Semester 2

LQB488	Physiology 2
LQB684	Medical Biotechnology
LSB625	Clinical Biochemistry 2
LSB658	Clinical Physiology

### NOTE:

Students may substitute ONE unit from EACH of Year 3/Semesters 1 and 2 (or Year 2/Semester 2) with an approved pair of electives from the following list, providing that a MATCHING SET of science units is deleted: (eg [a] LQB583 and LQB684 OR [b] LSB525 and LSB625 OR [c] LQB486 and LQB586). The elective options are subject to timetabling and campus offerings.

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#### HEALTH COUNSELLING

Semester 1:

PYB012	Psychology
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Semester 2:

PYB208	Counselling Theory and Practice 1
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#### PUBLIC HEALTH

Semester 1:

PUB104	Australian Health Care Systems
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Semester 2:

PUB251	Contemporary Public Health
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#### EXERCISE SCIENCE FOR PREVENTIVE MEDICINE

Semester 1:

HMB271	Foundations of Motor Control, Learning and Development
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Semester 2:

HMB273	Exercise Physiology 1
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#### INDIGENOUS PERSPECTIVES

Semester 1:

HHB123	Indigenous Australian Culture Studies
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Semester 2:

HHB276	Indigenous Knowledge: Research Ethics and Protocols
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#### CONTEMPORARY ETHICS

Semester 1:

HHB270	Gene Technology And Ethics
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Semester 2:

HHB269	Ethics, Technology And The Environment
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### Course structure - Part-time

#### Year 1, Semester 1

MAB141	Mathematics and Statistics for Medical Science
SCB112	Cellular Basis of Life

#### Year 1, Semester 2

LSB255	Human Anatomy
SCB122	Cell and Molecular Biology

#### Year 2, Semester 1

PYB007	Interpersonal Processes and Skills
SCB111	Chemistry 1

#### Year 2, Semester 2

PCB150	Physics 1H
SCB121	Chemistry 2

#### Year 3, Semester 1

LQB383	Molecular and Cellular Regulation
LSB325	Biochemistry

#### Year 3, Semester 2

LQB483	Molecular Biology Techniques
LSB425	Quantitative Medical Science

#### Year 4, Semester 1

LQB386	Microbial Structure and Function
LQB388	Physiology 1

#### Year 4, Semester 2

HHB114	Introduction To Human Rights And Ethics
LQB486	Clinical Microbiology 1

#### Year 5, Semester 1

LQB584	Medical Cell Biology
LQB586	Clinical Microbiology 2

#### Year 5, Semester 2

LQB488	Physiology 2
LSB658	Clinical Physiology

#### Year 6, Semester 1

LQB583	Genetic Research Technology
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LSB525 Clinical Biochemistry 1

**Year 6, Semester 2**

LQB684 Medical Biotechnology 2

LSB625 Clinical Biochemistry 2

**Note for Years 5 and 6:**

Students may substitute ONE unit from EACH of Year 4 Semester 2 and Year 5 Semester 1, OR Year 6 Semester 1 and Year 6 Semester 2 with an approved pair of electives from the list which appears under the Note for Year 3 in the Full-time course structure, providing that a MATCHING SET of science units is deleted: (eg [a] LQB583 and LQB684 OR [b] LSB525 and LSB625 OR [c] LQB486 and LQB586). The elective options are subject to timetabling and campus offerings.

**Potential Careers:**

Laboratory assistant, Laboratory Technician, Medicine (after further study), Research Assistant.

## Bachelor of Pharmacy (SC45)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 055902G

**Course duration (full-time):** 4 years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$6,732

**International Fees (per semester):** 2008: \$10,608 per semester (*subject to annual review*)

**Domestic Entry:** February

**International Entry:** February IELTS 7.0 no subtest less than 6.0 (Quota applies)

**QTAC code:** 418512

**Past rank cut-off:** 95 Not all applicants with this rank were offered this course

**Past OP cut-off:** 4 Not all applicants within the OP 4 Band were offered this course

**Assumed knowledge:** English (4, SA), Maths B (4, SA) and Chemistry (4, SA)

**Preparatory studies:** MATHS: QUT unit Preparatory Mathematics as a visiting student or QUT Continuing Professional Education course Mathematics Bridging. CHEMISTRY: QUT unit Introductory Chemistry as a visiting student or QUT Continuing Professional Chemistry Bridging. ENGLISH: Successful completion of a year of full-time vocational or tertiary study. For further information contact 07 3864 2000 or email [study@qut.com](mailto:study@qut.com)

**Total credit points:** 384

**Standard credit points per full-time semester:** 48

**Course coordinator:** Associate Professor Fraser Ross

**Campus:** Gardens Point

### Career Opportunities

Pharmacists are employed in a range of settings including community pharmacies, hospitals, industry, regulatory and research roles. Australia is currently experiencing a shortage of trained pharmacists, particularly in hospital and community pharmacies. You can expect your skills to be in demand as the QUT Bachelor of Pharmacy focuses on these aspects of the pharmacy profession. You will also be well prepared to undertake postgraduate studies in pharmacy related areas.

As the first professional contacted for advice about health, community pharmacists frequently play a major role as health educators. Hospital pharmacists may work closely with doctors in a patient-care role, evaluate newly released medicines, coordinate clinical trials, or prepare medicines for patients requiring specialised treatments.

### Recommended Study

Biological Science is recommended.

### OP Guarantee

The OP Guarantee does not apply to this course.

### Course Design

The Bachelor of Pharmacy comprises four years of study in areas ranging from pharmacy practice, pharmaceuticals, pharmacology, drug metabolism, physiology and chemistry. You will also undertake professional practice units in QUT's on-campus dispensary and counselling facilities before embarking on a series of professional placements in hospitals and community pharmacy environments.

### Special Course Requirements

Prior to undertaking hospital placements students must be vaccinated for hepatitis B and must provide a post-vaccination pathological report or similar certification showing proof of immunity.

### 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 Pharmacists Board of Queensland. 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).

### Why Choose this Course?

This course has been developed with significant input from pharmacists to incorporate latest practices and emerging trends. The inclusion of essential small business management skills will help you to operate effectively in your chosen setting.

### Contact Details

#### Course Coordinator

Associate Professor Fraser Ross

Phone: +61 7 3138 2502

Email: [fb.ross@qut.edu.au](mailto:fb.ross@qut.edu.au)

### Deferment

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

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

Find out more on deferment.

### Domestic student tuition fee (Dfee) places

**Undergraduate domestic full fee places (Dfee) are not available in this course.** Tuition fees are only applicable to currently enrolled students who were unable to comply regulations regarding their original Commonwealth Supported place (i.e. failure to lodge an eCAF, has consumed of other their Student Learning Entitlement etc.) and who have been invited and accepted to continue as a fee-paying student.

**Course structure**

SCB848	Pharmacotherapeutics 3
SCB858	Pharmacy Management 2
SCB868	Professional Placements 2

**Year 1, Semester 1**

MAB141	Mathematics and Statistics for Medical Science
PYB007	Interpersonal Processes and Skills
SCB112	Cellular Basis of Life
SCB113	Chemistry for Health and Medical Science

**Potential Careers:**

Community Pharmacist, Hospital Pharmacist, Pharmaceutical Research Scientist.

**Year 1, Semester 2**

LSB255	Human Anatomy
SCB122	Cell and Molecular Biology
SCB131	Experimental Chemistry
SCB208	Introduction to Pharmacy Practice

**Year 2, Semester 1**

LQB388	Physiology 1
LSB325	Biochemistry
SCB308	Pharmacy Practice 1
SCB338	Pharmaceutical Chemistry and Pharmacology 1

**Year 2, Semester 2**

LQB488	Physiology 2
SCB408	Pharmacy Practice 2
SCB428	Pharmacokinetics
SCB438	Medicinal Chemistry and Pharmacology 2

**Year 3, Semester 1**

LQB386	Microbial Structure and Function
SCB508	Pharmacy Practice 3
SCB528	Pharmaceutics 1
SCB538	Pharmacology 3

**Year 3, Semester 2**

SCB608	Pharmacy Practice 4
SCB628	Pharmaceutics 2
SCB638	Pharmacogenomics and Drug Metabolism
SCB648	Pharmacotherapeutics 1

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**

SCB708	Pharmacy Practice 5
SCB748	Pharmacotherapeutics 2
SCB758	Pharmacy Management 1
SCB768	Professional Placements 1

**Year 4, Semester 2**

SCB808	Pharmacy Practice 6
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## Bachelor of Applied Science (Honours) (SC60)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 009041G

**Course duration (full-time):** 1 Year

**Course duration (part-time):** 2 Years

**Domestic fees (per credit point):** Commonwealth Supported Place; Full fee tuition 2008: \$218 per credit point (*subject to annual review*)

**Domestic fees (indicative):** 2008: Full fee tuition \$20,928; CSP \$7,253

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February and July

**International Entry:** February and July

**Total credit points:** 96

**Standard credit points per full-time semester:** 48

**Course coordinator:** Associate Professor Peter Mather

**Discipline coordinator:** Dr John Bartley (Chemistry); Dr David Hurwood (Ecology); Associate Professor Peter Mather (Environmental Science); Dr Gregg Webb (Geology); Associate Professor Terry Walsh (Life Science); Dr Troy Farrell (Mathematics); Dr Esa Jaatinen (Physics)

**Campus:** Gardens Point

### Career Outcomes

The Bachelor of Applied Science (Honours) program is designed for graduates who have excelled in their degree from a recognised tertiary institution, with major studies in a relevant discipline. The course not only enhances your professional employability in your chosen discipline but also prepares you for a research career. The Honours qualification opens a direct pathway to postgraduate studies, qualifying you for entry into Doctor of Philosophy and Master of Applied Science courses.

### Entry Requirements

To be eligible for admission, you should have completed QUT's Bachelor of Applied Science or equivalent and should have attained a grade point average (GPA) of at least 5 (on a 7-point scale), including grades of at least 5 in all units directly relevant to the proposed Honours program. Application for admission should normally be made at the end of the pass degree, or within 18 months of completing that degree.

If you do not satisfy the above conditions but who have demonstrated outstanding performance in only the final year of a degree, or your application is based on other factors including work experience or involvement in research, you may be admitted at the discretion of the Executive Dean of Faculty.

Please note that for the Mathematics major, other degrees with major studies in Mathematics (including Statistics) may provide suitable entry to the program.

### Course Structure

The Honours year comprises coursework and a major research project supervised by QUT staff, in some cases in

conjunction with local industry. Majors are offered in Chemistry, Ecology, Environmental Science, Geology, Life Science, Mathematics and Physics.

### Professional Recognition

Relevant scientific professional bodies include Australasian Association of Clinical Biochemists, Australasian Institute of Mining and Metallurgy, AusBiotech Ltd, Australian Institute of Geoscientists, Australian Institute of Physics, Australian Mathematical Society, Australian Society for Biochemistry and Molecular Biology, Australian Society for Medical Research, Australian Society for Microbiology, Australian Society for Operations Research, Ecological Society of Australia, Geological Society of Australia, Royal Australian Chemical Institute, and Statistical Society of Australia. Eligibility for membership is based on the combination of units undertaken in the degree and the Bachelor of Applied Science course that underpins it.

### Contact Details

#### Course Coordinator

Associate Professor Peter Mather

Phone: +61 7 3138 1737

Email: p.mather@qut.edu.au

### Discipline Coordinators

#### Chemistry

Dr John Bartley

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Email: j.bartley@qut.edu.au

#### Ecology

Dr David Hurwood

Phone: +61 7 3138 5072

Email: d.hurwood@qut.edu.au

#### Environmental Science

Associate Professor Peter Mather

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#### Geology

Dr Gregg Webb

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#### Life Science

Associate Professor Terry Walsh

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Email: t.walsh@qut.edu.au

#### Mathematics

Dr Troy Farrell

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Email: t.farrell@qut.edu.au

#### Physics

Dr Esa Jaatinen

Phone: +61 7 3138 4281

Email: e.jaatinen@qut.edu.au

**Entry Requirements**

To be eligible for admission, students should have completed one of the Faculty's Bachelor of Applied Science degrees (CH32, LS36, LS37, MA34, SC01 or SC30) or equivalent and should have attained a grade point average (GPA) of at least 5 on a 7-point scale over that degree, including grades of at least 5 in all units directly relevant to the proposed honours program. Application for admission should normally be made at the end of the pass degree, or within 18 months of completing that degree.

Applicants who do not satisfy the above conditions but who have demonstrated outstanding performance in only the final year of a degree, or whose application is based on other factors including work experience or involvement in research, may be admitted at the discretion of the Dean of Faculty.

Please note that for the Mathematics major, other degrees with major studies in Mathematics (including Engineering and Statistics) may provide suitable entry to the program.

**Professional Recognition**

Relevant scientific professional bodies include Australasian Association of Clinical Biochemists, Australasian Institute of Mining and Metallurgy, AusBiotech Ltd; Australian Institute of Geoscientists; Australian Institute of Physics; Australian Mathematical Society; Australian Society for Biochemistry and Molecular Biology; Australian Society for Medical Research; Australian Society for Microbiology; Australian Society for Operations Research; Ecological Society of Australia; Geological Society of Australia; Royal Australian Chemical Institute; Statistical Society of Australia. Eligibility for membership is based on the combination of units undertaken in the degree and the Bachelor of Applied Science course that underpins it.

**Course structure - Major in Chemistry**

**Year 1, Semester 1**

- PCB700-1 Research Project
- PCB700-2 Research Project
- PCB742 Elective Unit
- PCB780-1 Advanced Topics in Chemistry 1

**Year 1, Semester 2**

- PCB700-3 Research Project
  - PCB700-4 Research Project
  - PCB700-5 Research Project
  - PCB780-2 Advanced Topics in Chemistry 1
- NOTE: Students wishing to apply for entry to BAppSc(Hons) should consult with the contact person for the relevant science discipline before applying (see contact details link above).

**Course structure - Major in Ecology, Environmental Science, Geology**

**Year 1, Semester 1**

- NRB720-1 Project
- NRB730-1 Research Methods and Strategies
- NRB730-2 Research Methods and Strategies
- NRB735 Advanced Studies in Resource Sciences

**Year 1, Semester 2**

- NRB720-2 Project
- NRB720-3 Project
- NRB720-4 Project
- NRB720-5 Project

NOTE: Students wishing to apply for entry into BAppSc(Hons) should consult with the contact person for the relevant science discipline before applying (see contact details link above).

**Course structure - Major in Life Science**

**Year 1, Semester 1**

- LSB850-1 Research Strategies
- LSB851-1 Readings in Life Science 1
- LSB852-1 Project

**Year 1, Semester 2**

- LSB850-2 Research Strategies
  - LSB851-2 Readings in Life Science 1
  - LSB852-2 Project
- NOTE: Students wishing to apply for entry into BAppSc(Hons) should consult with the contact person for the relevant science discipline before applying (see contact details link above).

**Course structure - Major in Mathematics**

**Year 1, Semester 1**

- MAN787-1 Project
- 36 credit points of elective units selected from the list below\*

**Year 1, Semester 2**

- MAN787-2 Project
  - MAN787-3 Project
- 24 credit points of elective units selected from the list below\*

**Elective List (Mathematics) - 60 credit points to be selected**

- MAN717 Minor Project
- MAN761 Analysis
- MAN764 Applied Mathematical Modelling
- MAN765 Bayesian Data Analysis
- MAN766 Applied Time Series Analysis
- MAN768 Advanced Techniques in Operations Research
- MAN769 Mathematics of Finance

## SCIENCE

MAN771	Computational Mathematics 4	PCB669	Astrophysics 2
MAN774	Perturbation Methods	PCB708	Advanced Topics in Physics
MAN775	Statistical Modelling of Financial Processes	PCN716	Advanced Topics in Physics 2
MAN777	Mathematics of Fluid Flow	NOTE:	PCB708 and PCN716 typically comprise two components chosen from atmospheric aerosol physics, classical mechanics, non-linear optics, quantum electrodynamics, advanced general relativity or aspects of units from the Masters in Medical Physics course.
MAN778	Applications of Discrete Mathematics null Up to 12 credit points from the following lists can be included in the 60 credit points of electives:		
MAB522	Computational Mathematics 3	<b>Potential Careers:</b>	
MAB524	Statistical Inference	Actuary, Analytical Chemist, Astrophysicist, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Database Manager, Ecologist, Environmental Scientist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Mathematician, Medical Biotechnologist, Medical Physicist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Physicist, Plant Biotechnologist, Population Ecologist, Programmer, Quantitative Analyst, Statistician, Virologist.	
MAB613	Partial Differential Equations		
MAB672	Advanced Mathematical Modelling		
MAN536	Time Series Analysis null Up to two units of a quantitative nature from another Faculty or School may be included with the permission of the Mathematics Coordinator. The unit(s) must be of honours level and relevant to the proposed program. Examples of suitable units are:		
EFN505	Financial Risk Management		
PCB706	Quantum Mechanics		
*	The Course Coordinator may approve a student taking 24 credit points of elective units (together with MAN787-1 and MAN787-2) in Semester 1 and 36 credit points of elective units (together with MAN787-3) in Semester 2.		
NOTE:	Students wishing to apply for entry to BAppSc(Hons) should consult with the contact person for the relevant science discipline before applying (see contact details link above).		

### Course structure - Major in Physics

#### Year 1, Semester 1

PCB700-1	Research Project
PCB700-2	Research Project
PCB706	Quantum Mechanics Elective

NOTE: An alternative to PCB706 Quantum Mechanics may be permitted

#### Year 1, Semester 2

PCB700-3	Research Project
PCB700-4	Research Project
PCB700-5	Research Project Elective

NOTE: Students wishing to apply for entry into BAppSc(Hons) should consult with the contact person for the relevant science discipline before applying (see contact details link above).

#### Elective List (Physics)

PCB664	Lasers and Photonics
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## Graduate Diploma in Applied Science (SC71)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 020314E

**Course duration (full-time):** 2 semesters (1 year)

**Course duration (part-time):** 4 semesters (2 years)

**Domestic fees (per credit point):** Commonwealth Supported Place (*subject to annual review*)

**Domestic fees (indicative):** 2008: CSP \$7,031

**International Fees (per semester):** 2008: \$9,600 per semester (*subject to annual review*)

**Domestic Entry:** February and July

**International Entry:** February

**Total credit points:** 96

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Associate Professor Peter Mather

**Discipline coordinator:** Dr Geoffrey Will (Chemistry); Dr Mark O'Brien (Life Science); Dr Troy Farrell (Mathematics); Associate Professor Peter Mather (Natural Resource Sciences); Dr Andrew Fielding (Physics)

**Campus:** Gardens Point

### Entry requirements

Applicants must possess a bachelor degree in applied science or equivalent qualification, or other evidence of qualifications that satisfy the Faculty Academic Board that the applicant possesses the capacity to pursue the course of study.

### Course Design

This coursework program allows students to complete a minor project in some disciplines. The assessed coursework may include advanced lecture courses, seminars, reading courses or independent study designed to focus on information retrieval skills. Coursework units are chosen from those in the Master of Applied Science course, and may contain units from other postgraduate courses, the Bachelor of Applied Science (Honours) program or advanced undergraduate programs.

Candidates of the Graduate Diploma in Applied Science undertake a program of coursework, or coursework and a minor research project, as approved by the Academic Board on the advice of the Head of School.

Students must complete a total of 96 credit points which may consist of between 60 and 96 credit points of coursework, and up to 36 credit points as a minor research project.

Coursework units will be selected from the specific units available within the Master of Applied Science (SC80) course and may contain units selected from other postgraduate courses or advanced undergraduate courses where the background of the student requires this.

### Overview

This course offers students a one-year postgraduate qualification by coursework, or coursework and a minor

research project. The course will particularly suit if students are employed in the industry and wish to undertake postgraduate study to upgrade their professional qualification in one of the science disciplines.

### Contact Details

#### Coordinator

Associate Professor Peter Mather

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Email: p.mather@qut.edu.au

### Discipline Coordinators

#### Chemistry

Dr Geoffrey Will

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Email: g.will@qut.edu.au

#### Life Science

Dr Mark O'Brien

Phone: +61 7 3138 2568

Email: m.obrien@qut.edu.au

#### Mathematics

Dr Troy Farrell

Phone: +61 7 3138 2364

Email: t.farrell@qut.edu.au

#### Natural Resource Sciences

Associate Professor Peter Mather

Phone: +61 7 3138 1737

Email: p.mather@qut.edu.au

#### Physics

Dr Andrew Fielding

Phone: +61 7 3138 5325

Email: a.fielding@qut.edu.au

### Course structure - Chemistry Strand

PCN701	Topics in Advanced Chemistry 1
PCN705-1	Research Methodology
PCN705-2	Research Methodology
PCN710	Chemical Instrumentation
PCN720	Chemometrics
PCN730	Advanced Physical Methods in Chemistry
PCN740	Laboratory Techniques for Preparative Chemistry
PCN801	Topics in Advanced Chemistry 2

### Course structure - Ecology, Environmental Science & Geoscience Strands

NRN100	Readings in Natural Resource Sciences 1
NRN101	Readings in Natural Resource Sciences 2
NRN104	Advanced Topics in Natural Resource Sciences 1
NRN105	Advanced Topics in Natural Resource

Sciences 2

And units approved by the Strand Coordinator

**Course structure - Life Science Strand**

LSN011 Research Seminars in Life Science 1

LSN013 Readings in Life Science 3

LSN023 Research Seminars in Life Science 3

**Course structure - Mathematics Strand**

Units selected from other programs, such as MA75 Graduate Diploma in Mathematical Science and MA85 Master of Mathematical Science, offered by the School of Mathematical Sciences and approved by the Mathematics coordinator.

**Course structure - Physics Strand**

PCN715 Advanced Topics in Physics 1

PCN716 Advanced Topics in Physics 2

And/or alternative unit(s) approved by the Physics Coordinator

**Potential Careers:**

Actuary, Analytical Chemist, Astrophysicist, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Database Manager, Ecologist, Environmental Scientist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Mathematician, Medical Biotechnologist, Medical Physicist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Physicist, Plant Biotechnologist, Population Ecologist, Programmer, Quantitative Analyst, Statistician, Virologist.



## Master of Applied Science (Research) (SC80)

**Year offered:** 2008

**Admissions:** Yes

**CRICOS code:** 014020C

**Course duration (full-time):** 4 semesters (2 years)

**Course duration (part-time):** 8 semesters (4 years)

**Domestic fees (per credit point):** RTS/RTA; Full fee tuition 2008 \$135 per credit point (exceeded max entitlements) (*subject to annual review*)

**Domestic fees (indicative):** 2008: \$12,960 (exceeded max entitlements)

**International Fees (per semester):** 2008: \$11,184 per semester (*subject to annual review*)

**Domestic Entry:** At any time

**International Entry:** At any time

**Total credit points:** 192

**Standard credit points per full-time semester:** 48

**Standard credit points per part-time semester:** 24

**Course coordinator:** Associate Professor Peter Mather

**Discipline coordinator:** Dr Geoffrey Will (Chemistry); Associate Professor Terry Walsh (Life Sciences); Professor Vo Anh (Mathematics); Associate Professor Peter Mather (Natural Resource Sciences); Dr Andrew Fielding (Physics)

**Campus:** Gardens Point

### Entry Requirement

Applicants must possess a bachelor of applied science or equivalent qualification or other evidence of qualifications that satisfy the Faculty Academic Board that the applicant possesses the capacity to pursue the course of study.

### Course Design

This degree consists of coursework that can comprise up to one-third of the course and research, which must be at least two-thirds of the course. The assessed coursework may be in the form of advanced lectures, seminars, reading courses, or independent study designed to focus on information retrieval skills. The research component is a program of supervised research and investigation at a level of scientific competence significantly higher than that expected from an undergraduate degree and, typically, a masters thesis does not need to be as substantial as a Doctor of Philosophy thesis.

Students undertake a program of research and investigation on a topic approved by the Academic Board. All projects should be sponsored either by outside agencies such as industry, government authorities, or professional organisations, or by the University itself.

Students entering the course with an honours degree or its equivalent to candidates with substantial relevant work experience normally gain exemptions to a maximum of 96 credit points at the discretion of the Academic Board on the recommendation of the Head of School.

Students entering the course with a graduate diploma may gain exemption to a maximum of 96 credit points at the discretion of the Academic Board on the recommendation of the Head of School.

A full-time candidate who does not hold an honours degree appropriate to the course of study will normally be required to complete both course and research work, including submission of the thesis for examination during a period of registration of 24 months. The corresponding period in the case of a part-time candidate shall be 48 months. In special cases the Academic Board may approve a shorter period.

A holder of an honours degree or its equivalent appropriate to the course of study may submit the thesis for examination after not less than 12 months of registration if a full-time student, or 24 months if a part-time student. In special cases the Academic Board may approve a shorter period.

### Overview

The objectives of this course are to:

- provide postgraduate educational opportunities in specialised fields of applied science by means of a program that involves either an original contribution to knowledge or an original application of existing knowledge
- provide education in research methods
- enable graduates employed in industry to undertake further education by a combination of coursework, research and thesis
- expand the involvement of students employed in industrial organisations and external agencies in undertaking relatively short-duration applied research or investigation.

Students can undertake an approved project in any area of interest supported by a research area or school within the Faculty of Science. Please note that these areas of research specialisation are only a guide. Staff are happy to discuss study choices directly with students.

### Contact Details

#### Course Coordinator

Associate Professor Peter Mather

Phone: +61 7 3138 1737

Email: p.mather@qut.edu.au

#### Discipline Coordinators

##### Chemistry

Dr Geoffrey Will

Phone: +61 7 3138 2297

Email: g.will@qut.edu.au

##### Life Sciences

Associate Professor Terry Walsh

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*Mathematics*

Professor Vo Anh  
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*Natural Resource Sciences*  
 Associate Professor Peter Mather  
 Phone: +61 7 3138 1737  
 Email: p.mather@qut.edu.au

*Physics*  
 Dr Andrew Fielding  
 Phone: +61 7 3138 5325  
 Email: a.fielding@qut.edu.au

**Course structure - Chemistry Strand**

- PCN701 Topics in Advanced Chemistry 1
- PCN705-1 Research Methodology
- PCN705-2 Research Methodology  
 Select one of the following Elective Units:
- PCN710 Chemical Instrumentation
- PCN720 Chemometrics
- PCN730 Advanced Physical Methods in Chemistry
- PCN740 Laboratory Techniques for Preparative Chemistry
- PCN801 Topics in Advanced Chemistry 2

**Course structure - Ecology, Environmental Science & Geoscience Strands**

Essential units:

- NRN100 Readings in Natural Resource Sciences 1
- NRN102 Confirmation of Candidature Seminar
- NRN103 Final Seminar  
 Select up to one of the following units if required:
- NRN101 Readings in Natural Resource Sciences 2
- NRN104 Advanced Topics in Natural Resource Sciences 1
- NRN105 Advanced Topics in Natural Resource Sciences 2

**Course structure - Life Science Strand**

- LSN011 Research Seminars in Life Science 1
- LSN013 Readings in Life Science 3
- LSN023 Research Seminars in Life Science 3

**Course structure - Mathematics Strand**

Selections from other School programs, such as MA75 Graduate Diploma in Mathematical Science and MA85 Master of Mathematical Science, to a maximum of 60 credit points

**Course structure - Physics Strand**

- PCN715 Advanced Topics in Physics 1
- PCN716 Advanced Topics in Physics 2  
 and/or alternative unit(s) approved by the Physics coordinator

**Research Work**

The Research Work component of the degree must constitute at least 128 credit points. The units below have been devised to represent the EFTSU (Effective Full-time Student Unit) and attendance type of graduate research students.

**Full-Time Students**

The minimum number of credit points per semester for full-time status is 36. The standard number is 48. At the end of each semester a grade of T - Assessment Continues will be awarded in any IFNXXX units provided satisfactory progress is being maintained. A final grade (S - Satisfactory or U - Unsatisfactory) will be awarded once the thesis has been examined according to the degree rules.

**Full-Time Course Structure**

- IFN100 Full-Time Masters Research  
 null  
 Full-time students who are required to undertake coursework units in addition to their research as part of their masters enrolment should enrol in a combination of the following units. These should total (in combination with the coursework unit/s) as close as possible to 48 credit points per semester.
- IFN300 Masters Research
- IFN301 Masters Research
- IFN302 Masters Research
- IFN303 Masters Research
- IFN304 Masters Research

**Part-Time Students**

The maximum number of credit points per semester for part-time status is 36. The standard number is 24. At the end of each semester a grade of T - Assessment Continues will be awarded in any IFNXXX units provided satisfactory progress is being maintained. A final grade (S - Satisfactory or U - Unsatisfactory) will be awarded once the thesis has been examined according to degree rules.

**Part-time Course Structure**

- IFN200 Part-Time Masters Research  
 null  
 Part-time students undertaking research but no coursework units enrol in:

undertake coursework units in addition to their research as part of their masters enrolment should enrol in a combination of the following units. These should total (in combination with the coursework unit/s) as close as possible to 24 credit points:

IFN302	Masters Research
IFN303	Masters Research
IFN304	Masters Research

**Potential Careers:**

Actuary, Analytical Chemist, Astrophysicist, Biochemist, Biologist, Biotechnologist, Chemist, Chemist Industrial, Coastal Scientist, Conservation Biologist, Database Manager, Ecologist, Environmental Scientist, Forensic Scientist, Geologist, Geophysicist, Geoscientist, Health Physicist, Hydrogeologist, Immunologist, Industrial Chemist, Laboratory Technician (Chemistry), Marine Scientist, Mathematician, Medical Biotechnologist, Medical Physicist, Microbiologist, Molecular Biologist, Natural Resource Scientist, Physicist, Plant Biotechnologist, Population Ecologist, Programmer, Quantitative Analyst, Statistician, Virologist.