



**UTS:  
SCIENCE**  
UNDERGRADUATE COURSES GUIDE 2014

# WELCOME TO UTS:SCIENCE

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Science is not just a field of study. It is also a philosophy and a way of viewing the world. Scientists are critical thinkers, using evidence to justify our beliefs in how the universe, the world and life work.

UTS: Science is housed in a modern building with state-of-the-art instrumentation available for researchers and students. It is a vibrant Faculty, melding technology and creativity to advance our knowledge and capabilities.

It is an exciting environment, where students learn and experience modern applications of science geared towards practice that will create greater opportunities for rewarding employment.

UTS: Science has world-class research activities including climate change, forensic science and biology, nanotechnology, health technology, mathematical modelling of complex systems, infectious and parasitic diseases, imaging and marine biology.

As Dean of a lively and stimulating Faculty, I have the good fortune to work with many excellent researchers and teachers, students and support staff. The atmosphere in the Faculty is welcoming and motivating. I am looking forward to helping UTS: Science to continue to thrive and grow, and to make significant contributions to Australia and globally through our graduates and our research.

**Professor Bruce Milthorpe**  
Dean, UTS Faculty of Science

## CONTACT US

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# WHY SCIENCE AT UTS?

## TEACHING AND LEARNING LEADER

UTS: Science academics are among the finest practitioners, where many are recognised for their work and contributions.

Examples include, **UTS Distinguished Professor Matt Wand** was recently awarded the 2013 Australian Academy of Science's Hannan Medal in Mathematical Sciences, recognising his research in statistical science in Australia and internationally.

**Professor Les Kirkup** was recognised for his contributions to teaching and learning nationally in 2007 with the award of a Carrick Associate Fellowship, and again in 2011 with the award of an Australian Learning and Teaching Council (ALTC) National Fellowship, for enhancing student experience in laboratories.

**Professor Geoff Smith** was the joint winner in the Invention category, in the 2011 NSW Science and Engineering award for his pioneering work into sustainable and energy efficient technologies, especially his contributions to green roofing systems, window and lighting technologies.

## PRACTICE-BASED DEGREES

While learning the theory is important, UTS is a firm practitioner and believer in hands-on, practical experience. Our students are exposed to laboratory and clinical work from day one of their study. Facilities are modern and up-to-date, similar to those used in commercial laboratories. Excursions and field trips are common in our environmental sciences programs. Mathematics students receive extensive exposure to application softwares.



**Front cover:** *Daphnia pulex* is the most common species of water flea and the first crustacean to have its genome sequenced.

## RESEARCH INTENSIVE FACULTY

UTS: Science contributes about 40 percent of UTS's research outputs. The Australian Government benchmarked 100% of UTS research at world standard or above world standard in the 2012 Excellence in Research for Australia initiative.

UTS: Science is committed to pursuing research that provides solutions to the most significant issues facing our world, which includes infectious diseases, climate change effects, eco-friendly energy and resources, etc. More details on honours and research opportunity, see page 32 or visit [www.science.uts.edu.au/research/centres.html](http://www.science.uts.edu.au/research/centres.html)

## INDUSTRY NETWORKS

Fostering links with industry and other organisations is important to us, reflecting our aim to be a leader in collaborative research. UTS is highly rated as one of the universities that industry like to partner with. Expand your network through our connections and make valuable contacts to gain advantage over other graduates.

## GRADUATES SUCCESS

Our graduates leave with the skills, knowledge and practical experience sought by industry because of our industry-focused approach.

What you learn at UTS: Science will not only get you the job you want but also teach you how to keep learning throughout your career.

Success stories include two forensic science graduates whose fingerprint detection technology lead to a phototype developed by Foster and Freeman.

## FLEXIBLE STUDY OPTIONS

Our degrees are designed to be flexible. Students can choose their major at the beginning or end of their first-year of study.

You can choose from a range of second and third year subjects. This flexibility enables you to pursue areas of interest to you, while keeping your career options open.

## INTERNATIONAL OPPORTUNITIES

In today's globalised world, international experience can open doors to better career opportunities as well as broaden your mind and the way you think. UTS is the only university in Australia to offer students the option of studying another language overseas for a year by combining their degree with a Bachelor of Arts in International Studies. A UTS: Science degree can also be combined with a degree from another UTS faculty, such as Business, Engineering or Law. See page 30 for combined degrees options.

The UTS Bachelor of Biomedical Science and UTS Bachelor of Science in Biomedical Science major are the only degrees accredited by the Australian Institute of Medical Scientists (AIMS) in Sydney. This accreditation allows graduates to practice in laboratories in the USA and the UK.

## MODERN AND ACCESSIBLE FACILITIES

Students are well supported and exposed to the latest technologies and facilities. Our laboratories are comparable if not better to those in advanced commercial labs. We also provide solution-based services to industry, giving industry access to students and vice versa.

UTS also leads the way in delivering a world-leading campus through its billion dollar Campus Master Plan, where a new state of the art science building will open in mid-2014, housing additional teaching and learning spaces, research labs, social spaces and a super lab.

## CONVENIENT LOCATION AND STUDENT LIFE

UTS City Campus has the advantage of being in the centre of Sydney, close to amenities and industry. A great university experience is also about the student social life and with over 120 clubs and societies on offer on-campus, along with a gym, multi-purpose sports hall, cafes and bars – you'll be spoilt for choices.

Academic assistance, learning centres and career advice are available to ensure students feel secure, supported and safe.

# WORLD-CLASS FACILITIES

UTS has invested over A\$100 million in its science facilities and will be investing more, making it one of the best in Australia.

By providing access to state-of-the-art instruments and facilities, our students and staff gain essential experience in using the latest technologies and are provided with the facilities needed to produce cutting edge, relevant research.



## NEW SCIENCE BUILDING

As part of the UTS Master Plan, Science at UTS is set to receive a boost with the construction of a new purpose-built facility connected to the existing ultra-modern science building by 2014. The new addition will consist of first-class super laboratories, teaching, learning and research spaces, social and common areas for both students and staff, allowing the faculty to expand its activities. The new building will put UTS amongst the first universities in the world to be equipped with a super-lab with all the latest technologies.

Image supplied by: Durbach Block Jaggars & BVN Architecture



## TEACHING LABORATORIES

Fifteen teaching laboratories are dedicated to undergraduate practicals. Labs are fitted with modern scientific and analytical instrumentations, e-lecterns and computers.

UTS: Science also has off-campus learning sites such as the Stroud Research Station, which provides access to forests and rivers around Stroud, situated near Newcastle. It's equipped with 12 artificial stream systems used for stream ecology and ecotoxicology research.



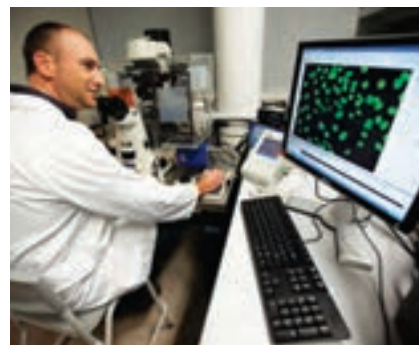
## MATHEMATICS AND COMPUTING FACILITIES

Mathematics students have access to modern computer labs with up-to-date mathematical and statistical software, e-learning support, and regional and national advanced computing facilities. UTS collaborates closely with the Australian Consortium for Advanced Computing and Communications (Ac3) giving access to state-of-the-art computing facilities.



## TRADITIONAL CHINESE MEDICINE OUTPATIENT CLINIC

UTS is only a handful of English language universities in the world to offer comprehensive professional education and research in traditional Chinese medicine. Our on-campus outpatient clinic is open to the public and enables students to practice treatments in acupuncture, Chinese herbal medicine and Chinese medicine remedial massage.



## RESEARCH LABORATORIES

There are three levels of research laboratories where UTS: Science collaborate with a number of its industry partners including Agilent Technologies, FEI Company, and the Australian Federal Police. Some of these partnerships have resulted in advanced and specialist facilities, such as the Nuclear Magnetic Resonance (NMR) facility that supports top-quality research into chemistry, biology and forensics, becoming available to UTS students.

### WORLD-FIRST MICROSCOPE TECHNOLOGY AT UTS

The world's first system for studying the cell biology of living microorganisms at super-resolution has been installed at UTS, promising new insights into the behaviour of infectious diseases. UTS is the world-first commercial site for the next generation DeltaVision OMX Blaze super resolution imaging system – a device capable of capturing real-time multiple colour images of interactions between micro organisms and living cells.

"This new imaging platform is truly amazing. We are at the forefront of being able to actually see infectious disease processes at sub-micron level resolution level, in living cells," says Professor Ian Charles, Director of ithree institute.

"This will enable research aimed at better understanding how microorganisms such as malaria, bacteria and viruses cause infection and has the potential to help develop treatments for life-threatening diseases." Deputy Premier and Minister

for Trade and Investment, Andrew Stoner, said the commissioning of the OMX Blaze positioned NSW at the very forefront of scientific imaging research.

"Researchers at UTS are the first in the world to access this technology," Mr Stoner said.

"NSW has world-class universities and research institutes, and the fact that UTS secured the opportunity to become the world-first commercial site for this technology speaks volumes about the calibre of research undertaken at the university.

"It will help secure national and international collaborations in science and medical research for NSW and will attract increased investment to the State," he said.

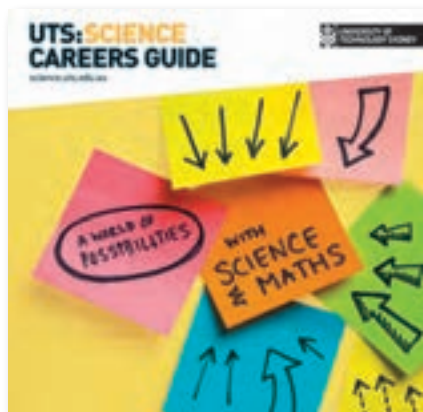
"Researchers at UTS are the first in the world to access this technology."

**Mr Andrew Stoner,  
Deputy Premier and  
Minister for Trade &  
Investment**

Image of a bone cell taken using OMX Super-Resolution microscope. The bone cell is stained for nuclear DNA (red) and actin (green). Image provided by Dr Lynne Turnbull.



# CAREERS IN SCIENCE AND MATHEMATICS



The UTS: Science Careers Guide provides aspiring students a better understanding of where a science or maths careers could possibly take them.

Download it at  
[www.science.uts.edu.au](http://www.science.uts.edu.au)

## UTS: SCIENCE GRADUATES HAVE UNLIMITED CAREER PATHS

At UTS: Science, we offer a broad range of specialisations and subjects which lead to an endless list of careers for a science or maths graduate. The breadth and depth of our courses enable our graduates to apply both scientific and soft skills in a broad range of careers and industries.

Graduates have a range of destinations available to them, particularly in professional careers in science, business, finance, teaching, law, IT, art, engineering and technology.

Careers in science are constantly evolving as consumers seek more advanced, efficient and eco-friendly technologies to improve their daily lives. Scientists are employed across a myriad of areas including:

- > developing vaccines and cures for infectious diseases;
- > understanding and slowing climate change;
- > developing greener and sustainable products;
- > tackling crime effectively.

These are just some examples of potential areas of employment for science graduates.

## EMPLOYERS WANT WORK-READY GRADUATES

Work-ready graduates are mature and diligent, possess strong practical hands-on skills and soft skills in problem-solving, are able to think critically, work as a team, possess logical analysis with numerate abilities, and are effective communicators both verbally and in writing.

These are all skills attained by science and maths graduates through interactions in laboratories, field work and lectures.



UTS: Science courses are practical and hands-on from day one. The compulsory subjects cover fundamental building blocks of the enabling sciences – physics, chemistry and maths.

You'll learn where and how science and maths fits within the community and industry, and how to effectively communicate your science to the community at large.

## WHAT IS THE DIFFERENCE BETWEEN A BACHELOR OF SCIENCE AND A SPECIALIST BACHELOR DEGREE?

UTS: Science offers students the option to study a Bachelor of Science or a specialist Bachelor degree in science or mathematics.

Students who are uncertain of what to study, are often advised to choose the Bachelor of Science for its flexibility and variety of options, i.e. a total of 11 majors to choose from (see below table).

The Bachelor of Science also gives students ease and flexibility to change their majors after first year if they decide it is not suitable for their career aspirations.

In most cases, where the same majors are offered in both the Bachelor of Science (BSc) and specialist Bachelor degree, there is no great difference between the two degree programs. Students in the same major attend the same lectures and practicals. Examples of such majors are the environmental forensics, marine biology, biotechnology, biomedical science and medical science.

## WHAT ARE THE PRE-REQUISITES FOR ENTRY?

UTS: Science's Bachelor degrees do not have pre-requisites, only assumed knowledge, which means if you didn't study science at high school, you can still apply to study science at UTS. However, students are expected to have this knowledge when they commence their degree.

UTS: Science offers bridging courses in mathematics, physics and chemistry to assist students who don't have the recommended knowledge. However, these courses do not attempt to teach Year 12 science or mathematics.

More information on UTS: Science bridging courses, go to [www.science.uts.edu.au](http://www.science.uts.edu.au)

## HOW MANY HOURS WILL I BE AT UNIVERSITY PER-WEEK?

A typical full-time science or mathematics student can expect about 20 hours of contact time per week.

You'll also be required to study and prepare for assessments, dedicating up to 40 hours per week to your university studies, which include lab practicals and tutorials.

It's about half the time for part-time students.

BACHELOR OF SCIENCE DEGREE	2013 ATAR	SPECIALIST DEGREE	2013 ATAR	PAGE
Bachelor of Science (Flexible)	74.00	Not offered	-	22
Bachelor of Science (Mathematics)	73.05	Not offered	-	8
Bachelor of Science (Statistics)	73.05	Not offered	-	9
Bachelor of Science (Applied Physics)	71.20	Not offered	-	12
Bachelor of Science (Applied Chemistry)	71.65	Not offered	-	10
Bachelor of Science (Nanotechnology)	71.25	Not offered	-	11
Bachelor of Science (Environmental Biology)	70.70	Not offered	-	14
Bachelor of Science (Environmental Forensics)	70.70	Bachelor of Science in Environmental Forensics	70.70	15
Bachelor of Science (Marine Biology)	70.70	Bachelor of Science in Marine Biology	71.85	16
Bachelor of Science (Biotechnology)	78.00	Bachelor of Biotechnology	74.80	18
Bachelor of Science (Biomedical Science)	78.00	Bachelor of Biomedical Science	83.75	20
Bachelor of Science (Medical Science)	78.00	Bachelor of Medical Science	87.35	19
Not offered	-	Bachelor of Mathematics and Computing	71.70	27
Not offered	-	Bachelor of Mathematics and Finance	79.65	26
Not offered	-	Bachelor of Forensic Biology in Biomedical Science	84.35	23
Not offered	-	Bachelor of Forensic Science in Applied Chemistry	78.45	24
Not offered	-	Bachelor of Health Science in Traditional Chinese Medicine	75.90	28

# BACHELOR OF SCIENCE

## KEY INFORMATION

**2013 ATAR:** See majors, pages 8-22

**Duration:** 3 years (full time)  
6 years (part time)

**Location:** City campus

### Assumed Knowledge:

See information on relevant majors

### Recommended Year 12 Studies:

See information on relevant majors

### Combine this Degree with:

Business, Engineering, International Studies and Law – see page 30

**Bonus Points:** Available, see page 36

**How to apply:** See page 36

### Professional Recognition:

See information on relevant majors

## HOW DOES IT WORK?

The Bachelor of Science (BSc) is a flexible degree designed to give you a solid foundation of scientific knowledge and practice, while allowing you to specialise in your area of interest.

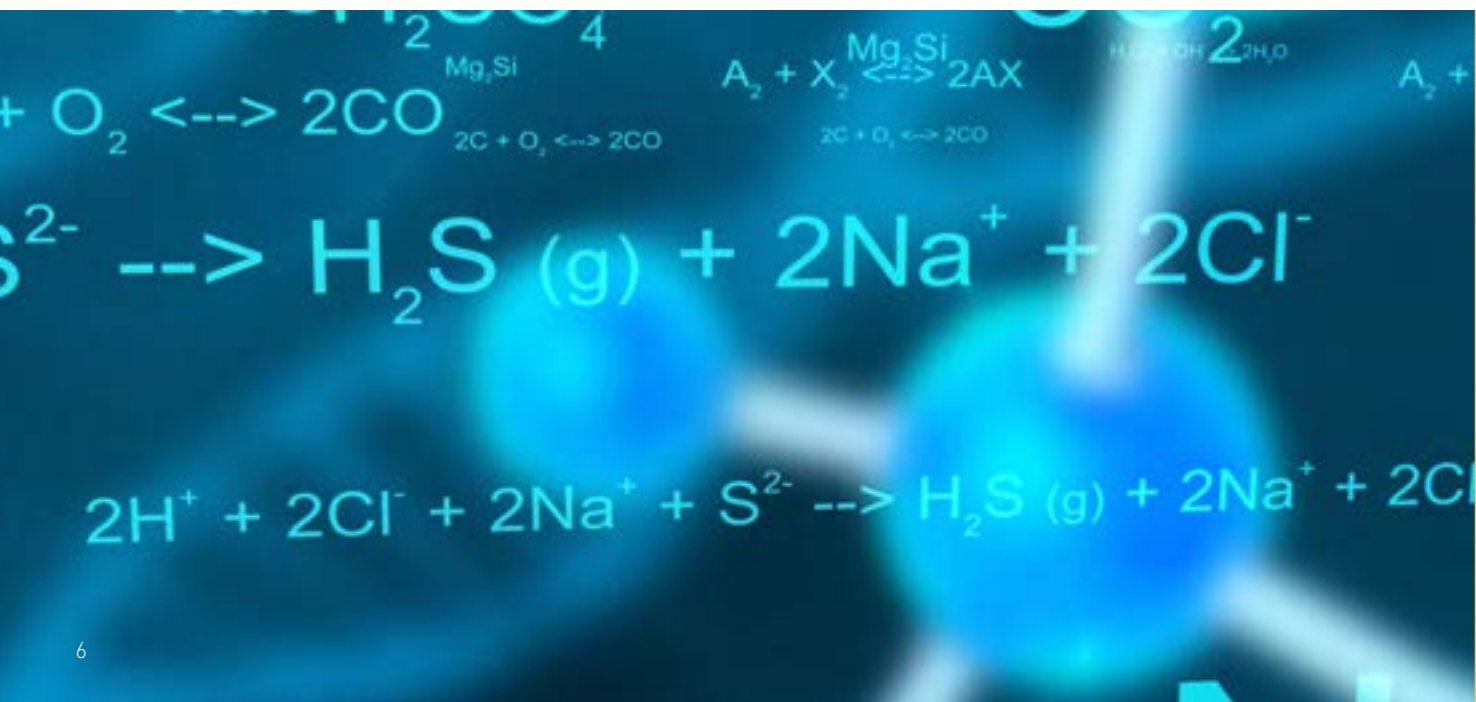
In your first year, you'll study core subjects of your chosen foundation stream. At the end of the first year, you can either continue or change your chosen major or area of specialisation within the foundation stream.

You can also opt to study a range of subjects by choosing the flexible major, and graduate with a Bachelor of Science award. This allows you to follow your interests and aspirations, while keeping your career options open.

**Flexible major:** You'll need to choose one of the three first-year foundation streams. Upon completion of the foundation streams, you may choose any of the specific majors that articulate with your chosen foundation stream or you may choose a flexible mix of subjects that matches your interests and ambitions. See page 22 for more information.

## CAN YOU COMBINE THE BACHELOR OF SCIENCE WITH ANOTHER DEGREE?

Yes, you can combine the Bachelor of Science, with degrees from other UTS faculties such as business, international studies, law and engineering. For example, you can combine Bachelor of Science (Applied Physics) with Bachelor of Arts in International Studies, which allows you to study abroad for a year. See page 30 more information.

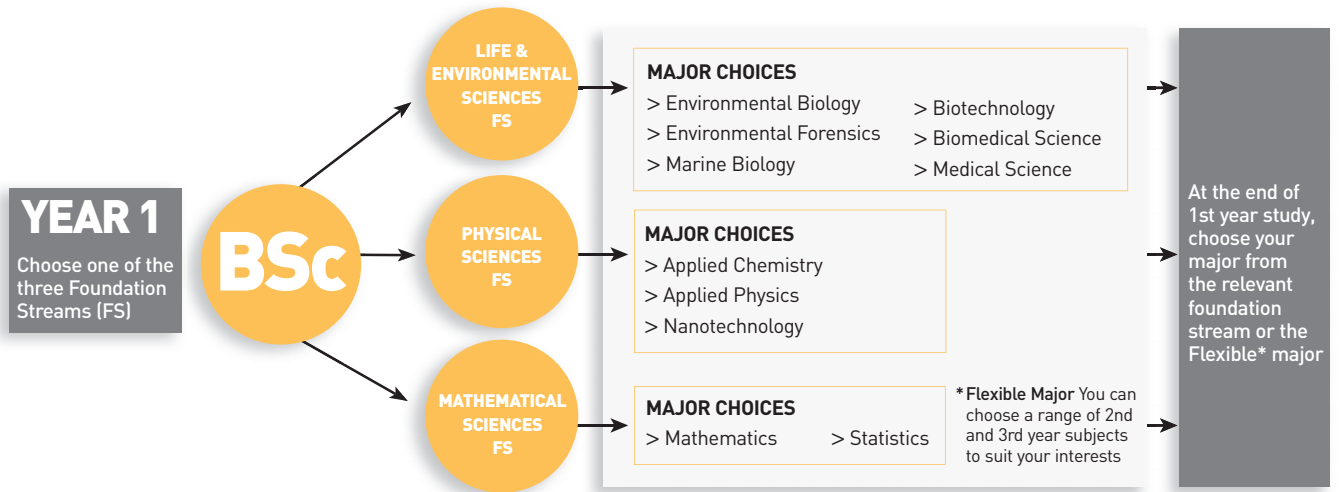




**WHAT ARE THE FOUNDATION STREAMS?  
WHAT MAJORS DO THEY LEAD INTO?**

There are 3 foundation streams that lead into 11 majors.

FOUNDATION STREAMS	MAJORS
Life and Environmental Sciences	Biotechnology, Biomedical Science, Medical Science, Environmental Biology, Environmental Forensics, Marine Biology
Physical Sciences	Applied Chemistry, Applied Physics, Nanotechnology
Mathematical Sciences	Mathematics, Statistics



Photographer: Jessica Blac

**PRACTICAL APPROACH TO TEACHING THAT INVOLVES HOT WHEELS CARS AND SHOOTING ARROWS”**

Second-year Bachelor of Science (Applied Chemistry) student Alex West admits physics was the one subject that “freaked me out” before coming to university.

“I didn’t study physics for the HSC, so the prospect of doing it first-year at uni was a little scary. However, I soon discovered, it wasn’t like that at all. I found the material really stimulating and made a lot of sense as the theory and practical linked together well.

“The subject started off with a bang! They didn’t waste any time getting us straight into the practicals and you have to admit it’s pretty cool when your first lab involves testing Hot Wheels cars and constructing huge ramps for them to speed down.”

But it’s not all fun and games. West says there’s a serious side too.

“We had to use the equations we learnt in the lecture to manipulate the distance and accuracy of the car. It was a big competition among the class, and whoever could build the highest, but also most accurate, ramp won. A bit of competition is always good to get you thinking.”

Extracted from UTS Newsroom.

Byline: Sarah Gillett, Bachelor of Arts in Communication (Journalism) and Andrew Fitzsimons, Bachelor of Science (Applied Chemistry)

# Bachelor of Science (Mathematics)

## KEY INFORMATION

**2013 ATAR:** 73.05  
**Duration:** 3 years (full time)  
 6 years (part time)  
**Location:** City campus  
**UAC Code:** 607003  
**UTS Course Code:** C10242

**Assumed Knowledge:**  
 Maths, 2 units of English  
**Recommended Year 12 Studies:**  
 Maths Extension 1  
**Combine this Degree with:**  
 Business, Engineering, International Studies and Law – see page 30  
**Bonus Points:** Available, see page 36  
**How to apply:** See page 36

## COURSE DESCRIPTION

You'll gain a good understanding of mathematics, analysis and design of experiments, sample surveys, quality control, quantitative methods in management and finance, logistics, modelling techniques and mathematical foundations. You'll obtain a high level of analytical skills and learn to apply mathematics in complex real world situations. With an extensive list of mathematics subjects to choose from, you can customise your degree according to your interests.

## CAREER OPTIONS INCLUDE

Financial consultant, valuer, quantity surveyor, banker, investment analyst, computer programmer, intelligence analyst. Mathematics graduates are in demand in a wide range of industries such as business, health, economics, engineering, market research, physical sciences and social sciences. Graduates could be employed to analyse traffic flow at airports, calculate the optimum distribution of branches for a major bank, or set the rates of insurance premiums. Others might be part of a

medical team working on ground-breaking research, modelling industrial inventory control, teaching or providing advice on the stock market. Wherever decisions have to be made, there is a need for graduates who have the skills to work with numerical information.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

## COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10242.html](http://www.handbook.uts.edu.au/courses/c10242.html)

## MATHEMATICS MAJOR

Year 1	Year 2	Year 3
Introduction to Quantitative Management Introduction to Linear Dynamical Systems Introduction to Statistics Foundation subject choice A Introduction to Sample Surveys Introduction to Analysis and Multivariable Calculus Applications of Discrete Mathematics Foundation subject choice B	Computational Linear Algebra Optimisation in Quantitative Management Stochastic Models Differential Equations Regression Analysis <b>Select one of the following:</b> > Advanced Analysis > Mathematical Methods > Nonlinear Methods in Quantitative Management > Network and Combinatorial Optimisation > Stochastic Processes > Seminar (Mathematics) > Quality Control > Seminar (Statistics) <b>Select two electives</b>	Advanced Calculus <b>Select two of the following:</b> > Quantitative Management Practice > Mathematical Statistics > Design and Analysis of Experiments > High Performance Computing <b>Select three of the following:</b> > Advanced Analysis > Mathematical Methods > Nonlinear Methods in Quantitative Management > Network and Combinatorial Optimisation > Stochastic Processes > Seminar (Mathematics) > Quality Control > Seminar (Statistics) <b>Select two electives</b>

# Bachelor of Science (Statistics)

## KEY INFORMATION

**2013 ATAR:** 73.05  
**Duration:** 3 years (full time)  
 6 years (part time)  
**Location:** City campus  
**UAC Code:** 607003  
**UTS Course Code:** C10242

**Assumed Knowledge:**  
 Maths, 2 units of English  
**Recommended Year 12 Studies:**  
 Maths Extension 1  
**Combine this Degree with:**  
 Business, Engineering, International Studies and Law – see page 30  
**Bonus Points:** Available, see page 36  
**How to apply:** See page 36

## COURSE DESCRIPTION

Statistics involves the design of data collection to gain maximum information, and the interpretation of that data. It is very important in marketing and finance industries. You'll learn the theory involved in the discipline and also the analytical and problem-solving skills to answer a wide range of problems.

## CAREER OPTIONS INCLUDE

Market researcher, quantitative data analyst, financial consultant, valuer, quantity surveyor, investment analyst, systems analyst, banker. Statistics graduates are commonly employed to identify underlying trends in business or social data, design surveys for market research companies, model the effects of

decisions based on incomplete or uncertain data, or estimate risks in processes that inherently involve some degree of randomness.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

## COURSE STRUCTURE

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**Professor Matt Wand** was awarded the 2013 Australian Academy of Science's Hannan Medal in Mathematical Sciences, recognising his research in statistical science in Australia and internationally.

Over the years Professor Wand's scientific studies has addressed questions as diverse as "What are the main determinants of extreme rainfall events in the Sydney hinterland?" and "Does maternal stress predispose a child to atopy-asthma?"

Statistics plays a key role in obtaining useful information from the massive amounts of data now being generated by science and industry. Professor Wand's current research is driven by data sets becoming bigger and more prevalent with the growth of technology such as the Internet.

## STATISTICS MAJOR

Year 1	Year 2	Year 3
Introduction to Quantitative Management Introduction to Linear Dynamical Systems Introduction to Statistics Foundation subject choice A Introduction to Sample Surveys Introduction to Analysis and Multivariable Calculus Applications of Discrete Mathematics Foundation subject choice B	Computational Linear Algebra Optimisation in Quantitative Management Stochastic Models Differential Equations Regression Analysis <b>Select one of the following:</b> > Quality Control > Seminar (Statistics) <b>Select two electives</b>	Mathematical Statistics Design and Analysis of Experiments Advanced Calculus <b>Select one of the following:</b> > Quality Control > Stochastic Processes > Seminar (Statistics) <b>Select two of the following:</b> > Advanced Analysis > Nonlinear Methods in Quantitative Management > Network and Combinatorial Optimisation <b>Select two electives</b>

# Bachelor of Science (Applied Chemistry)

## KEY INFORMATION

**2013 ATAR:** 71.65  
**Duration:** 3 years (full time)  
 6 years (part time)  
**Location:** City campus  
**UAC Code:** 607005  
**UTS Course Code:** C10242

### Assumed Knowledge:

Maths, 2 units of English,  
 2 units of Science

### Recommended Year 12 Studies:

Maths Extension 1, Physics, Chemistry

### Combine this Degree with:

Business, Engineering, International  
 Studies and Law – see page 30

**Bonus Points:** Available, see page 36

**How to apply:** See page 36

### Professional recognition and accreditation:

Royal Australian  
 Chemical Institute (RACI)

## COURSE DESCRIPTION

Chemistry is the science of matter, and the basis of most of today's scientific advances. With its dynamic combination of practice and theory, this major gives you insight into how chemical substances work and why. The core subjects will develop your advanced problem-solving skills, and the electives will allow you to learn the basic concepts, vocabulary and patterns of thought in a second discipline.

You'll have access to high technology instruments and laboratory facilities. UTS has strong links with major employers which offer students valuable networking opportunities.

## CAREER OPTIONS INCLUDE

Chemist, food and wine producer, laboratory technician, science teacher, QC analyst (pharmaceutical), process development technologist, aquatic chemist, chemical oceanographer, analytical and clinical chemist, development chemist, environmental chemist, geochemist, organic chemist, research chemist, regulatory toxicologist, molecular scientist, organic analytical chemist.

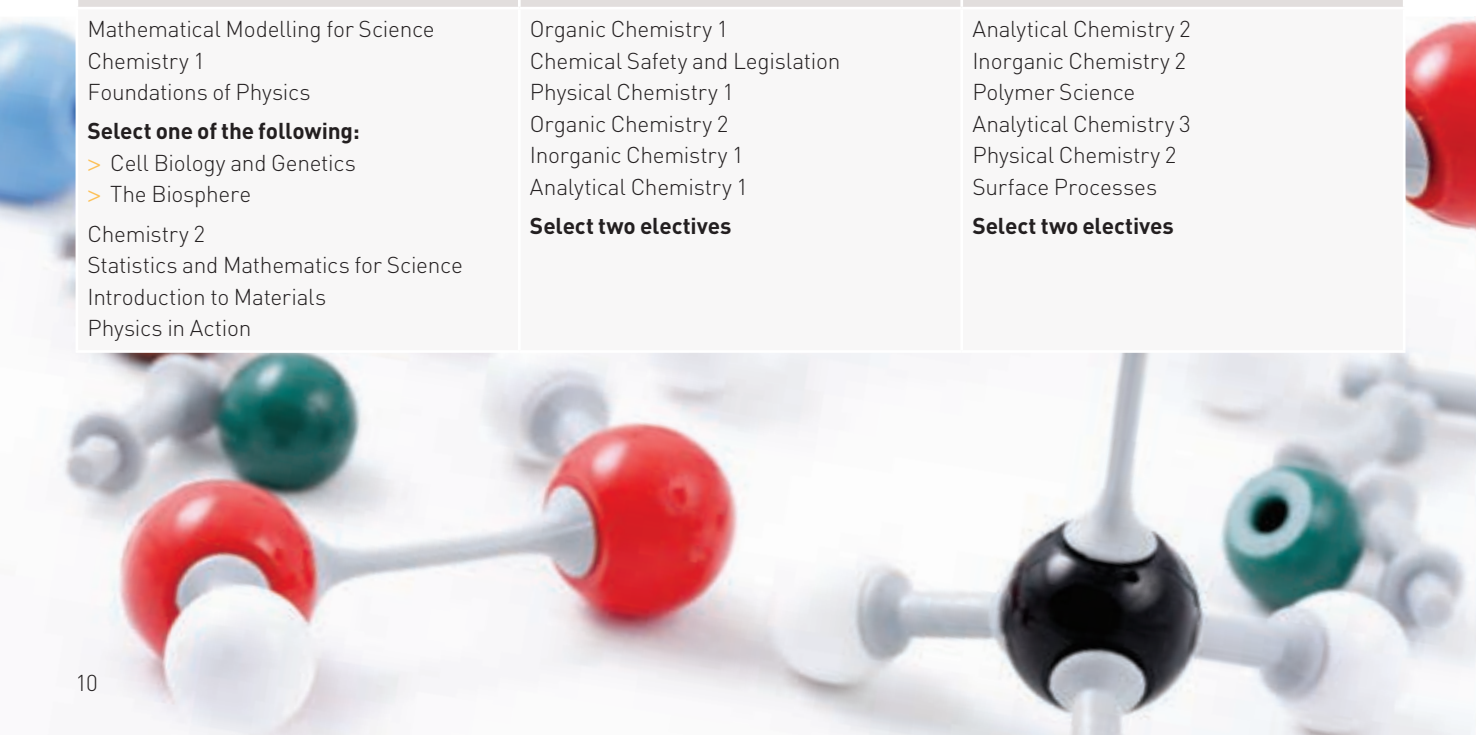
For more career options, visit  
[www.science.uts.edu.au](http://www.science.uts.edu.au)

## COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10242.html](http://www.handbook.uts.edu.au/courses/c10242.html)

## APPLIED CHEMISTRY MAJOR

Year 1	Year 2	Year 3
Mathematical Modelling for Science Chemistry 1 Foundations of Physics <b>Select one of the following:</b> > Cell Biology and Genetics > The Biosphere Chemistry 2 Statistics and Mathematics for Science Introduction to Materials Physics in Action	Organic Chemistry 1 Chemical Safety and Legislation Physical Chemistry 1 Organic Chemistry 2 Inorganic Chemistry 1 Analytical Chemistry 1 <b>Select two electives</b>	Analytical Chemistry 2 Inorganic Chemistry 2 Polymer Science Analytical Chemistry 3 Physical Chemistry 2 Surface Processes <b>Select two electives</b>



## Bachelor of Science (Nanotechnology)

### KEY INFORMATION

**2013 ATAR:** 71.25  
**Duration:** 3 years (full time)  
 6 years (part time)  
**Location:** City campus  
**UAC Code:** 607007  
**UTS Course Code:** C10242

#### Assumed Knowledge:

Maths, 2 units of English,  
 2 units of Science

#### Recommended Year 12 Studies:

Maths Extension 1, Physics, Chemistry

#### Combine this Degree with:

Business, Engineering, International  
 Studies and Law – see page 30

**Bonus Points:** Available, see page 36

**How to apply:** See page 36

#### Professional recognition and

**accreditation:** Australian Institute of  
 Physics (AIP)

### COURSE DESCRIPTION

Nanotechnology is about understanding how the world works at the level of atoms and molecules, and applying that knowledge to create innovative solutions. Nanotechnology products on sale today include; clothes that are completely stain proof, self-cleaning surfaces, energy-efficient window coatings, clear-gel sunscreens and microchips.

Targeted drug-delivery systems, smart materials that respond to their surroundings, DNA computers and paper-thin and flexible displays are only a few nanotechnologies soon to be released.

In this major, you'll be exposed to a multi-discipline course that develops your analytical and critical thinking skills, and also learn how to apply practical problem-solving skills.

Hands-on training in the tools of nanotechnology is a core component of this course.

The innovation and commercialisation process is examined to give graduates an appreciation of how new technologies may be brought to the market place.

### CAREER OPTIONS INCLUDE

Material scientist, polymer scientist, composite technologist, entrepreneurial, investment advisor, product development and commercialisation, nanotechnologist, science teacher, academia, technical officer, imaging specialist, research associate or assistant, drug deliverance researcher, nanolithography, platform project officer.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

### COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10242.html](http://www.handbook.uts.edu.au/courses/c10242.html)

### NANOTECHNOLOGY MAJOR

Year 1	Year 2	Year 3
Mathematical Modelling for Science Chemistry 1 Foundations of Physics <b>Select one of the following:</b> > Cell Biology and Genetics > The Biosphere Chemistry 2 Statistics and Mathematics for Science Introduction to Materials Physics in Action	Mathematics for Physical Science Physical Chemistry 1 Nanomaterials BioNanotechnology Quantum Physics Imaging Science Select two electives	Applied Electronics and Interfacing Molecular Nanotechnology Solid-state Science and Nanodevices Surface Processes Optics and Nanophotonics Scanning Probe and Electron Microscopy <b>Select two electives</b>

## Bachelor of Science (Applied Physics)

### KEY INFORMATION

**2013 ATAR:** 71.20  
**Duration:** 3 years (full time)  
 6 years (part time)  
**Location:** City campus  
**UAC Code:** 607009  
**UTS Course Code:** C10242

#### Assumed Knowledge:

Maths, 2 units of English,  
 2 units of Science

#### Recommended Year 12 Studies:

Maths Extension 1, Physics, Chemistry

#### Combine this Degree with:

Business, Engineering, International  
 Studies and Law – see page 30

**Bonus Points:** Available, see page 36

**How to apply:** See page 36

#### Professional recognition and

**accreditation:** Australian Institute of  
 Physics (AIP)

### COURSE DESCRIPTION

Physics challenges the imagination and today's physicists are turning their talents to some of the great challenges facing society. Energy efficient lighting, climate change studies and medical technologies are all benefiting from the contributions of physicists.

You'll learn about the interactions of energy and matter, precision measurement techniques, laws of nature and their behaviour, and how new developments in physics are helping to expand the frontiers of technology. It combines theory and practice with lots of opportunities for practical skills and laboratory experience.

You'll gain valuable critical thinking skills and learn how to apply practical problem-solving skills in a hands-on environment. You'll discover how applied research becomes new technology.

### CAREER OPTIONS INCLUDE

Conservator, metallurgist, meteorologist, physicist, coal geologist, sensory biophysicist, atmospheric and environmental physicist, atomic and molecular physicist, medical and health physicist, nanotechnologist, optical physicist, noise consultant, materials analyst or scientist, biophysics consultant, exploration and consulting, medical physics diagnoses, energy and sustainable research.

For more career options, visit  
[www.science.uts.edu.au](http://www.science.uts.edu.au)

### COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10242.html](http://www.handbook.uts.edu.au/courses/c10242.html)

### APPLIED PHYSICS MAJOR

Year 1	Year 2	Year 3
Mathematical Modelling for Science Chemistry 1 Foundations of Physics <b>Select one of the following:</b> > Cell Biology and Genetics > The Biosphere Chemistry 2 Statistics and Mathematics for Science Introduction to Materials Physics in Action	Nanomaterials Energy Science and Technology Mathematics for Physical Science Advanced Mechanics Quantum Physics Imaging Science <b>Select two electives</b>	Applied Electronics and Interfacing Solid-state Science and Nanodevices Computational Physics Optics and Nanophotonics Scanning Probe and Electron Microscopy Measurement and Analysis of Physical Processes <b>Select two electives</b>

**RICHARD CRENDAL****Bachelor of Science in Applied Physics****Why did you choose to study Physics?**

It appealed strongly to my inquisitive nature. I wanted to learn how things worked, and why things behaved the way they did. I was more interested in understanding concepts and developing skills than I was in rote learning.

**What was it about the UTS course that attracted you?**

Being applied physics, I knew that the UTS course would have a strong practical component, which I believe is crucial in the formation of any scientist. It's also one of the only courses that allow undergraduates to use some of the country's leading edge equipment – latest electron microscopes!

**What is your favourite aspect of the course that attracted you?**

Physics is a challenging course, and I take great delight in the feeling of triumph every time a problem is solved, or we get an experiment running smoothly. UTS: Science also has some excellent facilities, and having a chance to use them has been a great experience. The class sizes are relatively small too, so the learning environment becomes much more relaxed and interactive.

**Do you think a Physics degree is versatile?**

You would be hard-pressed to find a more versatile degree. Physics degrees focus on developing your skills, such as problem-solving, computing ability, logical thought and communication of ideas. These are skills that are valuable in all fields, earning physics a reputation as the 'Swiss Army Knife' of science degrees.

## Bachelor of Science (Environmental Biology)

### KEY INFORMATION

**2013 ATAR:** 70.70  
**Duration:** 3 years (full time)  
 6 years (part time)  
**Location:** City campus  
**UAC Code:** 607011  
**UTS Course Code:** C10242

#### Assumed Knowledge:

Maths, 2 units of English,  
 2 units of Science

#### Recommended Year 12 Studies:

Maths Extension 1, Chemistry

#### Combine this Degree with:

Business, Engineering, International  
 Studies and Law – see page 30

**Bonus Points:** Available, see page 36

**How to apply:** See page 36

### COURSE DESCRIPTION

You'll study natural systems, how these systems work, and how detrimental impacts on them can be assessed and recovered. You'll gain a thorough understanding of the way living organisms function both on land and in water, and the skills to detect and calculate detrimental effects on their function and the environment.

You'll learn these concepts and skills through a dynamic combination of theory, field and laboratory experiences. Excursions or field trips to places such as the Snowy Mountains, NSW Outback, Heron Island and the Great Barrier Reef, are core components of this course.

### CAREER OPTIONS INCLUDE

Biologist, environmental research scientist, environmental consultant, life scientist, aquatic ecologist, coal geologist, geological oceanographer, botanists, plant ecologist, plant pathologist, plant physiologist, plant taxonomist, biological scientist, exploration geologist, hydrogeologist, ranger, hydrologist, pest and weed controllers, entomologist, ecologist, land economist, mapping scientist.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

### COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10242.html](http://www.handbook.uts.edu.au/courses/c10242.html)

### ENVIRONMENTAL BIOLOGY MAJOR

#### Year 1

Chemistry 1  
 The Biosphere  
 Cell Biology and Genetics  
 Statistical Design and Analysis  
 Chemistry 2  
 Biocomplexity  
 Human Anatomy and Physiology  
 Physical Aspects of Nature

#### Year 2

Geological Processes  
 Experimental Design and Sampling  
 Ecology  
 Animal Behaviour and Physiology  
 Plant Physiology and Ecophysiology

#### Select three electives

#### Year 3

GIS and Remote Sensing  
 Wildlife Ecology  
 Aquatic Ecology  
 Biodiversity Assessment  
 Stream and Lake Assessment  
 Environmental Protection and Management  
 Advances in Ecology

#### Select one of the following:

- > Forest and Mountain Ecology
- > Semi-arid Ecology



# Bachelor of Science (Environmental Forensics)

## Specialist Degree\*: Bachelor of Science in Environmental Forensics

### KEY INFORMATION

**Bachelor of Science (Environmental Forensics)**

**2013 ATAR:** 70.70  
**UAC Code:** 607011  
**UTS Course Code:** C10242

**Bachelor of Science in Environmental Forensics (specialist degree)**

**2013 ATAR:** 70.70  
**UAC Code:** 607030  
**UTS Course Code:** C10227

**Duration:** 3 years (full time)  
 6 years (part time)

**Location:** City campus

**Assumed Knowledge:**

Maths, 2 units of English,  
 2 units of Science

**Recommended Year 12 Studies:**

Maths Extension 1, Chemistry

**Combine this Degree with:**

Business, Engineering, International Studies and Law – see page 30

**Bonus Points:** Available, see page 36

**How to apply:** See page 36

### COURSE DESCRIPTION

This course is the first of its kind in Australia. It combines environmental science with studies of legal framework surrounding environmental protection. It focuses on studies of living and non-living components of the environment and on the impacts of human use of environmental resources on the ecosystem.

It is structured around a combination of theoretical, field and laboratory studies of ecology and environmental chemistry, with the aim to produce scientists who contribute to environmental management, policy and planning processes.

### CAREER OPTIONS INCLUDE

Endangered species consultant, conservation consultant, environmental policy adviser, work safe regulator, environmental media liaison. Graduates could be employed in government, environmental law firms, environmental protection agencies, urban and regional planning, national heritage agencies.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

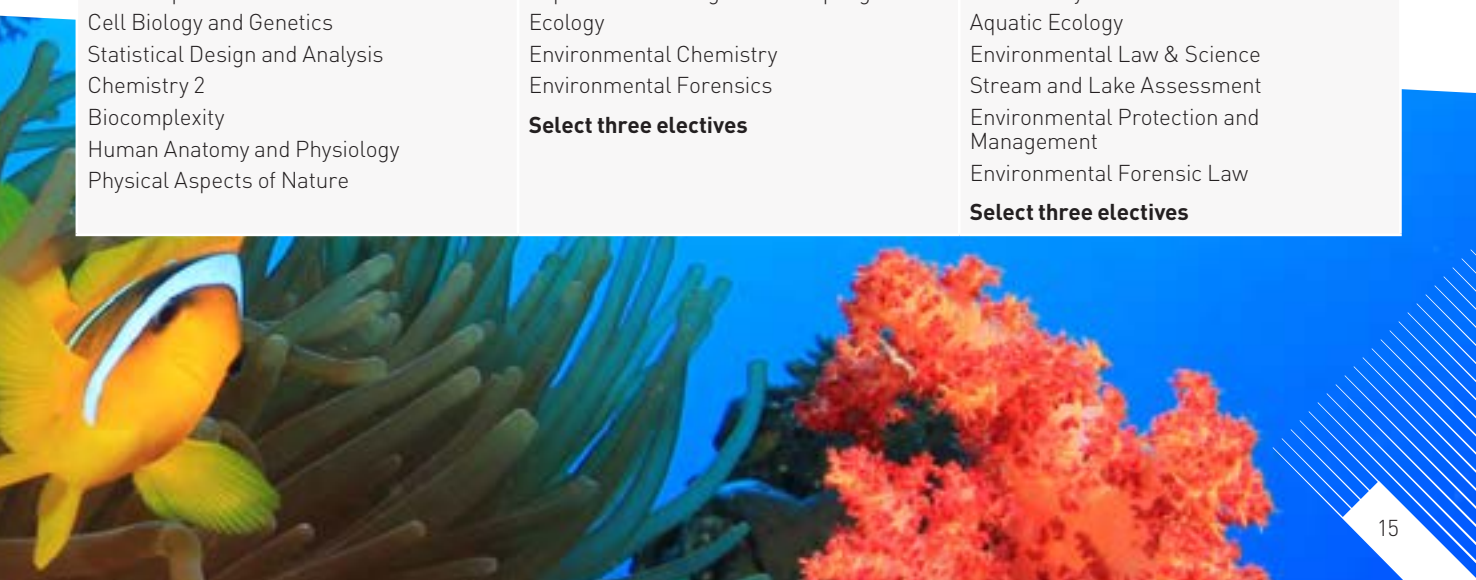
### COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10242.html](http://www.handbook.uts.edu.au/courses/c10242.html) or [www.handbook.uts.edu.au/courses/c10227.html](http://www.handbook.uts.edu.au/courses/c10227.html)

\* See page 5 for more detail on the difference between a Bachelor of Science degree and a specialist degree in science or maths.

### ENVIRONMENTAL FORENSICS MAJOR

Year 1	Year 2	Year 3
Chemistry 1 The Biosphere Cell Biology and Genetics Statistical Design and Analysis Chemistry 2 Biocomplexity Human Anatomy and Physiology Physical Aspects of Nature	Geological Processes Experimental Design and Sampling Ecology Environmental Chemistry Environmental Forensics <b>Select three electives</b>	GIS and Remote Sensing Biodiversity Assessment Aquatic Ecology Environmental Law & Science Stream and Lake Assessment Environmental Protection and Management Environmental Forensic Law <b>Select three electives</b>



## Bachelor of Science (Marine Biology)

### Specialist Degree\*: Bachelor of Science in Marine Biology

#### KEY INFORMATION

##### Bachelor of Science (Marine Biology)

2013 ATAR: 70.70

UAC Code: 607011

UTS Course Code: C10242

##### Bachelor of Science in Marine Biology (specialist degree)

2013 ATAR: 71.85

UAC Code: 607035

UTS Course Code: C10228

**Duration:** 3 years (full time)  
6 years (part time)

**Location:** City campus

##### Assumed Knowledge:

Maths, 2 units of English,  
2 units of Science

##### Recommended Year 12 Studies:

Maths Extension 1, Chemistry

##### Combine this Degree with:

Business, Engineering, International  
Studies and Law – see page 30

**Bonus Points:** Available, see page 36

**How to apply:** See page 36

##### Professional recognition and

**accreditation:** Australian Marine  
Science Association

#### COURSE DESCRIPTION

This course focuses on how the marine environment works and how it can be better managed. You'll acquire a thorough understanding of the way plants, animals and micro-organisms function in marine ecosystems, and the skills required to detect and assess detrimental impacts on these marine environments resulting from climate change and human impact.

With a practical focus, this course combines theory, laboratory and real-world experience through field trips to a range of marine environments including the Great Barrier Reef and NSW coast.

UTS has strong links with key industry and government partners through workshops and internships, which create excellent networking opportunities for students.

#### CAREER OPTIONS INCLUDE

Marine biologist, coastal management, marine education, aquatic research, climate change research, fisheries scientist. Graduates work for fisheries, national parks and wildlife, environmental protection authorities, natural resources and planning consultancies.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

#### COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10242.html](http://www.handbook.uts.edu.au/courses/c10242.html) or [www.handbook.uts.edu.au/courses/c10228.html](http://www.handbook.uts.edu.au/courses/c10228.html)

#### MARINE BIOLOGY MAJOR

Year 1	Year 2	Year 3
Chemistry 1 The Biosphere Cell Biology and Genetics Statistical Design and Analysis Chemistry 2 Biocomplexity Human Anatomy and Physiology Physical Aspects of Nature	Geological Processes Experimental Design and Sampling Ecology Animal Behaviour and Physiology Plant Physiology and Ecophysiology Marine Communities** <b>Select two electives</b>	GIS and Remote Sensing Aquatic Ecology <b>Select one of the following:</b> > Fisheries Resources > Marine Geosciences Coral Reef Ecosystems** Environmental Protection and Management Marine Primary Producers** <b>Select two electives</b>

\* See page 5 for more detail on the difference between a Bachelor of Science degree and a specialist degree in science or maths.

\*\* Subject includes field excursion of more than one city.

**SINEM TULPAR****Bachelor of Science in Marine Biology****How did you decide to pursue this degree?**

I came to university straight from high school. I did do some volunteer work with environmental non-government Organisations so I knew the path I wanted to take. I've always been passionate about the natural environment and conservation. Seeing the Great Barrier Reef (GBR) at a young age showed me the wonders of sea life. Not enough people think about marine threats since it's not easily seen, I wanted to identify these issues so a Marine Biology degree fit in perfectly with my ambitions.

**What is the most appealing element of your course?**

I love the practical element! I've snorkelled with sharks and moray eels, and have had hands on experience using various research equipment. We've had great field trips to the GBR, rainforests and various locations around Sydney. I also love being able to look out at the ocean and understand what goes on beneath.

One thing I appreciate about studying at UTS is how approachable the lectures are. They are all still involved in research and are able to fill the lectures with information about recent findings and issues.

**Is there any advice you would give to students studying this degree?**

Keep an open mind. There are a lot of different pathways to follow with marine biology so play to your passions and strengths. There's no need to limit yourself!

**Now that you have almost finished your degree, what are your plans for the future?**

I would like to go into policy work. I think we need more scientific minds in non-scientific fields in order to communicate issues and processes to a wider audience and implement change.

Mitch Hollier underwent what has "truly been a once in a lifetime experience."

He spent four months at base camp in Antarctica with eight other scientists to conduct a series of experiments related to climate change.

Mitch Hollier, Bachelor of Science (Hons) in Environmental Biology, Bachelor of Science in Marine Biology conducts experiments on the Sorsdal Glacier



## Bachelor of Science (Biotechnology)

### Specialist Degree\*: Bachelor of Biotechnology

#### KEY INFORMATION

##### Bachelor of Science (Biotechnology)

**2013 ATAR:** 78.00  
**UAC Code:** 607015  
**UTS Course Code:** C10242

##### Bachelor of Biotechnology (specialist degree)

**2013 ATAR:** 74.80  
**UAC Code:** 607045  
**UTS Course Code:** C10172

**Duration:** 3 years (full time)  
 6 years (part time)

**Location:** City campus

##### Assumed Knowledge:

Maths, 2 units of English,  
 2 units of Science

##### Recommended Year 12 Studies:

Maths Extension 1, Chemistry

##### Combine this Degree with:

Business, Engineering, International  
 Studies and Law – see page 30

**Bonus Points:** Available, see page 36

**How to apply:** See page 36

##### Professional recognition and

**accreditation:** Australian Biotechnology  
 Association

#### COURSE DESCRIPTION

You'll study the biological processes of living organisms and learn the skills needed to naturally manipulate these processes in the development of new medicine, food and organic substances.

Biotechnology professionals use the above techniques to create new medicines, foods and organic substances by applying gene technology and other natural processes. The broad range of electives allows you to tailor the course to suit your interests.

This degree also covers ethical issues, hazard management and intellectual property issues.

#### CAREER OPTIONS INCLUDE

Product development in a variety of industries including pharmaceuticals, agriculture, wineries or breweries. Quality control in food and public health, drugs research such as anti-cancer vaccines, defence technologies, and the mining industry.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

#### COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10242.html](http://www.handbook.uts.edu.au/courses/c10242.html) or [www.handbook.uts.edu.au/courses/c10172.html](http://www.handbook.uts.edu.au/courses/c10172.html)

\* See page 5 for more detail on the difference between a Bachelor of Science degree and a specialist degree in science or maths.

#### BIOTECHNOLOGY MAJOR

Year 1	Year 2	Year 3
Chemistry 1 The Biosphere Cell Biology and Genetics Statistical Design and Analysis Chemistry 2 Biocomplexity Human Anatomy and Physiology Physical Aspects of Nature	General Microbiology Metabolic Biochemistry Biotechnology Molecular Biology 1 <b>Select two of the following:</b> > Analytical Biochemistry > Epidemiology and Public Health Microbiology > Introductory Haematology and Immunology <b>Select two electives</b>	Molecular Biology 2 Biobusiness and Environmental Biotechnology Advanced Immunology Bioreactors and Bioprocessing Plant Biotechnology <b>Select one of the following:</b> > Transfusion Science > Biochemistry, Genes and Disease > Parasitology <b>Select two electives</b>

# Bachelor of Science (Medical Science)

## Specialist Degree\*: Bachelor of Medical Science

### KEY INFORMATION

#### Bachelor of Science (Medical Science)

**2013 ATAR:** 78.00  
**UAC Code:** 607015  
**UTS Course Code:** C10242

#### Bachelor of Medical Science (specialist degree)

**2013 ATAR:** 87.35  
**UAC Code:** 607050  
**UTS Course Code:** C10184

**Duration:** 3 years (full time)  
 6 years (part time)  
**Location:** City campus

#### Assumed Knowledge:

Maths, 2 units of English,  
 2 units of Science

#### Recommended Year 12 Studies:

Maths Extension 1, Chemistry

#### Combine this Degree with:

Business, Engineering, International Studies and Law – see page 30

**Bonus Points:** Available, see page 36

**How to apply:** See page 36

### COURSE DESCRIPTION

You'll learn the human body's structure, function and disease processes at the cellular and whole organ level. The course is designed to train graduates for careers in medical and health-related sciences with the aim to produce professional medical scientists with highly adaptable and practical scientific skills accompanied by a thorough grounding in theory.

It also provides excellent foundation knowledge, thus a good preparation for entry into postgraduate degrees such as medicine, dentistry, pharmacy, biomedical engineering, nutrition and dietetics, complementary medicine, public health and health administration.

### CAREER OPTIONS INCLUDE

Medical scientist, medical imaging technician, human factors researcher, anaesthetic technician, cardiac technician, operating theatre technician, medical research, cancer research, gene therapy, embryology, geneticist, medical journalist or writer, health professions, nutrition, pathology.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

### COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10242.html](http://www.handbook.uts.edu.au/courses/c10242.html) or [www.handbook.uts.edu.au/courses/c10184.html](http://www.handbook.uts.edu.au/courses/c10184.html)

\* See page 5 for more detail on the difference between a Bachelor of Science degree and a specialist degree in science or maths.

### MEDICAL SCIENCE MAJOR

Year 1	Year 2	Year 3
Chemistry 1 The Biosphere Cell Biology and Genetics Statistical Design and Analysis Chemistry 2 Biocomplexity Human Anatomy and Physiology Physical Aspects of Nature	Metabolic Biochemistry General Microbiology Physiological Systems Molecular Biology 1 Human Pathophysiology <b>Select two of the following:</b> > Analytical Biochemistry > Epidemiology and Public Health Microbiology > Introductory Haematology and Immunology <b>Select one elective</b>	Pharmacology 1 Neuroscience <b>Select two of the following:</b> > Medical Imaging > Elective 2 > Elective 3 Medical Devices and Diagnostics Pharmacology 2 Medical and Applied Physiology <b>Select one elective</b>

# Bachelor of Science (Biomedical Science)

## Specialist Degree\*: Bachelor of Biomedical Science

### KEY INFORMATION

**Bachelor of Science (Biomedical Science)**

**2013 ATAR:** 78.00  
**UAC Code:** 607015  
**UTS Course Code:** C10242

**Bachelor of Biomedical Science (specialist degree)**

**2013 ATAR:** 83.75  
**UAC Code:** 607040  
**UTS Course Code:** C10115

**Duration:** 3 years (full time)  
 6 years (part time)

**Location:** City campus

**Assumed Knowledge:**

Maths, 2 units of English,  
 2 units of Science

**Recommended Year 12 Studies:**

Maths Extension 1, Chemistry

**Combine this Degree with:**

Business, Engineering, International Studies and Law – see page 30

**Bonus Points:** Available, see page 36

**How to apply:** See page 36

**Professional recognition and accreditation:**

Australian Institute of Medical Scientists (AIMS)

### COURSE DESCRIPTION

You'll learn in-depth how the body works at the cellular level, what causes disease and the techniques of laboratory diagnosis of disease, including the expanding area of molecular-based diagnostic techniques. You'll obtain knowledge and lab skills required to participate in research aimed at the prevention or treatment of disease.

This course is the only AIMS accredited degree in Sydney. It provides strong professional and industry focus with extensive theoretical knowledge and advanced laboratory skills. You'll gain a solid background in the biological and medical sciences practical experimentation.

It is also an excellent preparation for entry into postgraduate degrees, such as medicine, dentistry and pharmacy.

### CAREER OPTIONS INCLUDE

Medical lab manager, cytologist, biochemist, microbiologist, research associate, cancer research, gene therapy, embryology, infectious disease diagnostics, biological oceanographer, biologist, geneticist, pathology medical practitioner.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

### COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10242.html](http://www.handbook.uts.edu.au/courses/c10242.html) or [www.handbook.uts.edu.au/courses/c10115.html](http://www.handbook.uts.edu.au/courses/c10115.html)

### BIOMEDICAL SCIENCE MAJOR

Year 1	Year 2	Year 3
Chemistry 1 The Biosphere Cell Biology and Genetics Statistical Design and Analysis Chemistry 2 Biocomplexity Human Anatomy and Physiology Physical Aspects of Nature	General Microbiology Metabolic Biochemistry Histology Molecular Biology 1 <b>Select two of the following:</b> > Analytical Biochemistry > Epidemiology and Public Health Microbiology > Introductory Haematology and Immunology <b>Select two electives</b>	<b>Select three of the following:</b> > Molecular Biology 2 > Clinical Bacteriology > Medical and Diagnostic Biochemistry > Advanced Haematology > Advanced Immunology <b>Select three of the following:</b> > Transfusion Science > Biochemistry, Genes and Disease > Parasitology > Anatomical Pathology <b>Select two electives</b>

\* See page 5 for more detail on the difference between a Bachelor of Science degree and a specialist degree in science or maths.

**HAYLEY SUEN**

**Bachelor of Forensic Biology in Biomedical Science, Bachelor of Science (Honours) in Biomedical Science**

**Hospital Scientist, Royal Prince Alfred Hospital**

**What do you exactly do as a Hospital Scientist?**

I work in the Institute of Haematology at RPA hospital, conducting research on patients with multiple myeloma, a cancer of the plasma cells in the bone marrow. My research studies the function of certain T cell subsets in patients with myeloma with the aim of understanding more about these cells and exploiting them for therapeutic use. My day-to-day activities include processing blood from myeloma patients and analysing the phenotype and function of T cells through a technique called flow cytometry. I also spend time at the computer, analysing results, writing up my work and reading journal articles.

**Do you find the skills you learnt during your degree useful and versatile?**

My undergraduate subjects have been really useful as they have given me the knowledge and fundamentals for my scientific career. I find myself revisiting my

notes and textbooks as my research career develops. The biomedical component of the Forensic Biology degree definitely adds to the course's versatility. You get to experience many different disciplines like immunology, haematology, and biochemistry and this provides you with additional options for work or pursuing postgraduate studies.

**What part of your work inspires you the most?**

I find my work interesting because each day is different and promises new challenges. I enjoy being able to organise my own experiments and what I do each day. There is a lot of troubleshooting and interpreting data so that really stimulates the mind! It is also really interesting to be working with primary patient samples and to know that you are part of a team working towards a possible better future for patients with cancer.



# Bachelor of Science (Flexible)

## KEY INFORMATION

**2013 ATAR:** 74.00  
**UAC Code:** 607001  
**UTS Course Code:** C10242  
**Duration:** 3 years (full time)  
 6 years (part time)  
**Location:** City campus

**Assumed Knowledge:**  
 English, Maths and 2 Science subjects  
**Recommended Year 12 Studies:**  
 Maths Extension 1, Chemistry  
**Combine this Degree with:**  
 Business, Engineering, International  
 Studies and Law – see page 30  
**Bonus Points:** Available, see page 36  
**How to apply:** See page 36

## COURSE DESCRIPTION

This is our most flexible degree that enables you to study core science and mathematics subjects while specialising in your areas of interest and aspiration. In the first year, you'll study core subjects of your chosen foundation stream.

At the end of the first year, you can either continue or change your chosen major within the foundation stream. You can also opt to study a mix of subjects of your interests, while keeping your career options open.

It is also best suited if you're undecided over which major to follow, because it allows you to study a broad range of subjects in the first year before deciding on a major in the second year. It also enables you to familiarise yourself with different areas of science and maths, and discuss your interests and options with lecturers.

You can also combine this degree with other degrees from other UTS faculties such as business, international studies, law and engineering. For more details, see page 30.

## CAREER OPTIONS INCLUDE

Depend largely on the chosen subjects. Graduates will have versatile soft skills that are recognised in almost any industry.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

## COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10242.html](http://www.handbook.uts.edu.au/courses/c10242.html)

## FLEXIBLE MAJOR

Year 1	Years 2 and 3
<p><b>Flexible major for Mathematical Sciences Foundation Stream</b>                      Introduction to Quantitative Management                      Introduction to Linear Dynamical Systems                      Introduction to Statistics                      Foundation subject choice A                      Introduction to Sample Surveys                      Introduction to Analysis and Multivariable Calculus                      Applications of Discrete Mathematics                      Foundation subject choice B</p> <p><b>OR</b></p> <p><b>Flexible major for Physical Sciences Foundation Stream</b>                      Mathematical Modelling for Science                      Chemistry 1                      Foundations of Physics</p> <p><b>Select one of the following:</b>                      &gt; Cell Biology &amp; Genetics                      &gt; The Biosphere</p> <p><b>OR</b></p> <p><b>Flexible major for Life &amp; Environmental Sciences Foundation Stream</b>                      Chemistry 1                      The Biosphere                      Cells Biology &amp; Genetics                      Statistical Design and Analysis</p>	<p>Choose a combination of subjects that interests you.                      To view subjects, visit: <a href="http://www.handbook.uts.edu.au/courses/c10242.html">www.handbook.uts.edu.au/courses/c10242.html</a></p> <p>Chemistry 2                      Statistics &amp; Mathematics for Science                      Introduction to Materials                      Physics in Action</p> <p>Chemistry 2                      Biocomplexity                      Physical Aspects of Nature                      Human Anatomy &amp; Physiology</p>



# Specialist Degree: Bachelor of Forensic Biology in Biomedical Science

## KEY INFORMATION

**2013 ATAR:** 84.35  
**UAC Code:** 607025  
**UTS Course Code:** C10174  
**Duration:** 3 years (full time)  
 6 years (part time)  
**Location:** City campus

### Assumed Knowledge:

Maths, 2 units of English,  
 2 units of Science

### Recommended Year 12 Studies:

Maths Extension 1, Chemistry

**Bonus Points:** Available, see page 36

**How to Apply:** See page 36

**Professional recognition:** Australian and New Zealand Forensic Science Society (ANZFSS)

## COURSE DESCRIPTION

You'll gain expertise in both forensic biology and biomedical science. You'll also address how the human body works at the cellular level, and apply this knowledge to forensic investigations. You'll obtain hands-on experience and develop your critical thinking and problem-solving skills in the field and lab.

You'll learn how crimes are solved through forensic investigations of human evidence (DNA, bodily fluids and tissues), collection and handling of evidence, crime scene investigation and legal issues. You'll have access to one of the best, world-class science laboratories in Australia, and will be in contact with leading forensic scientists.

UTS also has strong links with federal and state police services and government forensic laboratories, giving you the opportunity to network with future employers.

## CAREER OPTIONS INCLUDE

Scene of crime officer, DNA profiler, forensic laboratory scientists, biomedical scientist, toxicology scientist, expert witness. Graduates can find employment in forensic labs for federal and state police, DNA testing labs and medical firms.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

## COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10174.html](http://www.handbook.uts.edu.au/courses/c10174.html)

## BACHELOR OF FORENSIC BIOLOGY IN BIOMEDICAL SCIENCE

Year 1	Year 2	Year 3
Chemistry 1 Cell Biology and Genetics Physical Aspects of Nature Statistical Design and Analysis Human Anatomy and Physiology Chemistry 2 Biocomplexity Principles of Forensic Science	Metabolic Biochemistry General Microbiology Histology Forensic Statistics Molecular Biology 1 Analytical Biochemistry Anatomical Pathology <b>Select one of the following:</b> <ul style="list-style-type: none"> <li>&gt; Epidemiology and Public Health Microbiology</li> <li>&gt; Introductory Haematology and Immunology</li> </ul>	DNA Profiling Investigation of Human Remains Crime Scene Investigation Complex Forensic Cases (Biology) Complex Forensic Cases (Law for Biology) <b>Select one of the following:</b> <ul style="list-style-type: none"> <li>&gt; Molecular Biology 2</li> <li>&gt; Clinical Bacteriology</li> <li>&gt; Medical and Diagnostic Biochemistry</li> <li>&gt; Advanced Haematology</li> <li>&gt; Advanced Immunology</li> </ul> <b>Select two of the following:</b> <ul style="list-style-type: none"> <li>&gt; Transfusion Science</li> <li>&gt; Epidemiology and Public Health Microbiology</li> <li>&gt; Biochemistry, Genes and Disease</li> <li>&gt; Parasitology</li> </ul>

# Specialist Degree: Bachelor of Forensic Science in Applied Chemistry

## KEY INFORMATION

**2013 ATAR:** 78.45  
**UAC Code:** 607020  
**UTS Course Code:** C10244  
**Duration:** 3 years (full time)  
 6 years (part time)  
**Location:** City campus

### Assumed Knowledge:

Maths, 2 units of English,  
 2 units of Science

### Recommended Year 12 Studies:

Maths Extension 1, Chemistry, Physics

**Bonus Points:** Available, see page 36

**How to Apply:** See page 36

### Professional recognition and accreditation:

Australian and New Zealand Forensic Science Society (ANZFSS), Royal Australian Chemical Institute (RACI)

## COURSE DESCRIPTION

This course not only gives you insight into how science can solve and prevent crime and terrorism, but also why chemistry is the main underpinning discipline of the forensic scientist.

You'll have access to high technology instruments and laboratory facilities many of which are found in commercial operational forensic laboratories, thus developing your advanced analytical, problem-solving and communication skills.

You'll graduate with a professional degree in both forensic science and applied chemistry, highly adaptable and practical scientific skills, and a thorough theoretical grounding in both specialisations.

## CAREER OPTIONS INCLUDE

Scene of crime officer, forensic trace evidence specialist, laboratory manager, analytical chemist, science teacher, lecturer or academic, clinical toxicologist, forensic toxicologist, regulatory toxicologist, forensic entomologist, forensic scientist, team leader in investigations, forensic chemist, forensic anthropology, laboratory service management/operations, research associate, analytical technician.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

## COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10244.html](http://www.handbook.uts.edu.au/courses/c10244.html)

## BACHELOR OF FORENSIC SCIENCE IN APPLIED CHEMISTRY

Year 1	Year 2	Year 3
Mathematical Modelling for Science Chemistry 1 Foundations of Physics Statistics and Mathematics for Science Chemistry 2 Principles of Forensic Science <b>Select one of the following:</b> <ul style="list-style-type: none"> <li>&gt; Cell Biology and Genetics</li> <li>&gt; The Biosphere</li> </ul> <b>Select one of the following:</b> <ul style="list-style-type: none"> <li>&gt; Introduction to Materials</li> <li>&gt; Physics in Action</li> <li>&gt; Human Anatomy and Physiology</li> </ul>	Organic Chemistry 1 Chemical Safety and Legislation Physical Chemistry 1 Crime Scene Investigation Organic Chemistry 2 Inorganic Chemistry 1 Analytical Chemistry 1 Physical Evidence	Analytical Chemistry 2 Chemical Criminalistics Forensic Toxicology Physical Chemistry 2 Analytical Chemistry 3 Chemistry and Pharmacology of Recreational Drugs Fire and Explosion Investigation <b>Select one of the following:</b> <ul style="list-style-type: none"> <li>&gt; Forensic Statistics</li> <li>&gt; Inorganic Chemistry 2</li> <li>&gt; Polymer Science</li> </ul>

**GARRY MANN**

**Bachelor of Forensic Science in  
Applied Chemistry**

**What motivated you to study this degree?**

Forensic Science appealed so much because it combines chemistry, law and real world problem-solving with innovative technologies and critical thinking. Also there were several possible career paths with this degree.

**What do you enjoy most about your degree?**

Apart from the other students and the lecturers, I enjoy the hands-on approach to forensic science, as well as finding out about (and in some cases the opportunity to be involved in) research projects.

**Why did you choose to study at UTS?**

UTS had the course I wanted, gave theory as well as practical experience, along with modern facilities and awesome lecturers. Great location, too.

**What is it like to study at UTS: Science?**

Really busy at times, but mostly very enjoyable and rewarding. UTS also has industry links, so real world problems are able to be assessed, and my studies have helped me a lot during my internship at Australian Nuclear Science and Technology Organisation (ANSTO).

**Is there any advice you would give to students studying this degree?**

Enjoy your degree, and make the most out of uni life in and around UTS. In terms of studies, make the most out of the lecturers, resources and facilities we have here at UTS. They really are exceptional!

**What would you like to do once you complete your degree?**

Possibly postgraduate studies, continue working at ANSTO or work overseas in the field of chemistry or forensic science.

# Specialist Degree: Bachelor of Mathematics and Finance

## KEY INFORMATION

**2013 ATAR:** 79.65  
**UAC Code:** 609040  
**UTS Course Code:** C10155  
**Duration:** 3 years (full time)  
 6 years (part time)  
**Location:** City campus

**Assumed Knowledge:**

Maths, 2 units of English

**Recommended Year 12 Studies:**

Maths Extension 1

**Combine this Degree with:**

International Studies – see page 30

**Bonus Points:** Available, see page 36

**How to Apply:** See page 36

## COURSE DESCRIPTION

Mathematical techniques are increasingly important for risk assessment and the optimisation of financial plans, and there is a corresponding demand for highly skilled graduates in these areas.

This course combines both mathematical and business studies. Graduates with this speciality are in high demand in today's current financial market.

Students learn the theory behind investment principles and how financial markets operate, and develop high level analytical, statistical and algebraic skills.

## CAREER OPTIONS INCLUDE

Financial analyst, stock market analyst, portfolio manager, financial risk analyst, reinsurance pricing analyst, market research analyst, banker, policy advisor, quantitative analyst, forensic accountant, investment analyst, taxation consultant, treasurer or economist.

Graduates can find employment in stock market analysis, providing advice on portfolio management, option pricing, prediction of movements in international money markets and financial risk management. Major possible employers include banks, insurance companies, superannuation providers, government regulatory bodies such as APRA, ASIC and other major financial bodies.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

## COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10155.html](http://www.handbook.uts.edu.au/courses/c10155.html)

## BACHELOR OF MATHEMATICS AND FINANCE

Year 1	Year 2	Year 3
Introduction to Linear Dynamical Systems Introduction to Statistics Accounting for Business Decisions A Economics for Business Introduction to Quantitative Management Introduction to Analysis and Multivariable Calculus Accounting for Business Decisions B Fundamentals of Business Finance	Computational Linear Algebra Optimisation in Quantitative Management Stochastic Models The Financial System Differential Equations Regression Analysis Economics for Business 2 Investment Analysis	Mathematical Statistics Advanced Calculus Derivative Securities Corporate Finance: Theory and Practice Financial Time Series Stochastic Processes <b>Select one of the following:</b> <ul style="list-style-type: none"> <li>&gt; Nonlinear Methods in Quantitative Management</li> <li>&gt; Mathematical Methods</li> <li>&gt; Seminar (Mathematics)</li> </ul> Stochastic Processes Financial Time Series <b>Select one of the following options:</b> <ul style="list-style-type: none"> <li>&gt; Corporate Financial Analysis (Capstone)</li> <li>&gt; International Financial Management</li> <li>&gt; Issues in Corporate Finance</li> </ul>

# Specialist Degree: Bachelor of Mathematics and Computing

## KEY INFORMATION

**2013 ATAR:** 71.70  
**UAC Code:** 609045  
**UTS Course Code:** C10158  
**Duration:** 3 years (full time)  
 6 years (part time)  
**Location:** City campus

**Assumed Knowledge:**

Maths, 2 units of English

**Recommended Year 12 Studies:**

Maths Extension 1

**Combine this Degree with:**

International Studies – see page 30

**Bonus Points:** Available, see page 36

**How to Apply:** See page 36

**Professional recognition and accreditation:**

Australian Computer Society

## COURSE DESCRIPTION

You'll be taught the underlying mathematics and language of computing combined with the ability to model and analyse practical situations.

You'll develop advanced skills in statistics and operations research to interpret data and put it to use. This combines with a thorough grounding in computing sciences and communications networking.

This course is designed to meet the increasing industry need for graduates with both computational and mathematical skills.

## CAREER OPTIONS INCLUDE

Investment analyst, computer programmer, management consultant, intelligence analyst, information system development. Graduates can find employment in quantitative finance, computing and information technology and operations research. Teachers with qualifications in this field are also highly sought after. The combination of maths and computing provides a competitive edge and access to careers in both areas.

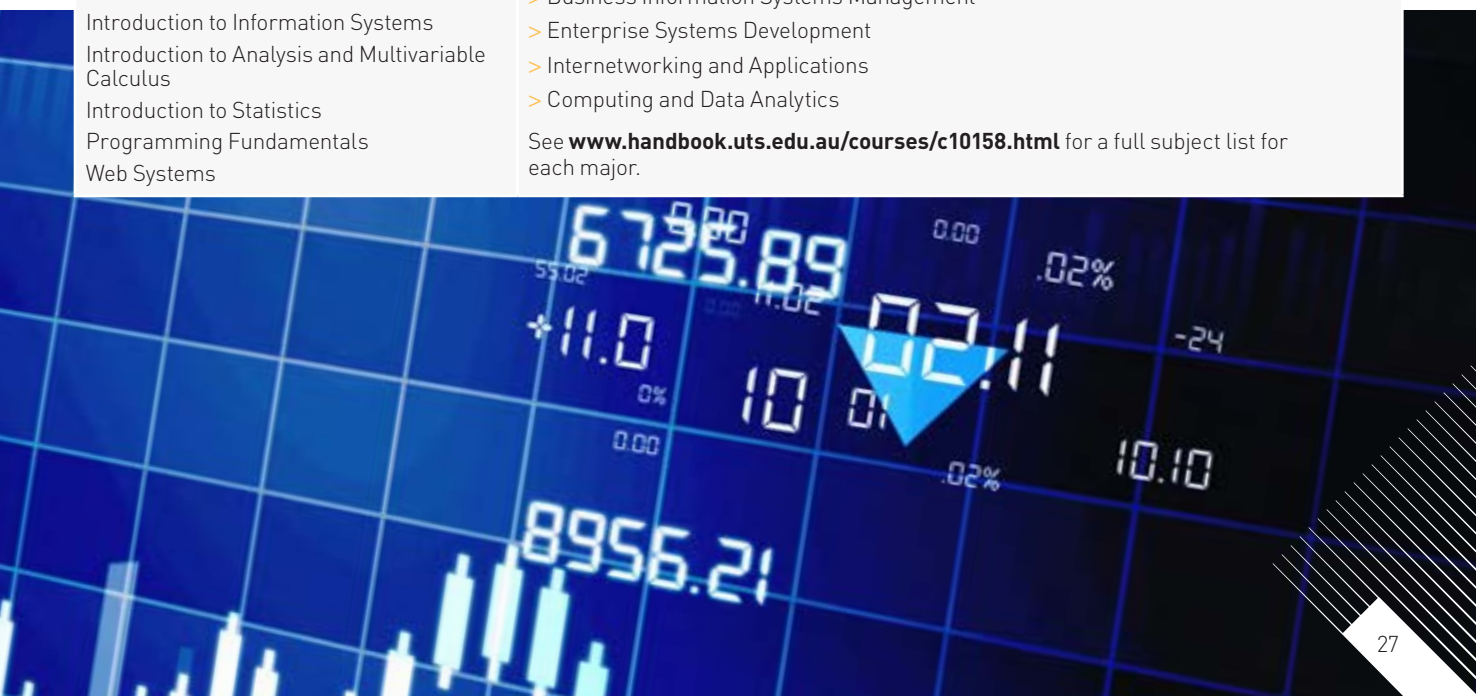
For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

## COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10158.html](http://www.handbook.uts.edu.au/courses/c10158.html)

## BACHELOR OF MATHEMATICS AND COMPUTING

Year 1	Years 2 and 3
Introduction to Linear Dynamical Systems Introduction to Quantitative Management Communication for IT Professionals Introduction to Information Systems Introduction to Analysis and Multivariable Calculus Introduction to Statistics Programming Fundamentals Web Systems	Years 2 and 3 subjects are dependant on the sub-major chosen. Students select one Mathematics and Computing major from the following: <ul style="list-style-type: none"> <li>&gt; Business Information Systems Management</li> <li>&gt; Enterprise Systems Development</li> <li>&gt; Internetworking and Applications</li> <li>&gt; Computing and Data Analytics</li> </ul> See <a href="http://www.handbook.uts.edu.au/courses/c10158.html">www.handbook.uts.edu.au/courses/c10158.html</a> for a full subject list for each major.



# TRADITIONAL CHINESE MEDICINE

## Specialist Degree: Bachelor of Health Science in Traditional Chinese Medicine

### KEY INFORMATION

**2013 ATAR:** 75.90  
**UAC Code:** 607055  
**UTS Course Code:** C10186  
**Duration:** 4 years (full time)  
 8 years (part time)  
**Location:** City campus

#### Assumed Knowledge:

2 units of English, 2 units of Science

#### Recommended Year 12 Studies:

Biology

**Bonus Points:** Available, see page 36

**How to Apply:** See page 36

#### Professional recognition and accreditation:

Accredited by the Chinese Medicine Board of Australia. Graduates are eligible for professional membership

### COURSE DESCRIPTION

You'll learn about traditional Chinese medicine (TCM), pharmacology of Chinese herbal medicine, Chinese massage, acupuncture and Chinese diagnostics

This course also discusses the role of traditional Chinese medicine as a complementary health care system. It aims to produce professional Chinese medicine practitioners with highly adaptable and practical clinical skills accompanied by a thorough grounding in theory.

UTS has an on-campus TCM clinic where students gain clinical experience from their first year of study.

You'll also have the opportunity to transfer into the combined degree of Bachelor of Health Science in Traditional Chinese Medicine, Bachelor of Arts in International Studies (C10164), which involves an additional two years of language and culture training in Australia and China.

### CAREER OPTIONS INCLUDE

Private practitioner in acupuncture or Chinese herbal medicine, clinical therapist, TCM researcher, nutritional and health consultant.

For more career options, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

### COURSE STRUCTURE

The table below indicates a typical full time study program. To view subject descriptions, visit [www.handbook.uts.edu.au/courses/c10186.html](http://www.handbook.uts.edu.au/courses/c10186.html)

### BACHELOR OF HEALTH SCIENCE IN TRADITIONAL CHINESE MEDICINE

Year 1	Year 2	Year 3	Year 4
Chinese Medicine Foundations 1 Point Location and Acupuncture Anatomy Clinical Theory and Clinic Level 1 Communication for the Complementary Therapist Introduction to Chinese Herbal Medicine Chinese Medicine Foundations 2 Clinic Level 2 and Acupuncture Techniques 1 Health and Homeostasis	Chinese Diagnostic System 1 Clinic Level 3 and Acupuncture Techniques 2 Pharmacology of Chinese Herbal Medicine Pathophysiology and Pharmacology 1 Chinese Diagnostic System 2 Clinic Level 4 and Acupuncture Techniques 3 Chinese Herbal Formula 1 Pathophysiology and Pharmacology 2	Clinical Features of Disease Clinic Level 5 and Acupuncture Microsystems Chinese Herbal Formula 2 Pathophysiology and Pharmacology 3 Medical Classics and the History of Chinese Medicine Clinical Practicum (Therapy and Diagnosis) Clinic Level 6 Disease States for Traditional Chinese Medicine 1	Evaluating TCM: Theory, Practice and Research 1 Clinical Practice 1 (TCM) Disease States for Traditional Chinese Medicine 2 Professional Issues in Traditional Chinese Medicine Clinical Practice 2 (TCM) Evaluating TCM: Theory, Practice and Research 2



**MARIENNE COX**

**Practitioner of  
Acupuncture and  
Chinese Herbal Medicine**  
**Bachelor of Health  
Science in Traditional  
Chinese Medicine**

**What do you like about traditional Chinese medicine (TCM)?**

Working as a practitioner is very rewarding because the positive results of my work is obvious in my patients. I know I'm contributing to society and making the lives of those in my community better. I'm passionate about Chinese Medicine and firmly believe that it can be beneficial in helping people to achieve and maintain health, balance and harmony in their lives.

**What career options can traditional Chinese medicine graduates consider?**

Opening your own practice is the main option available to TCM graduates. This can take on various forms – you can rent a clinic space; rent a treatment room in an existing multi-modality medical practice where there are a range of medical options are available, such as GP, physio, chiropractor; or you can rent a treatment room in a 'like-minded' business such as yoga studio, health food shop, etc.

There are other options for graduates, and these are much the same as in conventional medicine. They include working in businesses related to the practice of TCM such as equipment supplies.

The range of equipment used varies depending on the practitioner but we all need acupuncture needles and herbal supplies!

**How has your degree helped you in this type of work?**

For part of the week I practice in a GP clinic and the other part I practice in a chiropractic clinic. The great advantage of setting up my own business is that I'm very flexible with where I work and working with different clinics expose me to patients with very different conditions.

It's not difficult for TCM graduates to find work – there are many opportunities. The health community is a very diverse group. I work with GP's, psychologists, massage therapists and chiropractors. UTS provided good support for me during my years as a student. They have some very gifted teachers and practitioners who always have time to help. The student clinic provided many learning opportunities. I'm still in touch with some of my clinic supervisors, and they continue to offer help and advice with difficult and interesting cases.



# COMBINED DEGREES

	WITH BUSINESS	2013 ATAR	WITH INTERNATIONAL STUDIES	2013 ATAR
<b>COMBINED DEGREES</b>	<ul style="list-style-type: none"> <li>&gt; Bachelor of Science (any major), Bachelor of Business (UAC Code: 609170)</li> <li>&gt; Bachelor of Medical Science, Bachelor of Business (UAC Code: 609175)</li> <li>&gt; Bachelor of Biotechnology, Bachelor of Business (UAC Code: 609176)</li> </ul>	<p>85.75</p> <p>93.15</p> <p>89.75</p>	<ul style="list-style-type: none"> <li>&gt; Bachelor of Science (any major), Bachelor of Arts in International Studies (UAC Code: 609250)</li> <li>&gt; Bachelor of Medical Science, Bachelor of Arts in International Studies (UAC Code: 609255)</li> <li>&gt; Bachelor of Mathematics and Finance, Bachelor of Arts in International Studies (UAC Code: 609220)</li> <li>&gt; Bachelor of Mathematics and Computing, Bachelor of Arts in International Studies (UAC Code: 609225)</li> </ul>	<p>78.65</p> <p>89.95</p> <p>85.90</p> <p>84.55</p>
<b>DURATION</b>	4 Years Full Time		5 Years Full Time	
<b>MAJORS AVAILABLE</b>	<ul style="list-style-type: none"> <li>&gt; Any of the Bachelor of Science majors inclusive of the flexible majors can be combined with a business degree or the specialist degrees as listed above.</li> <li>&gt; Business study areas include marketing, management, economics and finance.</li> <li>&gt; Business core subjects include: Accounting for Business Decisions A, Managing People and Organisations, Marketing Foundations, Economics for Business, Fundamentals of Business Finance, Business Statistics, Integrating Business Perspectives, Accounting for Business Decisions B.</li> </ul>		<ul style="list-style-type: none"> <li>&gt; Any of the Bachelor of Science majors can be combined with international studies or the specialist degrees listed above.</li> <li>&gt; International Studies Country Choice includes Argentina, Canada, Chile, China, France, Germany, Italy, Japan, Mexico, Spain, Switzerland and Latino USA</li> <li>&gt; International Studies core subjects include: Language and Culture, Foundations in International Studies, In-Country study.</li> </ul>	
<b>WHY CHOOSE THIS COMBINATION?</b>	<ul style="list-style-type: none"> <li>&gt; Allows you to graduate with two highly sought after degrees in only four years.</li> <li>&gt; You will develop a combination of practical business skills and professional scientific qualifications.</li> <li>&gt; There are almost limitless career options available, depending on the majors chosen.</li> </ul>		<ul style="list-style-type: none"> <li>&gt; International Studies is unique to UTS and allows students to gain a thorough understanding of the language and culture of another country while also giving them international experience.</li> <li>&gt; Students study overseas for a year in their chosen country and this international experience develops students both personally and professionally.</li> <li>&gt; Increased career prospects both in Australia and globally</li> <li>&gt; It is great fun and affordable – your overseas fees remain unchanged and are based on your Australian tertiary fees.</li> </ul>	
<b>COURSE STRUCTURE</b>	<a href="http://www.handbook.uts.edu.au/sci/ug/index.html">www.handbook.uts.edu.au/sci/ug/index.html</a>		<a href="http://www.handbook.uts.edu.au/sci/ug/index.html">www.handbook.uts.edu.au/sci/ug/index.html</a>	



	WITH ENGINEERING	2013 ATAR	WITH LAW	2013 ATAR
COMBINED DEGREES	<ul style="list-style-type: none"> <li>&gt; Bachelor of Engineering, Bachelor of Science (UAC Code: 609360)</li> <li>&gt; Bachelor of Engineering, Bachelor of Medical Science (UAC Code: 609370)</li> <li>&gt; Bachelor of Engineering, Bachelor of Biotechnology (UAC Code: 609380)</li> </ul>	<p>85.10</p> <p>85.85</p> <p>86.15</p>	<ul style="list-style-type: none"> <li>&gt; Bachelor of Science, Bachelor of Laws (UAC Code: 609060)</li> <li>&gt; Bachelor of Medical Science, Bachelor of Laws (UAC Code: 609065)</li> </ul>	<p>98.80</p> <p>97.00</p>
DURATION	5 Years Full Time		5 Years Full Time	
MAJORS AVAILABLE	<ul style="list-style-type: none"> <li>&gt; Any of the Bachelor of Science majors inclusive of the flexible majors can be combined with an engineering degree or the specialist degree as listed above.</li> <li>&gt; Engineering study areas include civil, civil and environmental, computer systems, construction, electrical, mechanical, mechanical and mechatronic, software and telecommunications.</li> </ul>		<ul style="list-style-type: none"> <li>&gt; Any of the Bachelor of Science majors inclusive of the flexible majors can be combined with a laws degree or the specialist degree as listed above.</li> <li>&gt; Law does not have a major</li> </ul>	
WHY CHOOSE THIS COMBINATION?	<ul style="list-style-type: none"> <li>&gt; Prepares you for a variety of exciting and challenging careers including research, design and development, and scientific management.</li> <li>&gt; You'll graduate from this practical degree combination with hands-on experience in both the science and engineering disciplines.</li> <li>&gt; Allows you to add the Diploma of Engineering Practice to your degree, where you will complete two, six months internships. This is unique to UTS.</li> </ul>		<ul style="list-style-type: none"> <li>&gt; The law component satisfies the academic requirements for admission as a lawyer in New South Wales. Students wishing to obtain full recognition as graduate lawyers have the option of completing the Practical Legal Training program also offered by UTS: Law.</li> <li>&gt; Specialist scientific lawyers, such as patent lawyers, environmental lawyers and medical lawyers are in high demand and very well paid.</li> <li>&gt; Law firms highly value graduates who can thrive in the fast-paced world of science, medicine and technology.</li> </ul>	
COURSE STRUCTURE	<a href="http://www.handbook.uts.edu.au/eng/ug/index.html">www.handbook.uts.edu.au/eng/ug/index.html</a>		<a href="http://www.handbook.uts.edu.au/law/ug/index.html">www.handbook.uts.edu.au/law/ug/index.html</a>	

**BEN GAD**



**Bachelor of Medical Science, Bachelor of Business**

**Why did you choose this combined degree at UTS?**

I knew I wanted to study Science and Business at UTS was when my HSC chemistry class went on a tour of UTS: Science. I was impressed by the facilities and the philosophy the academics had towards teaching. They prioritised analytical thinking and attaining skills not just developing a bank of knowledge.

**What are the benefits of doing a combined degree?**

The main appeal is that you get to complete two degrees in a shorter amount of time than if you were to complete them separately. The combined degree in Business and Medical Science provides a great deal of variety and a completely different perspective in life.

Studying a combined degree does add one or two more years to your usual undergraduate degree but in terms of intensity or workload it is not any more difficult than a single degree. In a way, a combined degree balances out your workload as each semester you would take half of your subjects from science and the other half from your second degree.

**What are your plans in the future when you finish your degree?**

In my penultimate year I applied for a Vacation Program at a large accounting firm. I really enjoyed my time there and they have offered me a graduate position which I intend to take up, next year.

I have also considered getting into a career in medicine or pharmacy a few years down the track.

# HONOURS YEAR: HOW WILL IT HELP ME?

An Honours degree is the first step towards a career in research. It gives you the opportunity to draw together your previous science or mathematics studies and focus your knowledge, skills and intellect on an exciting piece of original research.

It's a unique opportunity for students to explore their research potential by designing an independent project and producing a thesis of their work. Honours in UTS: Science is a highly regarded additional year of undergraduate study available to students who have recently completed their undergraduate degree.

## WHAT ARE THE BENEFITS OF DOING HONOURS?

An honours year in science or mathematics opens doors to many opportunities, especially in the field of scientific research. Honours students have the opportunity to undertake exciting, original research under the supervision of internationally recognised researchers, contributing real discoveries to mankind's overall scientific knowledge-base, with some publishing one or more scientific papers.

Honours also vastly improves career prospects because it's proof to future employers that you can plan and organise your work, find solutions to problems, work independently and communicate your ideas and results both verbally and on paper, and helps develop maturity and skills. If you intend to pursue a career in research, an honours degree is highly recommended and is the pre-requisite for enrolling in a PhD.

## HOW LONG DOES IT TAKE AND WHEN DOES IT START?

Full-time study will take one year, and part-time study is available. Commencement is possible in March or mid-year depending on arrangements with your supervisors.

## WHAT DOES IT INVOLVE?

You'll be responsible for a research project of your choice, subject to faculty approval. You'll work in collaboration with a faculty academic supervisor, where you'll seek advice and guidance, but much of your research will be done on your own.

There'll be no formal classes to attend, but you'll meet with your supervisor regularly. In some cases, your work may be undertaken in external laboratories such as hospitals, CSIRO or other industry centres. This provides valuable industry experience and networking opportunities.

Honours projects on offer differ each year. To see detailed honours projects, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

## AM I ELIGIBLE?

You must have consistently scored a credit average or above throughout your undergraduate studies. You should have completed a relevant degree or major relating to the intended Honours project or discipline. Applications for entrance into the Honours Program is highly competitive.

## HOW DO I APPLY?

Read the step by step guide to applying for an Honours degree in UTS: Science at [www.science.uts.edu.au](http://www.science.uts.edu.au)

Honours vastly improve career prospects because it's proof to future employers that you can plan and organise work.

**EMMA DAWSON****Bachelor of Biotechnology (Honours)****Supervisor:** Dr Iain Duggin**Honours project title:** Identifying protein-protein Interactions of a new tubulin-like protein, FtsZ4 in the archaeal organism *Haloferax volcanii***What is the focus of your Honours project?**

My honours project involved my looking at a possible missing link the evolution of an important superfamily of proteins, Tubulin and FtsZ4. I aimed to develop and collect preliminary data for both an artificial and native environment from which I could identify interactions of my protein interest FtsZ4 with its native environment in *Haloferax volcanii*. In understanding what proteins FtsZ4 interacts with in its native environment it will help us further understand its function and structure within the cell.

**Why did you choose to pursue an honours degree as opposed to going into the workforce? Why this area of research?**

I chose to pursue an honours degree as it provided me with the necessary in lab experience both going out into the workforce and I am highly interested in research. I chose this area, in cell biology as it is an important fundamental area of research and I chose a proteomics project as this is one of the upcoming areas of research. Combining both areas allowed me to receive a range of research and professional skills.

**What is the best thing about your Honours year?**

The best thing about my honours year was the sense of accomplishment at the end of it. At the end of the year I was able to say, I conducted my own research, I learnt new skills that I can use in laboratories around the world and I have contributed to science. Also, you form close friendships due to a select cohort of students. These are the people you know will be your friends and colleagues throughout your career and your life.

**What attracted you to research at UTS: Science?**

Research at UTS: Science is exciting, in particular, the research being conducted in the iThree institute. The research challenges past and current science and looks at the greater picture and the impact of science on society which is something I quite enjoyed. Also, you can't go past the facilities available at UTS. But in the end, the atmosphere at UTS: Science is always buzzing, keeping you active, excited and motivated!

**What are your future plans?**

In the future, I am hoping to continue my research at UTS in the iThree institute as a PhD project. I truly love research and I would love to make a career out of it.

# SCHOLARSHIPS AND PRIZES

Scholarships at UTS can either be university-wide, where the scholarship is open to students from all faculties, or they can be faculty-specific, where the scholarships are only available to students in a specific faculty or area of study.

## FACULTY OF SCIENCE SCHOLARSHIPS

### DEAN'S SCHOLARSHIP

- > Valued at \$10,000 each, and are highly competitive. They are awarded on the basis of academic merit.
- > Awarded to the top two ATAR applicants (ATAR of 99.5 or above, excluding bonus points) who undertake any science or mathematics bachelor degree within the faculty.

### UTS: SCIENCE SCHOOL'S RECOMMENDATION SCHOLARSHIPS\*

- > Aimed to encourage high school students with a keen interest in science and mathematics to take the next step to study at UTS.
- > Valued at \$6,000 to be paid over three years of study.
- > To be eligible to receive this scholarship you must be nominated by your school principal and have received an offer through UAC to one of the UTS: Science eligible undergraduate courses as listed below.

#### The eligible courses are:

- > Bachelor of Science in Mathematics / Statistics (UAC Code: 607003)
- > Bachelor of Science in Applied Chemistry (UAC Code: 607005)
- > Bachelor of Science in Nanotechnology (UAC Code: 607007)
- > Bachelor of Science in Applied Physics (UAC Code: 607009)
- > Bachelor of Science in Environmental Biology / Environmental Forensics / Marine Biology (UAC Code: 607011)
- > Bachelor of Science in Environmental Forensics (UAC Code: 607030)
- > Bachelor of Science in Marine Biology (UAC Code: 607035)
- > Bachelor of Mathematics and Finance (UAC Code: 609040)
- > Bachelor of Mathematics and Computing (UAC Code: 609045)
- > Combined degree Bachelor of Science<sup>#</sup>, Bachelor of Arts in International Studies (UAC Code: 609250)
- > Combined degree Bachelor of Science<sup>#</sup>, Bachelor of Business (UAC Code: 609170)

## HIGH ACHIEVERS SCHOLARSHIP PROGRAM

- > Aimed at recognising outstanding students and their achievements academically.
- > Valued at \$6,000 and will be paid over three years of study.
- > Awarded on the basis of academic merit to students with a minimum ATAR of 98 and above, who apply to one of the below degrees at UTS.

#### The degrees are:

- > Bachelor of Science in Applied Physics (UAC Code: 607009)
- > Bachelor of Science in Nanotechnology (UAC Code: 607009)
- > Bachelor of Science in Applied Chemistry (UAC Code: 607005)
- > Bachelor of Science in Environmental Forensics (UAC Codes: 607011 & 607030)
- > Bachelor of Science in Environmental Biology (UAC Code: 607011)
- > Bachelor of Science in Marine Biology (UAC Codes: 607011 & 607035)
- > Bachelor of Science in Mathematics (UAC Code: 607003)
- > Bachelor of Science in Statistics (UAC Code: 607003)
- > Bachelor of Mathematics and Finance (UAC Code: 609040)
- > Bachelor of Mathematics and Computing (UAC Code: 609045)

## INDIGENOUS SCHOLARSHIP PROGRAM

- > Scholarship to encourage outstanding indigenous students to undertake a science or mathematics degree.
- > Valued at \$6,000 to be paid over three years of study.
- > Awarded on the basis of demonstrated commitment to academic study

For more information on science and maths scholarships, please visit [www.science.uts.edu.au/scholarships/](http://www.science.uts.edu.au/scholarships/)

\*If you'd like to be nominated for this scholarship, please discuss with your school's career adviser in the first instance. If your school's career adviser needs more information, please get them to contact us at email: [science@uts.edu.au](mailto:science@uts.edu.au)

<sup>#</sup>Majors Mathematics, Statistics, Applied Chemistry, Applied Physics, Nanotechnology, Environmental Biology, Environmental Forensics, Marine Biology) only.

## UNIVERSITY-WIDE SCHOLARSHIPS

### VICE-CHANCELLOR'S SCHOLARSHIPS

Vice-Chancellor's Scholarships are open to students studying any course, and are not restricted to Science students.

#### Vice-Chancellor's Outstanding Achievement Scholarship

- > UTS offers up to five of these scholarships to top HSC students.
- > Value: \$12,500 pa for the duration of your undergraduate studies.
- > Application deadline: 30 November 2013.

#### Vice-Chancellor's Merit Scholarship

- > UTS offers up to five of these scholarships to top HSC students who are assessed as being in need of financial assistance.
- > Value: \$12,500 pa for the duration of your undergraduate study in any discipline.
- > Application deadline: 30 November 2013.

#### Vice-Chancellor's Indigenous Undergraduate Tuition Fee Scholarship

- > Scholarships are awarded on academic merit to Australian Indigenous students who are commencing higher education studies for the first time.
- > Value: Tuition fees for the duration of your undergraduate studies.
- > Application deadline: 30 November 2013.

For information on all scholarships visit [www.undergraduate.uts.edu.au/scholarships](http://www.undergraduate.uts.edu.au/scholarships)

**STEPHEN KEARSEY**

**Bachelor of Science in Applied Chemistry**

**UTS: Science School's Recommendation Scholarship Recipient 2012**

**Why did you choose to study a science degree at UTS?**

Everything I read and heard about UTS suited me, and I particularly love their practical approach to learning. Hence, my major is "Applied Chemistry" not just chemistry. UTS has excellent facilities and a reputation for delivering a very hands on approach to learning. I spend a lot of hours on campus, which I really like, I know I will learn more in a one hour lab session than two hours at home. There is plenty of support available as well, from organised peer assisted study sessions, to maths and chemistry learning centres, no matter where you look there is support to help you with your studies.

**How did you find out about the UTS: Science Scholarships?**

I was always fascinated by science. My Year 12 chemistry teacher knew how passionate

I was about science and that I wanted to go to UTS. She told me that I should apply for the School's Recommendation Scholarship, and that I had a really good chance of getting it, and she was right! I was so glad to get the scholarship at my dream university, and now I'm here having a great time doing chemistry!

**How has the scholarship helped you in your studies?**

The scholarship has been very helpful, particularly in terms of covering my transports costs as I come from Oatley. It contributes to the basics that I need, like a lab coat, and text books. I also used it to get a tablet, which is great for reading lectures on the train, and having the internet everywhere I go. I am glad that I don't have to stress over not having enough money as it's a fair amount to get me through uni very comfortably.

# FEES & FINANCIAL ASSISTANCE

## LOCAL STUDENTS

Most local students will be studying in a Commonwealth Supported Place which means the Australian Government makes a contribution to the cost of your study while you pay a student contribution. If eligible, you can elect to pay your student contribution upfront and receive a 10% discount. Alternatively, you can defer payment of your student contribution using HECS-HELP visit:

[www.goingtouni.gov.au](http://www.goingtouni.gov.au) for more info.

Students are also required to pay a Student Services and Amenities Fee. This fee funds services and amenities at UTS such as social and cultural clubs, services for developing students study skills, UTS Union food, beverage and retail outlets (including a 10% discount for students), the free legal services centre for students, and the second-hand bookstore. If you're an Australian citizen or on a humanitarian visa, this fee may be deferred through a new government loan scheme called SA-HELP.

For more information see [www.fees.uts.edu.au](http://www.fees.uts.edu.au)

## International students

Please note this guide is not intended for international students. For information on fees for international students visit:

[www.uts.edu.au/international](http://www.uts.edu.au/international)

## FINANCIAL ASSISTANCE

The UTS Financial Assistance Service can help students with practical and financial aspects of life at university.

Local UTS students with ongoing and long-term low income can approach our financial assistance service for support with advocacy to Centrelink, information on HECS and FEE-HELP, loans and equity based scholarships and grants, and advice on budgeting.

As a UTS student you may be eligible for an interest free student loan from UTS of up to \$500 to assist with bills, rent, one-off living expenses and other costs, such as medical costs.

For information on financial assistance at UTS visit [www.ssu.uts.edu.au/fassist](http://www.ssu.uts.edu.au/fassist)

# APPLYING TO UTS

## LOCAL STUDENTS

Applications for most UTS undergraduate courses must be lodged online through the Universities Admission Centre (UAC): [www.uac.edu.au](http://www.uac.edu.au)

Applications open in August and must be received by UAC by the end of September. Late fees apply for applications received after this date.

For high school student applicants, selection is based on your ATAR only. You may also increase your chances of getting in to UTS with the Year 12 Bonus Scheme and/or access schemes, see below for more info.

If you are currently completing the International Baccalaureate (IB) in Australia, or if you have completed your IB in the past, you can apply to UTS through UAC. How your IB is considered varies depending on the degree you're applying for. Details for each degree are provided on the specific course pages of the UTS website. If you completed your IB in another country you may also need to demonstrate your English language proficiency.

For mature-aged students and non-current school leavers, selection is based on academic merit based on previous ATAR or post-school subjects already completed. UTS may also take into account your relevant achievements. You may also increase your chances of getting into UTS via access schemes. See the next page for more info.

## INDIGENOUS AUSTRALIANS

If you identify as Australian Aboriginal or Torres Strait Islander, the Jumbunna Indigenous House of Learning will provide specialised assistance to help you gain entry to UTS through the Jumbunna Direct Entry Program or UNISTART.

To apply for entry to UTS through the Jumbunna Direct Entry Program or UNISTART, contact:

### Jumbunna Indigenous House of Learning

Tel: 1800 064 312 (free call within Australia)

Tel: +61 2 9514 1902 (for international calls)

Web: [www.jumbunna.uts.edu.au](http://www.jumbunna.uts.edu.au)

Email: [atsirecruitment@uts.edu.au](mailto:atsirecruitment@uts.edu.au)

## INTERNATIONAL STUDENTS

Please note this guide is not intended for International students and not all courses are available to international students.

Course information for international students is available in the relevant UTS: International Course Guide and online at: [www.uts.edu.au/international](http://www.uts.edu.au/international)

Applicants who are not citizens or permanent residents of Australia or citizens of New Zealand must apply as international students directly through UTS International.

### UTS International

Tel: 1800 774 816 (free call within Australia)

Tel: +61 3 9627 4816 (for international calls)

Web: [www.uts.edu.au/international](http://www.uts.edu.au/international)

Email: [international@uts.edu.au](mailto:international@uts.edu.au)

## ENTRY SCHEMES

### Year 12 bonus scheme

If you are in high school and perform well in HSC subjects that relate to the degree you want to do, you may be eligible to receive up to a maximum of 5 bonus points. For more info, visit [www.undergraduate.uts.edu.au/bonuspoints](http://www.undergraduate.uts.edu.au/bonuspoints)

### Guaranteed Entry Scheme

If you achieve the guaranteed ATAR cut-off published in the 2014 UAC guide, which includes any bonus points you may be eligible for, and don't receive an offer to a higher preference, UTS will be able to guarantee you a place.



### Educational Access Schemes

UTS Educational Access Schemes take into account a range of educational disadvantages that may have affected your most recent academic performance. The following schemes assist applicants to gain entry to UTS courses:

- > inpUTS Educational Access Scheme awards 10 concessional ATAR points for high school leavers and students with post-secondary qualifications who have experienced educational disadvantage and achieve a minimum ATAR of 69.
- > UTS Elite Athletes and Performers Special Admissions Scheme awards 5 concessional points off the ATAR cut-off to applicants who are elite athletes and/or performers (representing school or state in national level competition) and whose sport or performance commitments have impacted on their studies.
- > Principals' Recommendation Scheme aims to support Year 12 students who are eligible for financial hardship under the inpUTS Educational Access Scheme, achieve a minimum ATAR of 69 and who is nominated by their high school principal, by offering them a place at UTS, given that a UTS course is one of their UAC preferences.

For more information about Educational Access Schemes contact:

#### UTS Equity & Diversity Unit

Tel: +61 2 9514 1084

Web: [www.equity.uts.edu.au/admission](http://www.equity.uts.edu.au/admission)

Email: [equity@uts.edu.au](mailto:equity@uts.edu.au)

### ENTRY PATHWAYS

If you don't gain entry to your degree of choice, consider undertaking another form of study and then reapply the following year as a non-current school leaver. At UTS, there are a number of pathways you can take to gain entry to your preferred course:

#### Complete an INSEARCH Diploma

UTS:INSEARCH is the premium pathway provider to UTS. Diploma programs can provide direct entry<sup>1</sup> into corresponding undergraduate degrees and you could fast track into the 2nd year of a UTS undergraduate degree, depending on the course you choose.

UTS Foundation Studies provides pathways to UTS:INSEARCH diplomas and entry into the first year of an undergraduate degree at UTS (provided you meet the academic admission requirements and if you obtain exceptional results). For more info, visit [www.insearch.edu.au](http://www.insearch.edu.au).

1. Subject to successful completion of a diploma with the required Grade Point Average

#### Complete a TAFE Diploma

UTS offers some subject exemptions to students who apply to study at UTS after first completing a course at TAFE. Each exemption is assessed on an individual basis.

#### Commence study of a course with a lower ATAR requirement

, either at UTS or another university, and apply to transfer to your preferred degree after a year. The marks you achieve in your first year of study will count towards your application and you may be eligible to receive credit recognition towards your final degree for some of the subjects you've studied.

**For more information on all entry pathways in to UTS visit [www.undergraduate.uts.edu.au/pathways](http://www.undergraduate.uts.edu.au/pathways)**



# WANT MORE INFORMATION?

## VISIT OUR WEBSITE

The UTS: Science website contains detailed information about courses, scholarships, graduate and student profiles, news, events and more.

[science.uts.edu.au](http://science.uts.edu.au)

## CONTACT US

**UTS: Science**

Email: [science@uts.edu.au](mailto:science@uts.edu.au)

Tel: **1300 ASK UTS (1300 275 887)**

Postal address:

PO Box 123, Broadway

NSW 2007, Australia

## VISIT UTS

### UTS: Science Outreach Programs

UTS: Science Outreach Programs are school excursions for Years 10 to 12 students, that provide students the opportunity to come on-campus and experience interactive, hands-on workshops of science and mathematics applications.

For more information, visit [www.science.uts.edu.au](http://www.science.uts.edu.au)

### UTS Open Day

Saturday 31 August 2013

9am-4pm

City campus

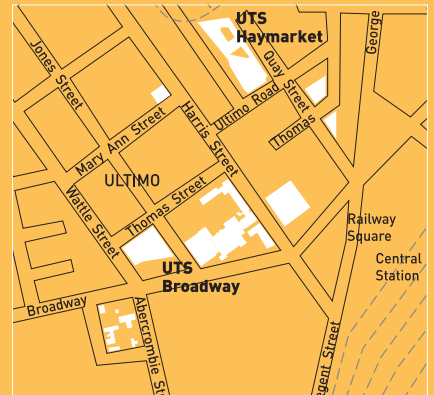
### UTS Info Day

Friday 3 January 2014

9am-4pm

City campus

## CITY CAMPUS



**DISCLAIMER:** The information in this brochure is correct at February 2013. Changes in circumstances after this date may alter the accuracy or currency of the information. The UTS reserves the right to alter any matter described in this brochure without notice. Readers are responsible for verifying information that pertains to them by contacting the University.

### ENVIRONMENTALLY RESPONSIBLE PAPER:

You'll be happy to know that this guide has been printed on 'Silk Gloss' which is FSC Mixed Sources Chain of Custody certified paper and printed at an FSC certified printer.

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