# WELCOME TO UTS:SCIENCE

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UTS acknowledges the Gadigal People of the Eora Nation and the Boorooberongal People of the Dharug Nation upon whose ancestral lands our campuses stand. We would also like to pay respect to the Elders both past and present, acknowledging them as the traditional custodians of knowledge for these lands.
WHY SCIENCE AT UTS?

UTS Science offers practical, relevant and innovative Science and Mathematics courses in world-class facilities.

OUR DIFFERENCE
Think of us as the innovator incubator. Our Science and Mathematics courses are taught by Australia’s foremost thinkers in world-class facilities.

GRADUATE WITH AN EDGE
Now is the time to get the head start that will make your career go places faster. Learn to combine theory with communication and critical thinking. Then let us help you find an internship that will show the world what you have to offer.

REAL-WORLD EXPERIENCE
Real in-the-field scientific experience. Solving real everyday problems through mathematical modelling. These are the extra things that stand out on C.V.s. That’s why we prioritise them.

MORE INSPIRATION, LESS PERPLEXITY
Theory is great, but wouldn’t you rather learn from someone who’s actively engaged in cutting-edge projects? That’s what makes us stand out. Our lecturers are leaders in their fields, academics with a wealth of theoretical and professional expertise in both research and industry.

WORLD-CLASS FACILITIES
Learn in award-winning facilities with access to a wealth of specialised teaching and research laboratories, including the Super Lab, the Crime Scene Simulation Lab and the Chinese Medicine Clinic.

THE WORLD IS WATCHING
Research drives your industry. Be part of the research projects the world holds in high esteem. Ours. In the 2015 Excellence in Research for Australia (ERA) outcomes, UTS Science was rated at or above world standard in every discipline, with research in chemical sciences, material chemistry, environmental sciences and genetics receiving the highest possible score.

“UTS Science is focused on practical experiences and hands-on education—it’s ideal for those who love to learn by doing.”

DANIEL TOTONJIAN, Bachelor of Science in Nanotechnology.
The UTS Super Lab offers stunning learning technologies supported by experienced teachers.
WORLD-CLASS FACILITIES

Learn from quality teachers and researchers in world-class facilities

At UTS Science, our purpose-built facilities are revolutionising the way science and mathematics are taught. You’ll study in state-of-the-art laboratories and have access to the latest technologies and equipment that enable scientific discovery across multiple disciplines.

SPECIALIST FACILITIES

Super Lab
The Super Lab can accommodate over 200 students from 12 different classes simultaneously. Whether you’re conducting experiments as a first year physics student or a final year biology student, the Super Lab offers stunning learning technologies supported by experienced teachers and demonstrators.

Crime Scene Simulation Lab
Set up like a city apartment, the Crime Scene Simulation Lab will give you hands-on experience in skills like fingerprinting and evidence handling.

Chinese Medicine Clinic
Our Chinese medicine clinics are open to the public, giving you the opportunity to deliver acupuncture, Chinese herbal medicine and Chinese remedial massage to real patients.

TEACHING LABS

Our teaching labs are fitting with scientific and analytical equipment, e-lecterns and computers to support your practical learning. Mathematics and statistics students have access to leading software, e-learning support and advanced computing facilities. Environmental students will benefit from our off-campus learning sites in Stroud, near Newcastle, and their proximity to forests and rivers for practical research experience.

RESEARCH LABS

Our commitment to applied research can be seen in our purpose-built research laboratories, which are accessible to both research and undergraduate students, especially students completing their Honours year.

These facilities, such as the Surgical and Anatomical Science Facility used by our Advanced Science (Pre-Medicine) students, house the latest technologies that support innovative discovery across a wide range of discipline areas.

INNOVATIVE CITY CAMPUSS

UTS is home to an engaging and student-centric campus that boasts new public spaces, renovated facilities and a wealth of new buildings.

As a UTS Science student, you’ll have access to the best of what UTS has to offer, including:

> Access to cutting-edge facilities and technologies that will support you to excel in your studies.
> A ‘sticky’ campus full of vibrant social spaces, including the Alumni Green and the Multi-Purpose Sports Hall.
> A central location with proximity to public transport, major Sydney landmarks and the vibrant Pyrmont-Ulmo industry precinct.
MAY WHITAKER
Deputy Director of Medical Physics, Chris O’Brien Lifehouse
Bachelor of Applied Science (Physics) Honours, UTS (2005)

What exactly does your job entail?
As a radiation oncology medical physicist, my day-to-day activities might include providing consultation on patient treatments using my physics knowledge, ensuring the quality and accuracy of the radiation treatment and equipment, collaborating on research to improve treatment accuracy and outcomes, commissioning new equipment and techniques, and training staff.

What part of your work inspires you the most?
Our patients are some of the bravest people I’ve ever met, and I am humbled to be a part of their journey as they fight against cancer. Everything I do – the research, the quality assurance checks, the plan assessments – is to ensure that our patients are receiving the safest and most accurate treatment we can give them.

Do you find the skills you learnt during your degree useful and versatile?
At UTS, my degree focused on the real world of working science: we had a lot of hands-on laboratory components, along with report writing and collaborating with other students on projects.
A science or mathematics career gives you the chance to innovate, create and solve pressing global concerns, and use your expertise in maths and science to create positive change.

Can you see yourself at the cutting edge of scientific research? You could develop new drugs to treat cancer, fight climate change with renewable energies, use biostatistics to help people live longer and healthier lives, or create new forensic techniques for effective crime scene processing.

Interested in life outside the lab? Our science and maths graduates work in both scientific and professional roles across a wide range of industries, including business, government, law, health, education, food and agriculture, mining and construction, and education.

SCIENCE AND MATHS GRADUATES ARE IN DEMAND

Did you know that 75 per cent of the fastest growing occupations require Science, Technology, Engineering and Mathematics (STEM) skills and knowledge?*

At UTS Science, you’ll gain important practical and people skills, such as problem-solving, numerical literacy, analytical thinking and interpersonal communication skills. Paired with the attributes that make you a good fit for a science or maths degree in the first place – being intellectually curious and an analytical thinker – you’ll graduate with a toolkit of expertise that you can apply just about anywhere.


A REWARDING CAREER

Science draws a certain type of person into its orbit – people who are analytical, intellectually capable, passionate and interested in the world around them. These attributes spill into life outside of work, and are further enhanced by academic and professional pursuit.

Working in science is more than just a career – it’s a way of life.

CRUNCHING THE NUMBERS

According to the Grattan Institute, a bachelor degree holder will make up to $1.4 million more than their non-university-educated counterparts over the course of their working life. Did you also know that holding a degree from a technology university like UTS provides an additional lifetime income advantage of approximately 6 per cent?**

Once you’re in the workforce, salary ranges for science careers are broad. Open Universities Australia estimates an average annual income of $55,000 - $120,000 depending on the scientific discipline you work in. But if you choose to apply your science skills in a non-science role (becoming a science editor, stockbroker, policy analyst or patent attorney), your salary will be determined by the industry you work in. Think broad, think big – career opportunities abound!

For more career ideas, check out our UTS Science Careers Guide at www.science.uts.edu.au/future
Surrounded by stunning learning technologies and supported by experienced teachers and demonstrators, the UTS Super Lab is revolutionising the way science is being taught to our undergraduate students.

Specially designed to suit our students’ needs, the Super Lab facilitates the buzz of a multidisciplinary environment, while ensuring students feel part of an intimate class group.

With 26 workbenches seating eight students, the Super Lab can simultaneously accommodate over 200 students across 12 different disciplines.

Each student has a monitor in front of them which shows a combination of information from the demonstrator station, as well student’s own data input from their bench computer.

There are 12 demonstrator stations, where teaching staff manage and communicate with students through the two-way wireless headset, which also allows them to move throughout the lab easily.

Breakout spaces throughout the Super Lab are equipped with smart boards to facilitate group discussions and student presentations.

Our Audio Visual equipment is sophisticated yet user-friendly. Following its first year in operation, the Super Lab was awarded the ‘Best Application of AV in Education with a Budget over $500K’ at the 2016 Audio Visual Industry Awards.

One of the main benefits to student learning in the Super Lab is the multidisciplinary aspect. Students are given a ‘sneak peek’ at future subjects and are also exposed to different subjects that might be outside their degree.

In order to solve some of the world’s biggest challenges—from climate change to antibiotic resistance—we must all work together. Our students gain a good understanding of this collaborative approach to research and learning early on in their careers.

We are equipping our students with the right mix of knowledge, skills and technology that will prepare them to become future innovators and thought leaders.

**UTS SUPER LAB FACTS**

- **52 METRES LONG,** with 26 workbenches seating eight students.

- **12 DEMONSTRATOR STATIONS** allow teachers to communicate via a wireless headset.

- **Student stations have 24 INCH TOUCHSCREEN MONITORS, PCs, wireless headsets and microphones.**

- **Special flooring and ceiling materials reduce echo and noise.**

- **The UTS Super Lab is Australia’s first multidisciplinary Super Lab.**

- **The first classes started in FEBRUARY 2015.**
WHAT CAN I STUDY?

Science is about problem-solving, critical thinking and taking a collaborative approach to solving real-world problems. At UTS Science, we offer a range of courses across numerous disciplines.

Degree options include:

> Bachelor of Advanced Science which combines research and coursework, and has a choice of four majors (pages 10-13).
> Bachelor of Science with a choice of nine majors, or choose a flexible major (pages 17-43).
> Specialist Science and Mathematics degrees, including new courses in Forensic Science and Biotechnology (pages 17-43).
> Combined Science and Mathematics degrees with Business, Creative Intelligence and Innovation or International Studies (pages 44-49).

There are also opportunities to undertake an Honours year, see page 51 for more information.

Which **course** is for me?

**INTERESTED IN DRUG DEVELOPMENT FOR BETTER HEALTH?**

Combine chemistry, biology and pharmacology and gain the skills to develop new drug treatments for a wide range of diseases with the Bachelor of Medicinal Chemistry (page 18).

**INTRIGUED BY TECHNOLOGY’S ROLE IN THE NATURAL WORLD?**

Learn to use technology to aid biological processes and create new ways to improve human health and the environment, such as the production of antibiotics, or the enhancement of crops with either the Bachelor of Biotechnology (page 35) or the Bachelor of Science in Biotechnology (page 33).

**INTERESTED IN HOW TECHNOLOGY CAN HELP THE ENVIRONMENT?**

Discover the latest techniques in tackling global resource and waste management with the Bachelor of Advanced Science in Environmental Biotechnology (page 11). You’ll learn how microbes work, and how they can be used to create innovative commercial products that help the environment, like algae biofuels.

**CURIOS ABOUT HOW CHEMICAL SUBSTANCES WORK?**

Study organic, inorganic, environmental and toxicological chemistry with the Bachelor of Science in Applied Chemistry (page 17). You’ll learn about interesting chemistry facts, like how ice-creams get their colours and flavours! Or, combine chemistry with another discipline to expand your career opportunities with the Bachelor of Science in Applied Chemistry, Bachelor of Business (page 44), the Bachelor of Science in Applied Chemistry, Bachelor of Arts in International Studies (page 48), or the Bachelor of Science in Applied Chemistry, Bachelor of Creative Intelligence and Innovation (page 46).

**FASCINATED BY BIG DATA?**

Prepare for a career in the emerging field of data with the Bachelor of Science in Analytics (page 26). Study subjects such as mathematical analysis and modelling, probability and quantitative management and learn how to translate data into information that drives businesses and innovation.
INTERESTED IN MATERIAL DESIGN OR NANOTECHNOLOGY?
Discover how materials science can help solve global issues in clean energy, water purification and health and security technologies, with the Bachelor of Advanced Science in Advanced Materials and Data Science (page 10). Or, work at the level of atoms and molecules to create revolutionary products with the Bachelor of Science in Nanotechnology (page 22).

More of a purist? Study energy, matter and the laws of nature to drive innovation in technology development with the Bachelor of Science in Applied Physics (page 19). Or combine your science majors with another discipline to expand your career opportunities (pages 44-49).

CURIOS ABOUT THE HUMAN BODY?
Learn about the structure, function and disease processes of the human body with either the Bachelor of Science in Medical Science or the Bachelor of Medical Science (page 32). These are excellent preparation courses for entry into postgraduate medicine or dentistry. Want to know the difference between Bachelor of Science in Medical Science and Bachelor of Medical Science? See page 51. Interested in adding a research component to your degree? Choose the Bachelor of Advanced Science in Infection and Immunity (page 12).

COMMITTED TO A CAREER IN MEDICINE, PHARMACY OR DENTISTRY?
Gain skills to prepare you for work in the biological and medical science fields, or prepare for entry into postgraduate degrees in medicine, dentistry or pharmacy with the Bachelor of Biomedical Science or Bachelor of Science in Biomedical Science (page 31); the Bachelor of Medical Science or Bachelor of Science in Medical Science (page 32); or the Bachelor of Advanced Science in Pre–Medicine (page 13).

PASSIONATE ABOUT IMPROVING HUMAN HEALTH AND WELLBEING?
Study Chinese medicine and diagnostics, the pharmacology of herbal medicine, massage and acupuncture with the Bachelor of Health Science in Traditional Chinese Medicine (page 37). You’ll also gain hands–on experience by treating patients at UTS’s Chinese medicine outpatient clinics. Or combine your Chinese Medicine degree with International Studies to travel and live in China for a year, where you will learn from the source (pages 48-49).

INTERESTED IN BIOMEDICAL DEVICES?
Combine biomedical science with physics application and apply your skills in the disciplines of radiation oncology, medical imaging and radiation safety with the Bachelor of Biomedical Physics (page 21). This course is also a possible pathway to postgraduate studies in medical physics or medicine.

INTRIGUED BY THE POWER OF MATHEMATICS?
Learn to analyse and manipulate data to solve even the most complicated problems with the Bachelor of Science in Mathematics (page 23) or Bachelor of Science in Statistics (page 25).

JUST LOVE SCIENCE, BUT NOT SURE WHICH AREA TO FOCUS ON?
Experience a broad range of subjects with the flexible major within the Bachelor of Science (page 42). You can choose from three learning streams (Life and Environmental Sciences, Physical Sciences or Mathematical Sciences) before deciding which major to pursue.

PASSIONATE ABOUT THE NATURAL WORLD?
Learn how plants, animals and the environment all work together with our Bachelor of Environmental Biology (page 38), or indulge your passion for the ocean and marine environments with the Bachelor of Marine Biology (page 41). Can’t decide? Check out the Bachelor of Science in Environmental Sciences (page 39) for a broad view of key environmental issues, and the chance to run unique experiments in environmental remediation, like mock oil spills.

KEEN TO USE SCIENCE TO SOLVE CRIME?
Did you know UTS was the first Australian university to introduce a Bachelor’s degree in Forensic Science? Discover the latest techniques in crime scene investigation with a Bachelor of Forensic Science (page 28). Check out the different majors and you can also combine it with another specialisation. See pages 46-49.

INTERESTED IN SCIENCE, BUT CURIOUS ABOUT OTHER AREAS OF STUDY?
Broaden your career prospects by graduating with two areas of specialisations. Combine your Science or Mathematics degree with disciplines including Business, Creative Intelligence and Innovation, or International Studies (pages 44-49). Combining studies is a great way to complete two degrees in a shorter timeframe.
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HOW DOES IT WORK?
The Bachelor of Advanced Science is designed specifically to develop student learning using an inquiry-oriented and research-immersion model. It is a holistic experience designed to train the next generation of scientists.

You can choose from four majors: Advanced Materials and Data Science, Environmental Biotechnology, Infection and Immunity, and Pre-Medicine.

Learning from world-leading research scientists, students enrolled in the Advanced Materials and Data Science, Environmental Biotechnology and Infection and Immunity majors will be actively mentored within a research team where they will complete a number of research projects.

Students studying the Pre-Medicine major will focus more on coursework in the second and third years.

The Bachelor of Advanced Science can also be combined with the Bachelor of Creative Intelligence and Innovation.

BACHELOR OF SCIENCE OVERVIEW

HOW DOES IT WORK?
The Bachelor of Science is a flexible course designed to give you a solid foundation in scientific knowledge and practice, while allowing you to specialise in your area of interest.

At UTS Science you will have nine different majors to choose from:

- Applied Chemistry
- Applied Physics
- Biotechnology
- Biomedical Science
- Environmental Sciences
- Mathematics
- Medical Science
- Nanotechnology
- Statistics

If you’re unsure about which major to choose, we also offer a flexible major across three streams: Life & Environmental Sciences, Physical Sciences and Mathematical Sciences (see page 42).

You can also choose to combine your Bachelor of Science degree with other specialisations such as Business, Creative Intelligence and Innovation, International Studies, Engineering and Law (see page 44-49).
Modern civilisation depends upon natural and man–made materials such as metals, textiles and materials for the development and manufacture of electronic components and devices. The next generation of advanced materials will be key to meeting many of society’s needs, such as clean energy from solar cells and water purification, materials that support health and security technologies, to name a few.

This course will give you essential skills and knowledge in the properties and development of materials, how to measure and test properties using various experimental techniques, and how to design new materials using computer simulations. You will also learn from, and network with, researchers in advanced materials and in developing areas such as data science.

### KEY INFORMATION
- **2017 ATAR:** 99.95
- **Duration:** 3 years (full–time)
  6 years (part–time)
- **UAC code:** 607058
- **UTS course code:** C10347

**Assumed knowledge:** Year 12 Mathematics, two units of Science and any two units of English

**Bonus points:** Available. See page 53

**How to apply:** See page 53

### COURSE STRUCTURE

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<td>Research Methods</td>
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### CAREER OPTIONS INCLUDE
This major leads to a variety of careers in either conventional science based within government, defence and commercial laboratories; or new innovative careers in financial modelling, management and other non–technical fields where data science skills are combined with the science of applying and analysing data trends to bring about business improvement. Jobs include Material Scientist, Researcher, Product Developer and Inventor.

For more career options, visit [www.science.uts.edu.au/future](http://www.science.uts.edu.au/future)
BACHELOR OF ADVANCED SCIENCE IN ENVIRONMENTAL BIOTECHNOLOGY

COURSE DESCRIPTION
Humans are in a constant battle with microbes, both medically and environmentally.

This course focuses on understanding how to effectively manage the microbes that impact upon the environments we depend upon, using techniques such as bioremediation and mine waste management. You’ll learn how microbes can be used to solve problems, leading to the creation of commercial end products like biofuels, nutraceuticals and agricultural feed stocks.

The diversity of microbes with novel traits is immense; a new style of scientist with a specialist background is needed to identify which microbes can be used to solve environmental challenges.

This course focuses on industrial applications of environmental biotechnology. You will develop advanced skills in bio-informatics, omics, microbial ecology and the fundamental sciences to prepare you for an exciting career in the ever-expanding field of biotechnology, with a specific focus on environmental applications and solutions to our changing globe.

CAREER OPTIONS
This course prepares students for a wide range of careers, such as positions within the industrial energy and biofuel sector, agricultural sector, and environmental management or phyto-remediation sectors.

For more career options, visit www.science.uts.edu.au/future

KEY INFORMATION
2017 ATAR: 95.05
Duration: 3 years (full-time)
6 years (part-time)
UAC code: 607059
UTS course code: C10347

Assumed knowledge:
Year 12 Mathematics, two units of Science and any two units of English
Bonus points: Available. See page 53
How to apply: See page 53

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<tr>
<td>Mathematical Modelling for Science</td>
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<tr>
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<tr>
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<td>Bioreactors and Bioprocessing</td>
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<tr>
<td>Fundamentals of Software Development</td>
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<td>Research Methods</td>
<td>Elective x 2</td>
<td>Elective x 2</td>
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<tr>
<td>Biocomplexity</td>
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BACHELOR OF ADVANCED SCIENCE IN INFECTION AND IMMUNITY

KEY INFORMATION
2017 ATAR: 96.05
Duration: 3 years (full-time)
6 years (part-time)
UAC code: 607060
UTS course code: C10347

Assumed knowledge:
Year 12 Mathematics, two units of Science and any two units of English
Bonus points: Available. See page 53
How to apply: See page 53

COURSE DESCRIPTION
One of the biggest global threats to human health and the environment is antibiotic resistance, or the resistance of micro-organisms to drugs that are used to treat serious infections.

This course will provide you with the skills and expertise to enable you to participate in the effort to address this urgent health problem.

You will learn how micro-organisms cause infections, how the host prevents and responds to infection, and you will develop an understanding of processes both in the microbe and the host that can be targeted in clinical applications for the diagnosis, treatment and protection against microbial infection.

You will gain advanced experimental, analytical and computational skills in areas such as drug discovery, development of vaccines, drug synthesis, human immunology and antibiotic resistance. You will explore innovative ways of how to tackle the antibiotic resistance problem.

CAREER OPTIONS INCLUDE
This course is a gateway to multiple career options in biotechnology, medicine, pharmaceuticals, vaccine development, patent law and public health. A research career is also available via the Honours program, followed by postgraduate study.

For more career options, visit www.science.uts.edu.au/future

COURSE STRUCTURE

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<td>Chemistry 1</td>
<td>General Microbiology</td>
<td>Advanced Research Project 3</td>
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<tr>
<td>Physical Aspects of Nature</td>
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<tr>
<td>Cell Biology and Genetics</td>
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<tr>
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<tr>
<td>Molecular Biology 1</td>
<td>Immunology 1</td>
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<tr>
<td>Chemistry 2 (Advanced)</td>
<td>Advanced Research Project 2</td>
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</tr>
<tr>
<td>Human Anatomy and Physiology</td>
<td>Elective x 2</td>
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</tr>
<tr>
<td>Research Methods</td>
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</tr>
</tbody>
</table>

Select two of the following:
> Immunology 2
> Clinical Bacteriology
> Virology

Select one of the following:
> Bacterial Pathogenesis
> Parasitology

Select one of the following:
> Proteomics
> Pharmacology 2
COURSE DESCRIPTION
This course aims to prepare you for postgraduate study in medicine or to equip you with the knowledge for various health related positions areas like dentistry and pharmacy.

Compared to other majors in the UTS Bachelor of Advanced Science, this degree has a stronger focus on coursework.

You’ll study human anatomy and function and disease processes at the cellular and organ level. You’ll also be introduced to the practices and theory that underlie both medical research and the health professions.

CAREER OPTIONS INCLUDE
Pharmacy, physiotherapy, health policy writing, health and medical writing, sales and technical support of medical devices, as well as positions within the pharmaceutical and therapeutic goods industry. Graduates will also be prepared for postgraduate medicine.

For more career options, visit www.science.uts.edu.au/future

KEY INFORMATION
2017 ATAR: 96.20
Duration: 3 years (full-time)
6 years (part-time)
UAC code: 607063
UTS course code: C10347
Assumed knowledge: Year 12 Mathematics, two units of Science and any two units of English
Bonus points: Available. See page 53
How to apply: See page 53

COURSE STRUCTURE

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<td>Cell Biology and Genetics</td>
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<td>General Microbiology</td>
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<td>Quantitative Skills for Science</td>
<td>Human Pathophysiology</td>
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<td>Chemistry 2 (Advanced)</td>
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<td>Elective x 2</td>
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<tr>
<td>Research Methods 2</td>
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</table>
MATTHEW MISKELL
Bachelor of Science (Applied Chemistry)

What do you enjoy most about your degree?
I enjoy the practicality of the degree. Every practical session explores an essential concept for the subject. The staff have some of the best insights which is really valuable. I really appreciate the exposure to different scientific techniques, instruments and concepts throughout the degree.

What is it like to study at UTS Science?
Studying at UTS Science is very engaging. Each week you are exposed to varying difficulties of concepts and you get to use all the resources that the UTS Science community makes available.

What advice you would give to students studying this degree?
Study in groups and use the resources that UTS Science and the wider UTS community makes available to you. Always ask for feedback. There is no point in practising something over and over if you are going about it the wrong way. It is imperative that you have an open dialogue with your peers and your lecturers about the work that you are doing.

What would you like to do once you complete your degree?
Currently I am working as a Junior Development Chemist in a team that develops new personal care products. After graduation, I hope to continue with this position and move on to developing new products that go to market for brands.
BACHELOR OF SCIENCE
(APPLIED CHEMISTRY)

KEY INFORMATION
2017 ATAR: 74.10
Duration: 3 years (full-time)
          6 years (part-time)
UAC code: 607005
UTS course code: C10242

Recommended year 12 subjects:
Maths Extension 1, Physics, Chemistry,
Maths, 2 units of English, 2 units of Science

Bonus points: Available. See page 53
How to apply: See page 53
Professional recognition:
Royal Australian Chemical Institute

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 help you to develop advanced problem-solving skills, while the electives will allow you to learn the basic concepts, vocabulary and patterns of thought in a second discipline.

You’ll have access to modern technology, instruments and laboratory facilities. UTS has strong links with major employers, such as ANSTO and CSIRO, giving you access to valuable networking opportunities.

POSSIBLE JOBS
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.

POSSIBLE EMPLOYERS

For more career options, visit www.science.uts.edu.au/future

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<td>Statistics and Mathematics for Science Physics in Action</td>
<td>Physical Chemistry 1</td>
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<tr>
<td>Principles of Scientific Practice</td>
<td>Organic Chemistry 2</td>
<td>Analytical Instrumentation 2</td>
</tr>
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<td>Select one of the following:</td>
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<td>Physical Chemistry 2</td>
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<tr>
<td>&gt; Cell Biology and Genetics</td>
<td>Spectroscopy and Structure</td>
<td>Surface Processes</td>
</tr>
<tr>
<td>&gt; Introduction to Materials</td>
<td>Elective x 2</td>
<td>Elective x 2</td>
</tr>
<tr>
<td>&gt; Human Anatomy and Physiology</td>
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For more information, visit www.science.uts.edu.au/future
BACHELOR OF MEDICINAL CHEMISTRY

KEY INFORMATION

2017 ATAR: 85.20
Duration: 3 years (full–time)
6 years (part–time)
UAC code: 607065
UTS course code: C10275

Assumed knowledge:
Year 12 Mathematics, two units of Science and any two units of English

Bonus points: Available. See page 53
How to apply: See page 53
Professional recognition:
Royal Australian Chemical Institute

COURSE DESCRIPTION

The aim of this course is to equip you with skills to undertake the design, discovery and development of new drugs. The course is a research–inspired, trans–disciplinary degree located at the intersection of chemistry, biology and pharmacology.

You will develop a solid foundation in chemistry, maths and biology to underpin your studies. As you progress through your degree, you will explore pharmacology and drug synthesis strategies.

You will gain necessary skills to prepare you for a career as a medicinal chemist with access to sophisticated instrumentation.

POSSIBLE JOBS

Pharmacologists, toxicologists, clinical trials manager, analytical chemist, microbiologist, biopharmacist, drug developer.

POSSIBLE EMPLOYERS

Pharmaceutical companies, biotechnology start-ups, hospitals, medical research facilities, universities, and government regulatory authorities.

For more career options, visit www.science.uts.edu.au/future

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<td>Human Anatomy &amp; Physiology</td>
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<td>Elective x1</td>
<td>Medicinal Chemistry</td>
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For more information, please visit www.science.uts.edu.au/future
BACHELOR OF SCIENCE (APPLIED PHYSICS)

KEY INFORMATION

2017 ATAR: 71.20  
Duration: 3 years (full-time)  
6 years (part-time)  
UAC code: 607009  
UTS course code: C10242

Recommended year 12 subjects: Maths Extension 1, Physics, Chemistry, Maths, 2 units of English, 2 units of Science
Bonus points: Available. See page 53
How to apply: See page 53
Professional recognition: Australian Institute of Physics

COURSE DESCRIPTION

Physics challenges the imagination and today’s physicists are turning their talents to addressing some of the great challenges facing society, such as creating more efficient lighting or better medical technologies.

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. Physics at UTS 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.

POSSIBLE JOBS

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, energy and sustainability researcher.

POSSIBLE EMPLOYERS

Energy companies like Energy Australia or Origin Energy, Australian Defence Force, Bureau of Meteorology, Defence Science and Technology Organisation, KPMG, MasterFoods Australia, NASA, ANSTO, higher education sector, secondary schools, Australian Institute of Physics, Australasian College of Physical Scientists and Engineers, Australian Research Council, Australian Genome Research Facility (AGRF), Australian Institute of Physics, Institute of Microelectronics (IME), federal and state government departments, and medical research facilities/hospitals.

For more career options, visit www.science.uts.edu.au/future

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</table>
JAMES IRVINE  
Bachelor of Biomedical physics

What motivated you to study this degree/major?
I became interested in nuclear medicine while being treated for cancer. This degree provided me with a chance to understand many of the principles behind the physics biology interface.

What do you enjoy most about your degree?
I had the opportunity to visit many workplaces in which my course was relevant; this was very insightful and interesting. The course is also a balanced mix of biology and physics units, which helps to keep things interesting.

Why did you choose to study at UTS?
UTS has incredibly good access to transport, and this degree was very new and unique. It also offers good disability support when required.

What is it like to study at UTS Science?
There are many enjoyable labs, good facilities and large freedom for electives. The laboratories and tutorials are actively engaging and are some of the most enjoyable things about university.

What advice you would give to students studying this degree?
Continuously attended all classes, this won’t only make your life easier, but you will enjoy each session much more if you’re staying on top of things.
COURSE DESCRIPTION
Some of the most rewarding yet challenging applications of physics are in the area of biomedical physics. This discipline has a broad range of applications, including radiation oncology, medical imaging and radiation safety to name a few.

Knowledge of biomedical physics can be applied to instrument development, from magnetic resonance imaging (MRI) to simple glucose monitors or therapeutic agents based on nanoparticles.

This course gives you the skills and expertise that will equip you to participate in this exciting and rapidly growing area of activity found at the interface between physics and biomedicine.

You’ll gain advanced experimental, analytical and computational skills as well as an understanding of how the body works at a cellular and organ level.

You’ll explore the biomedical applications of physics, ranging from the use of nanoparticles as diagnostic and therapeutic agents to medical imaging and diagnostic instrumentation.

CAREER OPTIONS INCLUDE
This course offers a gateway to multiple career options, including imaging technology and the medical instrumentation industry. It also provides a pathway to postgraduate studies in medical physics and medicine.

For more career options, visit www.science.uts.edu.au/future
BACHELOR OF SCIENCE (NANOTECHNOLOGY)

KEY INFORMATION
2017 ATAR: 71.60
Duration: 3 years (full-time)
6 years (part-time)
UAC code: 607007
UTS course code: C10242

Recommended year 12 subjects:
Maths Extension 1, Physics, Chemistry, Maths, 2 units of English, 2 units of Science
Bonus points: Available. See page 53
How to apply: See page 53
Professional recognition: 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: fabrics 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 and DNA computers are a few nanotechnology products soon to be released.

In this major, you’ll be exposed to a multi-disciplinary course that develops your analytical, critical thinking, and problem-solving skills.

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

POSSIBLE JOBS
Materials scientist, polymer scientist, composite technologist, investment advisor, nanotechnologist, science teacher, academic, technical officer, imaging specialist, research associate or assistant, drug delivery researcher, nanolithographer, platform project officer.

POSSIBLE EMPLOYERS

For more career options, visit www.science.uts.edu.au/future

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<tr>
<td>Physics in Action Principles of Scientific Practice</td>
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BACHELOR OF SCIENCE (MATHEMATICS)

KEY INFORMATION

2017 ATAR: 76.95
Duration: 3 years (full-time)
       6 years (part-time)
UAC code: 607003
UTS course code: C10242

Recommended year 12 subjects:
Maths Extension 1, Maths, 2 units of English
Bonus points: Available. See page 53
How to apply: See page 53

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 course according to your interests.

POSSIBLE JOBS

Financial consultant, valuer, quantity surveyor, banker, investment analyst, computer programmer, intelligence analyst, airport traffic analyst, mathematical modeller, science or maths teacher, stock market advisor/analyst, portfolio manager, insurance pricing analyst, market research analyst, policy advisor, quantitative analyst, forensic accountant, taxation consultant, treasurer or economist.

POSSIBLE EMPLOYERS


For more career options, visit www.science.uts.edu.au/future

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<td>Linear Algebra</td>
<td>Advanced Calculus</td>
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<td>Introduction to Linear Dynamical Systems</td>
<td>Optimisation in Quantitative Management</td>
<td>Select two of the following:</td>
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<td>Simulation Modelling</td>
<td>&gt; Quantitative Management Practice</td>
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<tr>
<td>Regression Analysis</td>
<td>Differential Equations</td>
<td>&gt; Design and Analysis of Experiments</td>
</tr>
<tr>
<td>Introduction to Mathematical Analysis and Modelling</td>
<td>Programming for Informatics</td>
<td>&gt; Programming for Data Analysis</td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>Select one of the following:</td>
<td>Select three of the following:</td>
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<tr>
<td>Probability and Random Variables</td>
<td>&gt; Advanced Statistical Modelling</td>
<td>&gt; Advanced Statistical Modelling</td>
</tr>
<tr>
<td>Select one subject from Foundation subject choice B. Refer to online</td>
<td>&gt; Mathematical Methods</td>
<td>&gt; Mathematical Methods</td>
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<td>&gt; Network and Combinatorial Optimisation</td>
<td>&gt; Network and Combinatorial Optimisation</td>
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<td>&gt; Stochastic Processes</td>
<td>&gt; Stochastic Processes</td>
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<td>&gt; Discrete Mathematics</td>
<td>&gt; Discrete Mathematics</td>
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<td>&gt; Sample Surveys</td>
<td>&gt; Sample Surveys</td>
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<td></td>
<td>&gt; Advanced Statistical Modelling</td>
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Distinguished Professor Louise Ryan
Statistician, UTS Science

Professor Louise Ryan is well known for her methodological contributions to statistical methods for cancer and environmental health research.

Her contribution to biostatistics has been recognised in Australia and overseas, including being awarded the 2015 Harvard University Centennial Medal; and an Honorary Doctorate from University of Ghent in 2016.

Recently, Professor Ryan used statistics to gain a better understanding of the impacts that coal train transportation is having on air pollution in the Hunter Valley, NSW.

"Working in environmental health, I am doing something that helps improves people’s lives and that has always been very important to me."

Professor Ryan loves the challenge and satisfaction of multi-disciplinary collaboration.

"One example of this is when I was part of a national academy committee looking at health effects of in-utero exposure to methyl mercury.

"It required people coming from lots of different disciplinary perspectives—but I know that my work as a statistician was really useful in helping the team come to the final conclusions."

Professor Ryan is also passionate about encouraging more women into the fields of statistics and maths.

"Many of us women have that desire and drive to connect with other people, to feel like our work is doing something that matters,” she said. "Statistics is a branch of mathematics which is really connected to the real world and it appeals to women for that reason, especially biostatistics."
COURSE DESCRIPTION
Statistics involves the design of data collection to gain maximum information, and the interpretation of that data. It is a very important tool in the marketing and finance industries. You’ll learn the theory involved in the discipline as well as the practical skills that will enable you to apply your knowledge in diverse areas such as market research, health or the environment.

POSSIBLE JOBS
Market researcher, quantitative data analyst, financial consultant, valuer, quantity surveyor, investment analyst, systems analyst, banker, statistician (medical, sports, surveys), mathematics teacher, academic, statistical modelling analyst.

POSSIBLE EMPLOYERS

For more career options, visit www.science.uts.edu.au/future

KEY INFORMATION
2017 ATAR: 76.95
Duration: 3 years (full-time)
6 years (part-time)
UAC code: 607003
UTS course code: C10242
Recommended year 12 subjects:
Maths Extension 1, Maths, 2 units of English
Bonus points: Available. See page 53
How to apply: See page 53

COURSE STRUCTURE

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Quantitative Management</td>
<td>Linear Algebra</td>
<td>Advanced Calculus</td>
</tr>
<tr>
<td>Introduction to Linear Dynamical Systems</td>
<td>Optimisation in Quantitative Management</td>
<td>Select one of the following:</td>
</tr>
<tr>
<td>Introduction to Statistics Regression Analysis</td>
<td>Simulation Modelling</td>
<td>&gt; Design and Analysis of Experiments</td>
</tr>
<tr>
<td>Introduction to Mathematical Analysis and Modelling</td>
<td>Differential Equations</td>
<td>&gt; Programming for Data Analysis</td>
</tr>
<tr>
<td>Principles of Scientific Practice Probability and Random Variables</td>
<td>Programming for Informatics</td>
<td>Select one of the following:</td>
</tr>
<tr>
<td>Select one subject from Foundation subject choice B. Refer to online handbook for subject choices.</td>
<td>Select two of the following:</td>
<td>&gt; Sample Surveys</td>
</tr>
<tr>
<td></td>
<td>&gt; Sample Surveys</td>
<td>&gt; Advanced Statistical Modelling</td>
</tr>
<tr>
<td></td>
<td>&gt; Advanced Statistical Modelling</td>
<td>&gt; Stochastic Processes</td>
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<td></td>
<td>&gt; Stochastic Processes</td>
<td>Elective x 1</td>
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<td></td>
<td>Elective x 1</td>
<td>Select two of the following:</td>
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<tr>
<td></td>
<td></td>
<td>&gt; Mathematical Methods</td>
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<td></td>
<td>&gt; Nonlinear Methods in Quantitative Management</td>
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<tr>
<td></td>
<td></td>
<td>&gt; Network and Combinatorial Optimisation</td>
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<tr>
<td></td>
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<td>&gt; Stochastic Processes</td>
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<td></td>
<td></td>
<td>&gt; Discrete Mathematics</td>
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<td>&gt; Sample Surveys</td>
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<tr>
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<td></td>
<td>&gt; Advanced Statistical Modelling</td>
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<td>Elective x 2</td>
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</tbody>
</table>
**BACHELOR OF SCIENCE IN ANALYTICS**

**KEY INFORMATION**

- **2017 ATAR:** 89.75
- **Duration:**
  - 3 years (full-time)
  - 6 years (part-time)
- **UAC code:** 607080
- **UTS course code:** C10384

**Assumed knowledge:** Year 12 Mathematics, two units of English

**Recommended studies:** Mathematics Extension 1

**Bonus points:** Available. See page 53

**How to apply:** See page 53

**COURSE DESCRIPTION**

The Bachelor of Science in Analytics is a new interdisciplinary course combining mathematics, statistics, operations research, business and computing. This course focuses on the analytical skills and technical knowledge that underpin modern data analysis.

You will learn a unique mix of computational, mathematical and statistical skills to derive meaningful patterns in data. You’ll learn how to interpret results of statistical and other quantitative analyses, helping industry and business to capitalise on big data.

In this course you will have four majors to choose from: Consumer Analytics, Operations Analysis, Risk Management and Financial Mathematics.

This course comprises 24 subjects or 144 credit points made up of:

- Eight subjects or 48 credit points in the Quantitative Analytics stream
- Four subjects or 24 credit points in the Data Analytics stream
- Eight subjects or 48 credit points in your chosen major
- Four electives or four subjects in a sub-major choice (equal to 24 credit points).

**POSSIBLE JOBS**

Data scientist, data analyst, business analyst, market researcher, logistics manager, credit risk manager, stock market analyst, financial portfolio manager, financial risk manager.

**POSSIBLE EMPLOYERS**

Google, media and marketing companies, professional services and consulting firms, banks, insurance companies, superannuation providers, government regulatory bodies such as APRA and ASIC, and other major financial bodies.

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

### Year 1 | Year 2 | Year 3
---|---|---
**CONSUMER ANALYTICS MAJOR**
- Introduction to Linear Dynamical Systems
- Introduction to Quantitative Management
- Introduction to Statistics
- Regression Analysis
- Marketing Foundations
- Introduction to Mathematical Analysis and Modelling
- Probability and Random Variables
- Programming for Informatics
- Consumer Behaviour
- Database Fundamentals
- Linear Algebra
- Design and Analysis of Experiments
- Select 24 credit points from the following:
  - Electives (24cp)
  - Operations Analysis (24cp)
  - Risk Management (24cp)
  - Financial Mathematics (24cp)
- Marketing Research
- Introduction to Data Analytics
- Programming for Data Analysis
- Sample Surveys
- Advanced Statistical Modelling
- Analytics Capstone
- Select one of the following:
  - e-Business Trading
  - Object-relational Databases
  - Database Programming

### OPERATIONS ANALYSIS MAJOR
- Introduction to Linear Dynamical Systems
- Introduction to Quantitative Management
- Introduction to Statistics
- Regression Analysis
- Managing People and Organisations
- Introduction to Mathematical Analysis and Modelling
- Probability and Random Variables
- Programming for Informatics
- Database Fundamentals
- Linear Algebra
- Optimisation in Quantitative Management
- Select one of the following:
  - Business and Organisational Strategy
  - Global Operations and Supply Chain Management
  - Understanding Organisations: Theory and Practice
- Select 24 credit points from the following:
  - Electives (24cp)
  - Consumer Analytics (24cp)
  - Risk Management (24cp)
  - Financial Mathematics (24cp)
- Introduction to Data Analytics
- Programming for Data Analysis
- Nonlinear Methods in Quantitative Management
- Network and Combinatorial Optimisation
- Analytics Capstone
- Select one of the following:
  - e-Business Trading
  - Object-relational Databases
  - Database Programming

### RISK MANAGEMENT MAJOR
- Introduction to Linear Dynamical Systems
- Introduction to Quantitative Management
- Introduction to Statistics
- Regression Analysis
- Fundamentals of Business Finance
- Introduction to Mathematical Analysis and Modelling
- Probability and Random Variables
- Programming for Informatics
- The Financial System
- Database Fundamentals
- Linear Algebra
- Simulation Modelling
- Select 24 credit points from the following:
  - Electives (24cp)
  - Consumer Analytics (24cp)
  - Operations Analysis (24cp)
  - Financial Mathematics (24cp)
- Introduction to Data Analytics
- Design and Analysis of Experiments
- Advanced Data Analytics
- Sample Surveys
- Advanced Statistical Modelling
- Analytics Capstone
- Select one of the following:
  - e-Business Trading
  - Object-relational Databases
  - Database Programming

### FINANCIAL MATHEMATICS MAJOR
- Introduction to Linear Dynamical Systems
- Introduction to Quantitative Management
- Introduction to Statistics
- Regression Analysis
- Fundamentals of Business Finance
- Introduction to Mathematical Analysis and Modelling
- Probability and Random Variables
- Programming for Informatics
- The Financial System
- Database Fundamentals
- Linear Algebra
- Simulation Modelling
- Select 24 credit points from the following:
  - Electives (24cp)
  - Consumer Analytics (24cp)
  - Operations Analysis (24cp)
  - Risk Management (24cp)
- Introduction to Data Analytics
- Advanced Calculus
- Optimisation in Quantitative Management
- Differential Equations
- Stochastic Processes
- Analytics Capstone
- Select one of the following:
  - Database Programming
  - Programming for Data Analysis

- Select one of the following:
  - e-Business Trading
  - Object-relational Databases
  - Database Programming
  - Programming for Data Analysis
**COURSE DESCRIPTION**

You will gain a thorough understanding of how forensic science can solve and prevent crime. This is a hands-on course using world-class facilities that are modelled on operational laboratories. The aim is to produce professional forensic scientists with highly adaptable scientific skills, accompanied by a thorough grounding in theory and practice. It is a well-regarded course with strong links to industries such as the federal and state police services, national and international forensic institutions, and government laboratories.

**WHAT CAN I STUDY?**

You will have four majors to choose from: Biology, Chemistry, Crime Scene Investigation and Digital Forensics.

You can also combine this course with the Bachelor of Arts in International Studies, Bachelor of Creative Intelligence and Innovation (see pages 46-49), or the Bachelor of Laws.

**CAREER OPTIONS**

Depending on the chosen major, career opportunities include positions in the police service, state and federal law enforcement agencies, government and private forensic or drug detection laboratories, customs, quarantine services, environmental protection agencies, pharmaceutical, chemical and analytical industries, DNA testing laboratories, medical diagnostic laboratories, hospitals or corporate multinationals providing forensic, medical or research services, digital forensic laboratories, scene of crime officers.

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**KEY INFORMATION**

- **2017 ATAR:** 85.35
- **UAC code:** 607020
- **UTS course code:** C10387

- **Duration:** 3 years (full-time) / 6 years (part-time)
- **Recommended year 12 subjects:** Chemistry, Physics and HSC Mathematics Extension 1
- **Bonus points:** Available. See page 53
- **How to apply:** See page 53
- **Professional recognition:** Graduates are eligible for membership of the Royal Australian Chemical Institute and the Australian and New Zealand Forensic Science Society.
# BACHELOR OF FORENSIC SCIENCE

## COURSE STRUCTURE – BASED ON COMMENCEMENT IN AUTUMN

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHEMISTRY MAJOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry 1</td>
<td>Crime Scene Investigation</td>
<td>Elective x 4</td>
</tr>
<tr>
<td>Principles of Forensic Science</td>
<td>Organic Chemistry 1</td>
<td>Forensic Intelligence</td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>Criminalistics</td>
<td>Complex Cases</td>
</tr>
<tr>
<td>Mathematical Modelling for Science</td>
<td>Analytical Instrumentation 1</td>
<td>Forensic Research Project</td>
</tr>
<tr>
<td>Chemistry 2</td>
<td>Spectroscopy and Structure</td>
<td>Select one of the following:</td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td>Organic Chemistry 2</td>
<td>&gt; Forensic Toxicology</td>
</tr>
<tr>
<td>Forensic Statistics</td>
<td>Chemical Criminalistics</td>
<td>&gt; Document Examination and Counterfeiting</td>
</tr>
<tr>
<td>Forensic Imaging</td>
<td>Select one of the following:</td>
<td>&gt; Chemistry and Pharmacology of Recreational Drugs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; Fire and Explosion Investigation</td>
</tr>
<tr>
<td><strong>BIOLOGY MAJOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry 1</td>
<td>Crime Scene Investigation</td>
<td>Elective x 4</td>
</tr>
<tr>
<td>Principles of Forensic Science</td>
<td>General Microbiology</td>
<td>Forensic Intelligence</td>
</tr>
<tr>
<td>Mathematical Modelling for Science</td>
<td>Criminalistics</td>
<td>Complex Cases</td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>Metabolic Biochemistry</td>
<td>Forensic Research Project</td>
</tr>
<tr>
<td>Chemistry 2</td>
<td>Molecular Biology 1</td>
<td>Select one of the following:</td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td>DNA Profiling</td>
<td>&gt; Investigation of Human Remains</td>
</tr>
<tr>
<td>Forensic Statistics</td>
<td>Next Generation Sequencing</td>
<td>&gt; Biological Criminalisation</td>
</tr>
<tr>
<td>Forensic Imaging</td>
<td></td>
<td>&gt; Bioinformatics</td>
</tr>
<tr>
<td><strong>CRIME SCENE INVESTIGATION MAJOR</strong></td>
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</tr>
<tr>
<td>Chemistry 1</td>
<td>Crime Scene Investigation</td>
<td>Elective x 4</td>
</tr>
<tr>
<td>Principles of Forensic Science</td>
<td>Foundations of Physics</td>
<td>Forensic Intelligence</td>
</tr>
<tr>
<td>Mathematical Modelling for Science</td>
<td>Criminalistics</td>
<td>Complex Cases</td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>Spectroscopy and Structure</td>
<td>Forensic Research Project</td>
</tr>
<tr>
<td>Chemistry 2</td>
<td>Homicide Investigation</td>
<td>Select one of the following:</td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td>Major Scene Investigation</td>
<td>&gt; Investigation of Human Remains</td>
</tr>
<tr>
<td>Forensic Statistics</td>
<td>Investigation of Human Remains</td>
<td>&gt; Biological Criminalisation</td>
</tr>
<tr>
<td>Forensic Imaging</td>
<td>Elective x 1</td>
<td>&gt; Bioinformatics</td>
</tr>
<tr>
<td><strong>DIGITAL FORENSICS MAJOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web Systems</td>
<td>Crime Scene Investigation</td>
<td>Elective x 4</td>
</tr>
<tr>
<td>Principles of Forensic Science</td>
<td>Network Security</td>
<td>Forensic Intelligence</td>
</tr>
<tr>
<td>Network Fundamentals</td>
<td>Criminalistics</td>
<td>Complex Cases</td>
</tr>
<tr>
<td>Mathematical Modelling for Science</td>
<td>Digital Trace and Identity</td>
<td>Forensic Research Project</td>
</tr>
<tr>
<td>Programming for Informatics</td>
<td>Digital Forensics</td>
<td>Web Monitoring and Investigations</td>
</tr>
<tr>
<td>Fundamentals of Security</td>
<td>Digital and Cyber Crime</td>
<td></td>
</tr>
<tr>
<td>Forensic Statistics</td>
<td>Mobile Networking</td>
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</tr>
<tr>
<td>Forensic Imaging</td>
<td>Elective x 1</td>
<td></td>
</tr>
</tbody>
</table>

*Autumn commencing only*
KIORA PILLAY  
Bachelor of Science (Biomedical Science)

What is it like to study at UTS Science?
UTS highly values interaction-based learning which is amazing for retaining information as well as enjoying the degree. The practical and tutorial classes provide a friendly environment where academics are approachable.

Towards the end of the degree there are many information and networking nights to ensure success after uni. There has been such a supportive environment studying at UTS and I feel more confident in my ability to secure employment after my degree.

What would you like to do once you complete your degree?
Once I complete my degree I’d like to study postgraduate medicine to become a doctor of pathology, majoring in either microbiology or anatomical pathology.

What other activities do you do at uni?
Over the summer session I completed the subject Professional Experience in Biomedical Science and worked full-time in different labs in Liverpool Hospital Pathology for a month.

I learnt valuable skills and techniques in the labs and the correct use of large machinery, which are employment incentives that cannot be taught in any uni class. I also picked up information and techniques which I have used in every class at UTS since completing the program, allowing me to get ahead of my work and complete it to a higher standard than what I could’ve previously.
BACHELOR OF SCIENCE (BIOMEDICAL SCIENCE)
BACHELOR OF BIOMEDICAL SCIENCE

KEY INFORMATION

Bachelor of Science (Biomedical Science)
2017 ATAR: 76.20
UAC code: 607015
UTS course code: C10242

Bachelor of Biomedical Science (specialist course)
2017 ATAR: 81.00
UAC code: 607040
UTS course code: C10115

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

Recommended year 12 subjects:
Maths Extension 1, Chemistry, Maths,
2 units of English, 2 units of Science
Bonus points: Available. See page 53
How to apply: See page 53

COURSE DESCRIPTION

You’ll gain an in–depth understanding of 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 the knowledge and lab skills required to participate in research aimed at the prevention or treatment of disease.

You’ll gain a solid foundation in both biological and medical sciences, and practical experimentation through extensive theoretical knowledge and advanced laboratory skills.

These courses are also excellent preparation for entry into postgraduate degrees, such as medicine, dentistry and pharmacy.

POSSIBLE JOBS

Medical lab manager, cytologist, biochemist, microbiologist, research associate, cancer researcher, gene therapist, embryologist, infectious disease researcher, diagnostic technician, biologist, biological oceanographer, geneticist, pathologist, medical practitioner, medical and science technician, transplant scientist.

POSSIBLE EMPLOYERS

Children’s Medical Research Institute, Centre for Cancer Biology, Westmead Institute for Medical Research, Accenture Australia, Australian Genome Research Facility (AGRF), ALDI Australia, ANZ Bank, Australian Defence Force, Department of Foreign Affairs and Trade, KPMG, Lion Co, NSW Fire Brigades, PwC, Unilever Australasia, Royal Prince Alfred Hospital and other hospitals, various universities and biomedical and medical research institutions.

For more career options, visit www.science.uts.edu.au/future

COURSE STRUCTURE

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 1</td>
<td>General Microbiology</td>
<td>Anatomical Pathology</td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>Metabolic Biochemistry</td>
<td>Select three of the following:</td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td>Histology</td>
<td>&gt; Molecular Biology 2</td>
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<tr>
<td>Statistical Design and Analysis</td>
<td>Molecular Biology 1</td>
<td>&gt; Clinical Bacteriology</td>
</tr>
<tr>
<td>Chemistry 2</td>
<td>Elective x 1</td>
<td>&gt; Medical and Diagnostic Biochemistry</td>
</tr>
<tr>
<td>Biocomplexity</td>
<td></td>
<td>&gt; Haematology 2</td>
</tr>
<tr>
<td>Human Anatomy and Physiology</td>
<td></td>
<td>&gt; Immunology 2</td>
</tr>
<tr>
<td>Physical Aspects of Nature</td>
<td></td>
<td>&gt; Select two of the following:</td>
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<tr>
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<td>&gt; Transfusion Science</td>
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<td></td>
<td></td>
<td>&gt; Biochemistry, Genes and Disease</td>
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<tr>
<td></td>
<td></td>
<td>&gt; Parasitology</td>
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<td></td>
<td></td>
<td>Electives x 2</td>
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</tbody>
</table>
COURSE DESCRIPTION

You’ll learn the human body’s structure, function and disease processes at the cellular and whole organ level. These courses are designed to train graduates for careers in medical and health-related sciences. It aims to produce medical scientists with highly adaptable and practical scientific skills accompanied by a thorough grounding in theory.

These courses also provide an excellent foundation knowledge, and are thus good preparation for entry into postgraduate degrees such as medicine, dentistry, pharmacy, biomedical engineering, nutrition and dietetics, complementary medicine, public health and health administration.

POSSIBLE JOBS

Medical scientist, medical imaging technician, human factors researcher, anaesthetic technician, cardiac technician, operating theatre technician, geneticist, medical journalist or writer, health professional, nutritionist, and medical researcher.

POSSIBLE EMPLOYERS

Australian Red Cross Blood Service, Westmead Children Hospital, Children’s Medical Research Institute, hospitals, Australian Society for Medical Research (ASMR), Australian Defence Force, federal and state government health departments, Medicare Australia, pathology laboratories, Pfizer, Unilever and WorkSafe Victoria.

For more career options, visit www.science.uts.edu.au/future

KEY INFORMATION

Bachelor of Science (Medical Science)
2017 ATAR: 76.20
UAC code: 607015
UTS course code: C10242

Bachelor of Medical Science (specialist course)
2017 ATAR: 87.05
UAC code: 607050
UTS course code: C10184

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

Recommended year 12 subjects:
Maths Extension 1, Chemistry, Maths, 2 units of English, 2 units of Science
Bonus points: Available. See page 53
How to apply: See page 53

BACHELOR OF SCIENCE
BACHELOR OF MEDICAL SCIENCE

COURSE STRUCTURE

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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</thead>
<tbody>
<tr>
<td>Chemistry 1</td>
<td>Metabolic Biochemistry</td>
<td>Pharmacology 1</td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>General Microbiology</td>
<td>Neuroscience</td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td>Physiological Systems</td>
<td>Medical Devices and Diagnostics</td>
</tr>
<tr>
<td>Statistical Design and Analysis</td>
<td>Molecular Biology 1</td>
<td>Pharmacology 2</td>
</tr>
<tr>
<td>Chemistry 2</td>
<td>Human Pathophysiology</td>
<td>Medical and Applied Physiology</td>
</tr>
<tr>
<td>Biocomplexity</td>
<td></td>
<td>Elective x 3</td>
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<tr>
<td>Human Anatomy and Physiology</td>
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<tr>
<td>Physical Aspects of Nature</td>
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</table>

Select two of the following:

> Analytical Biochemistry
> Epidemiology and Public Health
> Microbiology
> Immunology 1
> Haematology 1
> Elective x 1
**BACHELOR OF SCIENCE (BIOTECHNOLOGY)**

### 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 medicines, foods 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.

These degrees also cover ethical issues, hazard management and intellectual property rights issues.

### COURSE STRUCTURE

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 1</td>
<td>General Microbiology</td>
<td>Molecular Biology 2</td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>Metabolic Biochemistry</td>
<td>Biobusiness</td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td>Biotechnology</td>
<td>Immunology 2</td>
</tr>
<tr>
<td>Statistical Design and Analysis</td>
<td>Molecular Biology 1</td>
<td>Bioreactors and Bioprocessing</td>
</tr>
<tr>
<td>Chemistry 2</td>
<td>Select two of the following:</td>
<td>Microbial Ecology</td>
</tr>
<tr>
<td>Biocomplexity</td>
<td>&gt; Analytical Biochemistry</td>
<td></td>
</tr>
<tr>
<td>Human Anatomy and Physiology</td>
<td>&gt; Epidemiology and Public Health</td>
<td></td>
</tr>
<tr>
<td>Physical Aspects of Nature</td>
<td>&gt; Microbiology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; Immunology 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; Haematology 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electives x 2</td>
<td></td>
</tr>
</tbody>
</table>

### POSSIBLE JOBS
Biotechnologist, microbiologist, food and wine producer, science and technology technical officer, cancer researcher, secondary school teacher, academic or lecturer, molecular scientist, microbiologist, geneticist, biologist or food technician.

### POSSIBLE EMPLOYERS
CSIRO, AusBiotech, AstraZeneca, Children’s Medical Research Institute, Kelly Scientific Resources, Australian Institute for Bioengineering and Nanotechnology, AgResearch, Accenture Australia; and various positions in tropical crops and biocommodities, bioengineering and nanotechnology, and food science technology companies.

For more career options, visit [www.science.uts.edu.au/future](http://www.science.uts.edu.au/future)
MAJCA TONGACAN
Bachelor of Biotechnology

What do you enjoy most about your degree?
I am completely fascinated by all the biotechnological aspects that permeate modern-day society. I particularly enjoy the labs and the interaction between myself and the supervisors.

What is it like to study at UTS Science?
It’s a great experience being around peers from the same discipline. The environment is very comfortable and provides an open space for discussion and intrigue. And because of UTS’s great position in the CBD there are plenty of fantastic food places!

What advice would you give to students studying this degree?
As much as you are tired of studying do not become complacent in your first year. In saying that, know when to take breaks as you do not want to burn out! Also make lots of friends to make the workload more fun!

What other activities do you participate in at uni?
In the summer of 2015-16, I was lucky enough to participate in a summer project with Dr Willa Huston. The project involved refining the enzyme cel1 from celery, which had further implications in the lab to analyse Chlamydial mutants. Although the project I undertook was minimal compared to the amazing chlamydiad research being done by her team, it was most certainly a very enlightening experience.
BACHELOR OF
BIOTECHNOLOGY

KEY INFORMATION
2017 ATAR: 85.40
UAC code: 607045
UTS course code: C10172

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

Recommended year 12 subjects:
Maths Extension 1, Chemistry, Maths

Bonus points: Available. See page 53

How to apply: See page 53

Professional recognition:
Australian Biotechnology Association

COURSE DESCRIPTION
You will gain a good understanding of the biological processes of living organisms and the skills required to naturally manipulate these processes in the development of new medicines, food and organic substances. Students gain broad knowledge of modern biotechnology, and practical skills in ethics law and business processes.

WHAT CAN I STUDY?
You will have four majors to choose from:
> Medical Biotechnology
> Environmental Biotechnology
> Computational Biotechnology; and
> Biosensor Technology.

Biotechnology is the science of the future and graduates have high employment rates due to the course’s strong professional and industry focus. Graduates of this course gain a professional qualification in biological science and a strong foundation in the industrial aspects of biotechnology.

CAREER OPTIONS
Careers opportunities include biotechnological research, product and development positions in agricultural, biomedical, chemical, communications, energy, environmental, manufacturing, medical and pharmaceutical companies. Graduates can innovate, invent and start up their own company to capitalise on their ideas.

Medical Biotechnology: Medical biotechnologists primary work in laboratory settings to develop new vaccines and medicines for pharmaceutical and biotechnology companies, pathology and biomedical industries, and universities and research institutes.

Environmental Biotechnology:
Environmental biotechnologists develop and use processes to develop new product and remediate contaminated sites. They may use plants to filter pollutants in soil, water, or air; convert algae or plants to biofuels; or develop more sustainable processes to prevent pollution. For example, microbes and bacteria are used in waste management to help breakdown the pollutants.

Computational Biotechnology:
Bioinformatics or computational biotechnologists are in demand with their combined expertise in biological sciences, statistics, mathematical modelling and database design. Employment prospects are driven by pharmaceutical and biotechnology industries looking to take advantage of genomics data to usher in a new era of drug discovery. There are other companies that have similar computational needs, such as Google, Facebook and Netflix, who are hiring computational biotechnologists to manage their own versions of big data.

Biosensor Technology:
A biosensor is an analytical device that converts a biological response into an electrical signal. Biosensor technologists create user-friendly diagnostic and drug testing technologies that could be applied in a variety of ways such as: disease diagnosis, illicit drug testing, water and food testing to improve our quality of life. For example, targeted drug delivery via nanotechnology methods where the medicine is delivered directly to the cancerous cells.
## BACHELOR OF BIOTECHNOLOGY

### COURSE STRUCTURE

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEDICAL BIOTECHNOLOGY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>General Microbiology</td>
<td>Elective x 4</td>
</tr>
<tr>
<td>Chemistry 1</td>
<td>Biotechnology</td>
<td>Medical Biotechnology</td>
</tr>
<tr>
<td>Integrating Business Perspectives</td>
<td>Pharmacology 1</td>
<td>Bioreactors and Bioprocessing</td>
</tr>
<tr>
<td>Molecular Biology 1</td>
<td>Intellectual Property and Commercialisation</td>
<td>Business Strategy and Scenario Planning</td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td>Pharmacology 2</td>
<td>Business and Organisational Strategy</td>
</tr>
<tr>
<td>Physical Aspects of Nature</td>
<td>Medical Devices and Diagnostics</td>
<td></td>
</tr>
<tr>
<td>Immunology 1</td>
<td>Immunology 2</td>
<td></td>
</tr>
<tr>
<td>Human Anatomy and Physiology</td>
<td></td>
<td>Biobusiness</td>
</tr>
<tr>
<td><strong>ENVIRONMENTAL BIOTECHNOLOGY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>Water Supply and Wastewater Engineering</td>
<td>Elective x 4</td>
</tr>
<tr>
<td>Chemistry 1</td>
<td>General Microbiology</td>
<td>Environmental Biotechnology</td>
</tr>
<tr>
<td>Integrating Business Perspectives</td>
<td>Biotechnology</td>
<td>Bioreactors and Bioprocessing</td>
</tr>
<tr>
<td>Molecular Biology 1</td>
<td>Experimental Design and Sampling</td>
<td>Business Strategy and Scenario Planning</td>
</tr>
<tr>
<td>The Biosphere</td>
<td>Environmental Chemistry</td>
<td>Business and Organisational Strategy</td>
</tr>
<tr>
<td>Business and Organisational Strategy</td>
<td>Intellectual Property and Commercialisation</td>
<td></td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td>Environmental Remediation</td>
<td></td>
</tr>
<tr>
<td>Biocomplexity</td>
<td>Principles of Environmental Engineering</td>
<td></td>
</tr>
<tr>
<td><strong>COMPUTATIONAL BIOTECHNOLOGY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>Business and Organisational Strategy</td>
<td>Elective x 4</td>
</tr>
<tr>
<td>Chemistry 1</td>
<td>General Microbiology</td>
<td>Bioinformatics</td>
</tr>
<tr>
<td>Integrating Business Perspectives</td>
<td>Biotechnology</td>
<td>Bioreactors and Bioprocessing</td>
</tr>
<tr>
<td>Molecular Biology 1</td>
<td>Introduction to Data Analytics</td>
<td>Business Strategy and Scenario Planning</td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td>Introduction to Information Systems</td>
<td>Business and Organisational Strategy</td>
</tr>
<tr>
<td>Mathematical Modelling 1</td>
<td>IP and Commercialisation</td>
<td></td>
</tr>
<tr>
<td>Programming Fundamentals</td>
<td>Programming for Data Analysis</td>
<td></td>
</tr>
<tr>
<td>Mathematical Modelling 2</td>
<td>Advanced Data Analytics</td>
<td></td>
</tr>
<tr>
<td><strong>BIOSENSOR BIOTECHNOLOGY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>Business and Organisational Strategy</td>
<td>Elective x 4</td>
</tr>
<tr>
<td>Chemistry 1</td>
<td>Medical Devices and Diagnostics</td>
<td>Biosensors</td>
</tr>
<tr>
<td>Integrating Business Perspectives</td>
<td>Biotechnology</td>
<td>Nanophotonics</td>
</tr>
<tr>
<td>Chemistry 2</td>
<td>Medical Imaging</td>
<td>Business Strategy and Scenario Planning</td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td>Molecular Nanotechnology</td>
<td>Business and Organisational Strategy</td>
</tr>
<tr>
<td>Maths for Physical Science</td>
<td>Intellectual Property and Commercialisation</td>
<td></td>
</tr>
<tr>
<td>Human Anatomy and Physiology</td>
<td>Bionanotechnology</td>
<td></td>
</tr>
<tr>
<td>Physical Modelling in Maths</td>
<td>Immunology 1</td>
<td>Biobusiness</td>
</tr>
</tbody>
</table>
COURSE DESCRIPTION
You’ll learn about Chinese medicine, pharmacology of Chinese herbal medicine, Chinese massage, acupuncture and Chinese diagnostics.

This course also discusses the role of 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 on-campus Chinese medicine clinics 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 (pages 48–49), which involves an additional two years of language and culture training in Australia and China.

POSSIBLE JOBS
Private practitioner in acupuncture or Chinese herbal medicine, clinical therapist, nutritional and health consultants, academic, researcher, and Chinese herbal medicine dispenser.

POSSIBLE EMPLOYERS
Self-employed, Chinese medicine clinic, medical centres, overseas hospitals in countries such as China, Korea and Taiwan, professional sports teams, multidisciplinary clinics, IVF centres, and tertiary institutions.

For more career options, visit www.science.uts.edu.au/future

KEY INFORMATION
2017 ATAR: 82.25
Duration: 4 years (full-time) 8 years (part-time)
UAC code: 607055
UTS course code: C10186

Recommended year 12 subjects:
Biology, 2 units of English, 2 units of Science

Bonus points: Available. See page 53

How to apply: See page 53

Professional recognition:
Chinese Medicine Board of Australia

COURSE STRUCTURE

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese Medicine Foundations 1</td>
<td>Chinese Diagnostic System 1</td>
<td>Clinical Features of Disease</td>
<td>Evaluating TCM: Theory, Practice and Research 1</td>
</tr>
<tr>
<td>Point Location and Acupuncture Anatomy</td>
<td>Clinic Level 3 and Acupuncture Techniques 2</td>
<td>Clinic Level 5 and Acupuncture Microsystems</td>
<td>Clinical Practice 1 (TCM)</td>
</tr>
<tr>
<td>Clinical Theory and Clinic Level 1</td>
<td>Pharmacology of Chinese Herbal Medicine</td>
<td>Chinese Herbal Formula 2</td>
<td>Disease States for Traditional Chinese Medicine 2</td>
</tr>
<tr>
<td>Communication for the Complementary Therapist</td>
<td>Physiological Systems</td>
<td>Neuroscience</td>
<td>Professional Issues in Traditional Chinese Medicine</td>
</tr>
<tr>
<td>Introduction to Chinese Herbal Medicine</td>
<td>Chinese Diagnostic System 2</td>
<td>Medical Classics and the History of Chinese Medicine</td>
<td>Clinical Practice 2 (TCM)</td>
</tr>
<tr>
<td>Chinese Medicine Foundations 2</td>
<td>Clinic Level 4 and Acupuncture Techniques 3</td>
<td>Clinical Practicum (Therapy and Diagnosis)</td>
<td>Evaluating TCM: Theory, Practice and Research 2</td>
</tr>
<tr>
<td>Clinic Level 2 and Acupuncture Techniques 1</td>
<td>Chinese Herbal Formula 1</td>
<td>Clinic Level 6</td>
<td></td>
</tr>
<tr>
<td>Human Anatomy and Physiology</td>
<td>Human Pathophysiology</td>
<td>Disease States for Traditional Chinese Medicine 1</td>
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</tbody>
</table>
**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.

**POSSIBLE JOBS**
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.

**POSSIBLE EMPLOYERS**
CSIRO, National Parks and Wildlife Service, NSW Roads and Maritime Service, Schlumberger Oilfield Australia, Sunwater, Sydney Water, environmental protection organisations, water and coastal resources organisations, universities, TAFEs, Australian government departments.

For more career options, visit www.science.uts.edu.au/future

**COURSE STRUCTURE**

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 1</td>
<td>Geological Processes</td>
<td>GIS and Remote Sensing</td>
</tr>
<tr>
<td>The Biosphere</td>
<td>Experimental Design and Sampling</td>
<td>Wildlife Ecology</td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td>Ecology</td>
<td>Aquatic Ecology</td>
</tr>
<tr>
<td>Statistical Design and Analysis</td>
<td>Animal Behaviour and Physiology</td>
<td>Biodiversity Conservation</td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>Plant Physiology and Ecophysiology</td>
<td>Stream and Lake Assessment</td>
</tr>
<tr>
<td>Biocomplexity</td>
<td>Electives x 3</td>
<td>Environmental Protection and Management</td>
</tr>
<tr>
<td>Environmental Chemistry</td>
<td></td>
<td>Elective x 1</td>
</tr>
<tr>
<td>Physical Aspects of Nature</td>
<td></td>
<td><strong>Select one of the following:</strong></td>
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<tr>
<td></td>
<td></td>
<td>&gt; Forest and Mountain Ecology</td>
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<tr>
<td></td>
<td></td>
<td>&gt; Semi–arid Ecology</td>
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<tr>
<td></td>
<td></td>
<td>&gt; Alpine and Lowland Ecology</td>
</tr>
</tbody>
</table>

**KEY INFORMATION**

- **2017 ATAR:** 72.25
- **Duration:** 3 years (full-time) 6 years (part-time)
- **UAC code:** 607003
- **UTS course code:** C10223

**Recommended year 12 subjects:**
Maths Extension 1, Chemistry, Maths, 2 units of English, 2 units of Science

**Bonus points:** Available. See page 53

**How to apply:** See page 53
BACHELOR OF SCIENCE
(ENVIRONMENTAL SCIENCES)

COURSE DESCRIPTION
This degree offers you the chance to study a wide range of environmental subjects. You’ll choose subjects according to your interests, ranging from environmental protection and management to remote sensing, forest and mountain ecology, marine and fisheries communities.

This degree combines theoretical knowledge, field excursions and laboratory practicals. It aims to produce graduates who have been exposed to a wide range of environmental issues. There are four free choice electives that allow you to choose subjects from any discipline, further extending your specialisation and employment opportunities.

POSSIBLE JOBS
Environmental scientist, environment education officer, secondary school teacher, conservation consultant, ecologist, ranger, marine park officer, fisheries manager, environment analyst, policy maker and botanist.

POSSIBLE EMPLOYERS
CSIRO, Local Councils, Goulburn-Murray Water, Lend Lease Corporation, Orica Ltd, WSP Parsons Brinckerhoff, NSW Roads and Maritime Service, Schlumberger Oilfield Australia, Sunwater, Sydney Water, NSW Department of Primary Industries.

For more career options, visit www.science.uts.edu.au/future

KEY INFORMATION
2017 ATAR: 73.05
Duration: 3 years (full–time)
6 years (part–time)
UAC code: 607011
UTS course code: C10242

Recommended year 12 subjects: Maths Extension 1, Chemistry, Maths, 2 units of English, 2 units of Science
Bonus points: Available. See page 53
How to apply: See page 53

COURSE STRUCTURE

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principles of Scientific Practice</td>
<td>Ecology</td>
<td>Select three from the following:</td>
</tr>
<tr>
<td>Chemistry 1</td>
<td>Experimental Design and Sampling</td>
<td>&gt; Aquatic Ecology</td>
</tr>
<tr>
<td>The Biosphere</td>
<td>Geological Processes</td>
<td>&gt; Biodiversity Conservation</td>
</tr>
<tr>
<td>Statistical Design and Analysis</td>
<td></td>
<td>&gt; Fisheries Resources</td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td></td>
<td>&gt; GIS and Remote Sensing</td>
</tr>
<tr>
<td>Physical Aspects of Nature</td>
<td></td>
<td>&gt; Wildlife Ecology</td>
</tr>
<tr>
<td>Biocomplexity</td>
<td></td>
<td></td>
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<tr>
<td>Environmental Chemistry</td>
<td></td>
<td><strong>Select three from the following:</strong></td>
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<tr>
<td></td>
<td></td>
<td>&gt; Environmental Protection and Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; Stream and Lake Assessment</td>
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<tr>
<td></td>
<td></td>
<td>&gt; Coral Reef Ecosystems</td>
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<tr>
<td></td>
<td></td>
<td>&gt; Marine Productivity and Climate Change</td>
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<tr>
<td></td>
<td></td>
<td>&gt; Semi-arid Ecology or Forest and Mountain</td>
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<tr>
<td></td>
<td></td>
<td>Ecology or Alpine and Lowland Ecology</td>
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<td></td>
<td>Elective x 2</td>
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<td>Select three of the following:</td>
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<tr>
<td></td>
<td>&gt; Animal Behaviour and Physiology</td>
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<tr>
<td></td>
<td>&gt; Environmental Remediation</td>
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<tr>
<td></td>
<td>&gt; Marine Communities</td>
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</tr>
<tr>
<td></td>
<td>&gt; Plant Physiology and Ecophysiology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; Microbial Ecology</td>
<td></td>
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<tr>
<td></td>
<td>Elective x 2</td>
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</tbody>
</table>
What do you enjoy most about your degree?
The course is practically orientated—we went on multiple field trips for each subject to collect data and apply the knowledge we had learnt in the field. The lectures and subjects are interesting, engaging and reflect up to date science that is relevant.

I also felt like I was really encouraged to be creative, think critically, innovate and problem solve in my own way.

What is it like to study at UTS Science?
At UTS, you don’t feel like a number, you feel like an individual. You feel valued and part of something important. There are loads of genuine, like-minded people who are passionate about what they do and it makes you feel really at home there.

What advice you would give to students studying this degree?
Use the resources at your disposal to the fullest. If you are serious about a career in science, that starts now, in first year. Start volunteering, attending seminars and making yourself known. If you let people see that you are passionate and hardworking, they will help you.

*Now Bachelor of Marine Biology
BACHELOR OF MARINE BIOLOGY

KEY INFORMATION

2017 ATAR: 72.80
Duration: 3 years (full-time)
6 years (part-time)
UAC code: 607035
UTS course code: C10228

Recommended year 12 subjects: Maths Extension 1, Chemistry, Maths, 2 units of English, 2 units of Science

Bonus points: Available. See page 53
How to apply: See page 53
Professional recognition: Australian Marine Science Association

COURSE DESCRIPTION

This course focuses on how marine environments work and how they 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.

POSSIBLE JOBS

Marine biologist, life scientist, coastal manager, marine educator, aquatic researcher, aquaculture microbiologist, climate change researcher, fisheries scientist or ecologist, marine mammal response scientist, scientific and commercial diver, molecular biologist, marine biotechnologist, secondary school teacher, oil rig researcher, ecologist, data analyst, biosecurity officer, sea farm manager, science writer/editor.

POSSIBLE EMPLOYERS

Sea world, Taronga Zoo, Sydney Aquarium, wildlife parks, research institutes, universities, Environmental Protection Authority New Zealand, local and city councils, Australian Marine Sciences Association, Sydney Water, Federal Department of Agriculture and Water Resources, NSW Office of Environment and Heritage, national parks, environmental protection authorities, and natural resources and planning consultancies.

For more career options, visit www.science.uts.edu.au/future

COURSE STRUCTURE

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 1</td>
<td>Geological Processes</td>
<td>GIS and Remote Sensing</td>
</tr>
<tr>
<td>The Biosphere</td>
<td>Experimental Design and Sampling</td>
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</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td>Ecology</td>
<td>Coral Reef Ecosystems</td>
</tr>
<tr>
<td>Statistical Design and Analysis</td>
<td>Animal Behaviour and Physiology</td>
<td>Environmental Protection and Management</td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>Plant Physiology and Ecophysiology</td>
<td>Marine Productivity and Climate Change</td>
</tr>
<tr>
<td>Biocomplexity</td>
<td>Marine Communities</td>
<td>Fisheries Resources</td>
</tr>
<tr>
<td>Environmental Chemistry</td>
<td>Electives x 2</td>
<td>Electives x 2</td>
</tr>
<tr>
<td>Physical Aspects of Nature</td>
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</tr>
</tbody>
</table>

41
COURSE DESCRIPTION
This is our most flexible course, enabling you to study core science and mathematics subjects while specialising in your areas of interest and aspiration. In the first year, you’ll study the core subjects of your chosen foundation stream.

At the end of first year, you can either continue within the foundation stream or choose not to follow a major, instead opting to study a mix of subjects and keep your career options open.

This course is a great option if you’re undecided over which major to pursue. It allows you to study a broad range of subjects in first year before deciding on a major in second year.

It also enables you to familiarise yourself with different areas of science and maths, and to discuss your interests and options with lecturers.

You can also include sub-majors or combine this course with other specialisations from other UTS faculties such as Business, International Studies, Law and Engineering, Creative Intelligence and Innovation.

CAREER OPTIONS INCLUDE
Graduates will have versatile, transferable skills that are recognised in almost any industry. However, your career options will depend largely on the subjects or major you choose.

For more career options, visit www.science.uts.edu.au/future

WHAT ARE THE FOUNDATION STREAMS? WHAT MAJORS DO THEY LEAD INTO?
There are three foundation streams that lead into nine majors.

<table>
<thead>
<tr>
<th>FOUNDATION STREAMS</th>
<th>MAJORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life and Environmental Sciences</td>
<td>Biotechnology, Biomedical Science, Medical Science, Environmental Sciences</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>Applied Chemistry, Applied Physics, Nanotechnology</td>
</tr>
<tr>
<td>Mathematical Sciences</td>
<td>Mathematics, Statistics</td>
</tr>
</tbody>
</table>

WHAT ARE THE FOUNDATION STREAMS?

Life and Environmental Sciences
- Biotechnology
- Biomedical Science
- Medical Science
- Environmental Sciences

Physical Sciences
- Applied Chemistry
- Applied Physics
- Nanotechnology

Mathematical Sciences
- Mathematics
- Statistics

COURSE STRUCTURE

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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</thead>
<tbody>
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</tbody>
</table>

Mathematical Sciences Stream
- Introduction to Quantitative Management
- Introduction to Linear Dynamical Systems
- Introduction to Statistics
- Introduction to Mathematical Analysis and Modelling
- Probability and Random Variables
- Principles of Scientific Practice
- Regression Analysis
- Choose one subject from Foundation Choice B

Choose six subjects from
- Level 2 subject choices (Physical Sciences)
  - Level 3 subject choices (Physical Sciences)
  - Elective x 2

Choose six subjects from
- Elective x 2

KEY INFORMATION
- 2017 ATAR: 74.25
- Duration: 3 years (full-time) 6 years (part-time)
- UAC code: 607001
- UTS course code: C10242

Assumed knowledge: Mathematics; any two units of English. At least two units of Science relevant to the individual discipline chosen is recommended. Maths Ext 1 is recommended for those majoring in mathematics or statistics.

Bonus points: Available. See page 53

How to apply: See page 53

BACHELOR OF SCIENCE (FLEXIBLE)
### COURSE STRUCTURE (CONTINUED)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chemistry stream</strong></td>
<td><strong>Choose six subjects from</strong></td>
<td><strong>Choose six subjects from</strong></td>
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<tr>
<td>Principles of Scientific Practice</td>
<td><strong>Level 2 subject choices (Physical Sciences)</strong></td>
<td><strong>Level 3 subject choices (Physical Sciences)</strong></td>
</tr>
<tr>
<td>Mathematical Modelling for Science</td>
<td>Elective x 2</td>
<td>Elective x 2</td>
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<tr>
<td>Foundations of Physics</td>
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<td>Chemistry 2</td>
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<tr>
<td>Statistics and Mathematics for Science</td>
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<tr>
<td>Physics in Action</td>
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<tr>
<td><strong>Select one of the following:</strong></td>
<td><strong>Choose six subjects from</strong></td>
<td><strong>Choose six subjects from</strong></td>
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<tr>
<td>&gt; Cell Biology and Genetics</td>
<td><strong>Level 2 subject choices (Physical Sciences)</strong></td>
<td><strong>Level 3 subject choices (Physical Sciences)</strong></td>
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<tr>
<td>&gt; Introduction to Materials</td>
<td>Elective x 2</td>
<td>Elective x 2</td>
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<tr>
<td><strong>Physics Stream</strong></td>
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<tr>
<td>Mathematical Modelling for Science</td>
<td><strong>Choose six subjects from</strong></td>
<td><strong>Choose six subjects from</strong></td>
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<tr>
<td>Chemistry 1</td>
<td><strong>Level 2 subject choices (Physical Sciences)</strong></td>
<td><strong>Level 3 subject choices (Physical Sciences)</strong></td>
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<tr>
<td>Principles of Scientific Practice</td>
<td>Elective x 2</td>
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<td>Statistics and Mathematics for Science</td>
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<td>Chemistry 2</td>
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<td>Physics in Action</td>
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<td>Introduction to Materials</td>
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<tr>
<td><strong>Environmental Stream</strong></td>
<td><strong>Choose six subjects from</strong></td>
<td><strong>Choose six subjects from</strong></td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td><strong>Level 2 subject choices (Life and Environmental Sciences)</strong></td>
<td><strong>Level 3 subject choices (Life and Environmental Sciences)</strong></td>
</tr>
<tr>
<td>The Biosphere</td>
<td>Elective x 2</td>
<td>Elective x 2</td>
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<tr>
<td>Statistical Design and Analysis</td>
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<tr>
<td>Biocomplexity</td>
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<tr>
<td>Cell Biology and Genetics</td>
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<tr>
<td>Physical Aspects of Nature</td>
<td></td>
<td></td>
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<tr>
<td>Environmental Chemistry</td>
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</tr>
<tr>
<td><strong>Life Sciences Stream</strong></td>
<td><strong>Choose six subjects from</strong></td>
<td><strong>Choose six subjects from</strong></td>
</tr>
<tr>
<td>Cell Biology and Genetics</td>
<td><strong>Level 2 subject choices (Life and Environmental Sciences)</strong></td>
<td><strong>Level 3 subject choices (Life and Environmental Sciences)</strong></td>
</tr>
<tr>
<td>Principles of Scientific Practice</td>
<td>Elective x 2</td>
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<tr>
<td>Statistical Design and Analysis</td>
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<td>Chemistry 2</td>
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<tr>
<td>Physical Aspects of Nature</td>
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<tr>
<td>Biocomplexity</td>
<td></td>
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<tr>
<td>Human Anatomy and Physiology</td>
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</tbody>
</table>
UTS combined degrees open up a broader range of careers opportunities. You can combine your Science or Mathematics degree with another specialisation, such as Business, International Studies, Creative Intelligence and Innovation, Engineering and Law, giving you access to two specialisations. You do the same number of subjects per session someone doing a single degree. A combined degree is also shorter in duration than undertaking two undergraduate degrees separately.

### Key Information

**Bachelor of Science, Bachelor of Business**
- **2017 ATAR:** 85.90
- **UAC code:** 609170
- **UTS course code:** C10162

**Bachelor of Medical Science, Bachelor of Business**
- **2017 ATAR:** 94.25
- **UAC code:** 609175
- **UTS course code:** C10163

**Bachelor of Biotechnology, Bachelor of Business**
- **2017 ATAR:** 90.55
- **UAC code:** 609176
- **UTS course code:** C10169

**Duration:** 4 years (full-time)

**Bonus points:** Available. See page 53

**How to apply:** See page 53

### Successful Combinations

#### Combining Science with Business

Demand is growing for graduates able to cross the divide between science and business. You will develop a combination of practical scientific and professional business skills. You will be prepared for scientific practice and business and management in technical, financial, regulatory, environmental, health or biomedical oriented businesses, industries or government departments.

**Course Structure**
You’ll be required to complete a total of 192 credit points or 32 subjects, comprising equal numbers of science and business subjects.

### Bachelor of Business Majors
- > Accounting
- > Economics
- > Finance
- > Human Resource Management

### Bachelor of Science Majors*
- > Applied Chemistry
- > Applied Physics
- > Nanotechnology

#### Physical Sciences Foundation Stream

### Life Sciences Foundation Stream
- > Biotechnology
- > Biomedical Science
- > Medical Science
- > Environmental Sciences

#### Mathematical Sciences Foundation Stream
- > Mathematics
- > Statistics

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*MAJORS AVAILABLE*
For more details on specific science majors, please refer to the relevant Bachelor of Science (major) on pages 17-43.
## CAREERS

<table>
<thead>
<tr>
<th>Bachelor of Science</th>
<th>Bachelor of Medical Science, Bachelor of Business</th>
<th>Bachelor of Biotechnology, Bachelor of Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career options</td>
<td>Gives you practical skills and knowledge of science and business related fields. Depending on your chosen majors, you can work in the commodity and resource trading, pharmaceutical industry, or as a scientist in leading consumer goods companies, health services, medical research, hospitals or environmental protection agencies.</td>
<td>Designed to produce graduates for scientific practice or entry into business management in health and medical businesses or institutions. This combined degree offer opportunities in the growth area of health services and management.</td>
</tr>
<tr>
<td>Possible jobs</td>
<td>Analyst, consultant, statistician, communicator, marketer, researcher or scientist within government agencies, manufacturer, product developer, scientific publisher.</td>
<td>Hospital scientist, lab or medical pathologist, technician, medical or science writer, analyst, consultant, marketer and product developer. Positions in health services and management in government, hospitals, industry and medical research organisations.</td>
</tr>
</tbody>
</table>

**Bachelor of Science or Bachelor of Medical Science or Bachelor of Biotechnology, Bachelor of Business**

- Bachelor of Science or Bachelor of Medical Science or Bachelor of Biotechnology
  - 32 subjects or total 192 credit points

- Bachelor of Business
  - 16 subjects or 96 credit points

You can complete these degrees over four years of full-time study with approximately 16 hours each week on campus. You can also transfer from your single Science or Maths degree into a combined degree if you meet academic performance requirements.
Combining Science with Creative Intelligence and Innovation

You will gain high-level conceptual thinking and problem-solving practices that lead to the development of innovative, creative and entrepreneurial outcomes. Taking a trans-disciplinary approach, the Bachelor of Creative Intelligence and Innovation utilises multiple perspectives from diverse fields, integrating a range of industry experiences, real-world projects and self-initiated proposals, equipping graduates to address the complex challenges and untapped opportunities in today’s world.

Bachelor of Science available majors include:
- Applied Chemistry
- Applied Physics
- Nanotechnology
- Mathematics
- Statistics
- Biotechnology
- Biomedical Science
- Medical Science
- Environmental Sciences
- Flexible

Bachelor of Advanced Science available majors include:
- Advanced Materials and Data Science
- Environmental Biotechnology
- Pre-Medicine
- Infection and Immunity

COURSE STRUCTURE
You’ll be required to complete a total of 240 credit points, comprising of 144 credit points from the Science stream and 96 credit points of Creative Intelligence and Innovation core subjects. The subjects are undertaken in accelerated form within July and Summer sessions during the first three years of study, and through one year of full-time study after completion of your science degree. You can complete the degree in four years of full-time study, with approximately 24 hours each week on campus.

CAREER
Graduates can work in almost any industry such as biotechnology, biomedical science, medical science, environmental management and forensics, mathematics, statistical modelling, applied chemistry, applied physics, nanotechnology and material science. By being creative thinkers, initiators of new ideas, scenario planners, global strategists, open network designers or sustainable futures innovators within their chosen field of study, graduates will maximise the potential of their chosen profession, making them highly sought after by employers.

FUTURE PROOF YOUR DEGREE: ADD ON THE DIPLOMA IN INNOVATION

Want to explore more about innovation and entrepreneurship? Want to explore your creative side? Want to compliment your studies by developing your creative intelligence and innovation skills?

Taking a transdisciplinary approach the new Diploma in Innovation engages students with open, complex and networked problems, and in doing so develops students’ capacity for complex systems thinking, creating value in problem solving and inquiry, imaginative and ethical citizenship and entrepreneurial/intrapreneurial skills. The Diploma can only be undertaken in conjunction with an undergraduate bachelor’s degree (excluding the BTi or BCII); it consists of intensive courses in winter and summer schools that allow students to experience transdisciplinary innovation practices without extending their course duration.
### COURSE STRUCTURE

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>December session</td>
<td>Creative Practice and Methods (8cp)</td>
<td>Creative Practice and Methods (8cp)</td>
<td>Creativity and Complexity (8cp)</td>
<td></td>
</tr>
<tr>
<td>March session</td>
<td>4 Science subjects (24cp)</td>
<td>4 Science subjects (24cp)</td>
<td>4 Science subjects (24cp)</td>
<td>Envisioning Futures (6cp)</td>
</tr>
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<td></td>
<td>Innovation Capstone: Research and Development (12cp)</td>
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<td>Select one of the following (6cp):</td>
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<tr>
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<td></td>
<td>Innovation Internship A</td>
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<td></td>
<td>Speculative Start-up</td>
</tr>
<tr>
<td>July session</td>
<td>Problems to Possibilities (8cp)</td>
<td>Past, Present, Future of Innovation (8cp)</td>
<td>Leading Innovation (8cp)</td>
<td></td>
</tr>
<tr>
<td>September session</td>
<td>4 Science subjects (24cp)</td>
<td>4 science subjects (24cp)</td>
<td>4 science subjects (24cp)</td>
<td>Professional Practice at the Cutting Edge (6cp)</td>
</tr>
<tr>
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<td>Innovation Internship B (6cp)</td>
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<td></td>
<td></td>
<td>Innovation Capstone: Research and Development (12cp)</td>
</tr>
</tbody>
</table>

### CAREERS

<table>
<thead>
<tr>
<th>Career options</th>
<th>Bachelor of Science</th>
<th>Bachelor of Advanced Science</th>
<th>Bachelor of Biomedical Physics</th>
<th>Bachelor of Medicinal Chemistry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career options</td>
<td>You will be highly versatile as a graduate of this degree, working in almost any industry such as biotechnology, biomedical science, medical science, environmental management and forensics, mathematics, statistical modelling, applied chemistry, applied physics, nanotechnology and material science.</td>
<td>Combining your strong research and creative thinking and innovation skills will make you highly employable in a wide variety of fields. You will be well prepared to lead research teams and develop new and exciting research programs.</td>
<td>You will be highly skilled in the biomedical applications of physics, including in the use of diagnostic and therapeutic technologies. Combining with the Bachelor of Creative Intelligence and Innovation will give you strong creative and innovative skills to develop new technologies and methodologies.</td>
<td>Creativity and innovative thinking skills will enhance your knowledge of drug discovery and development, increasing your employability and opening up new options in the medical and chemistry industries. You will also be highly skilled at working in multi-disciplinary teams, a vital component of drugs.</td>
</tr>
<tr>
<td>Possible jobs</td>
<td>Please refer to relevant major in the single Bachelor of Science degree, see pages 17-43. Other jobs include creative and planning roles such as a strategist, entrepreneur or scenario planner.</td>
<td>Please refer to relevant major in the Bachelor of Advanced Science, see pages 9-13. Other jobs include creative and planning roles such as strategist, entrepreneur or scenario planner.</td>
<td>Work with medical technology companies, and other businesses in a wide variety of strategy, technology or planning roles. This course will offer a gateway to postgraduate studies in medical physics.</td>
<td>Work for pharmaceutical or biotechnological companies and start-ups, design and manage clinical trials or work across a wide variety of research fields.</td>
</tr>
</tbody>
</table>
You will develop practical scientific and mathematical skills with an international dimension. International study allows you to gain qualifications in language, intercultural and international awareness in a country of your choice. This added dimension expands your career opportunities and aims to make you more marketable to future employers in the global workplace.

You’ll live overseas for a year, experiencing the international component as part of your combined degree.

WHAT WILL I LEARN IN THE INTERNATIONAL STUDIES COMPONENT?

- **Learn a language** – you don’t need any previous language experience. Language and culture subjects cater for both beginners and students with prior language knowledge.

- **International connections** – you’ll gain thorough knowledge of another language and make overseas connections.

- **UTS support** – you’ll be supported by UTS and your partner university overseas.

COURSE STRUCTURE

**Year 1* – Start your degree**

Science degree subjects (8 subjects)

**Year 2 – Combined study**

Science degree subjects (4 subjects)
Language and culture subjects (2 subjects)
Foundation in International Studies (1 subject)

**Year 3 – Combined study**

Science degree subjects (4 subjects)
Language and culture subjects (2 subjects)
Contemporary (country of choice) eg Contemporary Germany (1 subject)

**Year 4 – Study overseas**

In-country study

**Year 5 – Final subjects**

Science degree subjects (8 subjects)

*To view the course structure for the Bachelor of Health Science in Traditional Chinese Medicine, Bachelor of Arts in International Studies, visit www.handbook.uts.edu.au/courses/c10164

For the combined degree Bachelor of Science, Bachelor of Arts in International Studies, you choose one major from both the science and international studies component. Refer to the diagram of majors available on page 49.
## CAREERS

<table>
<thead>
<tr>
<th>Bachelor of Science, Bachelor of Arts in International Studies</th>
<th>Bachelor of Medical Science, Bachelor of Arts in International Studies</th>
<th>Bachelor of Health Science in Traditional Chinese Medicine, Bachelor of Arts in International Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career options</td>
<td>Career options vary depending on chosen majors, but global opportunities are enhanced by the international perspective provided by the international studies component, and by the specific language and culture chosen.</td>
<td>Multinational pharmaceutical companies look to medical science graduates to work in drug registration, clinical trials coordination, as technical or marketing representatives and as policy analysts.</td>
</tr>
<tr>
<td>Possible jobs</td>
<td>Positions in government departments, private and public hospitals and public health units, nationally and internationally.</td>
<td>Acupuncture or Chinese herbal medicine practitioner in private or community health services.</td>
</tr>
<tr>
<td>More info</td>
<td>Please refer to relevant major in the single Bachelor of Science degree, see pages 17-43.</td>
<td>Positions in government departments, private and public hospitals and public health units, nationally and internationally.</td>
</tr>
</tbody>
</table>

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### DIPLOMA IN LANGUAGES

Add the Diploma in Languages to your degree for the opportunity to learn a new language. Choose from Chinese, French, German, Italian, Japanese or Spanish.

The Diploma adds an international perspective and skills to your core UTS degree and will prepare you for globalised work opportunities. Available for domestic students only.

Find out more at [www.uts.edu.au/future-students/international-studies/study-areas/diploma-languages](http://www.uts.edu.au/future-students/international-studies/study-areas/diploma-languages)

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### BACHELOR OF SCIENCE MAJORS*

* MAJORS AVAILABLE

For more details on specific science majors, please refer to the relevant Bachelor of Science (major) on pages 17-43.

<table>
<thead>
<tr>
<th>Physical Sciences Foundation Stream</th>
<th>Life Sciences Foundation Stream</th>
<th>Mathematical Sciences Foundation Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Chemistry</td>
<td>Biotechnology</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Applied Physics</td>
<td>Biomedical Science</td>
<td>Statistics</td>
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<tr>
<td>Nanotechnology</td>
<td>Medical Science</td>
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<td></td>
<td>Environmental Sciences</td>
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</tbody>
</table>

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### BACHELOR OF ARTS IN INTERNATIONAL STUDIES

In-country study (Country of choice)

- Argentina
- Canada
- Chile
- China
- Colombia
- Costa Rica
- France
- Germany
- Italy
- Japan
- Latino USA
- Mexico
- Spain
- Switzerland
- French
- Spanish
- Chinese
- Italian
- Japanese
- German

Learn a new language
WHAT IF I DON’T GET THE ATAR FOR MY PREFERRED COURSE?

UTS Science offers an aptitude assessment as an alternate entry pathway. An aptitude assessment is conducted by a third party, and is designed to assess your analytical and critical thinking skills. It is not a knowledge based assessment. Find out more at www.uts.edu.au/aptitude-assessment

Alternatively, you can search for a similar UTS degree with a lower ATAR rank and apply for that with the aim of transferring to your preferred degree at the end of your first year of study. You will need to work hard in your first year to get the necessary admission grades (generally equivalent to the ATAR), and then re-apply through UAC. Admissions are not guaranteed and entry is still competitive.

DO ANY OF THE COURSES HAVE PRE-REQUISITES FOR ENTRY?

All UTS Science undergraduate courses DO NOT have pre-requisites, but only assumed knowledge.

A pre-requisite is a subject that must be completed before enrolment in another specified subject.

Assumed knowledge means that we assume that you have passed a relevant subject in the HSC. Details of assumed knowledge for our courses can be found in the key information box for each degree, or in the online handbook.

If you need a refresher in Physics, Chemistry or Mathematics, please enrol in a UTS bridging course. For more details, see www.uts.edu.au/future-students/science/essential-information/bridging-courses

CAN I START MY COURSE IN MID-YEAR?

Yes, you can but not all courses are offered in mid-year. See the list at www.science.uts.edu.au/future

WHAT ARE CREDIT POINTS?

A credit point is the value of each subject or unit of study. Each subject/unit is normally worth six credit points, but there are some exceptions. Credit points reflect a common measure of load in courses. A standard full-time load of study usually consists of 48 credit points in one calendar year.

WHAT IS AN ELECTIVE?

Elective subjects are free choice subjects you choose to study. You can either choose subjects within your study area or out of your discipline.

Science students may wish to use their electives to undertake an internship subject, and/or participate in a UTS study abroad or global exchange program.

CAN I STUDY PART-TIME?

You can study part-time for most UTS courses. Part-time is approximately half the subject load of a full-time student. Some courses offer some subjects at night, but not all. A standard full-time load is 24 credit points and a standard part-time load is less than 18 credit points.

Please note: 18 credit points is classified as part-time for government reporting purposes.

HOW MANY HOURS WILL I BE AT UNIVERSITY EACH WEEK?

As a full-time student, you’re expected to have approximately 20 hours of contact time each week in your first year. You are also required to study and prepare for assessments, making your total dedicated time to studies per week approximately 40 hours.

CAN I APPLY TO TRANSFER FROM ONE SCIENCE DEGREE TO ANOTHER?

You can transfer from one course to another, as long as you meet the academic requirements for the new course. Please remember all applications for transfer between degrees and credit recognition are assessed on academic merit. You should discuss this with the course/program director before proceeding to transfer.

CAN I GET CREDIT RECOGNITION TOWARDS A UTS DEGREE BASED ON PREVIOUS STUDIES?

Yes, but only if your previous study is relevant to what you’re planning to study and you have completed it at an accredited institution. Credit recognition is granted on a case-by-case basis, so you’ll need to apply to find out if you’re eligible. See more info at www.handbook.uts.edu.au/general/rpl.html

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

There are specialists degrees, and majors within the Bachelor of Science degree for Medical Science and Biomedical Science. In most cases, the two study programs will be the same, with only some points of difference.

For example, John is enrolled in the Bachelor of Medical Science (specialist degree) and Emma is enrolled in the Bachelor of Science (Medical Science). Both John and Emma could be attending the same lectures and doing the same practical experiments. The only differences are their choice of elective subjects and the award they receive when they graduate.

Emma will also have more flexibility than John to change her specialisation or major if she wants to.

The specialist degrees usually have a higher ATAR than the major within the Bachelor of Science degree.
WHAT IS THE DIFFERENCE BETWEEN THE BACHELOR OF BIOTECHNOLOGY AND THE BACHELOR OF SCIENCE (BIOTECHNOLOGY)?

In the Bachelor of Biotechnology, you have a choice of four majors to follow: Medical Biotechnology, Environmental Biotechnology, Computational Biotechnology and Biosensor Technology. This course offers more cross-disciplinary subjects in both business and laws.

The Bachelor of Science (Biotechnology) (see page 33) does not offer any further majors within its biotechnology program. It is a much more flexible course that allows you to more easily transfer from the Bachelor of Science (Biotechnology) into either the Bachelor of Science (Medical Science) or Bachelor of Science (Biomedical Science). If you are undecided on which major to follow, we advise that you enrol in this course, or any other major in the Bachelor of Science.

HOW DO I QUALIFY TO BE A SCIENCE OR MATHS TEACHER?

Upon the successful completion of your science or mathematics degree with UTS, you can apply for a Master of Teaching in Secondary Education, also at UTS, which will provide you with a masters qualification to teach in NSW secondary schools.

The core component provides research-based studies of educational theory and practice as a basis for professional decision-making in the secondary school context; the major component provides teaching methods; and the professional experience component includes both campus-based and field-based experiences. You can choose to specialise in science, maths or science/maths. Students who have both the required undergraduate degree and specialisation subjects can complete the course in 2 years of full-time study or 1.5 years in accelerated mode.

To find out more or to apply, visit: www.uts.edu.au/future-students/education/study-areas/secondary-education-postgraduate

WHAT IS AN HONOURS DEGREE?

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. 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. An honours year is not the same as postgraduate study.

WHAT ARE THE BENEFITS?

> Opens doors to many opportunities, especially in the field of scientific research.
> Opportunity to undertake exciting, original research under the supervision of recognised researchers, contributing to real discoveries and publishing one or more scientific papers.
> Improves career prospects—it’s proof to future employers that you can plan and organise work, find solutions to problems, work independently and communicate ideas and results both verbally and on paper.

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 as you work towards the completion of a thesis which you’ll submit at the end of the year. In some cases, your work may be undertaken in external laboratories such as hospitals, the CSIRO or other industry centres.

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

For more details, visit www.science.uts.edu.au/future

“Honours is a very challenging but rewarding experience, I would recommend anyone considering research to do an honours year.”

REANNAN HONEY, Bachelor of Science (Hons) in Environmental Sciences.

CAN I DISCUSS STUDY OPTIONS WITH SOMEONE AT UTS?

Email us at science.future@uts.edu.au with your enquiry or to book an appointment to speak to a UTS Science staff member. You can also call the UTS Student Centre on 1300 275 887.

UTS have a number of info days throughout the year where you can talk to academics and current students. For more details, see www.science.uts.edu.au/future
Fees, Scholarships & Financial Assistance

TUITION FEES
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 or defer payment of your student contribution using HECS-HELP visit www.fees.uts.edu.au for more info.

For information on fees for international students visit www.uts.edu.au/international. Note, this guide is not intended for international students.

STUDENT SERVICES AND AMENITIES FEE
Students are 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 food, beverage and retail outlets (including a 10% discount 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 SAHELP. For more information see www.fees.uts.edu.au

SCHOLARSHIPS
UTS is proud to award a large number of scholarships to its students every year. Through providing scholarships, the university endeavours to reward achievement and recognise motivation to succeed.

UTS is also committed to providing support to students experiencing financial hardship and/or other educational disadvantages. For information on all scholarships visit www.uts.edu.au/future-students/scholarships

SCHOLARSHIPS FOR SCIENCE AND MATHS STUDENTS
UTS offers a large number of scholarships each year. They can be university-wide which are open to all UTS students or faculty specific scholarships.

UTS Science awards many scholarships each year in recognition of students’ achievements and also to encourage future students to take up science or mathematics degree. Some of these scholarships include:
> Science Dean’s Scholarship
> Science High Achievers Scholarship Program
> Science Indigenous Scholarship

For more information, visit www.sciencescholarships.uts.edu.au

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
Applying to UTS

Domestic students who wish to apply for entry into one of the undergraduate programs at UTS must first lodge an online application through the Universities Admission Centre (UAC) www.uac.edu.au

The UAC application process commences in August each year, and continues through till the end of September. Students applying through UAC must submit their application before the end of September as late fees will be applied to your application by UAC for any applications received after this date.

To be eligible to apply for a course at UTS students must satisfy at least one of the following minimum admission requirements:

- Must have attained a full NSW HSC or equivalent with an ATAR of 69 (excluding bonus points), or
- Completed TAFE TPC, Associate Diploma, AQF Diploma or Advanced Diploma, or
- Completion of one year of tertiary studies (must be full time), or
- Be at least 20 years of age at 1 March 2018.

Check the UTS website for full admission requirements.

CURRENT SCHOOL LEAVERS

Admittance for Australian high school students into an undergraduate program at UTS is based on your ATAR or IB results. If you completed your IB in a country other than Australia, you may be required to demonstrate your English language proficiency.

MATURE AGE AND NON–CURRENT SCHOOL LEAVERS

The selection process for mature-aged students and non-current school leavers is based on academic merit. Academic merit is measured by your previous ATAR or equivalent interstate rank, and/or further tertiary studies. Credit recognition for tertiary studies that you have already been completed may be awarded if you have completed studies related to the course you are applying for. For further information regarding credit recognition eligibility and requirements, visit www.uts.edu.au

INDIGENOUS AUSTRALIANS

The Jumbunna Indigenous House of Learning provides Australian Aboriginal or Torres Strait Islander students specialised assistance to gain entry into UTS through the Jumbunna Direct Entry Program or UNISTART. For further information regarding, please visit the Jumbunna website www.uts.edu.au/future-students/indigenous

ENTRY SCHEMES

Year 12 Bonus Scheme

Students may be eligible to have bonus points applied to their ATAR result through this entry scheme, provided you have just completed high school and performed well in HSC subjects relevant to the program which you have applied for. If eligible, you may be able to receive up to a maximum of 5 Year 12 bonus points.

inpUTS Educational Access Scheme (EAS)

If you have applied to be assessed for the inpUTS Educational Access Scheme (EAS) at UTS, you may be granted up to 10 concessional ATAR points. The EAS scheme is open to current high school leavers, as well as students with tertiary qualifications who have experienced educational disadvantage. In order to be eligible for bonus or concessional points at UTS, you must first meet the matriculation eligibility requirements above, which includes achieving a minimum ATAR of 69 (80 for Law).

Schools’ Recommendation Scheme (SRS)

This scheme aims to support year 12 students who are eligible to apply for support on the basis of financial hardship or school environment (S01C & S01E only) through the inpUTS Educational Access Scheme. In order to be eligible for this scheme, students must achieve a minimum ATAR rank of 69 (80 for Law). Potential applicants must submit both an EAS application for financial hardship as well as an SRS application via UAC.

UTS Elite Athletes and Performers Special Admissions Scheme

The UTS Elite Athletes and Performers Special Admissions Scheme awards 5 concessional points to potential applicants who are elite athletes and/or performers who have represented their school or state at a national level competition level, and whose sport or performance commitments have impacted on their studies.

For more information on UTS’ entry schemes, visit www.undergraduate.uts.edu.au/entrieschemes

ENTRY PATHWAYS

Entry pathways are available for students who don’t gain entry into their preferred UTS course based on their ATAR result.

For more information on pathways into UTS www.undergraduate.uts.edu.au/pathways

UTS RANKED AUSTRALIA’S #1 YOUNG*uni


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