

UTS: SCIENCE CAREERS GUIDE

science.uts.edu.au/future



NO. 1

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YOUNG UNI**


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SCIENCE AND MATHS: A REWARDING CAREER

The field of science and mathematics provides countless career options, from research positions to professional and managerial roles across a wide range of industry sectors. 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? As a researcher or academic, 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.

More interested in life outside the lab? Expertise in science makes you highly attractive to a wealth of employers across all different sectors. According to the Australian Council of Deans of Science, science 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.

By studying a science degree, you'll acquire essential technical skills and the ability to apply scientific theories and methodologies to real-world scenarios. You'll also 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 WAY OF LIFE

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. An Australian Council of Deans of Science survey revealed that the majority of people who studied science believe their background in science influences not only their work but their personal interests and pursuits, their social interactions and their approaches to contemporary social issues. Working in science is more than just a career – it's a way of life.

CRUNCHING THE NUMBERS

The first step towards a career in science or maths is getting the qualifications you need. While the labour market can be volatile, the good news is that a university degree ultimately makes you more employable than someone with no tertiary qualifications. 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, and 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, for example), your salary will be determined by the industry you work in, rather than by your degree qualifications. Think broad, think big – career opportunities abound!

*Mapping Australian Higher Education 2014-15, page 80.

“As well as the fundamental knowledge provided by science, its application is central to our ability to live in the modern world, to provide resources, to grow our economy, and to care for our community, our health and our environment.”

Australian Council of Deans of Science.

WHY SCIENCE AT UTS?

GRADUATES WITH AN EDGE

UTS Science courses are strongly practice oriented, combining scientific theory with transferable skills like communication and critical thinking. As a graduate, this skill mix will make you highly attractive to prospective employers. You can also increase your competitive edge with industry-based internships and work experience programs.

REAL-WORLD EXPERIENCE

As a science student, you'll start building your lab and field experience from early in your degree. As a mathematics student, you'll learn how to use mathematical modelling to explain and solve everyday problems. You'll also have the chance to network with industry practitioners, participate in guest lectures, and attend careers forums too.

HIGH-QUALITY TEACHERS

UTS Science academics are leaders in their fields, boasting a wealth of theoretical and professional expertise in research and industry. You'll study in an inclusive, nurturing and solutions-driven environment where you'll be supported to reach your full potential.

GLOBAL OPPORTUNITIES

Give your degree an international edge by spending a year studying abroad or participating in international internships through programs like UTS BUiLD. You can also add a Diploma of Languages to your degree.

INNOVATIVE RESEARCH

Our globally-recognised research responds to the key challenges of our time and informs the content of our undergraduate courses. In the 2015 Excellence in Research for Australia (ERA) research benchmarking initiative, 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.

QUALITY 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 will also have access to leading software, e-learning support and advanced computing facilities. Environmental Science students will benefit from our off-campus learning sites in Stroud, near Newcastle, and their proximity to forests and rivers for practical research experience.

ACCESS TO RESEARCH LABS

Our commitment to applied research can be seen in our purpose-built research laboratories, which are accessible to both undergraduate and research students. These labs house the latest technologies that support innovative discovery across a wide range of discipline areas.

SUPER LAB

At 52 metres long, 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

UTS is a leader in Forensic Science education, and our teaching efforts are supported by the cutting-edge Crime Scene Simulation Lab. Set up like a city apartment, the lab will give you a hands-on experience of forensics techniques including fingerprinting and evidence handling.

CHINESE MEDICINE CLINIC

UTS is one of only a handful of English language universities to offer comprehensive education and research in Chinese medicine. Our Chinese Medicine Clinic is open to the public, giving you the opportunity to deliver acupuncture, Chinese herbal medicine and remedial massage to real-life patients.

INNOVATIVE CITY CAMPUS

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/Ultimo industry precinct.



SCIENCE AND MATHS AT SCHOOL VS UNIVERSITY

Studying at university can open up a whole new world of opportunities. If you're coming straight from high school, the biggest difference is that at university, you're treated like an adult. This means being prepared for your classes, participating in group projects, managing your study time and completing assignments by the deadline. You'll get to study and socialise with lots of different people, use your own ideas and skills, and discuss important concepts with your lecturers and other students in your classes. University also gives you the chance to get involved in different extra-curricular activities, including activism, religion, politics, social and sports.

At UTS Science our teaching staff want you to succeed, and so they're always there to assist you. There are lots of other avenues if you need support outside the classroom, including counselling, financial management, housing and much more. For more information, visit: www.uts.edu.au/current-students/support.

UNIVERSITY MEANS: SCIENCE AND MATHS REALLY MATTERS

At high school, you learn the foundations of science and maths, which haven't changed much over the last few decades. At university, you'll build upon this foundation knowledge and learn how to apply science and maths to solve real world problems. You'll also learn about the latest science discoveries and the development of new technologies.

UNIVERSITY MEANS: DISCOVERY

Science at university asks students to seek knowledge for themselves. No one will give you the answers or tell you how to find them. This is the best way to remember what you learn and to understand its relevance. You're never alone though – your fellow students, lecturers and tutors are all there to help.

UNIVERSITY MEANS: MORE EXPERIMENTS

Ever wanted to create your own viral cultures, or to head to the ocean or lake to collect real-life samples of coral? Studying science at UTS means you'll be doing these kinds of experiments or field trips on a regular basis. You will even get the chance to solve problems on your own, conduct your own research and design your own experiments.

UNIVERSITY MEANS: ACCESS TO CUTTING-EDGE EQUIPMENT

Our new sustainable Science and Graduate School of Health Building is the result of a \$1 billion investment into the UTS City Campus. You'll have access to state-of-the-art facilities like our multi-disciplinary Super Lab and Crime Scene Simulation Lab. The high ratio of equipment to students means you can be in sole control of your experiments from beginning to end. All our equipment is at industry standard or above, so you'll have the technical skills you need when you head out into the working world.

UNIVERSITY MEANS: A BIGGER UNDERSTANDING OF SCIENCE

All science disciplines, from maths to biology, physics to chemistry, are related. In order to solve complex problems like climate change and global antibiotic resistance, researchers must collaborate and work across different disciplines. At university, these interdisciplinary links become clear as you gain a better understanding of science as a whole, as opposed to seeing it fragmented into different areas.

UNIVERSITY MEANS: LIKE-MINDED PEOPLE

You'll meet and create diverse networks of people from many walks of life on university campus. The scientific community at UTS is dynamic, innovative and inclusive, with lecturers, tutors and students united by their passion for science. This likeminded approach creates the perfect atmosphere for the creation and development of new ideas, and for new discoveries to be made. You'll be inspired to study in such an engaging and motivating environment.

UNIVERSITY MEANS: KICKSTARTING AN EXCITING JOURNEY OF LIFE-LONG LEARNING AND CAREER OPPORTUNITIES

A university degree is just the beginning for your journey as science professional. Many science graduates also choose to apply their science or maths degree in many walks of life. Science graduates have worked in investment banking, businesses, teaching, management and more. The sky's the limit!



“I love the practical, hands-on nature of the degree. You get to do some experiments in high school but they are few and far between.”

Josh Klingberg, Bachelor of Forensic Science in Applied Chemistry

ANALYTICS AND MATHEMATICS



Name
Jasmine Tan
Job
Associate – Risk Consulting, Treasury and Market Risk, PwC Australia
Degree
Bachelor of Mathematics and Finance, UTS (2014)

My role is very much project based, which means it's quite varied. My day-to-day activities are always changing. Sometimes I'm assessing debt structures that I believe a client would benefit from; or I might be looking at hedge accounting procedures, reviewing an organisation's accounting, IT or overall controls; or I might be working through a client's regulatory requirements and even building fundamental risk structures from the ground up.

Being exposed to a broad range of industries and being continually challenged inspires me on a daily basis. I regularly meet new people and it's a very rewarding experience delivering valuable insights to my clients.

Since graduating, I've been applying the skills I learnt at UTS throughout my career. A mathematician's skill set doesn't lie with the number of formulas you can memorise, but rather in the approach and way of thinking about problems. This way of thinking is something that can also be applied to everyday situations and problems.

At UTS I also learnt how to take complex problems and translate them in a way that others can easily understand, which is a very helpful skill to have.

I am enjoying building my career in my chosen field. Recently, I was the youngest person to have ever participated in the Financial Services Council's Deloitte Future Leaders Award, where I spoke about the recent Financial Systems Inquiry and had the opportunity to meet Mr David Murray AO. I came second in my heat. I'm also the Chair of Finsia's Young Finance Professionals Committee.

“A mathematician's skill set doesn't lie with the number of formulas you can memorise, but in the approach and way of thinking about problems.”





DEGREE

BACHELOR OF SCIENCE (MATHEMATICS)

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

CSIRO, APRA, Australian Bureau of Statistics, Correlix, Boston Consulting Group, McKinsey & Company, Department of Treasury, PwC, Accenture Australia, ALDI, Woolworths, Australian Defence Force, Bureau of Meteorology, Centrelink (Australian Government Department of Human Services), the NASDAQ Stock Market, Deloitte, IBM, First NZ Capital, Colonial First State, Insurance Australia Group, Productivity Commission, the Linfox Group, NSW Transport, the Aerospace Corporation, Applied Mathematics, Inc., National Institute of Standards and Technology, Boeing, 3M, Commonwealth Bank, ANZ Bank & other banking and financial institutions.

DEGREE

BACHELOR OF SCIENCE IN ANALYTICS

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.

APPLIED CHEMISTRY



Name

Corey Williams

Job

ABU Laboratory Manager, Chevron

Degree

Bachelor of Science (Applied Chemistry),
UTS (2004)

In my current role I look after the operations of three oil and gas laboratories for Chevron. These labs are responsible for the certification and verification of LNG and condensate for sale to domestic and international markets. The laboratories also analyse process fluids from the plant to provide essential feedback on plant operation.

After graduation I started out as a Graduate Chemist with an analytical company. I worked with that company for four years before moving to another analytical company. During the past seven years, I moved to various locations working on a range of different projects and laboratories before moving to Chevron.

The versatility of working in oil and gas provides a changing environment where chemistry is applied to solve day-to-day problems on a large processing scale.

I am inspired by seeing the theoretical translated into the practical in plant process applications. I find the challenges associated with managing process chemistry the most interesting.

The skills learnt at UTS Science prepared me for working on complex analytical equipment with a thorough understanding of theoretical principles that accelerated me into more complex work.

The safety component prepared me for understanding the requirements of the workplace. In later years, the technical applications of physical and inorganic chemistry allowed me to understand chemical processing plants — I still have my text books!

As someone who employs chemistry graduates, it is the science students that show an understanding of the applications of the theory they learned during their university degree that often have the most success. Safety and quality are also now a major factor in employment pre-requisites, although they may be less interesting than the interactive chemistry subjects, there is significant value in knowing these well when entering the workforce.

“The skills learnt in my degree at UTS have been very applicable, particularly the safety component which has prepared me well for my current role.”



DEGREE

BACHELOR OF SCIENCE (APPLIED CHEMISTRY)

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

Advanced Analytical Australia, CSIRO, Chevron, ANSTO, Australian Genome Research Facility (AGRF), The Australian Centre for Plant Functional Genomics, ALDI, ANZ, Amcor Australasia, Australian Defence Force, Australian Secret Intelligence Service (ASIS), BHP Billiton, Bluescope Steel, Boral Limited, Chevron, Honeywell, Kellogg Brown and Root Pty Ltd (KBR), NSW Fire Brigades, Rio Tinto, Sydney Water, Technip Oceania, Thales Group, Unilever and Visy.



APPLIED PHYSICS



Name

May Whitaker

Job

Deputy Director of Medical Physics, Chris O'Brien Lifehouse

Degree

Bachelor of Applied Science (Physics) Honours, UTS (2005)

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. Having the opportunity to use my physics background and implement all sorts of interesting equipment and measurement devices towards such a compassionate purpose is extremely motivating.

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.

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. These are all things I do as part of my job, and although I don't recall much of my quantum mechanics theory, I can set up equipment safely, perform measurements accurately, analyse data intelligently and come to a logical conclusion. These are all things I learnt throughout my degree at UTS, not as a single subject but as an immersive experience over the years. Presenting the results to a varied audience is not an easy task, but I also learnt how to do this at UTS throughout the course and it's a very important component of my work today.

I am currently working with the Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM) to help promote medical physics as a career, and also to encourage women in science and engineering. In particular, we would love to see more young women choosing science and engineering as their undergraduate major with a longer-term view of working in medical physics. The ACPSEM is also introducing activities to assist our members to grow professionally, learning skills to complement the scientific background and developing the science leaders of tomorrow.

“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.”



DEGREE

BACHELOR OF SCIENCE (APPLIED PHYSICS)

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, ANZ Bank, Australian Defence Force, Bureau of Meteorology, Defence Science and Technology Organisation, KPMG, MasterFoods Australia, Nova Corporation, NSW Fire Brigades, Orica Ltd, PwC, Woodside Energy, Australian Synchrotron, 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.

BIOMEDICAL SCIENCE



Name

Karieshma Kabani

Job

2IC Transplant Scientist, Institute of Haematology at Royal Prince Alfred (RPA) Hospital

Degree

Bachelor of Science (Biomedical Science), UTS (2007), Master of Science (Research), UTS (2012)

I am part of a team whose goal is to improve the quality of life of patients affected with blood cancers, and to potentially offer curative treatments. It is a rewarding role that is also interesting, because every day is different—as is every patient. My role provides me with the opportunity to work in a multidisciplinary team where I can both teach and learn from staff and colleagues from all over the world.

A typical day for me involves:

- > Processing and cryopreservation of cell products including apheresis and bone marrow.
- > Setup and maintenance of assays for quantitating haematopoietic stem cell viability, number and function.
- > Liaising with different team members including nurses, scientists, clinicians and transplant co-coordinators.

I started out in a research position at RPA's Institute of Haematology after the final year of my undergraduate degree and was able to pursue my masters in collaboration with UTS. In the tail end of my masters, a position opened up in the transplantation area and I applied. I was successful in part due to the crossover of skills I learnt during my masters, such as flow cytometry and cell culture.

The practical components of my undergraduate degree at UTS Science were very hands on. The knowledge and skills gained both in my undergraduate degree and later in my postgraduate degree, really prepared me well for a career in biomedical science. I was able to successfully combine my postgraduate studies while working at the hospital, the combination of theory and practical knowledge directly translated to my current position.

In 2011 I received the UTS Young Alumni Award which enhanced my confidence to continue working in this field. I have also just returned from speaking at a conference in Singapore – the International Society for Cellular Therapies – which was a fantastic experience.

“It is a rewarding role that is also interesting, because every day is different—as is every patient.”



DEGREE

BACHELOR OF BIOMEDICAL SCIENCE, BACHELOR OF SCIENCE (BIOMEDICAL SCIENCE)

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.



CHINESE MEDICINE



Name

Herbert Huiskamp

Job

Chinese Medicine Practitioner
(self-employed)

Degree

Bachelor of Health Science in Traditional
Chinese Medicine, UTS (2014)

The most inspirational aspect of my job is seeing the clinical results of my work. Every patient is different and has their own story, so every treatment is unique and challenging in its own way.

Most of my days are spent interacting with my patients in consultation and treatment. As a self-employed practitioner, however, I also spend any free time on clinic upkeep, marketing, paperwork, as well as continuing professional education.

The course at UTS has provided me with a very solid foundation upon which to build my clinical skills and experience. It's a very practical course that covers a wide variety of content. This gave me all the experience I needed to feel confident as practitioner after graduation.

Within the course there is a considerable volume of content covering physiology, pathology and pharmacology, which is invaluable when it comes to communicating with patients and interacting with other health care professionals. As a sole trader, I also relied heavily on the business component of the course to guide me through setting up my own business.

The varied nature of my work keeps me interested as every client I see has different needs, and I never know what the next challenge will be.

“To see my patients’ health and wellbeing improve is a reward that inspires me each day.”





DEGREE

BACHELOR OF HEALTH SCIENCE IN TRADITIONAL CHINESE MEDICINE

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.



ENVIRONMENTAL BIOLOGY AND SCIENCES



Name

Darren Fernandez

Job

Environmental Scientist, Environmental Earth Sciences

Degree

Bachelor of Science (Environmental Biology), UTS (2007)

As a contaminated land consultant, my role is a balance between project management, field work and reporting. In the office, I'm involved with a variety of areas including mining, landfills, acid sulphate soils and contaminated sites. In the field, I can be found supervising a team, delineating contaminants, and walking through the bush to collect soil and water samples for testing— sometimes in the rain and covered in mud!

All of my jobs are carried out in response to appropriate legislation to ensure I'm following best industry practices. I provide simple and pragmatic science-based solutions to obtain a favourable outcome for clients.

My studies in environmental science at UTS allowed me to participate in several field trips that focused on things like semi-arid ecology and coral reef ecosystems. I wrote reports on the diverse life found in semi-arid floodplains that generates from a dormant state following rainfall, and on measuring the social interactions of the humbug damselfish on the reef.

While these subjects gave me great laboratory and snorkelling skills, it was the freedom to develop my own project that was most important. This approach encouraged problem solving-skills and an ability to look at the overall picture. These skills are fundamental in an industry that often has multiple solutions for any one issue; by determining a measurable course of action, I am able to achieve the desired outcome.

There are many highlights within my job, but the most prevalent is actually working on a site and witnessing its progress from initiation to completion. I work on highly contaminated sites, including old mine sites, landfills and other industrial sites. Being able to see and help transform these sites into parklands or residential developments is very interesting and gives me a sense of purpose.

As I progress in this field, I am becoming more involved with larger projects that have extra responsibilities. This forces me to stay ahead of the game as I am always challenged and constantly learning more. With the ongoing changes to environmental laws and legislation and the varying methods and technologies that are constantly being introduced, I am excited to see what the future holds.

“Being able to help transform these sites into parklands or residential developments gives me a sense of purpose.”



DEGREE

BACHELOR OF SCIENCE (ENVIRONMENTAL BIOLOGY)

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, Arup Pty Ltd, Aurecon, Australian Genome Research Facility (AGRF), BHP Billiton, Local Councils, BlueScope Steel, Ernst & Young, Ford Motor Company, George Weston Foods Ltd, Linc Energy LTD, Earth Systems Pty Ltd, GHD Ltd, Goulburn-Murray Water, Lend Lease Corporation, Orica Ltd, WSP Parsons Brinckerhoff, NSW Roads and Maritime Service, Schlumberger Oilfield Australia, Sunwater, Sydney Water, Thales Group, Thiess Australia, Unilever, Veolia, VicRoads and Visy.

FORENSICS



Name

Annalise Wrzeczycki

Job

Forensic Document Examiner,
NSW Police Force

Degree

Bachelor of Forensic Biology in
Biomedical Science, UTS (2008)*

*Now a Bachelor of Forensic Science with four majors: Biology, Chemistry, Crime Scene Investigation or Digital Forensics. Subject to final approval.

The NSW Police Force Document Examination Unit assists operational police by examining documents related to serious crime. In any given week, I could be examining a counterfeit passport, a forged cheque or a handwritten threat letter. It's my job to reveal any class or identification evidence derived from these exhibits. For cases involving the examination of handwriting, for example, I compare each letter or formation of the document in question to specimen handwriting attributed to a suspect or victim, and provide opinion evidence on whether that person produced the writing.

It's important for forensic document examiners to maintain up-to-date training and keep abreast of research across the discipline. I do this by attending conferences and reading journals and articles relating to a wide range of topics, such as print identification, trends in teaching styles and writing systems, typewriters, security features, manipulation techniques and software, simulated handwriting, reconstruction of burnt and charred documents, and digital forgeries. This ensures my job is always interesting!

The skills I learnt during my UTS degree have been useful and transferrable in the workplace. Similar personal protective equipment worn during practicals at university is used in my lab. I also write reports and expert certificates, which, of course, I had great experience at producing during my degree.

The analytical and research skills gained through subjects such as Crime Scene Investigation and Complex Forensic Cases have also proven very useful in my day-to-day work, as have the opportunities to give oral presentations and make posters. I use these skills when I train detectives, present on the services my unit offers, speak at public science forums and give expert evidence in court. Meeting deadlines takes time management skills, resourcefulness and efficient work practices; these skills were also honed during my university studies.

A biomedical science degree gives you options and lays the foundations required for work across a wide range of disciplines. A career in forensic science is both challenging and rewarding. I'd encourage anyone to study at UTS.

“A career in forensic science is both challenging and rewarding.”



FORENSICS



Name

James Finger

Job

Crime Scene Officer, NSW Police Force

Degree

Bachelor of Applied Chemistry (Forensic Science) Honours*, UTS (2004)

*Now a Bachelor of Forensic Science with four majors: Biology, Chemistry, Crime Scene Investigation or Digital Forensics. Subject to final approval.

My science career began in 2005 when I became involved with Education Interactive (EI) — a science communication company whose core business is to develop and present hands-on forensics workshops for students that educate and entertain. First I was a workshop presenter, then programme developer, before becoming the business manager.

Science communication is an increasingly important field, and people who can act as the bridge between the sometimes complex world of science and the public have great opportunities in many workplaces.

I travelled all over Australia teaching EI's first program to high school students. After a short stint in crime scene with the NSW Police Force, I took to presenting again, this time in Ireland & the UK. I got to spend another year on the road, this time being effectively paid to travel Europe. Talking about the science I love to a new audience every day was a life-changing experience.

My course at UTS Science gave me a good grounding in a wide variety of forensic disciplines, allowing me to explain concepts accurately and on a level the students would appreciate.

Last year I accepted an offer to return to the NSW Police Force as a civilian Crime Scene Officer. My new role has me working at the police labs in Sydney, primarily handling drug offence related evidence with the Evidence Recovery Unit. I work alongside police and other civilian officers processing exhibits for DNA and fingerprints, as well as conducting preliminary drug identification. There are a good number of UTS graduates amongst my colleagues and throughout the Forensic Services Group—I seem to be bumping into people I used to know at university all the time.

The highly practical and hands-on nature of my degree at UTS prepared me well for both the crime scene and laboratory environments I now find myself in, and I'm loving being back in 'real' forensics with the Forensic Services Group.

“People who can act as the bridge between science and the public have great opportunities in many workplaces.”



DEGREE

BACHELOR OF FORENSIC SCIENCE

**MAJOR CHOICES:
BIOLOGY, CHEMISTRY, CRIME
SCENE INVESTIGATION OR
DIGITAL FORENSICS**

POSSIBLE JOBS

Depending on chosen major possible jobs include: Crime scene officer, DNA profiler, forensic laboratory scientists, biomedical scientist, expert witness, forensic trace evidence specialist, analytical chemist, science teacher, lecturer or academic, clinical toxicologist, forensic toxicologist, regulatory toxicologist, forensic entomologist, team leader in investigations, forensic chemist, forensic anthropologist, research associate, analytical technician.

POSSIBLE EMPLOYERS

Federal and state police, DNA testing labs, medical firms, secondary schools, universities, 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.

MARINE BIOLOGY



Name

Patrick Tegart

Job

Project Officer, Landcare Australia;
Environmental Education Consultant,
SCience in Nature Service

Degree

Bachelor of Science (Honours) in
Environmental Science majoring in
Marine Biology, UTS (2012)

As someone who likes to stay busy and utilise my energy while I have it, I find myself working two jobs a lot of the time. Working at Landcare Australia, I am regularly communicating and visiting a number of organisations throughout Queensland, New South Wales and Tasmania. As a project officer, I apply the skills I learnt at UTS to provide technical guidance to organisations who are undertaking revegetation, weed treatment and pest management activities.

Outside of Landcare, I run my own business called SCience in Nature Services, or SCiNS for short, where I put together workshops and educational materials designed to engage local community members and school students. One of my favourite aspects of this job is creating and managing environmental education events. These events, called 'BioBlitzes', provide platforms for environmental scientists, naturalists and community members to network, learn from one another and conduct surveys that collect valuable environmental data and species lists from specific areas.

The most inspiring part of my work is teaching and learning. I am quite fortunate due to the diversity my two jobs provide. As a strong advocate for citizen science and community engagement, I frequently find myself interacting with scientists, park rangers, teachers, and community members. With this ongoing networking and engagement, I am able to share my knowledge while directing projects or creating workshops.

In December 2015, I coordinated the Wallagoot Catchment BioBlitz. Sponsored by South East Local Land Services, Atlas of Life in the Coastal Wilderness, Bega Local Aboriginal Land Council and a number of other partners, this citizen science event targeted Bournda National Park and a neighbouring Aboriginal land lot found on the far south coast of NSW. Engaging over 20 scientists, the two-day event successfully attracted 200 local community members and 60 school students who supported scientists as they ran surveys.

Completing my degree, particularly my honours year, has been one of the most rewarding experiences of my young career. UTS provided an ideal learning platform from which I have gained technical skills backed by theoretical knowledge. It also taught me to take the good with the bad. Experiments go wrong, mistakes are made and technology is definitely not always your friend. Yet through these experiences, I have developed an open and adaptive mind that keeps me prepared for the evolving challenges that all research and projects contain.



DEGREE

BACHELOR OF MARINE BIOLOGY

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, laboratory technical officer, research assistant, policy analyst or advisor, field officer, fisheries health technician, 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.



MEDICAL SCIENCE



Name

Lacey Johnson

Job

Principal Research Fellow, Australian Red Cross Blood Service

Degree

Bachelor of Medical Science, Honours, UTS (2002)

I graduated from UTS with Honours, and then moved to UNSW to carry out a PhD. My PhD was focused on the development of megakaryocytes, which are the precursors for platelets (which are the focus of my current research endeavours). I then obtained a post-doctoral research position at a local biotechnology company, where I worked on the role of human expressed cytokines on haematopoietic development. The Global Financial Crisis (GFC) resulted in the folding of the biotechnology company, so I returned to my PhD lab for 12 months to finish off some experiments. I then obtained a post-doctoral research position at the Australian Red Cross Blood Service and have gradually progressed to my current role.

My research focus is very 'applied', so it's easy to see why we are performing the research and what the benefits will be. I am inspired to think that the work I am doing has the ability to be translated into an outcome that has a direct benefit to a patient or community. I also love working with students and junior staff, and seeing them develop a passion for their work. It helps to keep me motivated.

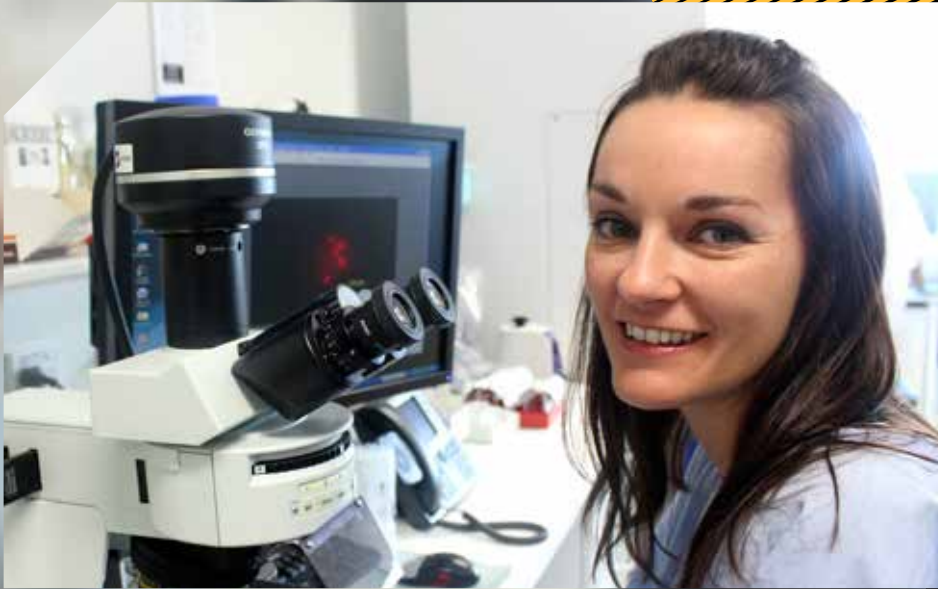
I find it interesting that you never know what the answer will be or where your research project will end up. You plan and generate a hypothesis, but science and research often has a way of surprising you. You find the answer to one question, only to find that you now have three more questions to answer. It is rarely boring if you are passionate about your research area.

Currently, I spend more time is on writing, management and planning than in the lab, but I do still find myself doing several experiments per week. It is important to understand this, as many people are attracted to the lab work aspect of things, and don't realise that there is a lot more to it.

In conjunction with my research role, I also work as a teaching associate at UTS tutoring in practical classes and lecturing. The opportunity to do this has complemented my research work nicely.

The skills I learnt during my undergraduate degree are used on a weekly basis, as I continue to tutor and lecture in several of the subjects that I studied during my degree. The skills I learnt during my Honours year were essential to enable my research career progression.

“My goal as a research scientist is to contribute to society in a positive way. That is why I love the applied research area, as you really get to see your work translated into the real world.”



DEGREE

BACHELOR OF MEDICAL SCIENCE, BACHELOR OF SCIENCE (MEDICAL SCIENCE)

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.



EXAMPLES OF JOBS AND EMPLOYERS

DEGREE

BACHELOR OF SCIENCE (BIOTECHNOLOGY)

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 technologist. Quality control in food and public health, drugs research such as anti-cancer vaccines, defence technologies, and the mining industry.

POSSIBLE EMPLOYERS

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

DEGREE

BACHELOR OF SCIENCE (ENVIRONMENTAL SCIENCES)

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.

DEGREE

BACHELOR OF SCIENCE (NANOTECHNOLOGY)

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

BluGlass RPCVD technology, Pilkington, Wattyl Paints, ANZ Bank, Australian Defence Force, Bureau of Meteorology, Defence Science and Technology Organisation, KPMG, MasterFoods Australia, Nova Corporation, Orica Ltd, PwC, Woodside Energy, Australian Synchrotron, NASA, ANSTO, Higher Education Sector, Secondary Schools, Australian Institute of Physics, Australasian College of Physical Scientists and Engineers, Australian Research Council, Australian Institute of Physics and Institute of Microelectronics.



DEGREE

BACHELOR OF MEDICINAL CHEMISTRY

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.



DEGREE

BACHELOR OF SCIENCE (STATISTICS)

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

CSIRO, Garvan Institute of Medical Research, Lockheed Martin, Australian Bureau of Statistics, Data Analysis Australia, Department of Defence, Deloitte, Roche Australia, AC Nielsen, News Poll, NSW Bureau of Crime Statistics & Research, NSW Bureau of Health Information, Commonwealth Bank, Westpac, ANZ, NAB, IAG Limited, PwC, Allianz and universities.



DEGREE

BACHELOR OF BIOTECHNOLOGY

**MAJOR CHOICES:
MEDICAL BIOTECHNOLOGY,
ENVIRONMENTAL BIOTECHNOLOGY,
COMPUTATIONAL BIOTECHNOLOGY
AND BIOSENSOR TECHNOLOGY**

POSSIBLE JOBS

Depending on chosen major possible jobs include: biotechnological researcher, product and development positions in agricultural, biomedical, chemical, communications, energy, environmental, manufacturing, medical and pharmaceutical companies.

POSSIBLE EMPLOYERS

Pharmaceutical and biotechnology companies, pathology and biomedical industries, universities and research institutes.

SCIENCE AND MATHEMATICS DEGREES AT UTS

UAC CODE	UTS Course Code	Course Name
Bachelor of Advanced Science:		
607058	C10347	Bachelor of Advanced Science in Advanced Materials and Data Science
607059	C10347	Bachelor of Advanced Science in Environmental Biotechnology
607060	C10347	Bachelor of Advanced Science in Infection and Immunity
607063	C10347	Bachelor of Advanced Science in Pre-Medicine
Bachelor of Science:		
607005	C10242	Bachelor of Science (Applied Chemistry)
607009	C10242	Bachelor of Science (Applied Physics)
607015	C10242	Bachelor of Science (Biotechnology/Biomedical Science/Medical Science)
607011	C10242	Bachelor of Science (Environmental Sciences)
607001	C10242	Bachelor of Science (Flexible)
607003	C10242	Bachelor of Science (Mathematics/Statistics)
607007	C10242	Bachelor of Science (Nanotechnology)
Specialist Degrees:		
607070	C10346	Bachelor of Biomedical Physics
607040	C10115	Bachelor of Biomedical Science
607045	C10172	Bachelor of Biotechnology
607033	C10223	Bachelor of Environmental Biology
607020	C10387	Bachelor of Forensic Science
607055	C10186	Bachelor of Health Science in Traditional Chinese Medicine
607035	C10228	Bachelor of Marine Biology
607050	C10184	Bachelor of Medical Science
607065	C10275	Bachelor of Medicinal Chemistry
607080	C10384	Bachelor of Science in Analytics

Combined Degrees:

609590	C10352	Bachelor of Advanced Science, Bachelor of Creative Intelligence and Innovation
609600	C10353	Bachelor of Biomedical Physics, Bachelor of Creative Intelligence and Innovation
609176	C10169	Bachelor of Biotechnology, Bachelor of Business
609346	C10164	Bachelor of Health Science in Traditional Chinese Medicine, Bachelor of Arts in International Studies
609255	C10167	Bachelor of Medical Science, Bachelor of Arts in International Studies
609175	C10163	Bachelor of Medical Science, Bachelor of Business
609595	C10354	Bachelor of Medicinal Chemistry, Bachelor of Creative Intelligence and Innovation
609250	C10243	Bachelor of Science, Bachelor of Arts in International Studies
609170	C10162	Bachelor of Science, Bachelor of Business
609585	C10330	Bachelor of Science, Bachelor of Creative Intelligence and Innovation
609220	C10385	Bachelor of Science in Analytics, Bachelor of Arts in International Studies
609252	C10388	Bachelor of Forensic Science, Bachelor of Arts in International Studies
609587	C10389	Bachelor of Bachelor of Forensic Science, Bachelor of Creative Intelligence and Innovation

WHERE WILL YOUR SCIENCE DEGREE TAKE YOU?

At UTS Science, we offer a range of courses across numerous disciplines. Are you fascinated by big data? Could you see yourself designing new materials to help solve global problems like clean water or climate change? What about helping to solve chronic health issues like cancer or diabetes? Whatever your passion, UTS Science has the right course for you. To find out about our undergraduate science and mathematics courses, check out our latest Undergraduate Courses guide at www.science.uts.edu.au/future



HOLISTIC LEARNING WITH THE UTS BACHELOR OF ADVANCED SCIENCE

UTS Science offers a specialised Bachelor of Advanced Science program designed to develop student learning using an inquiry-oriented and research-immersion model.

The Bachelor of Advanced Science is a holistic learning experience designed to train the next generation of scientists. You'll learn about theory through real-time application, an approach that is distinctive to UTS Science and distinguishes this degree from others.

Learning from world-leading research scientists, you will be actively mentored within a research team where you will complete a number of research projects based on your chosen major.

There are four majors to choose from: Advanced Materials and Data Science, Environmental Biotechnology, Infection and Immunity, and Pre-Medicine.

Pre-Medicine students will focus more on coursework as they prepare for either postgraduate studies in medicine or a related field, or a career within the health industry.



“The UTS Advanced Science degree allows students to learn from leading researchers, equipping them with professional skills from day one.”

Jacqueline Melvold, UTS Associate Lecturer



“UTS specialises in making students ‘future-ready’ using subjects structured to mimic the workplace. The advanced science degree enrolls the best of the best and provides a huge amount of support along the way – all of this is just what students need.”

Stephanie Town, Bachelor of Advanced Science (Infection and Immunity).



“The advanced science degrees are definitely good for something research-focused. I enjoy the experimentation and the contact with professionals in the field. The lab contact hours are good and there is plenty of freedom to do what interests you.”

Hugh Mackay, Bachelor of Advanced Science (Advanced Materials and Data Science).

DEGREE

BACHELOR OF ADVANCED SCIENCE

CAREER OPTIONS: ADVANCED MATERIALS AND DATA SCIENCE

Material scientists or researcher; product developer; inventor; developer of clean energy technologies such as solar cells, water purification products, and materials that support health and security technologies.

CAREER OPTIONS: ENVIRONMENTAL BIOTECHNOLOGY

Positions in sectors such as industrial energy and biofuel, agriculture, environmental management, phyto-remediation and mine waste.

CAREER OPTIONS: INFECTION AND IMMUNITY

Multiple positions in sectors such as biotechnology, medicine, pharmaceutical, vaccine development, patent law and public health. Research careers are also available with further study.

CAREER OPTIONS: PRE-MEDICINE

Pharmacy, physiotherapy, health policy, medical and health writing, sales and technical support of medical devices, positions within the pharmaceutical and therapeutic goods industry. Graduates can also pursue postgraduate studies in medicine.

SUCCESSFUL COMBINATIONS

Love science but want freedom in where your expertise takes you? By combining your science or mathematics studies with qualifications from another UTS Faculty, you'll be opening the doors to career opportunities in a wide range of professional areas. A double degree also expands your area of specialisation, giving you a competitive edge over your peers.

COMBINE SCIENCE WITH BUSINESS

Combine your science know-how with business qualifications and you'll be flavour of the month once you finish your degree. Employers are always on the lookout for scientific expertise that's underpinned by a cross-disciplinary skillset, and a business degree will make you highly marketable across a wide range of industries. Learn how to think about science as a business proposition and get ready to work in technical, financial, regulatory, environmental, health or biomedical organisations, or launch a life-changing idea with your own start-up.

Career options include roles in government, manufacturing, product development, biotechnology, banking and finance, research, human resource management, international business, management and marketing, medical research and health services sectors, and in regulatory agencies, scientific and research organisations.

COMBINE SCIENCE WITH INTERNATIONAL STUDIES

Take your science expertise on tour with a Bachelor of Arts in International Studies combined degree. The arts component of your studies will help you balance your science expertise with 'soft' skills, preparing you for a range of careers in which communication and relationships are key to success. It will also give your degree an international edge – you'll undertake in-depth study of the politics, history, film, literature and music of a foreign country, and spend a year living overseas in your country of choice. Choose from Canada, Chile, China, France, Germany, Indonesia, Italy, Japan, Latino USA, Malaysia, Mexico, Spain, Switzerland and Thailand.

Career options include science-based roles in almost any industry, including biotechnology, biomedical science, medical science, marine biology, environmental management, mathematics, statistical modelling, applied chemistry, applied physics, forensic science, nanotechnology and materials science. The international component of this degree will give you a global perspective that will make you highly sought after by prospective employers.


COMBINE SCIENCE WITH CREATIVE INTELLIGENCE AND INNOVATION

The Bachelor of Creative Intelligence and Innovation is a one-of-a-kind degree that champions creative problem solving, conceptual thinking and entrepreneurial practice. By studying the BCII alongside a Science degree, you'll graduate with a mindset that's firmly focused on innovation and underpinned by analytical thinking. It's a unique combo, and one that employers will love.

Career options include roles in the biotechnology, medical, medical instrumentation, pharmaceutical and therapeutic goods, patent law, public health, health policy, medical device, research and development, defence, finance and agriculture sectors, as well as more traditional science-based research and development careers.

OTHER DEGREE COMBINATIONS

You can also combine your science degree with qualifications in law and engineering, preparing you for roles in the legal, biomedical, pharmaceutical, health, environmental defence, finance and research sectors. Visit www.science.uts.edu.au/future for more information.



Business

- > Bachelor of Science, Bachelor of Business
- > Bachelor of Medical Science, Bachelor of Business
- > Bachelor of Biotechnology, Bachelor of Business

International studies

- > Bachelor of Science, Bachelor of Arts in International Studies
- > Bachelor of Medical Science, Bachelor of Arts in International Studies
- > Bachelor of Health Science in Traditional Chinese Medicine, Bachelor of Arts in International Studies
- > Bachelor of Forensic Science, Bachelor of Arts in International Studies*

Creative Intelligence and Innovation

- > Bachelor of Science, Bachelor of Creative Intelligence and Innovation
- > Bachelor of Advanced Science, Bachelor of Creative Intelligence and Innovation
- > Bachelor of Biomedical Physics, Bachelor of Creative Intelligence and Innovation
- > Bachelor of Medicinal Chemistry, Bachelor of Creative Intelligence and Innovation
- > Bachelor of Forensic Science, Bachelor of Creative Intelligence and Innovation*

Engineering

- > Bachelor of Engineering (Honours), Bachelor of Science
- > Bachelor of Engineering (Honours), Bachelor of Medical Science
- > Bachelor of Engineering (Honours), Bachelor of Science Diploma in Professional Engineering Practice
- > Bachelor of Engineering (Honours), Bachelor of Medical Science Diploma in Professional Engineering Practice

Law

- > Bachelor of Science, Bachelor of Laws
- > Bachelor of Forensic Science, Bachelor of Laws
- > Bachelor of Science, Bachelor of Laws (Honours)
- > Bachelor of Medical Science, Bachelor of Laws (Honours)

FURTHER STUDY

So you've already completed your first science degree – what do you do next? Undertaking an honours or postgraduate science qualification will increase the depth of your scientific expertise, enable you to specialise in a niche area, and prepare you for more senior opportunities once you enter the workforce. You could even consider building upon your scientific knowledge by branching out into a different discipline and career pathway. Interested? Find out more about further study options below.



HONOURS DEGREES

An honours degree is a one-year undergraduate qualification that provides additional depth and rigour to your bachelor's degree. It can also be the first step in a research career if you're heading in that direction – an honours degree or a masters by research is required for enrolment in a PhD.

As an honours student, you'll complete a research project on a subject of your choosing (subject to approval), getting intricately involved with your chosen area of science. You'll be guided and supported by an academic supervisor who specialises in your chosen area, and you'll have all the resources of UTS Science at your disposal.

To view current honours projects, visit www.science.uts.edu.au/future

POSTGRADUATE COURSEWORK DEGREES

A postgraduate coursework degree will build on the knowledge gained in your undergraduate studies, providing you with practical specialist skills that can easily be transferred to the workforce.

Coursework degrees combine professional expertise with advanced scientific knowledge and an emphasis on industry relationships. They take a structured approach to teaching and require the submission of formal assessment items, such as written coursework or written exams. You'll graduate as a subject matter expert with a broad skillset and strong professional networks, ready to achieve great things in science and related fields.

Postgraduate coursework degrees include graduate certificates, graduate diplomas and masters by coursework.

To view postgraduate coursework degrees currently on offer, visit www.science.uts.edu.au/future

POSTGRADUATE RESEARCH DEGREES

UTS is the #1 young university in Australia* with a growing reputation for innovative research. We're known for our commitment to research that responds to real-world challenges, from solving industry problems to answering the big questions impacting the world today.

As a postgraduate research student, you'll have the choice of studying a masters by research or a doctoral degree, depending on your previous qualifications, your interests and your professional goals. Both of these courses require you to produce a thesis that makes a novel contribution to knowledge in your chosen area of study. You'll be supported and guided by an academic supervisor, but your research will be largely self-directed and independent, giving you the chance to apply the skills and expertise you've gained throughout your previous study.

UTS also provides a wealth of support services for postgraduate research students, including programs and workshops covering research literacy and development, data analysis, statistics, thesis writing and project development.

Postgraduate research degrees include a masters by research and Doctor of Philosophy (PhD).

*QS Top 50 Under 50 2015



SAMANTHA GOYEN

RESEARCH PROJECT TITLE: HOW HAVE CORALS PUSHED THEIR LIMITS TO THRIVE IN SYDNEY'S BACKYARD?

**SUPERVISORS: ASSOCIATE PROFESSOR
DAVID SUGGETT AND PROFESSOR
PETER RALPH**

The overall goal of this project is to understand the nature and extent with which scleractinian corals are able to thrive at their southerly limits within Sydney Harbour. Corals already thriving in Sydney can tell us much about how corals need to be genetically programmed and physiologically adapted to tolerate future stressors. Answering these unknowns will enable us to better understand coral form and function, as well as the importance of Sydney Harbour as a possible 'coral refuge' given the potential for more northerly coral populations to migrate as waters warm.

Completing undergraduate studies and an Honours year at UTS really showed me how much I enjoy research so I decided a PhD would be a great option. I returned to university for Honours following a few years in the workforce, wanting a different type of challenge.

Research is an inspiring and essential aspect of science and I wanted to learn more about the oceans and in particular coral reefs. They are highly fragile ecosystems at the front-line of climate change and there is still so much we don't understand about them. They provide so many ecosystem services, including food and income support for millions of people, however are at risk from rapidly accelerating local (eutrophication, pollution) and global (warmer and more acidic waters) threats.

The first year of my PhD was really hands on with extensive field work (including a trip to Heron Island) collecting samples and data as well as setting up and running long-term stress experiments at Manly Sea Life Sanctuary. I have also been in the lab processing samples and developing molecular techniques.

UTS attracted me for undergraduate studies due to the emphasis on practical experience and learning which focuses on developing students for the future. I was able to go into the field, get experience on state of the art equipment, be involved in internships and projects and I was given the opportunity to go on exchange as part of a double degree. Through Honours and now a PhD, UTS has maintained a very progressive approach to learning and research where I feel I am in a world-class, productive and dynamic environment in which to contribute to the field.

GAIN A COMPETITIVE EDGE WITH AN INTERNSHIP

At UTS Science, we're committed to balancing theoretical knowledge with practical experience. We encourage all of our students to seek out professional experience opportunities in parallel with their studies.

A professional placement or internship will assist you to gain transferable skills such as communication, problem-solving and time management, which are highly sought after by employers across all sectors. It also gives you the chance to apply your technical skills and theoretical knowledge to a real-life scenario.

With an internship you can:

- > gain valuable workplace experience while studying
- > enhance your professional skills and disciplinary knowledge
- > explore career opportunities and gain experience of your chosen sector
- > expand your professional network
- > graduate with a valuable professional experience under your belt.

As a UTS Science student you'll be empowered to choose your own professional placement or internship in line with your chosen career path. Do you want to apply your analytical skills to a big data company? What about working in a medical research facility? You'll be encouraged to 'think outside the box' and supported by UTS Science and UTS Careers throughout the process.

For more information, visit www.uts.edu.au/science-external-engagement



INAH CAMAYA

Bachelor of Science (Biotechnology)

I completed an eight-week professional placement in the 2015-16 Summer Session after completing the second year of my degree. I was fortunate enough to be placed at the Newborn Screening (NBS) Laboratory at The Children's Hospital at Westmead.

I had a full-time schedule throughout my placement, so I was in the lab nearly every day. I observed the different tests used to screen newborns for various inherited metabolic disorders such as cystic fibrosis, congenital hypothyroidism, galactosaemia and multiple amino acid disorders.

I assisted with tasks such as general administrative work, validation of a modified screening assay for congenital hypothyroidism and completion of experiments as part of a research project based on a new test for severe combined immunodeficiency disorders.

I gained experience using various techniques such as tandem mass spectrometry, immunoassays, PCR and capillary electrophoresis. I also became more familiar with general administrative work, data analysis, method validation, workplace health and safety practices, quality assurance procedures and ethical considerations.

Speaking to the staff about the industry and their experience has helped me reshape my own plan for the future. I learned that pure academia can be challenging, so now I'm aiming to find a career path that balances working in the industry with research. I have also expanded my network and found some new mentors in the process.

UTS SCIENCE OUTREACH PROGRAM

The UTS Science Outreach Program invites your students to come on campus and take part in our hands-on maths and science workshops, meet current students and learn about the exciting research being conducted at UTS.

The outreach program is designed to excite and inspire students and help them realise the potential of a career in science and mathematics.

To find out more or book your free excursion to UTS Science visit:
www.science.uts.edu.au or
email science@uts.edu.au



science.uts.edu.au/future



Special thanks to our UTS Science graduates and students for sharing their stories in this guide.

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ISTOCK, SHUTTERSTOCK, VANESSA VALENZUELA DAVIE.

