Science

Graphics created by numbers of postgraduate, research students and staff at UTS Science and UTS in 2017 and 2016.
Shape the future workplace
Learn from thought leaders
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Faculty snapshot*

Students
4,164 total
264 postgraduate by coursework
391 postgraduate by research

Staff
284 teaching and research
124 professional and technical

UTS at a glance**

Students
42,674 total
10,865 postgraduate by coursework
1721 postgraduate by research
30,088 undergraduate

UTS student diversity**

49% are female students
48% are born outside Australia
34% are 25 or older

*As at June 2017
**As at August 2016

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Acknowledgement of Country

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

Whether you want to pursue a career in science, research or business, our postgraduate courses will sharpen your skills and dare you think outside the box.

WORLD-CLASS FACILITIES
Kick start your postgraduate education by learning in UTS Science’s sophisticated facilities and specialist laboratories. Our world-class facilities include teaching, learning and advanced specialist facilities in proteomics, forensic and analytical chemistry, environmental sciences, a Chinese medicine outpatient clinic and a glasshouse for conducting real in-the-field scientific experiments.

You’ll be well-supported and exposed to the latest technologies including a suite of imaging facilities, such as the OMX Blaze super resolution microscope. Our purpose-built spaces also encourage inquiry learning, further enriching your study experience.

UTS is continuing to invest in science, with a planned extension of our research and teaching facilities in Building 4 set to commence in late 2017/early 2018.

We are also very excited for the redevelopment project of Building 2—not just for its distinctive exterior, but for what’s inside, which includes a super-sized science lab; new library; learning spaces; industry hub and career spaces.

PRACTICAL COURSES
You’ll enjoy our innovative and hands-on courses, giving you both advanced scientific knowledge and professional expertise. Our courses are designed to achieve the ideal balance between scientific learning and professional expertise, e.g. discipline knowledge and professional skills with subjects like advanced communication and project management.

Practice-based learning and group work are high on the agenda in the delivery of our courses. In the coursework programs, you are required to complete both professional and advanced scientific subjects to better prepare you for the workplace, boosting knowledge with the latest scientific know-how methods and professional skills.

RESEARCH INTEGRATED LEARNING
As a research intensive faculty, we contribute about 30 per cent of UTS’s total research outputs. This means you’ll be learning from research active lecturers who work closely with industry, and conduct current research.

Whether you’re conducting research or studying a coursework program, our strong research culture means you’ll be taught or supervised by world-recognised experts and exposed to the latest research findings, networks and equipment.

Our courses are also continually reviewed to reflect the current situations and developments in the marketplace. We make sure our graduates are ready for the global workplace with skills, knowledge and experience employers’ value.
CAREER AND INDUSTRY RELEVANT
Professional subjects give you the opportunity to formulate ideas, market the product, establish a start-up company, manage intellectual property and pitch it to investors.

You’ll also have the chance to network with future employers through our partnerships with industries like the CSIRO, GE, Agilent Technologies and the Australian Federal Police.

By learning advanced scientific and mathematics skills in a realistic environment, similar to the changing workplace, you’ll gain the right set of skills to take your career to the next level.

INNOVATIVE CITY CAMPUS
UTS is home to an engaging and student-centric campus that boasts new public spaces, renovated facilities and a wealth of new buildings, all in the heart of Sydney.

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.

INQUIRY-BASED LEARNING
Our learning approach at UTS Science is based on the investigation of questions, scenarios or problems. Lecturers will facilitate the inquiry learning but you’ll identify and research issues and questions to develop your knowledge or solutions.

Inquiry learning is aimed at placing you, the student, at the core of your own learning, engaging and stimulating both learning outcomes and self-belief.

You’ll also be encouraged to apply your knowledge through workshops, case studies and master classes often facilitated by guest speakers or academics.
Postgraduate Education

You’ve completed a Bachelor’s degree, now what?
Now, it’s time to show the world what you’re really made of.

Depending on which Bachelor’s degree you’ve already finished you could be eligible to study either a Masters (by Coursework or Research), or a PhD.

As a postgraduate student at UTS, you’ll have the experience and desire to take charge of your own learning. Whether you’re completing coursework or undertaking research, you’ll be supported to reach your full potential in your chosen area.

Once you’ve finished your postgraduate study, you’ll be awarded with either a Graduate Certificate, Masters degree or PhD.

So, what are you waiting for? It’s time to take charge of your future, today.

WHAT’S IS THE DIFFERENCE BETWEEN A DEGREE BY COURSEWORK AND RESEARCH?
At UTS, you can choose from two postgraduate programs - coursework (that’s where you attend classes, write assessments and sit exams) and research (where a supervisor guides your in-depth study and final thesis).

If you’re doing a Graduate Certificate or Masters by Coursework, you’ll work your way through a set of subjects or credit points. Some students also choose to add a research component to complement their coursework.

If you decide on a Masters by Research or PhD (also known as a Higher Degree Research or HDR), you’ll undertake supervised study and research before submitting and presenting a thesis.

As a HDR student, you’ll also be encouraged to get involved in events on campus, such as the ‘Three Minute Thesis (3MT) Competition’ – an Australia-wide competition where PhD candidates present their research in just three minutes with the aid of one PowerPoint slide. There are also lots of student run initiatives, like societies, which help to create a supportive and collaborative learning environment for our postgraduate students.

<table>
<thead>
<tr>
<th>Type of Programs</th>
<th>Degree/Programs</th>
<th>UTS course code</th>
<th>Duration of study*</th>
<th>Total credit points (CP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postgraduate Programs by Coursework</td>
<td>Graduate Certificate in Mathematics</td>
<td>C11210</td>
<td>1 year PT</td>
<td>24 CP</td>
</tr>
<tr>
<td></td>
<td>Graduate Certificate in Science</td>
<td>C11216</td>
<td>½ year FT</td>
<td>24 CP</td>
</tr>
<tr>
<td></td>
<td>Master of Science*</td>
<td>C04241</td>
<td>1½ years FT</td>
<td>72 CP</td>
</tr>
<tr>
<td></td>
<td>Master of Science (Extension)*</td>
<td>C04265</td>
<td>2 years FT</td>
<td>96 CP</td>
</tr>
<tr>
<td></td>
<td>Master of Science (Honours)*</td>
<td>C04267</td>
<td>2 years FT</td>
<td>96 CP</td>
</tr>
<tr>
<td></td>
<td>Master of Quantitative Finance (MQF)</td>
<td>C04373</td>
<td>1½ years FT</td>
<td>72 CP</td>
</tr>
<tr>
<td>Postgraduate Program by Research</td>
<td>Master of Science (Research)</td>
<td>C03029</td>
<td>2 years FT</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>Master of Science in Mathematical Sciences (Research)</td>
<td>C03026</td>
<td>2 years FT</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>Doctor of Philosophy (PhD)</td>
<td>C02031</td>
<td>4 years FT</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>Doctor of Philosophy in Mathematics (PhD)</td>
<td>C02030</td>
<td>4 years FT</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

*Offered in a variety of majors, see pages 21-31.
Postgraduate coursework programs at UTS Science

Our courses are innovative, giving you both professional expertise and advanced scientific knowledge, achieving the ideal balance between scientific learning, practical experience and professional expertise. For the Master of Science, Master of Science (Extension) and Master of Science (Honours), you’ll have a variety of majors to choose from according to your interests.

MAJORS OFFERED:

<table>
<thead>
<tr>
<th>Major</th>
<th>UAC course code, Master of Science 72 CP</th>
<th>UAC course code, Master of Science (Extension), 96 CP</th>
<th>Master of Science 72 CP</th>
<th>Master of Science (Extension) 96 CP</th>
<th>Master of Science (Honours) 96 CP</th>
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<tbody>
<tr>
<td>Biomedical Engineering</td>
<td>940773</td>
<td>940797</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Marine Science and Management</td>
<td>940770</td>
<td>940794</td>
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<td>Forensic Science</td>
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<td>940779</td>
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<td>●</td>
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<tr>
<td>Medical Biotechnology</td>
<td>940759</td>
<td>940785</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Mathematical and Statistical Modelling</td>
<td>940765</td>
<td>940791</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>No specific major</td>
<td>940747</td>
<td>940776</td>
<td>●</td>
<td>●</td>
<td>NA</td>
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</table>

Refer to pages 21 to 31 for more details on a specific major.

COURSE STRUCTURE

<table>
<thead>
<tr>
<th>Course Structure</th>
<th>24CP</th>
<th>24CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Certificate in Mathematics</td>
<td>3 x Mathematics subjects + 1 elective</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Structure</th>
<th>24CP</th>
<th>12CP</th>
<th>12CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Certificate in Science</td>
<td>2 x Professional subjects</td>
<td>2 x Major subjects</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Structure</th>
<th>24CP</th>
<th>48CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Science</td>
<td>4 x Professional subjects</td>
<td>8 x Major subjects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Structure</th>
<th>24CP</th>
<th>72CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Quantitative Finance</td>
<td>9 x Professional subjects</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Structure</th>
<th>24CP</th>
<th>48CP</th>
<th>24CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Science (Extension)</td>
<td>4 x Professional subjects</td>
<td>8 x Major subjects</td>
<td>4 x Electives</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Structure</th>
<th>24CP</th>
<th>24CP</th>
<th>48CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Science (Honours)</td>
<td>4 x Professional subjects</td>
<td>4 x Major subjects</td>
<td>Honours thesis</td>
</tr>
</tbody>
</table>

Note: CP is the acronym for credit points, and most subjects are 6 credit points per-subject.
Graduate Certificate in Mathematics

**UAC course code:** 940743 (Autumn, Spring)
**UTS course code:** C11210
**Duration:** 1 year part-time only
**Credit points (cp):** 24

Designed to cater for graduates of non-mathematical disciplines who wish to broaden their expertise and careers by acquiring mathematical knowledge and skills.

The course is suitable for business, engineering or science graduates who need mathematical foundation for further studies. It aims to provide graduates with retraining in mathematics and statistics, and will provide pathways to more advanced mathematical programs.

**Course duration**
Only offered in part-time.

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**Course structure**
Completion requires 24 cp of study or 4 subjects, comprising subjects chosen from the following:

- **35511** Linear Dynamical Systems
- **35512** Modelling Change
- **35513** Statistical Methods

Select one subject from the CBK91011 list of science electives, shown in the UTS Online handbook [www.handbook.uts.edu.au/sci](http://www.handbook.uts.edu.au/sci)

**Recognition of prior learning:** No exemptions are granted as recognition of prior learning.

**Further study at UTS:** Upon completion of the Graduate Certificate in Mathematics (C11210), you may enrol in the Master of Science in Mathematical and Statistical Modelling (C04241).

**Fees:** refer to page 32.

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**NATALIE SALEMINK**
Graduate Certificate in Mathematics
Analyst, Capital Markets Cooperative Research Centre (CMCRC)

**What motivated you to study this degree/major?**
Mathematics is fascinating, because it can reduce the impossible paradoxes of the universe down to manageable human terms.

**What do you enjoy most about your degree?**
Meeting amazing professors, like Prof Anthony Dooley, who infect their students with their enthusiasm for the subject. This course is also helping me to refine my hard skills and see the world through another lens.

**Why did you choose to study at UTS?**
That’s easy! UTS has the best ranked course in my field in the country.

**What is it like to study at UTS Science?**
It’s a very accommodating and nurturing environment at UTS Science, where students can ask questions, flourish, explore and grow.

**What advice would you give to students studying this degree?**
Give 100 per cent and make use of the Mathematics Study Centre on campus. It’s also a good idea to solve more problems than you’re given and find multiple ways to do formal proofs.

**What would you like to do once you complete your degree?**
Continue the learning journey and apply lots of the new skills I’ve learnt to my job.
Graduate Certificate in Science

UAC course code: 940768 (Autumn, Spring)

UTS course code: C11216

Duration: 0.5 years full-time or equivalent part-time

Credit points (cp): 24

Suitable for those seeking a scientific qualification to assist them to gain entry into science, as well as for those who are already employed, but wish to gain new specialised skills to advance their area of expertise.

In addition to providing an opportunity to extend or renew your scientific knowledge, this course aims to provide some broad professional skills important to any career, be it in research, business, industry or government organisations.

Course duration
6 months of full-time study or equivalent in part-time mode. Completion requires 24cp or 4 subjects, comprising two professional subjects and two science subjects.

Course structure
Select two subjects from the following:

- 60901 Advanced Communication Skills in Science
- 60903 Project Management in Science
- 60904 Innovation, Entrepreneurship and Commercialisation
- 60902 The Scientific Method
- 37233 Linear Algebra

Select two subjects from the CBK90642 list of science electives, shown in the UTS Online handbook

www.handbook.uts.edu.au/sci

Credit recognition: No exemptions are granted for this course.

Further study at UTS: Upon completion of the Graduate Certificate in Science you will gain full credit recognition of prior learning to the Master of Science (C04241) for any subjects relevant to the specific masters specialisation in which you are enrolled.

Fees: refer to page 32.

CONTAMINATED SITE ASSESSMENT, REMEDIATION AND MANAGEMENT (CSARM) SHORT COURSES

UTS Science School of Life Sciences has developed a program of short course modules to help environmental professionals update their specific area of expertise, extend their knowledge base and network with colleagues in industry and government.

What is CSARM?
CSARM is recognised as the only comprehensive university based CSARM short courses. You’ll complete five self-contained modules in block mode over 2.5 – 3 days.

What are the benefits of CSARM?
- Recognition of prior learning for UTS Masters of Science by coursework (on successful completion of post-module work).
- Credit towards Site Contamination Practitioners Accreditation (SPCA), Environment Institute Australia and New Zealand CEnvP, Engineers Australia CPD Program, Soil Science Australia (CPSS).
- UTS Alumni discount.

Find out more at www.consitecourses.uts.edu.au
Master of Science

**UTS course code:** C04241

**Duration:** 1½ years full-time or equivalent part-time

**Credit points (cp):** 72

This course aims to update science and mathematics graduates with industry-related skills and advanced scientific knowledge for career advancement. It also provides a possible pathway to a research degree.*

You will develop the skills required to be a scientist or mathematician who can engage at a higher level in an enterprise whether in business, industry, research or government. You will gain analytical skills, disciplinary knowledge, creative and logical approaches to problem-solving and management skills.

The Master of Science is a 72 credit point degree that can be completed either in 1.5 years of full-time study or equivalent. It comprises 24 credit point of professional subjects and 48 credit points of the chosen major.

* Subject to faculty approval and suitable achievement levels.

### Professional subjects - compulsory

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Communication Skills in Science</td>
<td>6cp</td>
</tr>
<tr>
<td>Project Management in Science</td>
<td>6cp</td>
</tr>
<tr>
<td>Innovation, Entrepreneurship and Commercialisation</td>
<td>6cp</td>
</tr>
</tbody>
</table>

Select ONE of the following:

- The Scientific Method
- Linear Algebra
- Programming Fundamentals

[Read subjects descriptions at handbook.uts.edu.au/directory/stm90522.html](handbook.uts.edu.au/directory/stm90522.html)
What motivated you to study this degree/major?

After completing my undergraduate degree (Bachelor of Science majoring in Biochemistry and Microbiology) I came to realise I was very interested in forensics, particularly forensic biology. After researching the involved concepts and possible careers in the field, it became clear to me that this was not only a degree that had caught my interest at first glance, but a degree with careers that I knew I would love to partake in.

What do you enjoy most about your degree?

The wide range of subjects available for studying and the fact that UTS Master of Science majoring in Forensics includes core subjects that not only develop forensic skills, but also professional skills that can be used in everyday life, such as management and communication. Furthermore, all lecturers and faculty staff are easy to approach and are always eager to help; this support immensely improves the overall experience of studying this degree.

Why did you choose to study at UTS?

UTS has one of the best Forensic departments and a lot of affiliations with forensic departments in the community (e.g. the police force). Friends that are studying or have studied at UTS highly praised the university for both its staff and facilities.

What is it like to study at UTS Science?

It is a very enjoyable experience and the overall atmosphere is very warm and welcoming. All facilities from laboratories to lecture material are of the highest standard and all staff/lecturers are easy to approach.
Master of Science (Extension)

**UTS course code:** C04265

**Duration:** 2 years full-time or equivalent part-time

**Credit points (cp):** 96

This course aims to renew and broaden your scientific and industry experience with managerial and business acumen. It will provide you with numerous opportunities including value-add to your existing specialisation by bringing you up to speed on knowledge and technologies, expand into different majors by choosing elective subjects that are of interest, and acquire professional and management skills to succeed in the business community.

The Master of Science (Extension) is a 96 credit point degree that can be completed either in 2 years of full-time study or equivalent. It comprises 24 credit points of professional subjects, 48 credit points of the chosen major subjects and 24 credit points of electives.

**PROFESSIONAL SUBJECTS** are compulsory and provide essential skills for engagement with businesses, research, industries and governments. Skills you will gain include project management, communication skills, management of innovative ventures, management of intellectual property and more.

**The MAJOR CHOICE (SCIENCE) SUBJECTS** are essential to advance your skills as a professional scientist or mathematician. You will gain up-to-date knowledge of science and technologies in your chosen major.

Majors available include:
- Biomedical Engineering
- Forensic Science
- Mathematical and Statistical Modelling
- Marine Science and Management
- Medical Biotechnology
- No specific major


Refer to page 21 to 31 to read more about each specific major and their career opportunities.

**ELECTIVE SUBJECTS** give you the freedom to choose subjects that are of interest to you and provide a third dimension of expertise beyond your chosen major and professional knowledge and skills.

There is a variety of electives to choose from CBK90907 Electives (Science).

COURSE STRUCTURE

96CP = 24CP = 48CP + 24CP

Master of Science (Extension)

4 x Professional subjects

8 x Major subjects

4x Electives (Science)

Elective subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing Leadership in Contemporary Health Care</td>
<td>6cp</td>
</tr>
<tr>
<td>Organisational Dialogue: Theory and Practice</td>
<td>6cp</td>
</tr>
<tr>
<td>Accounting for Managerial Decisions</td>
<td>6cp</td>
</tr>
<tr>
<td>Marketing Management</td>
<td>6cp</td>
</tr>
<tr>
<td>Financial Management</td>
<td>6cp</td>
</tr>
<tr>
<td>Introductory Health Economics</td>
<td>6cp</td>
</tr>
<tr>
<td>Judgment and Decision Making</td>
<td>6cp</td>
</tr>
<tr>
<td>Economic Evaluation</td>
<td>6cp</td>
</tr>
<tr>
<td>Technology and Innovation Management</td>
<td>6cp</td>
</tr>
<tr>
<td>Environmental Policy for Energy Systems</td>
<td>6cp</td>
</tr>
<tr>
<td>Air and Noise Pollution</td>
<td>6cp</td>
</tr>
<tr>
<td>Leadership and Responsibility</td>
<td>6cp</td>
</tr>
<tr>
<td>Policy, Power and Politics in Health Care</td>
<td>6cp</td>
</tr>
<tr>
<td>Epidemiology and Population Health</td>
<td>6cp</td>
</tr>
<tr>
<td>Managing Quality, Risk and Cost in Health Care</td>
<td>6cp</td>
</tr>
<tr>
<td>Organisational Management in Health Care</td>
<td>6cp</td>
</tr>
<tr>
<td>Using Health Care Data for Decision Making</td>
<td>6cp</td>
</tr>
<tr>
<td>Information Architecture and Design</td>
<td>8cp</td>
</tr>
<tr>
<td>People, Information and Knowledge</td>
<td>8cp</td>
</tr>
<tr>
<td>People, Work and Employment</td>
<td>8cp</td>
</tr>
<tr>
<td>Positive Psychology and the Self</td>
<td>8cp</td>
</tr>
</tbody>
</table>
Pathway to research degree: All majors provide an opportunity to develop research skills by taking either a 12 credit point or 24 credit point research project.

Enrolment into the research project is subject to faculty approval which is dependent on your study achievements and the availability of suitable research projects.

Successful completion of a 24 credit point research project can provide a pathway to a research degree.

Credit recognition: This course may be eligible for credit recognition of up to 36 credit points if the subjects previously studied are deemed by the faculty to be equivalent to those specified for their course.

To be considered for credit recognition, subjects must normally have been completed no more than five years before the commencement of this course.

Students who have completed the Graduate Certificate in Science (C11216) will gain full credit for subjects that are in this course.

Alternate entry and exit pathways

There are a number of alternate entry and exit pathways into the Master of Science (Extension), should you decide to change direction.

- Gain entry or exit through the Graduate Certificate in Science
- Gain entry or exit through the Master of Science coursework program.
- Exit through the Graduate Diploma in Science, a 48 credit point coursework program.
- Complete a minimum of 48 credit points in the Master of Science (Extension) and transfer into the Master of Science (Honours). Suitable if you’re keen to pursue a postgraduate research degree because at the completion of the Master of Science (Honours), you can proceed to pursue a PhD.

Fees: refer to page 32
SUMIT SUSHIL BORHADE  
Masters of Science (Extension) in  
Medical Biotechnology

What did you do before you started your course?  
I studied bachelor degree in Pharmacy and was also working in the pharmaceutical and logistics industries.

What motivated you to study this degree/major?  
My love towards research, molecular biology and pharmacology. Also, looking at the current scenario in pharmaceutical industry and different diseases, I think there is a need for better research.

What do you enjoy most about your degree?  
The subjects that I am studying are quite interesting. I also enjoy collaborating with others and enjoy the interactive sessions.

Why did you choose to study at UTS?  
UTS is the No. 1 young university in Australia and is also in the heart of the city. When you are studying here you get better of both the worlds—the campus and city.

What is it like to study at UTS Science?  
Science has always been fascinating and I am really enjoying it here at UTS.

What would you like to do once you complete your degree?  
Find a job or be a tutor at UTS.
Master of Science (Honours)

**UTS course code:** C04267

**Duration:** 2 years full-time or equivalent part-time

**Credit points (cp):** 96

This course is for those who wish to enter into research and academia. It will renew and broaden your scientific and industry experience with managerial and business acumen.

The course provides you with a unique opportunity to undertake research and gain in-depth knowledge in a particular scientific specialisation. You will acquire professional and management skills to succeed in the business community. It will also value-add to your existing specialisation or degree, where you are brought up to speed on knowledge and technologies in that particular specialisation.

**Admission:** UTS recognised bachelor’s degree, or an equivalent or higher qualification, or evidence of general and professional qualifications that demonstrates potential to pursue graduate studies. Students who have commenced in the Master of Science (Extension) or Master of Science can apply for entry via internal course transfer.

<table>
<thead>
<tr>
<th>Professional subjects – compulsory</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Communication Skills in Science</td>
<td>6cp</td>
</tr>
<tr>
<td>Project Management in Science</td>
<td>6cp</td>
</tr>
<tr>
<td>Innovation, Entrepreneurship and Commercialisation</td>
<td>6cp</td>
</tr>
<tr>
<td>Select ONE of the following:</td>
<td></td>
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<td>Programming Fundamentals</td>
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The **HONOURS THESIS COMPONENT** is a research project that extends over the final year and normally takes the form of an experimental, analytical or theoretical investigation. You may be required to undertake one or more critical reviews of the literature in designated areas and to attend formal classes devoted to advanced coursework. The results of the project are presented in an oral seminar and in a written thesis, both of which are formally assessed.


**Pathway to research degree:** Upon completion of the Master of Science (Honours) you can proceed to a UTS PhD.

**Credit recognition:** This course may be eligible for credit recognition of up to 24 credit points if the subjects previously studied are deemed by the faculty to be equivalent to those specified for their course.

To be considered for credit recognition, subjects must normally have been completed no more than five years before the commencement of this course.

Students who have completed the Graduate Certificate in Science (C11216) will gain full credit for subjects that are in this course. Admission is via internal course transfer.

Local students who have completed an undergraduate qualification and satisfied the admission criteria for entry into the standard honours program may be considered for direct entry.

Future students who are keen to apply will need to complete the Faculty’s Supplementary Honours Application Form and organise a supervisor and project.

Eligibility for admission does not guarantee offer of a place. Refer to the handbook for more details on admission requirements: [www.handbook.uts.edu.au/courses/c04267](http://www.handbook.uts.edu.au/courses/c04267)

**Fees:** refer to page 32.

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The **SCIENCE MAJOR CHOICE (HONOURS) SUBJECTS** are essential to advance your skills as a professional scientist or mathematician. You will gain up-to-date scientific knowledge and technologies in your chosen major.

You have vast major choices which include:

- Biomedical Engineering (Honours)
- Forensic Science (Honours)
- Mathematical and Statistical Modelling (Honours)
- Marine Science and Management (Honours)
- Medical Biotechnology (Honours)


Refer to page 21 to 31 to read more about each specific major and their career opportunities.
The Master of Quantitative Finance (MQF) is a new course offering from the Faculty of Science. It is an integrated degree on financial economics, financial mathematics and computational methods focusing on derivative security pricing, financial engineering and risk management.

In this degree, you’ll gain specialised knowledge and the professional competency required to work as a quantitative finance analyst to develop models for the modern finance industry.

You’ll learn how to critically analyse financial data to facilitate effective decision-making and how to apply innovative new financial models to address complex financial trading and risk management issues.

Upon successful completion of this program, you’ll be able to demonstrate high levels of quantitative finance technical skills that are necessary for professional practice.

Career options for graduates include positions as quantitative analysts, risk management analysts, quantitative structures, quantitative developers, forecasters, traders, investment analysts and financial engineers across a range in industries and businesses.

Employer options include banks, reserve bank, regulators such as APRA, hedge funds, insurance organisations, consulting firms such as Deloitte, Price Waterhouse Coopers, energy firms, consumer organisation such as Woolworths, Coles, etc.

Admission: The minimum admission requirement is a cognate degree with a strong quantitative component. Students accepted into this degree typically has a bachelor’s degree in mathematics, statistics, science, physics, engineering, actuarial studies, econometrics, mathematical finance, computer science, etc.

Eligibility for admission does not guarantee offer of a place.

Credit recognition: Students may be granted a maximum of eight subject exemptions of which four core subjects may be approved from prior undergraduate study.

We encourage you to visit handbook.uts.edu.au/courses/c04373.html for more admission requirements.
What motivated you to study this degree?
Having come from UTS previously, I remembered how seamless the theoretical knowledge and its applicability in the workforce was, so I knew that I was signing up for something that I would be able to apply to my current job.

What do you enjoy most about your degree?
I love the flexibility and the understanding. It’s challenging to juggle a full-time job with university so having teachers that are super understanding of this is amazing. All my classes are after work, which means I can also physically be there to attend the lectures. Moving from undergraduate studies to postgraduate studies is a whole new world. It’s more mentally demanding and definitely more challenging!

What advice you would give to students studying this degree?
Learn how to manage your time effectively. Studying whilst working is the ultimate time-management skill builder—another skill you can fine tune while you’re studying! Whilst it’s difficult to meet deadlines, it’s worth the challenge.
Biomedical Engineering

Postgraduate coursework programs you can pursue this major in:
- Master of Science, C04241
- Master of Science (Extension), C04265
- Master of Science (Honours), C04267

Biomedical engineering is the application of science and engineering principles to solve medical and biological problems. This aim of this major is to introduce you to a variety of applications around biomechanics, medical devices, tissue engineering, medical imaging, and diagnostic and therapeutic uses of nanotechnology.

The structure gives you wide exposure across the field of biomedical engineering rather than focusing on one specific area.

This major is suitable for science or medical graduates who wish to bridge their knowledge gap in medical technologies without a full engineering degree. It’s an innovative major with wide application in growing areas in health, science and engineering.

An example of current biomedical engineering research at UTS is the development of bio-inspired and biomaterials where corals are being investigated for bone and tissue regeneration.

Careers options for graduates include positions in careers in medical device and biotechnology companies, government policy and regulation, hospitals and research organisations where the ability to combine biology and engineering knowledge and skills is required.

Employer options include medical device and technology companies, e.g. Cochlear, hospitals, government and regulatory departments, diagnostics medical labs, research organisations, etc.

Admission requirements: Bachelor’s degree in (but not limited to): engineering, chemistry, physics, nanotechnology, biochemistry & cell biology, microbiology, human biology, medical science, etc.

For information of the Master of Science, Master of Science (Extension) and Master of Science (Honours) see pages 11-18.

*MAJ03470 BIOMEDICAL ENGINEERING
(for Master of Science and Master of Science Extension)

Read subject descriptions at www.handbook.uts.edu.au/directory/maj03470.html
- Biomedical Instrumentation
- Biomedical Engineering stream choice (12cp)

Select 30 credit points from the following options:
- Human Pathophysiology
- Physiological Systems
- Medical and Applied Physiology
- Engineering Biomedical Polymer
- Medical Imaging
- Nanomaterials
- Molecular Nanotechnology
- Medical Devices and Diagnostics
- BioNanotechnology
- Neural Networks and Fuzzy Logic
- Programming Fundamentals
- Tissue Engineering Scaffolds
- Biomedical Engineering Project A 12cp
- Biomedical Engineering Project B 12cp
- Biomedical Engineering Project 24cp
#MAJ01135 BIOMEDICAL ENGINEERING (HONOURS)
(for Master of Science (Honours))

Read subject descriptions at
- Biomedical Instrumentation
- Biomedical Engineering stream choice 12cp

Select 6 credit points from the following options:
- Engineering Biomedical Polymer
- Programming Fundamentals
- Neural Networks and Fuzzy Logic
- Molecular Nanotechnology
- Nanomaterials
- BioNanotechnology
- Human Pathophysiology
- Medical Imaging
- Physiological Systems
- Medical Devices and Diagnostics
- Medical and Applied Physiology

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**COURSE STRUCTURE**

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Forensic Science

Postgraduate coursework programs you can pursue this major in:

- Master of Science, C04241A
- Master of Science (Extension), C04265
- Master of Science (Honours), C04267

The forensic science major gives you the opportunity to broaden your knowledge and skills in forensics investigation and analysis. You will gain in-depth understanding of methods and techniques used in forensics investigations.

This major contains subjects in both physical forensic sciences and biological forensic sciences, which means you can specialise in either forensic biology or forensic chemistry, or a combination of both. The ability to successfully undertake these subjects is influenced by your prior studies, and you should seek advice from the program adviser to plan a program of study that is best suited to your background and interests.

This major is suitable for students seeking a forensic qualification as entry into the field, or wish to gain new specialised skills in a range of theoretical and practical applications to advance your area of expertise and career prospects.

**Careers options** include positions in government or private organisations including police forensic laboratories, law enforcement agencies, government or private forensic or drug detection labs, customs and border protection agencies and environmental protection agencies.

**Employer options** include analytical labs, law enforcement agencies, state and federal police, private forensic or drug detection labs, customs, quarantine and border protection agencies, environmental protection agencies, etc.

**Admission requirements:** Bachelor’s degree in (but not limited to): chemistry, biology, biochemistry and cell biology, human biology, forensic science, forensic biology, forensic studies, medical science or any related studies.

For information of the Master of Science, Master of Science (Extension) and Master of Science (Honours) see pages 11-18.
#MAJ01132 FORENSIC SCIENCE (HONOURS)
(for Master of Science (Honours))

Read subject descriptions at

Select 24 credit points from the following options:
- Complex Forensic Cases (Chemistry)
- Expert Evidence Presentation
- Chemistry and Pharmacology of Recreational Drugs
- Fire and Explosion Investigation
- Forensic Statistics
- Chemical Criminalistics
- Forensic Toxicology
- Complex Forensic Cases (Law for Biology)
- DNA Profiling
- Investigation of Human Remains
- Complex Forensic Cases (Biology)
- Crime Scene Investigation
- Introduction to Forensic Science

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Medical Biotechnology

Postgraduate coursework programs you can pursue this major in:

- Master of Science, C04241
- Master of Science (Extension), C04265
- Master of Science (Honours), C04267

The medical biotechnology major will broaden your appreciation of the synergies between modern technologies that shape the diverse aspects of medicine (e.g. vaccines, therapy, cancer, diabetes), food production and industry.

You will gain insights into the rapidly evolving technologies and methods scientists use to produce this new generation of pharmaceuticals, vaccines, etc.

This major is suitable for those seeking an additional qualification as entry into the field, or wish to gain new specialised skills to hone your area of expertise and your prospects for advancement to more senior positions.

Alternatively, you may choose this course to re-skill and change careers completely or just for personal interest.

Career options include positions in pharmaceutical and biotechnology companies, hospital and diagnostic, medical and research laboratories.

Employer options include hospitals, government departments, diagnostics medical labs, pharmaceutical and biotechnology companies, etc.

Admission requirements: Bachelor’s degree in (but not limited to): biochemistry & cell biology, microbiology, human biology, medical science, food science, biotechnology, pharmacology, etc.

For information of the Master of Science, Master of Science (Extension) and Master of Science (Honours) see pages 11-18.

*MAJ01121 MEDICAL BIOTECHNOLOGY
for Master of Science and Master of Science Extension*

Read subject descriptions at www.handbook.uts.edu.au/directory/maj01121.html

- 91535 Microscopy and Cytometry
- 91536 Proteomics
- Bacterial Pathogenesis

Select 30 credit points from the following options:

- Elective
- Biochemistry, Genes and Disease
- Parasitology
- Medical Devices and Diagnostics
- Bioreactors and Bioprocessing
- Pharmacology 1
- Molecular Biology 2
- Immunology 2
- Medical and Diagnostic Biochemistry
- Biobusiness
- Biotechnology Research Project A 12cp
- Biotechnology Research Project B 12cp
- Biotechnology Research Project 24 cp
- Directed Study A
- Directed Study B
- Pharmacology 2

Select one (6cp) from the following:

- Leadership and Teamwork in Science
- Managing Science-based Enterprises
- Science and Industrialisation
- Science in Practice
#MAJ01131 MEDICAL BIOTECHNOLOGY (HONOURS)
(for Master of Science (Honours))

Read subject descriptions at

- Microscopy and Cytometry
- Bacterial Pathogenesis

Select 6 credit points from the following options:
- Directed Study A
- Directed Study B
- Molecular Biology 2
- Medical and Diagnostic Biochemistry
- Biochemistry, Genes and Disease
- Parasitology
- Immunology 2
- Bioreactors and Bioprocessing
- Biobusiness
- Medical Devices and Diagnostics
- Pharmacology 1
- Pharmacology 2

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Marine Science and Management

Postgraduate coursework programs you can pursue this major in:
- Master of Science, C04241
- Master of Science (Extension), C04265
- Master of Science (Honours), C04267

This is a cross institutional and multi-disciplinary major that combines professional and marine science subjects to ensure you acquired skills to be a qualified marine scientist who can engage in research, practice commercially or manage an organisation.

It offers you the unique opportunity to enrol at UTS, complete the capstone unit at the Sydney Institute of Marine Science (SIMS) and then take two elective subjects at one of SIMS’s partner universities.

Developed in collaboration with SIMS and its four partners, namely UTS, the University of Sydney, Macquarie University and the University of New South Wales, you’ll have access to a group of highly regarded marine scientists from these institutions.

You’ll undertake core units at UTS, and have the opportunity to take electives at one of the partner universities.

The capstone unit will be taught by scientists from the four partner universities at SIMS. It comprises a lecture series and practical component using real-life data from the Australian Integrated Marine Observatory System.

The distinctive feature of this program at UTS, is that it not only trains you to be a skilled marine scientist but also gives you good managerial skills such as communication skills, project management, commercialization and entrepreneurship.

Career options include private consultants in fields such as policy and conservation, fisheries, environmental sustainability and management, impact assessment, tourism and education. You can also re-skilled and change careers completely, or develop a specialist area of expertise and personal interest.

Employer options include fisheries and marine parks, estuary management, government and regulatory bodies, marine and conservation organisations, environment resource management and consulting organisations, local councils, Environment Protection Authority, research organisations, etc.

Admission requirements: Bachelor’s degree in (but not limited to): botany, ecology, marine science, zoology, environmental sciences or any related degree in environmental studies, etc.

* MAJ01130 MARINE SCIENCE AND MANAGEMENT
(for Master of Science and Master of Science Extension)

Read subject descriptions at www.handbook.uts.edu.au/directory/maj01130.html
- Topics in Australian Marine Science
- External Marine Study 1
- External Marine Study 2

Select 30 credit points from the following options:
- Marine Communities
- Fisheries Resources
- Coral Reef Ecosystems
- Marine Productivity and Climate Change
- Climate Change and Ecological Modelling
- Monitoring Ecological Variability
- Environment Research Project A 12cp
- Environment Research Project B 12cp
- Environment Research Project 24cp
#MAJ01134 MARINE SCIENCES AND MANAGEMENT (HONOURS)
(for Master of Science (Honours))

Read subject descriptions at

- External Marine Study 1
- External Marine Study 2
- Topics in Australian Marine Science

Select 6 credit points from the following options:
- Fisheries Resources
- Coral Reef Ecosystems
- Marine Productivity and Climate Change
- Marine Communities
- Climate Change and Ecological Modelling
- Monitoring Ecological Variability

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4 x Professional subjects

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Honours thesis
Mathematical and Statistical Modelling

Postgraduate coursework programs you can pursue this major in:
- Master of Science, C04241
- Master of Science (Extension), C04265
- Master of Science (Honours), C04267

This major highlights logistic, statistical, analytic tool and modelling skills. You will gain disciplinary knowledge, creative and logical approaches to problem-solving, and management skills to administer in an organisation.

This major is suitable if you are seeking a mathematics qualification as entry into the field, or wish to gain new specialized skills in a range of theoretical and practical applications to advance your area of expertise and career, or to reskill and change careers.

Career options include positions in a diverse range of organisations and industries such as banking, finance, health, market research and information technology. Graduates from other disciplines such as business may advance their career prospects by increasing their specialised mathematical expertise.

Employer options include banking, finance, health, market research, information technology, energy and transportation firms such as AGL, Lindsay Fox, consumer organisations such as Woolworths, Coles, etc.

Admission requirements: Bachelor’s degree in (but not limited to): mathematics, statistics, or any related degree in mathematical and statistical sciences, etc.

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#MAJ01124 MATHEMATICAL AND STATISTICAL MODELLING (for Master of Science and Master of Science Extension)


Select 48 credit points from the following options:

- Elective
- Differential Equations
- Mathematical Methods
- Advanced Calculus
- Quantitative Management Practice
- Nonlinear Methods in Quantitative Management
- Network and Combinatorial Optimisation
- Sample Surveys
- Advanced Bayesian Methods
- Design and Analysis of Experiments
- Stochastic Processes
- Statistics for Quantitative Finance
- Mathematical Methods
- Seminar A
- Seminar B
- Seminar C
- Seminar D
- Advanced Bayesian Methods
- Advanced Statistical Modelling
- Advanced Stochastic Processes
- Modern Analysis with Applications
- Multivariate Data Analysis
- Numerical Methods of Finance
- Optimisation in Quantitative Management
- Sample Surveys
- Simulation Modelling
- Elective

#MAJ01133 MATHEMATICAL AND STATISTICAL MODELLING (HONOURS)

(for Master of Science (Honours))


Select 24 credit points from the following options:

- Differential Equations
- Advanced Calculus
- Quantitative Management Practice
- Nonlinear Methods in Quantitative Management
- Network and Combinatorial Optimisation
- Programming for Data Analysis
- Design and Analysis of Experiments
- Stochastic Processes
- Statistics for Quantitative Finance
- Mathematical Methods
- Seminar A
- Seminar B
- Seminar C
- Seminar D
- Advanced Bayesian Methods
- Advanced Statistical Modelling
- Advanced Stochastic Processes
- Modern Analysis with Applications
- Multivariate Data Analysis
- Numerical Methods of Finance
- Optimisation in Quantitative Management
- Sample Surveys
- Simulation Modelling
- Elective
- Modern Analysis with Applications
No specific major

Postgraduate coursework programs you can pursue this major in:
- Master of Science, C04241
- Master of Science (Extension), C04265

By not choosing a major or specialisation, you can combine specialist subjects from various majors, according to your interests in the relevant subjects. This major gives you the flexibility to craft your own degree according to your interests and career paths.

This major is suitable for those seeking a scientific qualification as entry into the field, or wish to gain new specialised skills in a range of theoretical and practical applications to advance your area of expertise.

You will choose 48 credit points of subjects in CBK90649 - No specified major. You can view a list of subjects and their descriptions at www.handbook.uts.edu.au/directory/cbk90649.html

You will graduate with an award in the Master of Science.

Career options are vast, employment opportunities depending on the focus of their study program and prior background. The broader knowledge and skills you gain in this major are highly valuable to many employers from both science based-organisations and non-science based industries.

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How to apply for postgraduate coursework programs

LOCAL APPLICANTS
Once you know what course you want to study, you can submit your application for a postgraduate by coursework degree:

- online through the Universities Admissions Centre (UAC) uac.edu.au, or
- in person at one of our postgraduate information sessions.

Find out everything you need to know about upcoming information sessions at science.uts.edu.au/events

INTERNATIONAL APPLICANTS
If you’re an international student, head to uts.edu.au/international to find the course information, fees and application details relevant to you.

ENGLISH LANGUAGE PROFICIENCY
If you’ve studied overseas you may need to demonstrate your English proficiency. Find out if this applies to you at uts.edu.au/international

FEES
If you’re studying a postgraduate by coursework degree you’ll need to pay a fee. To find out more about what your degree will cost visit fees.uts.edu.au

If you do have to pay a fee and you’re a local student you may be eligible for FEE-HELP - an Australian Government loan scheme. Using FEE-HELP means you don’t have to pay for your tuition fees up front. Simply tell your employer that you have a FEE-HELP loan and they will withhold your payments through the PAYG tax system. And, if your postgraduate degree is related to your employment, your tuition fees may be tax deductible. For more information, contact your financial adviser or the Australian Tax Office (ATO).

APPLICATION CLOSING DATES
If you want to start studying at UTS in either the Autumn or Spring Sessions, you need to apply by:

- Autumn Session: 31 January 2018
- Spring Session: 30 June 2018

OFFERS
UTS will begin making 2018 Applications Offers from late September 2017.

ALUMNI ADVANTAGE
If you’ve already completed a degree at UTS then you’re eligible for the Alumni Advantage program, which offers a 10% discount on full fee paying degree programs. Find out if you’re eligible for Alumni Advantage at alumni.uts.edu.au/advantage

THE ACADEMIC YEAR
There are three teaching sessions at UTS:

- Autumn Session: March to June
- Spring Session: July to October
- Summer Session: November to February

While not all subjects offered by UTS are currently run during Summer Session, make sure you check out which ones are - it’s a great way to get ahead or to reduce your study load during Autumn and Spring Sessions.

NON-AWARD STUDY
Do you want to study a single subject without committing to a full degree? You can! It’s called non-award study and it’s a great way to upgrade your skills or just learn more about something you enjoy. What’s even more exciting is that any subjects you complete may be recognised in future study. To apply, visit uts.ac/non-award-study

TIMETABLE INFORMATION
Do you like to plan ahead? Then check out the UTS Timetable Planner. The online tool lets you see the timetable for the current session, so you can get an idea about when the subjects for your degree may be scheduled and offered. Visit timetable.uts.edu.au now.

NEED TO TALK TO SOMEONE?
Email science.future@uts.edu.au
Call 1300 ASK UTS (1300 275 887) (Monday – Friday, 9 am – 5 pm)
Visit science.uts.edu.au/future or uts.ac/apply-for-research
Or view our list of Postgraduate Course Directors at uts.edu.au/science-postgraduate-course-directors
Or find a UTS Science Postgraduate Info Session to attend at www.pg.uts.edu.au
Research at UTS Science

Do you want to be part of research projects that the world holds in high esteem? At UTS Science, research is part of our culture. Our academics are passionate about contributing to research that makes a real-world difference.

UTS Science accounts for about 30 per cent of UTS’s overall research outputs and grant income. In the recent Excellence in Research Australia 2015 assessment, we received a ranking of “well above world standard” – the highest available ranking – for a number of its research groups.

Our research environment gives you access to cutting edge technology and world-class facilities, including a new $150M purpose built science building equipped with clean rooms, imaging suites, custom designed laboratories and office spaces.

At UTS Science, our research is organised into university research strengths, centres and faculty research teams based within its two schools: the School of Life Sciences and School of Mathematical and Physical Sciences. These research groups conduct world-leading, focussed research in areas that include: climate change, infectious diseases, biomedical materials and devices, forensic science, materials science, medical and health sciences, as well as in the fundamental and theoretical aspects of mathematics, physics, chemistry, biology and environmental sciences.

As a research student, you’ll be an integral part an exciting research team at the frontiers of human knowledge. You’ll be given the opportunity to gain fundamental capabilities in the scientific method of investigation, an essential asset for professionals working in academia and industry.

Many research projects are conducted in close collaboration with industry and government research organisations. As a result, more than 80 per cent of our postgraduate students find professional employment within three months of graduation.

LEARNING WITH THE BEST

Our researchers engage in a wide spectrum of research with remarkable outcomes that are valuable to the quality of our life, both socially and economically. Examples include investigating whether parasitic worms, known as helminths, can treat autoimmune diseases like Multiple Sclerosis (MS); and whether Australian medicinal honey could be used to develop new treatments for infections caused by multi-drug resistant superbugs.

We’ve also developed and improved the mechanical properties of a carbon based material, called ‘graphene’ which can be made as thin as paper, but possesses ten times the strength of steel. The potential is enormous as it can revolutionise numerous industries, including the automotive, aviation, electrical and optical industries.
RESEARCH STRENGTHS

**ithree institute (i3):** addresses key challenges in the understanding and control of infectious disease in humans and animals.

**Climate Change Cluster (C3):** uses technology to measure and predict the structure, function and health of plant-based ecosystems.

**Centre for Forensic Science:** incorporates an interdisciplinary research approach to address crime and security issues.

**Centre for Health Technologies:** conducts research into health and disease processes; biomedical engineering; and detection and diagnosis of a range of disease states.

**Centre for Clean Energy Technology:** focuses on the development of efficient devices for energy harvesting, storage, and conversion.

**Initiative for Biomedical and Materials and Devices (IBMD):** aims to transform advances in photonics and materials into revolutionary biomedical technologies.

**Centre for Neuroscience and Regenerative Medicine:** an incubator and umbrella that aims to stimulate, initiate, implement and coordinate projects across UTS and beyond that are directed ultimately to understand central nervous system function (CNS) and improve quality of life for people with CNS disorders.

JOINT RESEARCH CENTRES

- ARC Centre of Excellence for Mathematical and Statistical Frontiers (ACEMS)
- Automotive Australia 2020 Cooperative Research Centre
- CSIRO Marine Coastal Carbon Cluster
- ARC Research Hub for Integrated Device for End-user Analysis at Low-levels (IDEAL)
- Rail Manufacturing Cooperative Research Centre
Research programs at UTS Science

Doctor of Philosophy

**UTS code:** C02031 (Science) C02030 (Mathematics)

**Duration:** 4 years full-time or 8 years part-time

You will acquire research skills and deepen your knowledge in your chosen area of science or mathematics. The PhD is a University-wide degree that involves an intense period of supervised study and research culminating in the submission of a thesis. The degree is awarded to candidates who, through original investigation, make a distinct and significant contribution to knowledge in their field of specialisation.

**Mode of delivery**

You will work under the guidance of a supervisor who is a full-time academic staff member of the Faculty. You may be required to take a prescribed subject in research methodology or any other subject deemed necessary by your principal supervisor. In addition to work on your research project, you will be expected to undertake extra activities in consultation with your supervisor to enhance and develop your skills as a researcher. These activities will be documented each year in the form of a doctoral study plan.

You are also required to submit, in consultation with your supervisor(s), a progress report at the end of each semester, and to complete an assessment task at the end of each year of candidature.

**Applications requirements**

- An Honours degree class 1 or 2(1); or a recognised Research Masters degree
- Selection criteria for admission also include the quality of the research project proposal, the Faculty’s ability to offer appropriate supervision in the applicant’s chosen field, and where necessary, demonstration of necessary technical skills.
- The English proficiency requirement for international students or local applicants with international qualifications is: Academic IELTS: 6.5 overall with a writing score of 6.0; or TOEFL: paper based: 550-583 overall with TWE of 4.5, internet based: 79-93 overall with a writing score of 21; or AE5: Pass; or PTE: 58-64; or CAE: 176-184.

**How to apply**

Please refer to page 40 for information on applying for a research program at UTS Science or visit uts.ac/apply-for-research
Describe your research project
My research project is about the understanding, characterization, and fabrication of single photon sources and their applications towards nanoscale sensing and quantum communication.

Why did you choose to pursue a research degree?
Getting a PhD is the first crucial step towards my potential career in the academia. The reason I chose to study Physics and Advanced Materials have been that I strongly believe materials and their associated technologies play an indispensable role in underpinning the entire development of future science and technology as a whole.

What is your daily activity?
I usually spend 14 hour a day doing research in the lab, starting from 7am. When I get back home, I usually prepare meals for the next day with my wife, and also watch movies with her.

What attracted you to research at UTS Science?
What I like about UTS Science is that it has a rich culture of multidisciplinary research and a very strong tendency of international collaboration which are all very critical for high-impact research. In addition, the faculties are very friendly and open-minded, and they usually keep in close touch with their PhD students during the entire course of research. My supervisors, in particular, Prof Milos Toth and A/Prof Igor Aharonovich have impressed me at my first interview with their unparalleled knowledge in their respective fields.

My future
My plan is to undertake a postdoctoral research position elsewhere (maybe in the US or Europe) for a couple of years to gain more international experience of research outside Australia. Upon finishing my postdoc there, I would consider to come back to UTS to start my research career here and contribute to the development and growth of UTS Science in particular, and also of UTS as a whole.
Master of Science (Research)

**UTS code:** C03029

**Duration:** 2 years full-time or 4 years part-time

You will acquire research skills and deepen your knowledge in your chosen area of science. This course aims to advance professional development by providing experience in problem definition, hypothesis formulation and testing, data acquisition, analysis and interpretation, and project presentation.

**Mode of delivery**
You will work under the guidance of a supervisor who is a full-time academic staff member of the Faculty. You will be examined through presentation of a thesis, and may be required to take a prescribed subject in research methodology or any other subject deemed necessary by your principal supervisor. In addition to work on your research project, you will be expected to undertake extra activities in consultation with your supervisor to enhance and develop your skills as a researcher. These activities will be documented each year in the form of a study plan.

**Career options**
There is a wide variety of career options depending on your chosen area of science. This includes environmental consultant, medical scientist, researcher, resource manager, scientist or technologist.

**Application requirements**
- A recognised bachelor's degree in the relevant field of research, or an equivalent or higher qualification.
- A nominated supervisor
- A research project proposal written in consultation with your nominated supervisor
- The English proficiency requirement for international students or local applicants with international qualifications is: Academic IELTS: 6.5 overall with a writing score of 6.0; or TOEFL: paper based: 550-583 overall with TWE of 4.5, internet based: 79-93 overall with a writing score of 21; or AE5: Pass; or PTE: 58-64; or CAE: 176-184.

**How to apply**
Please refer to page 40 for information on applying for a research program at UTS Science or visit [uts.ac/apply-for-research](uts.ac/apply-for-research)
REBECCA PAGNUCCO
Masters of Science (Research)

Rebecca Pagnucco graduated from UTS with a Bachelor of Science (Environmental Biology) and Bachelor of Arts in International Studies at UTS in 2015. She has since been working as an Environmental Consultant specialising in the area of waste management and is now completing a Masters of Science by Research at UTS.

“UTS has played a major role in shaping who I am today by giving me the practical experience, the exposure to industry and tools I needed to succeed in my chosen field,” Rebecca said.

Under the supervision of Dr Megan Phillips, from the School of Life Sciences, Rebecca is working on a unique research project investigating whether the hair waste from salons can be used to remediate environmental disasters such as oil spills.

“Hair is a natural biosorbent,” she said. “It’s been shown to adsorb 3-9 times its weight in oil.

“Your hair gets oily and greasy – the oil basically is stuck to the hair fibres. By a similar method, it would stick to other oils, such as crude oil.”

Using hair as a remediation tool is a fairly new area of research. Only a couple of studies having been conducted where the hair was either ground up or changed it in some way before being used.

Several environmental groups experimented with hair booms during the BP Gulf of Mexico oil spill in 2010, but did not conduct scientific research.

Working with Sustainable Salons Australia – who aim to recycle 95 per cent of salon waste – Rebecca hopes her research will help to give new life to a waste material that would usually have no other practical use.

“It’s really important that we start to find more sustainable ways of dealing with our waste,” Rebecca said.

“My research is important because if we continue on the path we’re on, our waste will continue growing and that has a flow-on effect on the whole environment.”
Master of Science (Research) in Mathematical Sciences

Master of Science (Research) in Mathematical Sciences

**UTS code:** C03026

**Duration:** 2 years full-time or 4 years part-time

You will acquire research skills and deepen your knowledge in your chosen area of mathematics. This course aims to advance professional development by providing experience in problem definition, hypothesis formulation and testing, data acquisition, analysis and interpretation, and project presentation.

**Mode of delivery**

You will work under the guidance of a supervisor who is a full-time academic staff member of the Faculty. You will be examined through presentation of a thesis, and may be required to take a prescribed subject in research methodology or any other subject deemed necessary by your principal supervisor. In addition to work on your research project, you will be expected to undertake extra activities in consultation with your supervisor to enhance and develop your skills as a researcher. These activities will be documented each year in the form of a study plan.

**Career options**

Skills in research and the ability to think mathematically are growing in demand – at various sectors such as banking and finance, government agencies, environmental companies and businesses in general. As a consequence, you will significantly broaden your career choices and pathways. For example, in senior levels of market research, quantitative management and quantitative finance.

**Applications requirements**

- A recognised bachelor’s degree, or an equivalent or higher qualification.
- A nominated supervisor
- A research project proposal written in consultation with your nominated supervisor
- The English proficiency requirement for international students or local applicants with international qualifications is: Academic IELTS: 6.5 overall with a writing score of 6.0; or TOEFL: paper based: 550-583 overall with TWE of 4.5, internet based: 79-93 overall with a writing score of 21; or AES: Pass; or PTE: 58-64; or CAE: 176-184.

**How to apply**

Please refer to page 40 for information on applying for a research program at UTS Science or visit [uts.ac/apply-for-research](http://uts.ac/apply-for-research).
How to apply
for postgraduate research programs

LOCAL APPLICANTS
A postgraduate by research degree will see you undertake and complete a research project.

There are five steps to applying for a postgraduate research degree at UTS:
1. Choose a course
2. Find a supervisor
3. Find a scholarship
4. Prepare your documents
5. Lodge your application to the UTS Graduate research School.

Visit uts.ac/apply-for-research or email ggrs@uts.edu.au to find out more about the application process and to apply.

ENGLISH LANGUAGE PROFICIENCY
If you’ve studied overseas you may need to demonstrate your English proficiency. Find out if this applies to you at uts.edu.au/international

FEES
For postgraduate by research degrees, you will need to either pay a fee or, if you’re eligible for the Research Training Program, the Australian Government will cover the cost for you. To find out more about what your degree will cost, visit fees.uts.edu.au

If you do have to pay a fee and you’re a local student you may be eligible for FEE-HELP – an Australian Government loan scheme. Using FEE-HELP means you don’t have to pay for your tuition fees up front. Simply tell your employer that you have a FEE-HELP loan and they will withhold your payments through the PAYG tax system. And, if your postgraduate degree is related to your employment, your tuition fees may be tax deductible. For more information, contact your financial adviser or the Australian Tax Office (ATO).

ALUMNI ADVANTAGE
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APPLICATION CLOSING DATES*
If you want to start studying at UTS in either the Autumn or Spring Sessions, you’ll need to apply by:

Local students:
– 31 October (for commencement in the following year)
– 31 May (for commencement in July the same year)

International students:
– 20 August (for commencement in January – March)
– 31 March (for commencement in July – August)

*The above dates are approximate only. Students should ensure they check application deadlines at uts.ac/apply-for-research

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Visit science.uts.edu.au/future or uts.ac/apply-for-research

Or view our list of Postgraduate Course Directors at uts.edu.au/science-postgraduate-course-directors

Or find a UTS Science Postgraduate Info Session to attend at www.pg.uts.edu.au
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UTS ranked
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#1 young uni

*Times Higher Education
QS World University Rankings
The information in this brochure is correct as of September 2017. Changes in circumstances after this date may alter the accuracy or currency of the information. UTS reserves the right to alter any matter described in this brochure without notice. Readers are responsible for verifying information that pertains to them by contacting the University.

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