The best uni in Australia*

* QS World University Rankings 2016-2017
JOIN US AT ANU

The best place to study science

When you join ANU as a postgraduate student, you join our community of world-leading researchers and academics. You learn from their research as it happens, in state-of-the-art facilities, and as they make breakthroughs which might change the world—and will definitely change yours.

You draw on the expertise of Australia’s leading scientific minds, research institutions, and policy-makers, all located in Canberra, and all your future mentors or employers.

You join the only Australian member of the International Alliance of Research Universities (IARU), a partnership which includes the University of Oxford, the University of Cambridge and the University of California, Berkeley. You have opportunities for international research collaborations and for life-changing international connections.

And you graduate with a qualification recognised globally as one of the best in the world. Doors will open for you, in your career or in your further education, as you join our network of respected and successful alumni.

Welcome to your future with ANU.

* QS World University Rankings by Subject 2015 and The Times Higher Education World University Rankings 2015-2016.
A range of national agencies in Canberra such as the Therapeutic Goods Administration and the Climate Change Authority provide opportunities for our students and graduates.

Located on campus, the Australian Academy of Science offers networking and career advancement opportunities for young scientists.

Image: Rory Hyde (flickr.com)

Many of our students complete their research or take up internships nearby at CSIRO, Australia’s national science agency, and find themselves working there after they graduate.

Our researchers regularly cooperate with the Australian Centre for International Agricultural Research on projects to improve agricultural outcomes in developing countries.

Students in our Master of Science Communication Outreach program bring science to life in the Shell Questacon Science Circus.

Our postgraduate students get hospital experience through our partnerships with ACT Health, Canberra Hospital and Calvary Health Care.

Our students and researchers draw on the expertise of Geoscience Australia, the country’s leading provider of geoscience information, services and capability.

The National Arboretum in Canberra is one of the world’s largest living collections of rare and significant trees and is an ANU research partner.

Global security and aerospace company Lockheed Martin takes on ANU interns and graduates and is our partner in the Space Environment Management Cooperative Research Centre.

Image: thegreatlondont (flickr.com)
World-class facilities

Our new $240-million science precinct on the ANU campus has state-of-the-art biological and chemical research laboratories, as well as a teaching hub.

![The Sensitive High Resolution Ion Microprobe (SHRIMP) for analysing geological materials was designed and developed at ANU.]

The ANU Siding Spring Observatory in north-west New South Wales is Australia’s premier optical and infrared observatory, housing the state-of-the-art SkyMapper telescope.

In partnership with the ACT Government and CSIRO, we are working to improve biodiversity at the “outdoor laboratories” of Mulligans Flat and Goorooyarroo Nature Reserves in the Canberra Nature Park.

ANU is home to the fastest super computer in the southern hemisphere at the $50-million National Computational Infrastructure.

![The $30-million Advanced Instrumentation and Technology Centre at our Mount Stromlo Observatory is a world-class facility for developing space instruments.]

The 348-hectare ANU Kioloa Coastal Campus on the south coast of New South Wales is one of Australia’s premier field stations, used for research and fieldwork training.

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![The Australian plant Phenomics Facility at ANU is the only place in the world that provides high-calibre public sector access to infrastructure and expertise on crop performance.]

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The $30-million Advanced Instrumentation and Technology Centre at our Mount Stromlo Observatory is a world-class facility for developing space instruments.

We have a ten per cent share in the Giant Magellan Telescope under construction in Chile. When completed, it will be the world’s most powerful telescope.

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Our Heavy Ion Accelerator Facility is the one of the largest in the world, supporting Australia’s only experimental nuclear physics program.

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The Australian Phenomics Facility at ANU specialises in mouse models of human disease and is one of Australia’s foremost genomics and bioinformatics capabilities.

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The Australian Plasma Fusion Research Facility is a uniquely versatile resource for developing fusion energy.

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See your future

Learn more, earn more

$80,000

Masters by coursework graduates, research or PhD graduates

$52,500

Bachelor degree graduates

Source: Graduate Careers Australia, Graduate Salaries report

“My Masters provided hands-on experience in biotechnology, helped me to choose a career in wheat genomics and to establish contacts at CSIRO. At work I apply what I learnt at ANU pretty much every day.”
Aswin Singaram Natarajan, Master of Biotechnology – 2009
Technical Officer; CSIRO Agriculture

“The content of the Master program is highly relevant to what is going on in the ‘real world’ and has helped me significantly in my career. I also developed strong teamwork skills and a network of supervisors and colleagues from all around the world to support me professionally.”
Wiene Andriyana, Master of Forestry – 2004
Monitoring and Evaluation Officer; Environment Unit, United Nations Development Programme (Indonesia)

“My degree definitely improved my professional development. I can engage in deeper conversations with fellow science teachers and students, and now have fresh new ideas for teaching bioethical issues.”
Pei Tzeun, Master of Biological Sciences – 2014
Head of Science, Singapore International School (Hong Kong)

“My degree provided me with the opportunity to experience international perspectives on tackling global environmental change. The professors nurtured and cultivated the students’ ideas alongside us, encouraging our beliefs towards facilitating and achieving social change.”
Brendan-Michael Galloway, Master of Environment – 2015
Regulatory Analyst; Office of Transportation and Air Quality, Environmental Protection Agency (USA)

“My Masters made me a more skilled communicator and gave me the confidence to think of myself as a professional. I learned how to manage my time, investigate topics, be analytical and construct an argument. After I graduated, I pitched BrainCraft to PBS and moved to New York.”
Vanessa Hill, Master of Science Communication – 2013
Writer, host and producer of PBS web series BrainCraft (USA)

“My Masters laid a very good foundation in mathematics for me. The friendly and motivating study environment created by students and professors boosted my interest and gave me the experience to pursue a PhD and a career in mathematics.”
Hui Li, Master of Mathematical Sciences – 2010
Postdoc Fellow; Research Center for Operator Algebras, East China Normal University
We offer Doctor of Philosophy (PhD) and Master of Philosophy (MPhil) postgraduate research programs across a range of disciplines in science and environment. Almost half of the ANU student body are PhD students, making for a vibrant research community. Our postgraduate research students have access to cutting-edge research facilities and work alongside some of the world’s most influential and innovative academics.

Pathways to a PhD
If you are interested in a PhD but your previous studies do not include a research component, you can consider an advanced Master degree, which combines coursework and research. Upon completion, you will have the skills to continue your research career and the academic qualifications needed to apply for a PhD.

You can find more information about our advanced Master programs in the postgraduate coursework section of this guide.

Postgraduate research areas

Astronomy and astrophysics: The research interests of our staff include planetary science, cosmology, instrumentation, observational and theoretical aspects of extra-solar planets, stellar atmospheres and evolution, the interstellar medium, globular clusters, galactic structure, the Magellanic clouds, normal galaxies, active galaxies, radio sources, quasars, and cosmology.

Biomedical science and biochemistry: We offer research projects in a range of biological systems, which involve fundamental investigations and applications of molecular, physiological, cellular, developmental and genetic processes in animals, plants, micro-organisms and viruses.

Chemistry: Our research groups work in areas from a wide spectrum of chemistry, including computational chemistry, materials science and protein structure and function. A large number of international scientists visit the groups each year, contributing to research projects, the extensive seminar series and graduate lecture courses.

Earth, marine and planetary sciences: Our research in Earth sciences focuses on the physical and chemical Earth processes ranging from those that led to the Earth’s formation and shaped its subsequent evolution, to processes impacting on our current environment. Our research is multidisciplinary and encompasses the physical sciences, geology, and biology.

Environment and resource management: Our research students collaborate with world-renowned academic leaders in a wide range of topics spanning environment and society, including conservation biology, landscape ecology, interdisciplinary environmental studies, sustainability science, global change, environmental policy and economics, forest science and geography.

Evolution, ecology and genetics: Research in evolution, ecology and genetics is a broad-based program that aims to provide students with a diversity of opportunities and training in biological research, and encourages graduates to take advantage of the rich and diverse community of biologists engaged in teaching, research, environmental management and policy formulation in Canberra.

Mathematical and computational sciences: Broad research areas include advanced computation and modelling; algebra and topology; analysis and geometry; applied and nonlinear analysis; astronomy and astrophysics; mathematical physics; statistical science; and stochastic analysis. Students have the choice of studying mathematics and statistics in their own right and/or applying them in other disciplines.

Physics: The underlying impetus of our research in physics is a belief in the fundamental importance of physics to all of science. Research areas include applied mathematics, materials engineering, quantum science, optics and theoretical physics. Students have access to some of Australia’s most important installations, such as the only heavy-ion accelerator and centre for nuclear research in the country.

Plant sciences: Research in plant sciences serves as a focal point for graduate students interested in the broad range of research in plant biology that exists in the scientific community in Canberra. Students have the opportunity to work on research incorporating photosynthesis and plant energy biology; plant environmental biology and functional ecology; plant genetics and gene regulation; and plant-microbe interactions.

Science communication: Research in science communication is for graduates with an interest in how science is communicated to diverse non-scientific audiences. Students may examine a scientific issue from a public communication perspective, investigate how a particular medium works to engage people with science, or explore scientists’ experiences with communication.

How to apply for a PhD or a MPhil

Step 1: Expression of interest
Prospective research students first need to identify a research project and find an academic supervisor.

If you are not sure which area of research or supervisor matches your interest please complete an expression of interest online at science.anu.edu.au/hdr-expression-interest.

Step 2: Academic supervisor
Email your academic supervisor directly to enquire about projects and supervision. You may also submit a short research proposal.

Once an academic supervisor has been confirmed to support your application you may proceed to step three.

Step 3: Scholarships
A number of scholarships are available and are awarded on a merit basis. You can also talk to your academic supervisor about other sources of funding you might access to assist with living expenses and tuition fees.

Please note, international research scholarships are only awarded to the most outstanding students and are extremely competitive.

Scholarship applications can be made when completing the program application process, step four.

Step 4: Application
Applicants should apply online at applyonline.anu.edu.au.
What is a postgraduate coursework program?
A major component of a postgraduate coursework degree program is attendance at lectures and tutorials; examinations; and the submission of assessments such as essays and assignments.

Some postgraduate coursework programs also include a research component.

Our postgraduate coursework programs result in the awarding of the following qualifications:
- **Graduate certificate**: approximately 24 units, or six months of full-time study.
- **Graduate diploma**: approximately 48 units or one year of full-time study.
- **Master degree**: approximately 96 units, or two years of full-time study (or less with credit).
- **Master (Advanced) degree**: approximately 96 units, or two years of full-time study (or less with credit), includes a 24-unit equivalent supervised sub-thesis.

Am I qualified to apply?
You need to have a Bachelor (undergraduate) degree or equivalent to apply for a postgraduate coursework program. Each program has specific application requirements. For more information, see the detailed program descriptions in this guide.

When can I start?
Most degree programs have two intakes per year and can be started in either semester one (mid- to late February) or semester two (mid-July).

For more information, see the detailed program descriptions in this guide.

How much does it cost?
Fees for domestic and international students can be found in each of the program descriptions in this guide. Please note the fees listed are indicative only as they are dependent on your course selection and are subject to change.

Are scholarships available?
Some of our research schools offer scholarships for specific programs. Information about these scholarships can be found in the program descriptions in this guide.

There are a number of ANU scholarships available to domestic and international students, as well as external scholarships managed by organisations outside the University.

For more information, visit anu.edu.au/students/scholarships-support.

How do I apply?
Domestic students apply for postgraduate coursework programs through the University Admissions Centre at uac.edu.au. The closing date for semester one entry is the end of January, and closing date for semester two entry is the end of June.

International students apply for postgraduate coursework programs online at applyonline.anu.edu.au. For international students, the closing date for semester one entry is 15 November, and closing date for semester two entry is 15 April.

How long will it take to finish?
A Master degree from ANU usually takes two years of full-time study to complete, but most programs can be fast-tracked with recognition of previous study in a related discipline.

Can I get credit for previous study?
Your prior study might count towards your Master degree, meaning you can complete the degree in less than two years.

If you have an undergraduate degree (or Australian equivalent) in a related field, you might get six months’ credit towards your Master degree.

If you have an undergraduate degree with honours (or Australian equivalent) in a related field, or a graduate diploma in a related field, your Master degree might only take one year to complete.

Graduate certificate and graduate diploma awards are available as exit options in circumstances where the two-year Master degree cannot be completed.

For more information about your program, see the detailed descriptions in this guide.

Two-year globally-recognised Master degree

You have an undergraduate degree in a related field
OR graduate qualification in a related field
Up to 12 months’ credit (48 units)

You have an undergraduate degree in an unrelated field
Up to 6 months’ credit

You have a graduate degree with honours in a related field
Up to 12 months’ credit (48 units)

A maximum of six months’ credit only is available for the following courses: Master of Biological Sciences (Advanced), Master of Biotechnology (Advanced) and Master of Energy Change (Advanced).

Pathway options

1 year

1 year

up to 6 months’ credit

up to 12 months’ credit
“There’s a very high risk there are going to be more and more collisions in space.”

“Astronomy and Astrophysics

Star light, star bright

“As far as job descriptions go, Associate Professor Céline d’Orgeville has a pretty good one.
And that’s just the beginning.
Her artificial stars are part of a project to shoot lasers at space junk orbiting the Earth before they cause a catastrophic collision.
It sounds like it could be straight out of the movie Gravity.
Well, almost.
“We don’t actually use the word ‘shoot,’” says Associate Professor d’Orgeville, an instrumentation scientist at the ANU Research School of Astronomy and Astrophysics.
“But yes, that is essentially what we are doing.
“We use laser pulses to measure where the satellite or the debris is in space, and predict where they’re going to be in the near future.
If there is a collision predicted, we can manoeuvre the debris by using a powerful laser to nudge it out of the way of the satellite.”

As anyone who’s seen Gravity knows, the risk posed by the 300,000 pieces of space junk currently orbiting Earth is a serious one for spacecraft, and also for the satellite technology we use in everything from an ATM to a GPS.

“There’s a very high risk there are going to be more and more ‘cascading collisions’, to the point where it won’t be safe to send man missions—or even anything—into space.”

Associate Professor d’Orgeville’s role is in adaptive optics, creating laser guide stars as a reference source to measure and correct for atmospheric turbulence.
She is also the lead scientist on the Laser Guide Star Facility for the Giant Magellan Telescope, the most powerful telescope in the world, currently under construction in Chile, and in which ANU is a founding partner.
And she is looking for students in the Master of Astronomy and Astrophysics to help her.
“These projects are growing right now, and we’re going to need more and more people working on them.
“So we’re looking for students who want to get involved, and also future colleagues.
“It’s really a once-in-a-lifetime opportunity for students.”

Image credit: Giant Magellan Telescope
ASTRONOMY AND ASTROPHYSICS

Postgraduate students in astronomy and astrophysics at ANU receive an innovative education. You will have access to Australia’s largest optical observatory and to the Advanced Instrumentation and Technology Centre, which designs, builds and tests world-leading instrumentation for astronomy and space science.

As a postgraduate student you’ll be based at our Mount Stromlo Observatory, where our staff and students have made major contributions to astronomy, mapping the structure and formation of the Milky Way, discovering planets orbiting other stars, studying dark matter in nearby galaxies, and discovering the accelerating expansion of the Universe. Our staff include winners of the Prime Minister’s Prize for Science and the Nobel Prize for Physics.

Master of Astronomy and Astrophysics (Advanced)

DURATION Two years full-time (or less with credit) SEMESTER INTAKE 1 or 2 CRICOS CODE 082274F

Cognate disciplines: Computer Science, Earth and Marine Sciences, Physics, and Mathematics.

Admission requirements: A Bachelor degree or international equivalent with a GPA of 5.5 and at least eight courses in cognate disciplines, and the approval of an identified supervisor for the research project/thesis. Applicants with a Bachelor degree or Graduate Certificate in a cognate discipline may be eligible for 24 units (one semester) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for 48 units (one year) of credit. Students must achieve a minimum 70% average mark in the first 24 units of coursework and have the approval of the supervisor for the research project. Students who do not achieve a minimum 70% average mark in the first 48 units of coursework or who do not have the approval of the supervisor for the research project will be transferred to the Graduate Diploma of Science.

Program description: The Master of Astronomy and Astrophysics (Advanced) incorporates a 50 percent coursework component and a 50 percent research component. The coursework component can be tailored to your interests, and can include astrophysical techniques, astrophysical computing, planetary science, stellar astrophysics, galaxies, and cosmology. Many courses contain research or hands-on components that develop your skills and knowledge in the latest advances in astronomy and astrophysics. The research project provides the opportunity to enhance and develop your detailed knowledge and skills in a specific area of astronomy or astrophysics. It may include the acquisition and analysis of telescope data, the development of theoretical models, or the development and testing of new astronomical instrumentation.

Domestic students can apply for the Research School of Astronomy and Astrophysics Masters (Advanced) Scholarship which provides a $10,000 stipend per annum.

Career opportunities: Graduates are well positioned to pursue further studies in astronomy and astrophysics in some of the best institutions in Australia and overseas.

“I never want to leave Mount Stromlo! It’s really serene, so you get a lot of work done, but at the same time there are all these experts in all these different fields available to you.

There’s a really friendly community atmosphere there. Every day there’s a morning tea with cookies and coffee and everyone comes so you can have really cool conversations, maybe even with a Nobel Prize winner.

Now I’ve finished my Masters I’m going to do my PhD at the Max Planck Institute for Astronomy at Heidelberg University, using new radio data to look at how galaxies were forming in the early universe.”

Sarah Leslie
Master of Astronomy and Astrophysics
You’re spongey and you know it

“The evolutionary transition between sponges and true animals is much smoother than we previously thought.”

Dr Maja Adamska is flipping through a textbook, and stops to show a photo of what looks like a lumpy blob.

“Oh, yes, this is one of my favourites,” she says. “This one is really fantastic.”

This particularly fantastic blob is a sea sponge.

Dr Adamska is a biologist with the ANU Research School of Biology, and something of an ambassador for the humble sponge.

Her eyes light up when she’s talking about them, and after hearing what she has to say, yours will too.

“We have always known sponges are our biological cousins, but they are so weird, so we haven’t known how to compare them to ‘true animals’ with nerves and muscles.

“What we have recently found, however, is that the evolutionary transition between sponges and true animals is much smoother than previously thought.”

Meaning you are more like a sponge than you might realise.

“Sponges don’t have a gut, but they have cells that are responsible for capturing food particles and digesting them, and they use several of the same molecular mechanisms in the development of these cells that are responsible for the production of your gut.”

And there’s more.

“Another feature we have found is that many of the genes expressed right around the main opening of the sponge are incidentally the same genes that are expressed during development of our anus.”

As I said, you’ll never look at a sponge in the same way again.

Dr Adamska teaches cell physiology in the Master of Biological Sciences and welcomes postgraduate students to her lab.

“We are investigating how a single cell becomes a complex animal, and I mean that both in the terms of development and evolution: how the single cells 600 to 700 million years ago started to become animals.

“We also get to go on field trips to the beach, to collect sponges of interest.”

All students are at risk, however, of becoming potential sponge ambassadors themselves.

“I actually started looking at sponges because I thought, well, obviously they are simple animals to study,” Dr Adamska says.

“Turns out I was wrong!”
Researchers in the biological sciences at ANU work on issues of global importance, including food security in both Australia and the developing world, new treatments for cancer and type 2 diabetes, and fighting malaria drug resistance.

Our Master programs are research-led and feature teaching contributions from more than 60 academics, leading scientists in their fields, who bring their experience and current breakthroughs to the classroom.

We offer our Master students state-of-the-art laboratories, research infrastructure, and flexible learning facilities. We pride ourselves on the support we give students, so we’ll help you design your degree to complement your prior study and to suit your interests.

Master of Biological Sciences
Master of Biological Sciences (Advanced)

Program description: The Master of Biological Sciences is a coursework program allowing you to specialise in areas such as biomedical sciences, ecology and evolution, genetics, plant sciences and biochemistry. Alternatively, you can choose a broad expertise in new, cutting-edge techniques.

Our practical classes refresh your skills, while developing your expertise in new, cutting-edge techniques. The Advanced program includes a research project and a thesis. A scholarship is offered to international students who receive the highest mark in the Advanced program.

Career opportunities: A degree in biological science provides graduates with background knowledge in biochemistry, molecular biology and chemistry to acquire new knowledge, or extend and update their theoretical and practical understanding of modern biotechnology. Throughout the program, students have many opportunities to interface with scientists who are advancing research in areas of biochemistry and molecular biology in the biomedical, animal and plant sciences.

The Advanced program incorporates a research project and thesis, and is a gateway to further research, such as a PhD. A scholarship is offered to international students who receive the highest mark in the Advanced program.

Career opportunities: A Master of Biotechnology degree provides students with opportunities to carry out research in basic, medical or agricultural sciences in university, industry or government research institutions. Opportunities exist in scientific sales, pharmaceutical and pathology companies, or in government and public service positions. A Master of Biotechnology (Advanced) can lead to a PhD.

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Master of Biotechnology
Master of Biotechnology (Advanced)

Program description: The Master of Biotechnology is a coursework program that provides a pathway for science graduates with background knowledge in biochemistry, molecular biology and chemistry to acquire new knowledge, or extend and update their theoretical and practical understanding of modern biotechnology. Throughout the program, students have many opportunities to interface with scientists who are advancing research in areas of biochemistry and molecular biology in the biomedical, animal and plant sciences.

The Master of Biotechnology (Advanced) can lead to a PhD.

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Cognate disciplines: Biochemistry, Molecular Biology and Gene Technology

Admission requirements: A Bachelor degree or international equivalent with a GPA of 5.0 and at least eight courses in cognate disciplines and two courses in the field of chemistry. Applicants with a Bachelor Degree, Honours, Graduate Diploma or Graduate Certificate in a cognate discipline may be eligible for 24 units (one semester) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for 48 units (one year) of credit.

Advanced: A Bachelor degree or international equivalent with a GPA of 5.5 and at least eight courses in cognate disciplines and two courses in the field of chemistry. Applicants with a Bachelor Degree, Honours, Graduate Diploma or Graduate Certificate in a cognate discipline may be eligible for 24 units (one semester) of credit. Students must achieve a minimum 70% average mark in all the coursework component or who do not have the approval of the supervisor for the research project will be transferred to the Master of Biotechnology program. Students who do not achieve a minimum 70% average mark in the coursework component or who do not have the approval of the supervisor for the research project will be transferred to the Master of Biotechnology program.

Program description: The Master of Biotechnology is a coursework program that provides a pathway for science graduates with background knowledge in biochemistry, molecular biology and chemistry to acquire new knowledge, or extend and update their theoretical and practical understanding of modern biotechnology. Throughout the program, students have many opportunities to interface with scientists who are advancing research in areas of biochemistry and molecular biology in the biomedical, animal and plant sciences.

The Advanced program incorporates a research project and thesis, and is a gateway to further research, such as a PhD. A scholarship is offered to international students who receive the highest mark in the Advanced program.

Career opportunities: A Master of Biotechnology degree provides students with opportunities to carry out research in basic, medical or agricultural sciences in university, industry or government research institutions. Opportunities exist in scientific sales, pharmaceutical and pathology companies, or in government and public service positions. A Master of Biotechnology (Advanced) can lead to a PhD.
“This rock was there when the USA was right next door to us.”

Professor Gordon Lister is a tectonicist and structural geologist. In other words, a rock-whisperer.

“When people ask me how old a rock is, I just laugh,” he says.

“The mistake most people make is they think a rock has an age. But a rock has a history.”

Professor Lister can pick up a rock from his collection in his office at the ANU Research School of Earth Sciences, and tell you not only the history of that rock, but of the planet.

“This one was on an ancient beach 1.74 billion years ago. It reached about 450-500 degrees centigrade deep in the Earth and it was stretched, like chewing gum.

“Then having suffered that degree of ignominy, it was squashed when the Australian tectonic plate was whacked by the United States.

“This rock was there when the USA was right next door to us.

“The fact we can link this rock to the collision of ancient continents, well, I find that entrancing.”

The rock has a more recent history too, of how it came to be on Professor Lister’s shelf.

It’s from the Mount Isa desert where Professor Lister takes students from the Master of Earth Sciences to teach the Advanced Structural Geology course.

“For students who’ve never been into the desert, never seen wild camels, and never slept in the sand, it’s an amazing experience,” he says.

Professor Lister’s rock-whispering is not just about telling histories. It’s also about telling the future, and hopefully saving thousands of lives, by predicting earthquakes.

“We can see there are structures in the tectonic plates that actually control where an earthquake starts.

“We can put instruments there to read signals and, over time, we hope they would tell us an earthquake is going to happen.

“So we use the mass spectrometer to tell us what happened in deeper times, seismometers to tell us about what’s happening now, and satellites to tell the future.

“And our Masters students get to be immersed in all of that.”
EARTH SCIENCES

The ANU Research School of Earth Sciences is Australia’s leading academic research institution for Earth sciences, home to the largest concentration of Earth scientists in Australia, and ranked 12th in the world for Earth and marine sciences (QS World University Rankings by subject 2016).

We take a broad view in addressing the big challenges of Earth sciences, seeking to answer questions ranging from the origins of the Earth, to understanding climate change.

We are innovators, always seeking to develop new methods, whether experimental, analytical or computational, providing a conducive environment for high-quality research training for our postgraduate students.

Master of Earth Sciences (Advanced)

Cognate disciplines: Earth and Marine Science, Engineering, Mathematics, Physics, Biology, Chemistry

Admission requirements: A Bachelor degree or international equivalent with a GPA of 5.0 and at least eight courses in cognate subjects, and the approval of an identified supervisor for the research project/thesis (undertaken by the convenor). Applicants with a Bachelor degree or Graduate Certificate in a cognate discipline may be eligible for up to 24 units (1 semester full-time) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for up to 48 units (1 year full-time) of credit. Students must achieve a minimum 70% average mark in the first 48 units of coursework and have the approval of the supervisor for the research project. Students who do not achieve a minimum 70% average mark in the first 48 units of coursework or who do not have the approval of the supervisor for the research project will be transferred to the Graduate Diploma of Science.

Program description: Earth science deals with complex systems and processes that shape our planet. Pressing issues such as the safe supply of water, resources and energy, climate change, sea-level rise as well as natural hazards are all intimately related to Earth sciences. Courses from different Earth science disciplines and training on how to gather data and interpret them are offered, as well as expert supervision for your extensive research project.

A number of scholarships are on offer to the best international and domestic students. Domestic students, including those who are successful in obtaining a Commonwealth Supported Place, may apply for a scholarship offered by the Research School of Earth Sciences.

Career opportunities: A Master of Earth Sciences (Advanced) gives you the opportunity to gain a wide range of knowledge and skills that are relevant for employment in industry, government agencies, education as well as for further university studies.

“For my research project I’m part of a team looking at climate change that took place 40 to 50 million years ago, when the Earth transitioned from ‘greenhouse’ to ‘icehouse’.

We are analysing the geochemical processes that took place in the ocean at the time by looking at small microorganisms called foraminifera, collected from 40-million-year-old sediments on the ocean floor.

Before my Masters, I was working as a geologist for a coal mining company. It couldn’t be further from what I’m doing now! I love what I’m studying. It’s really interesting, and it’s also really important work.”

Karina Tuveng
Master of Earth Sciences (Advanced)
When Professor Xuemei Bai says Canberra is “an exciting city to be in,” you should believe her. She understands what makes a city tick.

Professor Bai, from the Fenner School of Environment and Society, is one of the world’s leading researchers on urbanisation and urban system sustainability.

“One of my research areas is to look at innovative practices in cities to see why and how these bright spots of innovation have come about, and what sort of mechanism we can use to scale them up to meet the challenges of urbanisation,” she explains.

“And Canberra is doing some good, innovative things. As a city it’s quite advanced in adopting sustainability principles, which is impressive.”

While naturally taking a personal interest in Canberra, Professor Bai’s research focus is in Asia where, she says, “the scale and pace of urbanisation is simply unprecedented, and the challenges and opportunities it brings about are huge.”

The attention of Professor Bai can change the fortunes of a city. When she studied Rizhao, a Chinese city where solar energy accounted for 99 per cent of their water heating in the central city district, the city found itself in the international spotlight.

“It was very interesting to look at how they achieved success in Rizhao, because if you look at their economic situation, there was nothing particularly special.

“It came down to innovative policy measures, strong vision, and leadership.

“A short article containing our findings was published in more than 140 countries, and because of that coverage the city was awarded the first World Clean Energy Award and the central Chinese Government started paying attention to their policies.

“That felt great, to see our research have a cascading effect.”

In addition to research and supervising PhD students, Professor Bai teaches undergraduate and Master students at the Fenner School, showcasing her own research and experience as case studies.

“This School is a unique and wonderful place in terms of exposing students to broad, and cutting-edge thinking in local and global environment and sustainability sciences.

“I absolutely feel at home here. We have a culture of adopting an interdisciplinary and transdisciplinary approach to tackling major issues in society.”
At ANU, our goal is to produce influential graduates who can help to shape sustainable futures.

Our award-winning courses and teachers deliver innovative, high-quality education that combines excellence in fundamental knowledge with cutting-edge advances in thinking, and exciting opportunities for engaging in hands-on science and policy research.

We cultivate research-informed students who are able to draw on diverse disciplinary perspectives underpinned by our three foundations: environmental science, policy, and management. You will have the opportunity to develop a strong suite of career-relevant skills by working with stakeholders and applying what you have learnt in the field.

**Master of Climate Change**

**Program description:** The Master of Climate Change offers significant breadth and strength within the field through access to world-leading expertise in climate change science and policy, encompassing science, economics, law, policy and governance, aspects of climate change vulnerability, adaptation and mitigation. This means that you can develop a unique program of advanced learning suited to your individual interests and skills. Our program covers core topics of climate impacts, vulnerability and adaptation, climate change economics and policy, and methodological approaches. Elective courses can be selected from a wide range of topics to suit your educational goals.

**Career opportunities:** This program will advance the careers of professionals in government, non-government organisations, multilateral bodies, and civil society organisations, working on climate change risk assessment, adaptation and mitigation strategy development, and regional, national, and international policy formulation.


**Admission requirements:** A Bachelor degree or international equivalent with a GPA of 5.0 and at least eight courses in cognate disciplines. Applicants with a Bachelor degree or Graduate Certificate in a cognate discipline may be eligible for up to 24 units (1 semester full-time) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for up to 48 units (1 year full-time) of credit.

**Advanced:** A Bachelor degree or international equivalent with a GPA of 5.5 and at least eight courses in cognate disciplines. Applicants with a Bachelor Degree, Honours, Graduate Diploma or Graduate Certificate in a cognate discipline may be eligible for 24 units (one semester) of credit. Students must achieve a minimum 70% average mark in all the coursework and have the approval of the supervisor for the research project. Students who do not achieve a minimum 70% average mark in the coursework component or who do not have the approval of the supervisor for the research project will be transferred to the Master of Energy Change program.

**Program description:** The Master of Energy Change is an interdisciplinary coursework program that allows you to develop a program of advanced learning suited to your individual interests, skills and aspirations in the area of energy change. A major key to addressing climate change is the need for a world-wide change to carbon-free forms of energy production. The Master of Energy Change (Advanced) is a multi-disciplinary coursework and research degree which will provide you with both a strong basis in the fundamental areas related to energy change, as well as allowing you to undertake advanced courses and research in areas suited to your individual interests.

**Career opportunities:** The need for energy change is well-established yet there are relatively few people with an effective overview or the multi-disciplinary skills needed to effectively contribute to this complex issue. Depending on the area of study and specialisation, our graduates find work in government, policy, scientific research, development and aid organisations, multi-national companies, and many other exciting fields. The Advanced program is also a pathway to more advanced study.

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**Master of Energy Change (Advanced)**

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**Cognate disciplines:** Biology, Chemistry, Economics, Engineering, Environmental Studies, Law, Mathematics, Physics, Political Science, Sociology

**Admission requirements:** A Bachelor degree or international equivalent with a GPA of 5.0 and at least eight courses in cognate disciplines. Applicants with a Bachelor degree or Graduate Certificate in a cognate discipline may be eligible for up to 24 units (1 semester full-time) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for up to 48 units (1 year full-time) of credit.

**Advanced:** A Bachelor degree or international equivalent with a GPA of 5.5 and at least eight courses in cognate disciplines. Applicants with a Bachelor Degree, Honours, Graduate Diploma or Graduate Certificate in a cognate discipline may be eligible for 24 units (one semester) of credit. Students must achieve a minimum 70% average mark in all the coursework and have the approval of the supervisor for the research project. Students who do not achieve a minimum 70% average mark in the coursework component or who do not have the approval of the supervisor for the research project will be transferred to the Master of Energy Change program.

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Admission requirements: A Bachelor degree or international equivalent with a GPA of 5.0. Applicants with a Bachelor degree or Graduate Certificate in a cognate discipline may be eligible for 24 units (one semester) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for 48 units (one year) of credit.

Advanced: A Bachelor degree or international equivalent with a GPA of 5.5. Applicants with a Bachelor Degree or Graduate Certificate in a cognate discipline may be eligible for 48 units (one semester) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for 48 units (one year) of credit. Students must achieve a minimum 70% average mark in the first 48 units of coursework and have the approval of the supervisor for the research project. Students who do not achieve a minimum 70% average mark in the coursework component or who do not have the approval of the supervisor for the research project will be transferred to the Master of Environment program.

Program description: The Master of Environment degrees allow you to develop a program of advanced learning suited to your individual interests and skills in environment and sustainability. A broad-ranging suite of courses from across the University provides exposure to current perspectives on environmental issues and approaches. Areas of interest include environmental science and management, social and ecological linkages, environmental economics and governance, environmental policy, and integrative approaches to research and analysis.

You will also develop depth of knowledge in a selected disciplinary area. Available specialisation options include: biodiversity conservation, climate science and policy, environmental policy, environmental studies and human ecology, geography, natural resource management, sustainability science, and water science and management.

In the Advanced program you will develop research expertise through completing a substantial dissertation, which constitutes appropriate research training for a PhD.

Career opportunities: You can choose from a range of careers as diverse as the environment itself. Many of our graduates are employed in policy-making within local, state and federal governments, water resource management, environmental management, urban planning and sustainability, climate change adaptation consulting, and applied research science. Examples of roles of our graduates include: Technical Director, CARE International; Manager, National Water Commission; Assistant Director, EcoTrust; Research Associate, Scripps Institution of Oceanography (USA); and Researcher, Wildlife Conservation Society.


Admission requirements: A Bachelor degree or international equivalent with a GPA of 5.0. Applicants with a Bachelor degree or Graduate Certificate in a cognate discipline may be eligible for 48 units (one year) of credit.

Advanced: A Bachelor degree or international equivalent with a GPA of 5.5. Applicants with a Bachelor Degree or Graduate Certificate in a cognate discipline may be eligible for 48 units (one semester) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for 48 units (one year) of credit.

Program description: Our Master programs in environmental science are designed to build on your prior knowledge to extend and deepen your understanding in one or more of the biological, Earth, and environmental and ecological sciences. You will also develop your knowledge across the environmental sciences. The Advanced program focuses on completing a substantial research project and dissertation, which constitutes appropriate research training for a PhD.

Career opportunities: This program is for those students who have developed their scientific and professional expertise for careers in many aspects of environmental science, including environmental policy, management, administration, industry, services and research. Examples of roles of our graduates include: Technical Officer, CARE International; Manager, National Water Commission; Assistant Director, EcoTrust; Research Associate, Scripps Institution of Oceanography (USA); and Researcher, Wildlife Conservation Society.


Admission requirements: A Bachelor degree or international equivalent with a GPA of 5.0. Applicants with a Bachelor Degree or Graduate Certificate in a cognate discipline may be eligible for 24 units (one semester) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for 48 units (one year) of credit.

Advanced: A Bachelor degree or international equivalent with a GPA of 5.5. Applicants with a Bachelor Degree or Graduate Certificate in a cognate discipline may be eligible for 48 units (one semester) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for 48 units (one year) of credit. Students must achieve a minimum 70% average mark in the first 48 units of coursework and have the approval of the supervisor for the research project. Students who do not achieve a minimum 70% average mark in the coursework component or who do not have the approval of the supervisor for the research project will be transferred to the Master of Forestry program.

Program description: Forestry encompasses the planning and management of natural forests and woodlands, plantations and agroforestry through the practical application of scientific, economic and social principles. Sustainable management of forest resources requires both short-term management of variability and the ability to plan for the long-term sustainability of forest ecosystems.

Our forestry degree programs offer flexible, advanced learning to develop your knowledge and skills in forestry and the forest sciences and their relationship to other land management disciplines. The broad scope of the program reflects the diversity of perspectives needed for effective forest resource management, and the choice of courses within forestry sub-disciplines develops your knowledge in either the science and methods or policy and management aspects of forestry.

The Advanced program focuses on completing a substantial research project and dissertation, which constitutes appropriate research training for a PhD.

Career opportunities: Our graduates go on to careers in forestry and natural resource management and science. Roles include foresters, rangers, technicians and a range of consulting roles in the government and private sectors.

Program description: This program is for those students who have developed their scientific and professional expertise for careers in many aspects of environmental science, including environmental policy, management, administration, industry, services and research. Examples of roles of our graduates include: Technical Officer, CARE International; Manager, National Water Commission; Assistant Director, EcoTrust; Research Associate, Scripps Institution of Oceanography (USA); and Researcher, Wildlife Conservation Society.


Admission requirements: A Bachelor degree or international equivalent with a GPA of 5.0. Applicants with a Bachelor Degree or Graduate Certificate in a cognate discipline may be eligible for 24 units (one semester) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for 48 units (one year) of credit.

Advanced: A Bachelor degree or international equivalent with a GPA of 5.5. Applicants with a Bachelor Degree or Graduate Certificate in a cognate discipline may be eligible for 48 units (one year) of credit.

Program description: This program is for those students who have developed their scientific and professional expertise for careers in many aspects of environmental science, including environmental policy, management, administration, industry, services and research. Examples of roles of our graduates include: Technical Officer, CARE International; Manager, National Water Commission; Assistant Director, EcoTrust; Research Associate, Scripps Institution of Oceanography (USA); and Researcher, Wildlife Conservation Society.


Admission requirements: A Bachelor degree or international equivalent with a GPA of 5.0. Applicants with a Bachelor Degree or Graduate Certificate in a cognate discipline may be eligible for 24 units (one semester) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for 48 units (one year) of credit.

Advanced: A Bachelor degree or international equivalent with a GPA of 5.5. Applicants with a Bachelor Degree or Graduate Certificate in a cognate discipline may be eligible for 48 units (one year) of credit.

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Admission requirements: A Bachelor degree or international equivalent with a GPA of 5.0. Applicants with a Bachelor Degree or Graduate Certificate in a cognate discipline may be eligible for 24 units (one semester) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for 48 units (one year) of credit.

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The roughness of the real world

“The objects you’re looking at could be coming from any science.”

For Dr Pierre Portal, the tools of his trade are “a pen, paper and a whiteboard” combined with “a lot of staring out the window.”

Dr Portal is a mathematician with the ANU Mathematical Sciences Institute who spends his working days contemplating the problems of harmonic analysis.

“It’s the general phenomenon that various complicated mathematical objects can be written as sums of simple objects.

“The objects you’re looking at could be coming from any science, like physics, chemistry or biology.”

Dr Portal looks at “the type of mathematical analysis which provides a model for finding the most relevant information in signals, such as sounds or images, or even economical and financial data.”

Specifically, Dr Portal deals with “roughness”, a term used to describe a lack of regularity that makes mathematical analysis substantially more difficult.

“With economics, for instance, if we’re talking about purely rational agents having purely rational information then all the mathematics works quite well.

“But if you’re trying to be more realistic, and acknowledge we don’t live in a vacuum and we never have access to all the information, there are all sorts of things we can only measure very imprecisely.

“Mathematically, this means dealing with the effects of random noises, which is quite hard if one wants to do a full harmonic analysis.

“In the last 20 years or so, we’ve realised that we can nonetheless apply harmonic analysis to data which are more irregular than what was thought possible before. This is exciting because it brings us a lot closer to the real world.”

Dr Portal does himself leave his windowsill contemplation for the real world, teaching Mathematics of Finance in the Master of Mathematical Sciences.

“A solid mathematical foundation is increasingly useful in finance because things change ridiculously fast these days.

“The more grounded in pure mathematics your foundations are, the more prepared you are for all the changes that are bound to be made to the mathematical models in the future.”
MATHEMATICAL SCIENCES

ANU is ranked number one in Australia for mathematics teaching and research (QS World University Rankings by subject 2015). We offer our students small class sizes and access to some of the best mathematicians in Australia, currently including 15 fellows of the Australian Academy of Sciences, two fellows of the Royal Society, ten recipients of the Australian Mathematical Society Medal and three ARC Laureate Fellows. Our researchers have access to up-to-date computing facilities including the National Computational Infrastructure supercomputer.

We fulfil both a national and international role as a “research institute” in the mathematical sciences, working cooperatively with the Australian Mathematical Sciences Institute (AMSI) and a number of international centres.

Master of Mathematical Sciences (Advanced)

Cognate disciplines: Mathematics, Statistics, Mathematical Economics, Mathematical Finance, Actuarial Studies, Computer Science, Bioinformatics

Admission requirements: A Bachelor degree or international equivalent with a GPA of 5.5 and at least 8 courses in cognate disciplines. Applicants with a Bachelor Degree or Graduate Certificate in a cognate discipline may be eligible for 24 units (one semester) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for 48 units (one year) of credit. Students must achieve a minimum 70% average mark in all the coursework and have the approval of the supervisor for the research project. Students who do not achieve a minimum 70% average mark in the coursework component or who do not have the approval of the supervisor for the research project will be transferred to Graduate Diploma of Science.

Program description: This degree enables students to upgrade their expertise in the mathematical sciences, either as a route to further study of mathematical sciences, or to upgrade their quantitative skills in areas that are rapidly becoming more reliant on advanced techniques from the mathematical sciences, such as the biological and computational sciences. Students can take a variety of courses ranging from pure mathematics to mathematical modelling, computational mathematics and applications of mathematics, as well as courses in related disciplines such as statistics, computer science, financial mathematics and econometrics. The program can be tailored to the interests and needs of each student as much as possible. Past students have completed research projects in various branches of pure mathematics, as well as in applications including economics, epidemiology, financial mathematics and computational astrophysics.

Career opportunities: Examples of roles of our graduates include: Associate, Quantitative Applications Division at Macquarie Group; Lecturer, Sanata Dharma University (Indonesia); and Visiting Assistant Professor of Managerial Economics and Decision Sciences, Kellogg School of Management (USA).

“My favourite thing is the flexibility of choosing courses. If you just went to lectures and exams every semester it would be boring. You need to try other ways to learn, like reading courses or courses in special topics, which only have five or six students, so you can talk to your teacher.

It’s really important when you’re learning more and more difficult maths to be able to communicate about it with your lecturers and classmates. It’s much better than sitting in a huge lecture theatre.

And the teachers here are always happy to help.”

Shuaige Qiao
Master of Mathematical Sciences (Advanced)
The nuclear option

Tony Irwin is your go-to guy for nuclear reactors and the nuclear fuel cycle.

Whether you’re a Russian engineer wanting to improve your nuclear safety procedures, or a journalist wanting an expert opinion on the future of nuclear power.

Or a student wanting the only Master qualification in nuclear science in Australia.

Tony Irwin has commissioned and operated nine nuclear reactors, including Australia’s only nuclear reactor, OPAL, at ANSTO’s Lucas Heights site.

He knows about what can go wrong, and how to protect against it, having visited the Leningrad Nuclear Power Plant, the sister station of Chernobyl, to help improve their operating procedures.

And he knows what it’s like to see the glow of a reactor starting up for the first time.

“It’s always an exciting moment,” he says. “Especially with OPAL, because it’s one of the few new research reactors worldwide, and it was designed to provide neutron beams for research and nuclear medicines for Australia and overseas.

“Most people in Australia will have some nuclear medical investigation at some time in their life and most likely it will come from OPAL.

“So, absolutely; I look upon it with pride.”

Thanks to his industry connections, Mr Irwin is able to share his pride with students from the Master of Nuclear Science.

“The VIP tour of the reactor is one of the course highlights.

“The students are always impressed.”

Mr Irwin notes that it’s a particularly important time for nuclear power in Australia, following the South Australian Nuclear Fuel Cycle Royal Commission.

“For Australia to move towards low emissions, we have to use every technology available to us, and nuclear can be part of that solution.

“Many of our students are from federal government departments, and the program gives them a good appreciation of the nuclear fuel cycle, and information useful for directing policy.”

While he might be the go-to guy for nuclear reactors, Mr Irwin says he leaves the decision-making in the hands of his students.

“I present all the information and say, now you can make your own mind up about whether it should be employed in Australia.”

Image credit: ANSTO
ANU is home to Australia’s largest university-based physics research activity, incorporating major national facilities, national networks, a significant technical manufacturing and prototyping capability, as well as a highly innovative teaching program. We have a vibrant and highly collegial community of postgraduate students, professional and academic staff, all of whom form our greatest asset.

Our innovative research culture, strong industry focus, supportive intellectual environment, world-class facilities and enthusiastic, experienced staff ensure that we offer you a unique postgraduate experience. We are also the only university in Australia where you can study a Master program in nuclear science.

Master of Nuclear Science

Cognate disciplines: Engineering, Science

Admission requirements: A Bachelor degree or international equivalent with a GPA of 5.0. Applicants with a Bachelor degree or Graduate Certificate in a cognate discipline may be eligible for 24 units (one semester) of credit. Applicants with a Graduate Diploma or Honours in a cognate discipline may be eligible for 48 units (one year) of credit.

Program description: The Master of Nuclear Science gives you the opportunity to study the fundamentals and applications of nuclear science, including materials analysis, dating techniques, nuclear medicine, and nuclear energy.

The program provides students with sound knowledge of the underlying nuclear science; knowledge of the contemporary issues associated with nuclear science; practical knowledge of the measurement techniques employed in nuclear science; skills to assess the place of nuclear science in a broader context; and an appreciation of the issues associated with nuclear power as a source of energy. The program combines contact coursework with opportunities to acquire or extend practical skills.

Career opportunities: Our students go on to careers in policy development, defence, security or related fields, and to careers in the nuclear industry. Examples of roles of our graduates include: TLD Operations Officer, Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and Process Engineer, Australian Nuclear Science and Technology Organisation (ANSTO).

Master of Engineering in Photonics

Cognate disciplines: Electrical Engineering, Electronic Engineering, Optoelectronic Engineering, Physics

Admission requirements: A Bachelor of Engineering degree or international equivalent in a cognate discipline with a GPA of 5.0 and with at least one course in the field of electromagnetism or optical physics.

Program description: This Master qualification provides students with specialised knowledge and professional engineering skills to prepare you for a career in the rapidly-growing field of photonics and optoelectronics.

Photonics professionals work across a wide range of industries including research and development, telecommunications, sensing and remote detection and biomedical diagnostics. This program builds on the University’s interdisciplinary engineering focus and research expertise to give you the required skills to address complex multi-disciplinary problems, while at the same time providing advanced technical knowledge in photonics.

The program includes specialised courses in optical physics, fibre optic communications, optical sensing, biophotonics and photovoltaics. Students also have the opportunity to select electives from across the University.

Career opportunities: The global photonics industry is growing rapidly, offering exciting career prospects in research and development, telecommunications industry, sensing and biomedical diagnostics.

“I’m a Partner at PricewaterhouseCoopers. I lead consulting teams helping federal government departments with big challenges like IT strategy, organisational changes or delivery capability.

My Masters isn’t directly related to my work; it’s more about being challenged and studying something I’m interested in. But nuclear knowledge, related to mining, storage and defence for example, is going to be more and more in demand in Australia over the next five to twenty years, and it’s important to have people who can understand the concepts and communicate them.

The program is structured to cater to people from all sorts of backgrounds, and covers the whole spectrum from practical expertise to pure theory.”

Ken Maxwell
Master of Nuclear Science
When the Science Circus came to Africa

When the Science Circus came to Africa, where his Science Circus Africa education outreach program was seen by a staggering 41,000 people across five countries. There were rockets propelled by bicarb soda, levitating beach balls, and many things set on fire, but the memory that sticks with him is the humble magnet.

“I get tingly just talking about it,” he says.

“These kids—and even some of the teachers—have learnt the idea of magnetism, and they’ve done exams on magnetism, but they’d never held a magnet until we gave them one.

“Can you imagine holding two magnets together for the first time, experiencing magnetism?”

Dr. Graham Walker has just returned from 11 weeks in Africa, where his Science Circus Africa education outreach program was seen by a staggering 41,000 people across five countries. There were rockets propelled by bicarb soda, levitating beach balls, and many things set on fire, but the memory that sticks with him is the humble magnet.

“I get tingly just talking about it,” he says.

“These kids—and even some of the teachers—have learnt the idea of magnetism, and they’ve done exams on magnetism, but they’d never held a magnet until we gave them one.

“Can you imagine holding two magnets together for the first time, experiencing magnetism?”

Dr. Walker and teammate, Master of Science Communication graduate Joe Duggan, lugged the magnets and other everyday items to be transformed into science experiments on their Science Circus tour of Mauritius, South Africa, Botswana, Zambia and Malawi.

The project, funded by the Australian Government Department of Foreign Affairs and Trade, Questacon and ANU, resulted in 162 local African staff being trained to perform their own science shows and other programs.

“We give them the skills, the resources, the training, and hopefully we’re planting the seeds so it can grow into local, home-grown science communication—and we’re already seeing those results,” Dr. Walker says.

“In the long term, it’s going to generate a better economy and drive productivity at a systemic level for these countries.”

Dr. Walker says Science Circus Africa is the result of the unique environment fostered by the Australian National Centre for the Public Awareness of Science at ANU, where he completed a Graduate Certificate in Science Communication and a PhD, and where he now teaches.

“It’s not a place where people are sitting in ivory towers, stroking their chins,” he says. “They actually get out there and do prolific science communication.

“I’m rapt to be at an institution where you can propose a fairly out-there plan like this and get support for it. It’s a credit to ANU that they’ll back something that no one has ever done before.”
The Australian National Centre for the Public Awareness of Science at ANU was the first science communication centre in Australia and is now the most diverse of its kind in the world.

We are global leaders in the field of science communication and our research investigates new ways to excite the public imagination and to promote critical engagement and participation in science. We develop methods to encourage informed decisions about the scientific issues that concern us in the 21st century. We understand the history and theory of science communication and educate our students not only to be excellent communicators but also to gain deep insight into the contexts in which science communication takes place.

Master of Science Communication

DURATION
Two years full-time (or less with credit)

SEMESTER INTAKE
1 or 2

CRICOS CODE
082350K

Cognate disciplines: Mathematical Sciences, Physics and Astronomy, Chemical Sciences, Earth Sciences, Biological Sciences, Environmental Studies, other natural and physical sciences, Information Technology, Engineering and related technologies, Health.

Admission requirements: A Bachelor degree or international equivalent with a GPA of 5.0, and at least 8 courses in cognate disciplines. Applicants with a Graduate Certificate in a cognate discipline may be eligible for 48 units (one semester) of credit. Applicants with a Bachelor Honours degree or International equivalent, Graduate Certificate, or Graduate Diploma in cognate disciplines with a GPA of 5.0.

Program description: The ANU Master of Science Communication Outreach is an internationally well-regarded qualification unlike any other. Our education experiences are hosted at Questacon and ANU, with scientists and science communicators giving lectures and presentations based on cutting-edge research in science communication.

Cognate disciplines: Mathematical Sciences, Physics and Astronomy, Chemical Sciences, Earth Sciences, Biological Sciences, Environmental Studies, other natural and physical sciences, Information Technology, Engineering and related technologies, Health.

Admission requirements: A Bachelor Honours degree or international equivalent, Graduate Certificate, or Graduate Diploma in cognate disciplines with a GPA of 5.0.

Program description: The ANU Master of Science Communication Outreach is an internationally well-regarded qualification unlike any other. Our education experiences are hosted at Questacon and ANU, with scientists and science communicators giving lectures and presentations based on cutting-edge research in science communication.

You will develop skills in public speaking; presentation and media; public relations; exhibition design and communication outreach.

Career opportunities: Graduates have found careers as communications officers for scientific organisations such as CSIRO, science-oriented government departments, university departments and businesses. Examples of roles of our graduates include: Senior Medical Writer, Health Interactions; Physics Science Communicator, University of Sydney; Senior Policy Officer, Department of Industry, Innovation and Science; Freelance Journalist; and Radio Host, ABC Canberra.

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“I have a bachelor degree in science education and have experience teaching science but I didn’t like the way I communicated with the students. It seemed quite boring. The Master program has taught me to be more engaging in the way I communicate. Before I came here I would use lots of technical terms to show how much I knew about science. Now I use plain English so the audience can understand me, and I include stories to relate the science to their daily lives.”

Skye Zhu
Master of Science Communication

The program is ideal for people interested in becoming professional science communication officers and managers, or in gaining skills in communicating their own science.

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