

# CAREERS WITH STEM™

## SCIENCE

DOUBLE ISSUE  
FLIP FOR HEALTH

Growing food in a climate crisis p16

Life in the lab p8

Indigenous knowledge creating careers p22



**SYNCHROTRON SCIENTIST**

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# SCIENCE IS EVERYWHERE

Find the path that inspires you with a career in science. You never know where it could take you!



**SHAUN JENKINSON**  
CEO, ANSTO

**W**hat do an Indigenous environmental scientist, an ecotoxicologist and a synchrotron instrument scientist have in common? They're all early career professionals at ANSTO, Australia's home of nuclear science and technology. And you can read all about their interesting careers in this issue of *Careers with STEM*.

ANSTO employs people in a variety of STEM disciplines, from the use of nuclear science to benefit industry, nuclear techniques to improve health, a range of capabilities to tackle environmental challenges, meet energy needs, and much more.

### Solving real-world problems

The research that Dr Jessica Hamilton (page 10) has collaborated on with external researchers using beamlines at the Australian Synchrotron is one example. It's the Synchrotron that you can see behind Jessica on the front cover.

Jessica explores ways to reduce, reuse and recycle mining waste. As an instrument scientist, she assists with experiments that are very diverse in nature.

Another priority for Australia is protecting marine habitats along its coast. Amy MacIntosh (page 12) studies the impact of contaminants from offshore infrastructure on the ocean environment, assessing how Australian marine life responds to the toxicity of marine pipeline scale over short and long periods of exposure. This infrastructure contains naturally occurring radioactive materials.

### Learning from the first scientists

Brett Rowling (page 11) is an environmental chemist, a proud Guringai Awabakal man and descendant of the Aboriginal explorer Bungaree and wife Matora (who lived at the same time as Matthew Flinders).

An expert in environmental contaminants, Brett is combining Indigenous knowledge and Western science. He is also a Champion of reconciliation at ANSTO and helps us appropriately acknowledge Country and celebrate Aboriginal and Torres Strait Islander language and culture.

ANSTO is fully committed to the principles of reconciliation and has a long history of research confirming Indigenous cultural heritage. Several of our scientists have significant expertise in this area using radiocarbon and other methods.

I encourage you to explore ANSTO's website and read about the fascinating and relevant science that is happening at ANSTO.

Studying science will open doors to many sectors, where you can find the path that inspires you. I am continuously motivated by the important work of ANSTO staff. I hope one day you will consider a career with us.

**Shaun Jenkinson**  
CEO, ANSTO

**STUDYING SCIENCE WILL OPEN DOORS TO MANY SECTORS"**

CEO, ANSTO

GROUP EXECUTIVE, ANSTO HEALTH

DIRECTOR, AUSTRALIAN SYNCHROTRON

MANAGING DIRECTOR, INVACARE

SALES MANAGER, ABBOTT LABORATORIES

BIOTECHNOLOGY, LONDON SOUTH BANK UNIVERSITY

# What's inside?

**P6** Considered science communication?  
Get paid to talk about something you love

**P8** Life in the lab  
Uni not for you?  
Discover vocational education pathways

**P10** Amazing ANSTO careers  
Meet three nuclear scientists working to make the world a better place

**P24** Next steps  
Inspired? Flick to this page to make your own science career to-do list



P8



P18

**DOUBLE ISSUE**  
**FLIP OVER FOR HEALTH SCIENCE CAREERS**

**P14**

**STEM + X = 😊**  
Combine science (STEM) with your passion (+X) to discover your dream career. Here are some ideas to get you started.

Science + ...

**P14** Agriculture  
Passionate about tackling climate change? A science + agriculture career could lead to your dream job

**P18** Earth Science  
Earth scientists are helping us to better understand and coexist with the world around us, so why not give them a hand?

**P22** First Nations  
Applying Indigenous science (from the first scientists) is creating promising new career paths

## WHY SCIENCE?

Science is for everyone, but especially for people keen to explore the world and ask questions. A career in science allows you to change the world, whether it's working out better ways to feed our growing population, educating the public on climate change, helping people live healthier lives or harnessing our natural resources for a sustainable future. Whatever your passion or interest, you might be surprised at the career pathways and opportunities in science available to you.



P22

# NATIONAL SCIENCE WEEK TEACHER RESOURCE OUT NOW!

The outstanding series of National Science Week resource books has been published annually by ASTA with Australian Government support since 1984.

This year's resource book is designed specifically for both teachers of F-10 and all community educators and provides stimulating lessons on *Species Survival - More than just sustainability*, and investigates some of the challenges that affect life on Earth.

- ACTIVITIES INCLUDE:**
- CONSERVATION CRISIS! THE INTERACTIVE SPECIES SURVIVAL GAME TO PLAY IN CLASS
  - COMMUNITY HABITAT PROJECTS
  - BACKYARD BIODIVERSITY COUNT
  - AUSTRALIAN CURRICULUM: SCIENCE LINKED ACTIVITIES FOR FOUNDATION TO YEAR 10



DOWNLOAD ALL THE RESOURCES:  
[ASTA.EDU.AU/WIKW](http://ASTA.EDU.AU/WIKW)



# (YOU)<sup>us</sup>

## COULD HELP FEED THE WORLD

Acute food insecurity currently affects more than 345 million people worldwide, with conflict, economic shocks, climate extremes and soaring fertilizer prices combining to create a food crisis of unprecedented proportions. This means that scientists who can help food producers get more out of their land are in high demand.

Macquarie University is the home of 'hot rice'. This global project identified wild rice genes that are improving tolerance to heat, drought and salinity in the two species of cultivated rice that form the staple diet of nearly five billion people.

International research projects like the hot rice initiative have helped the University rank 39th in the world for its contribution towards the United Nations Sustainable Development Goals (THE Impact Rankings 2023).

If you are passionate about feeding the world, Macquarie's Bachelor of Biodiversity and Conservation, Bachelor of Environment and Bachelor of Science will allow you to explore the science behind crop improvements and soil management and help create more drought-resistant crops. Our flexible approach to learning also means that you can even combine two degrees to pursue your passions and prepare yourself for the future – wherever that may take you.



**FIND OUT MORE AND APPLY TODAY.**  
[mq.edu.au/study/find-a-course/science/](https://mq.edu.au/study/find-a-course/science/)



**MACQUARIE**  
University  
SYDNEY · AUSTRALIA



# COMMUNICATION AS A CAREER

If talking is your thing and you love science, we're here to tell you being a science communicator is a real and growing career option

**S**cience + communication is a job that does exactly what it says on the box: you communicate... science!

It's one of the best jobs going in the STEM field because communicators get to talk to the people making cutting-edge discoveries, and translate that for non-scientists.



Your job could be in journalism, public relations, museum and exhibition curation, documentary making, being a scientist who loves TikTok, advising governments... even your teachers are science communicators.

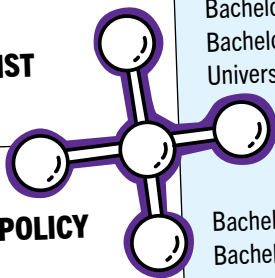
Neil DeGrasse Tyson and Ursula Le Guin might be two of the most famous science

communicators out there: one is an astrophysicist and the other is a science fiction author.

Closer to home, Brett Lewis is an earth and atmospheric scientist at QUT who studies coral biology and uses videography to tell stories. His coral videos have been featured in ABC, PBS and BBC documentaries, and a raft of popular U.S. science magazines.

To be a science communicator, you'll need to dive into difficult topics and ask a lot of questions. Plus, you'll need to write and communicate clearly so you can tell a story that non-scientists will understand and find fascinating. – Rachel Williamson

CAREER	COURSES	WHAT YOU'LL DO	SALARY RANGE
<b>SCIENCE COMMUNICATOR</b>	Bachelor of <b>Science (Science Communication)</b> , ANU	Jobs include hosting podcasts and radio shows, like Jen Martin, writing books, or teaching other scientists how to communicate.	<b>\$77K–\$150K</b> 
<b>SCIENCE JOURNALIST</b>	Bachelor of <b>Science</b> / Bachelor of <b>Journalism</b> , The University of Queensland	You might work in the media, or as a writer for professional services firms, public relations agencies, or pharmaceutical companies.	<b>\$60K–\$120K</b>
<b>SCIENCE POLICY ADVISOR</b>	Bachelor of <b>Public Policy</b> / Bachelor of <b>Science</b> , ANU	Jobs include advising government organisations such as the Climate Change Authority, or you could advise state or federal governments.	<b>\$90K–\$150K</b> 
<b>SCIENCE TEACHER, PARTY HOST</b>	Bachelor of <b>Science</b> / Master of <b>Teaching</b> , Victoria University	There's a shortage of science teachers, and entertainers who can do science with children at parties and in schools are also in demand.	<b>\$25–\$70/hour</b>





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Institute



# YOUR CAREER YOUR WAY

**Your career can take  
a variety of twists and  
turns, steps and stages.**

**[yourcareer.gov.au](http://yourcareer.gov.au)**

can help you make  
informed decisions  
about your learning,  
training and career  
development.

# Life in the lab

Get an awesome science career without going to uni!

If uni isn't for you but you're still keen on working in a science lab, you totally can! There are lots of VET pathways to becoming a lab technician, and here's what that gig looks like...

## WHERE YOU COULD WORK

So many interesting places! If you're interested in science + education, you could work in a school science lab. Keen on crime and justice? Get a job in forensics. Enjoy being hands-on? You could land a gig in manufacturing. Love the idea of a health career? Pharmacology could be perfect for you. Top tip: research all your VET study options to see which course will get you to where you want to go.



## WHAT TO STUDY

There are heaps of great TAFE courses that'll set you up for life in the lab. These include:

- Certificate III in Laboratory Skills
- Certificate IV in Laboratory Techniques
- Diploma in Laboratory Technology, in either Chemistry or Food

If pathology is your jam, you could also look at:

- Certificate III in Pathology Collection
- Diploma in Laboratory Technology

## WHAT YOU'LL BE DOING

So what does a lab technician actually do? Technicians head up the maintenance of lab tools and equipment, capture and sort data and ensure efficiency and accuracy.



## CAREER OPPORTUNITIES

By studying a lab tech course through VET, there are so many ways to combine science with your 'X' – that's your passion, hobby or big goal. You could become a:

- Biological testing technical assistant
- Laboratory assistant in water quality, food testing or polymer testing
- School laboratory technician
- Forensic science technician
- Medical laboratory technician
- Manufacturing testing technical officer
- Pathology collector

## SHOW ME THE MONEY

In 2023, lab technologists earned **\$65,795** on average.

## BE IN DEMAND

Lab technician jobs will grow by 6.8% by 2026, according to the National Skills Commission!



## VET PATHWAYS

Find out more about alternative pathways into science by scanning here!



# IN SAFE HANDS

CAITLAN NOBLE STARTED HER CAREER IN MARKETING, BUT AFTER DISCOVERING VOCATIONAL TRAINING OPTIONS TO WORK IN HEALTHCARE, HER LOVE FOR SCIENCE WON OUT

CAITLAN NOBLE  
ANAESTHETIC TECHNICIAN

Helping patients get through one of the most anxious times in their life is just part of a day's work for Caitlan, an anaesthetic technician.

Her daily tasks include preparing and monitoring patients under anaesthetic, assisting in airway management, distributing medication, ambulance transfers and transfusing blood products.

"Essentially, we're doing everything we can to assist the anaesthetist to ensure patients are kept safe during their anaesthetic and surgery," she says. But Caitlan's initial career was completely different – with an interest in both science and English, Caitlan says choosing a pathway after Year 12 was quite difficult.

"Initially I was accepted into university to study journalism but shortly after I realised that was no longer my passion."

"I completed a degree in marketing and public relations but still didn't feel fulfilled, and eventually looked at options for studying things relating to biology and healthcare; that's where I came across the Diploma of Anaesthetic Technology," Caitlan says.

Now Caitlan is doing a job where she loves the variety, and uses critical thinking and problem-solving every day.

"I really enjoy that we are often the first to receive a patient for surgery. We have a short 15-minute window prior to the operating room to learn as much as we can about our patients, not only clinically, but to also build a rapport so they feel safe and at ease for their operation."

Plus, in her hospital, anaesthetic technicians are part of the code blue emergency response team on call to help during times of crisis.

"Being a contributing member of a team that has helped save someone's life is a pretty special feeling," Caitlan says.

She encourages students to explore all their options in high school.

"There are so many careers out there that you wouldn't have even heard of or known existed and it's okay to try different things out until you find the right career that you are passionate about." – Charis Palmer

IT'S OK TO TRY DIFFERENT THINGS OUT UNTIL YOU FIND THE RIGHT CAREER

ANAESTHETIC TECHNICIAN,  
KING EDWARD MEMORIAL HOSPITAL

EMERGENCY DEPARTMENT CLERICAL OFFICER,  
PRINCESS MARGARET HOSPITAL FOR CHILDREN

DIPLOMA OF ANAESTHETIC TECHNOLOGY,  
NORTH METROPOLITAN TAFE

BACHELOR OF COMMUNICATIONS  
(MARKETING + PR), CURTIN UNIVERSITY

# Amazing ANSTO careers

Meet three scientists pursuing their dream STEM careers at ANSTO

#1

## LIGHTING THE WAY

WORKING AT THE AUSTRALIAN SYNCHROTRON ALLOWS JESSICA HAMILTON TO EXPERIMENT AND BE CREATIVE

**Fun fact**  
The Australian Synchrotron has been used as a movie set.

JESSICA HAMILTON  
BEAMLINE SCIENTIST

When Jessica first started her science degree, the geoscience lecturer opened with: "Do you want to learn about volcanoes, dinosaurs and space?"

"I was sold," Jessica says. She dropped physics in favour of geology, and today works as a beamline scientist at the Australian Synchrotron in a job that is very varied and in a facility that she says "looks like something out of a sci-fi film".

"I've gotten to work on so many cool projects in my time here, from Antarctic sediments, to molten rock, nanoparticles, batteries, and more," she says.

The beamline Jessica works on is one of many at the facility, which hosts different groups of visiting scientists every few days.

"My job is to set up the beamline and optimise it for their experiment, troubleshoot any issues, and train the scientists in how to operate the instruments to get the most out of their data," Jessica explains.

In her research she's developing a process that uses mining waste rock for carbon sequestration and critical metal recovery (mainly nickel and cobalt).

**JESSICA'S TOP CAREER TIP**  
Follow what you enjoy, not the path that you think you 'should' take, and don't stress if you have no idea where you belong.

"With the explosion of renewable tech and battery storage, we need to make sure the raw materials for these things are produced in more sustainable and ethical ways," Jessica says.

One of the biggest lessons she's learnt is that research requires a lot of creativity. "The key to doing research is actually to just try something new! That felt very freeing to me – to no longer feel a mountain of existing knowledge looming ahead of me, and to stop worrying about being right or wrong." – Charis Palmer

## WHAT IS A SYNCHROTRON?

The Australian Synchrotron is a circular technology, about the size of a football field, that accelerates electrons to almost the speed of light. When the electrons go around a circular path, they give off energy in the form of incredibly bright light. That X-ray and infrared light is directed to 'beamlines', where researchers use it to advance our knowledge of everything from medical science to agriculture.



#2

## COOL CHEMIST

**BRETT ROWLING WAS STUDYING TO BECOME A TEACHER WHEN HE FOUND OUT HOW AWESOME THE 'S' IN STEM REALLY IS!**

**Fun fact**  
Brett is also a keen follower of the Australian Ballet!

As an analytical chemist at ANSTO, Brett's days involve analysing air, water and soil samples from Australia and around the world. The aim? To understand the movement of natural and man-made contaminants through environmental systems.

But Brett didn't always know he wanted to be a scientist. "At school I liked chemistry, maths and engineering studies, and I also knew I liked talking – so teaching seemed an obvious choice," he explains. "I could see a guaranteed job at the end and really, I had no idea what a scientist did."

Brett scored a teaching scholarship and headed to uni. Halfway through his degree, he got into the Year in Industry program at ANSTO. "It was a fantastic position with a great mix of field sampling, laboratory and office work," Brett says.

As part of the program, Brett saw lots of interesting science and engineering projects. "I also performed a small research project looking at soils, which was written up and presented – all great work skills that set me up for future work within and outside of ANSTO."

During his time at ANSTO, Brett (a descendant of Bungoree and Matora) has worked on projects such as digitally preserving hand stencils from a site on his mob's country, and studying giant clam shells from northern Australia to reveal information about past climates.

"To me as a blackfella, it's the recent interest in our culture by the wider Australian community that's remarkable from a career perspective," he says.

"Our culture already has customs, lore, science and engineering which, being Australian-made, is world-leading. We have been able to take our oral stories and practical sciences from country, and marry them up with the use of modern techniques."

– Louise Meers

**BRETT ROWLING**  
ANALYTICAL CHEMIST

### BRETT'S TOP CAREER TIP

Look for people who will support and assist in guiding you. You want people who are there for the successes but also there when you need help.

BACHELOR OF SCIENCE (GEOSCIENCE) (HONOURS). UNIVERSITY OF WOLLONGONG

ANALYTICAL CHEMIST, ANSTO

#3

# MARINE ANIMAL PROTECTOR

**AMY MACINTOSH'S FASCINATION WITH THE BEHAVIOUR AND ANATOMY OF ANIMALS HAS LED HER TO A SCIENCE CAREER THAT'S ALL ABOUT PROTECTING THEM**

**What's ANSTO?**  
 Oh, just a top STEM employer! ANSTO is one of Australia's leading scientific institutions, employing more than 400 scientists and hundreds of others in nuclear industry professions. Researchers from Australia and around the world come to use its state-of-the-art nuclear science facilities.

**A**s an ecotoxicologist, Amy researches how naturally occurring radioactive materials from abandoned oil and gas pipes impact marine life. Amy always wanted to work with animals. She started her studies with a Bachelor of Science in zoology and geography at the University of Otago in Aotearoa / New Zealand. She then followed that up with more study and research projects, and is now completing a PhD in environmental science at Macquarie University, based at ANSTO. The aim of her PhD? To generate a database of the accumulation of potentially toxic metals and naturally occurring radioactive material (NORM) in different Aussie marine animals, and the key organs of concern (like muscle, liver, gut and shell), from contaminants of decommissioned offshore oil and gas pipelines.

**AMY'S TOP CAREER TIP**  
 Nothing is going to go according to plan and failure is a part of learning and knowing you are human.



**AMY MACINTOSH**  
 ECOTOXICOLOGIST

**Fun fact**  
 Amy studied anthropology and Hebrew as an undergraduate.

Amy says there are lots of cool things about her job, including travel. "I'm very lucky to have travelled all the way to the International Atomic Energy Agency HQ in Vienna, Austria, to be a representative for Australia and ANSTO," she says. And she's excited to apply her knowledge to emerging jobs in nuclear science, including monitoring opportunities in Australia's new nuclear-powered submarines program. – Louise Meers





## Change lives – choose a career in health

Improve Australia’s regional and rural communities and unlock limitless career opportunities.

### Why health?

As well as being a crucial part of our communities, healthcare is also Australia's hottest job market. The healthcare and social assistance sector is booming, with a whopping 301,000 new jobs expected in Australia by 2026\*. So why not step up to fill healthcare heroes' shoes, and be in demand too.

### Why us?

At Charles Sturt, we've been leading the way in rural and regional health education for over 40 years. And with a network of over 28,000 passionate Charles Sturt health graduates, you'll join a community making an impact across Australia – and around the globe.

You'll study, live and work in the regions – we've got six vibrant campuses to choose from. Get hands-on in cutting edge facilities. Master the latest tech and techniques in our state-of-the-art labs, clinics, and simulation setups.

Check out our wide range of courses in:

- Dentistry
- Exercise and Sport Science
- Food Science and Nutrition
- Health and Medical Science
- Laboratory Science (Pathology)
- Medicine
- Medical Radiation Science
- Nursing
- Occupational Therapy
- Oral Health
- Paramedicine
- Pharmacy
- Physiotherapy
- Podiatric Medicine
- Psychology
- Social Work



### Not up for a full-blown degree just yet?


Check out our Undergraduate Certificate in Health Studies. You'll start studying health, get a speedy qualification and get entry (with credit) into selected bachelor degrees.

### Keen for an early start?

Then the Charles Sturt Advantage early offer program is for you. We check out your Year 11 results and soft skills, and if successful, you'll score an offer before your exams!

### Want more info?

Get in touch with our friendly student advisers. They're ready to talk through your options.

 1800 275 278

 [csu.edu.au/contacts](https://csu.edu.au/contacts)



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career-area/  
medicine-health](https://study.csu.edu.au/career-area/medicine-health)

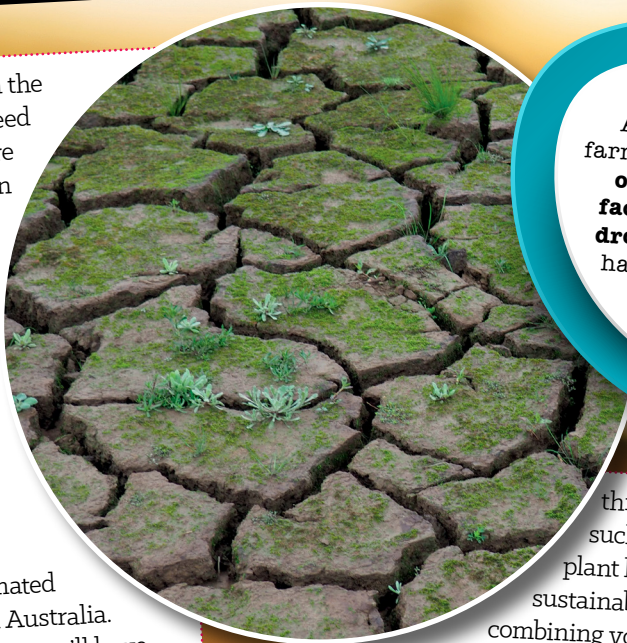
# Farming the future

From laboratories to vast fields: unleash your potential in science and agriculture

The world's population is on the rise, and that means we need to produce more food, more sustainably to feed everyone. In fact, we'll have to produce a massive 51% more food by 2050 to meet this demand. Scientists working in Australia's thriving agriculture industry are tackling the issue head on, using cutting-edge technology to help revolutionise farming.

Agricultural science is a growing field, with an estimated six jobs for every graduate in Australia. If this is the road you go down, you'll have plenty of opportunities to shape the future of sustainable agriculture – whether you're in the lab or getting your hands dirty in the field, working with private companies, local farmers, or even government agencies.

You could apply your science smarts to help develop drought-resistant crops, or grow premium grapes for world-class Aussie wine,



## Did you know?

Almost half of the world's farming land, where about **40% of all people on Earth live, faces continuous or frequent drought**. This makes it much harder to grow cereal crops like wheat and barley, which we need to feed the world.

through specialisations such as crop science, plant health and sustainable farming. By combining your scientific skills with tech like artificial intelligence (AI), you could deliver even more impact.

So, if you're passionate about tackling climate change and making the world more sustainable, a science + agriculture career could lead to your dream job.

The best part? You'll see your efforts actually making a difference in the real world. – Danielle Lucas



## GLOBAL STAGE

Imagine using what you know to help neighbouring countries with big challenges like biosecurity and making sure there's enough food. You might team up with local communities to help make their farms more productive and sustainable. And the best part? You get to travel the world, make global connections and bring cool new skills and knowledge back to Australia!

## TAKE YOUR PICK

### AGRICULTURAL SCIENTISTS

Research soil, plant and animal genetics, pest and disease management, and more, to help with global challenges like feeding the world's population.

### AGRONOMISTS

Work with businesses to ensure farming systems stay profitable and environmentally sustainable for future generations.

### FOOD SAFETY CONSULTANTS

Help reduce food waste and the impact of pathogens due to inappropriate food storage and bacterial contamination.

### VITICULTURISTS

Are expert grape growers, with a deep knowledge of soil, weather and the essential care needed to cultivate premium grapes used for wine.



**Feed the world**  
 In the 2019 to 2020 season, about **\$48 billion** of Australia's **\$61 billion** agricultural production was shipped to other countries.



## AI IN AGRICULTURE

According to the McKinsey Global Institute, AI has the potential to improve productivity and agricultural performance by up to 55%. It's already being used, with sensors, robotics, and data analysis making a positive impact.

### MACHINE LEARNING

Gathers and analyses data, helping to predict crop yields or disease outbreaks, and optimising planting and harvest times.

### AI-POWERED ROBOTS

Handle tasks like planting, weeding, harvesting and even caring for cattle, saving farmers time and labour.

### COMPUTER VISION

Is used to monitor crop health and identify pests by analysing images from drones, cameras and satellites.

## SCIENCE + AGRICULTURE + STUDY

Bachelor of **Agricultural Science**, Charles Sturt University

Bachelor of **Agricultural Science (Honours)**, University of Tasmania

Bachelor of **Science (Regenerative Agriculture)**, Southern Cross University

Bachelor of **Viticulture and Oenology**, The University of Adelaide

## SCIENCE + AGRICULTURE + JOBS

**Agriculture research scientist**  
\$66K-\$96K

**Sustainability consultant**  
\$58K-\$113K

**Agronomist**  
\$55K-\$96K

**Vineyard operator / manager**  
\$50K-\$91K\*

\*Salaries according to [payscale.com](https://www.payscale.com)

# FEEDING THE WORLD

**FROM FUNGI TO DROUGHT-RESISTANT CROPS, DR NIPUNI PETHTHA THANTRIGE IS HELPING GROW THE FUTURE OF AGRICULTURE**

With a background in genetic and molecular biology, Nipuni is helping to feed the world's growing population in the face of climate change.

Globally, we need to increase food production by 50% to meet demand by 2050, and Nipuni says plant scientists will have a crucial role to play. "By improving plants to make them more stress tolerant and nutritious, we enhance crop performance and quality," she says.

Nipuni's current project involves sorghum, one of Australia's vital cereal crops. "We're aiming to improve the quality of sorghum, using genetics to make it more digestible."

The diversity of tasks is a highlight of the job. "Each day is different," Nipuni says. "I experiment in the lab, apply that in the field, write academic articles and teach undergrads!" – Danielle Lucas



**DR NIPUNI PETHTHA THANTRIGE**  
FOOD RESEARCHER

BACHELOR OF SCIENCE (MICROBIOLOGY) (HONOURS), UNIVERSITY OF SRI JAYEWARDENEPURA, SRI LANKA

PHD IN MOLECULAR BIOLOGY AND PLANT BIOTECHNOLOGY, QUT

POSTDOCTORAL RESEARCH FELLOW, CENTRE FOR INTEGRATIVE RESEARCH, UNIVERSITY OF QUEENSLAND

SESSIONAL ACADEMIC AND LEAD TUTOR, QUT

RESEARCH ASSISTANT, CENTRE FOR AGRICULTURE AND THE BIOECONOMY, QUT

POSTDOCTORAL RESEARCH FELLOW, CENTRE FOR CROP SCIENCE, QUEENSLAND ALLIANCE FOR AGRICULTURE AND FOOD INNOVATION, UNIVERSITY OF QUEENSLAND

SHUTTERSTOCK

## CHARLES STURT UNIVERSITY

# AGRICULTURE HEROES REQUIRED

**FEEDING THE WORLD'S GROWING POPULATION WILL TAKE MORE THAN FARMERS WORKING IN REGIONAL AREAS**

Jim Pratley, Emeritus Professor in Agriculture at Charles Sturt University, is shouting it from the rooftops: we're on a mission to feed everyone!

Forget what you thought about agriculture being limited to rural and regional areas. Lots of agriculture jobs can be found in cities, working on the entire system of eco-friendly food production.

"There is a big demand for people with qualifications, not just in agriculture but also in the management of big data, robotics, drones, electronics, IT, engineering related to agriculture, as well as the specialists across the agricultural production systems," Prof Pratley says.

The planet needs you to join the mission and Charles Sturt is the place to be – agriculture is in its DNA, and it's ranked #1 in NSW for grads who land jobs. With a Charles Sturt degree in hand, you could be rocking it in agribusiness, biosecurity, or climate adaptation.

And hey, Charles Sturt's 2000 hectare Global Digital Farm has it all – livestock, crops and cool gadgets! It's basically an agri-paradise with a history dating back 120 years. You can take an interactive virtual tour of the Wagga farm at: [study.csu.edu.au/farm-tour](http://study.csu.edu.au/farm-tour)



**SEE ALL THE CAREERS IN AGRICULTURE**



CHARLES STURT UNIVERSITY



# Solving climate change

A FASCINATION WITH HOW THE NATURAL WORLD WORKS LED DYLAN CRONJE DOWN A BIODIVERSITY AND CONSERVATION PATH, AND NOW HE'S USING SOIL SCIENCE TO COMBAT CLIMATE CHANGE!

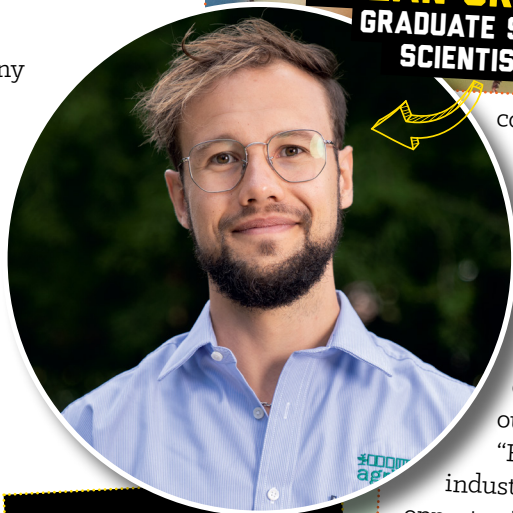
Dylan kickstarted his STEM journey by studying a Bachelor of Biodiversity and Conservation at Macquarie University. He loved that this degree had a wide range of subjects and that it was very science based. Awesome electives were a highlight too!

"There were quite a lot of elective subjects which meant I could broaden the scope of my degree," Dylan explains.

Fast forward to today and he's undertaking a graduate role at AgriProve, Australia's largest carbon soil-tech developer. AgriProve works with farmers to help them improve the carbon in the soil on their farms. Their aim is to help reduce the amount of greenhouse gases in the atmosphere.

"I love being a part of an innovative soil-tech company working to progress our understanding of soil science, food security, and build climate resilience for Australian farmers," Dylan says.

His gig involves undertaking scientific trials and working with farmers on the best way to improve soil for storing carbon. The non-STEM electives Dylan studied at uni have also helped him in his job, giving him a good understanding of how broader ecological



DYLAN CRONJE  
GRADUATE SOIL  
SCIENTIST

## TOP TIP

Discover and follow your passions, don't be rushed into picking a career or degree based on anyone else's opinions or expectations.

concepts tie in with enabling action from business and government. As for exciting opportunities popping up in this area of STEM, Dylan believes carbon offsets and nature-based solutions offer lots of avenues to apply scientific education to address the biggest, dynamic, real-world issue facing our generation: climate change. "Being a growing scientific industry, there exist massive career opportunities and significant investment into companies developing nature-based offsets, and this creates huge opportunities to fund science and innovative technologies to scale this action globally." — Louise Meers



CHECK OUT MACQUARIE UNI EARTH AND ENVIRONMENTAL SCIENCE STUDY OPTIONS

INAUGURAL GRADUATE.  
AGRIPROVE

GLOBAL LEADERSHIP PROGRAM  
(COMPLETION WITH MERIT), MACQUARIE UNIVERSITY

BACHELOR OF BIODIVERSITY AND  
CONSERVATION, MACQUARIE UNIVERSITY

BUSINESS DEVELOPMENT MANAGER.  
CYNOSURE AUSTRALIA

# TEAM ENVIRONMENT

Earth scientists are helping us to better understand and coexist with the world around us, which makes life a whole lot nicer for us and our planet!

**W**ith their knowledge, resources and collabs, earth and environmental scientists are leading us towards a more sustainable future. We caught up with a team of enviro scientists at Australian company GHD to explore some of the different science roles needed to protect our environment. – Pippa Duffy

## MEET THE TEAM



### PIPPA FERNANDES SPATIAL ANALYST

**Degree:** Bachelor of Science (Earth Science, Geography) (Honours)

Pippa didn't know spatial analysts existed before she started uni. Now, she helps people understand the geographical context of projects and what impacts they might have.

**How does your job make a difference?** "I help the field team plan their site visits by setting up a field mapping app so they can collect the right data."

**Cool tech you get to use?** "I create field-data collection tools that teams use on their phones, which is fun. My team gets to work with drones too, and we also create 3D models."



### DAVID CHUBB AUSTRALIAN FUTURE ENERGY LEADER – ENVIRONMENT

**Degree:** Master of Applied Science (Environmental Management)

David has done loads of jobs during his 30 years in the industry, so when it comes to building teams to work on various projects, he knows what he's talking about.

**What do you love most about your job?** "Kicking off a new project."

**Best part of being on the GHD team?** "The people, and that no two projects are the same."



### PAUL DE MAR TECHNICAL DIRECTOR, NATURAL RESOURCES AND BUSHFIRE

**Degree:** Master of Environmental Planning

Paul helps agencies look at how to control fire risks and set up protections during the design stage of projects.

**Fave part of your job?** "I get to go to some of the most magnificent places in Australia. I've recently been to Uluru and Kakadu working on fire management with First Nations peoples on their lands."

**Cool tech you get to use?** "My favourite is the aerial incendiary machine used on aircrafts and drones to release capsules with a special chemical, into hard-to-get-to areas, to start low-intensity control burns."

# HANDS-ON LEARNER

**CLAIRE ORLOV WAS "INTO EVERYTHING" AT SCHOOL, BUT SHE SETTLED ON GEOLOGY AND NOW, AS A RESEARCHER STUDYING MARS GETS TO BE CREATIVE EVERY DAY**

**SCIENCE + EARTH SCIENCE + STUDY**

Bachelor of Science (Earth Science), QUT

Bachelor of Marine Biology and Climate Change, UTS

Bachelor of Geoscience, University of New England

Bachelor of Environmental Science, Edith Cowan University

Certificate II in Conservation and Ecosystem Management, TAFE NSW

**SCIENCE + EARTH SCIENCE + JOBS**

Environmental scientist \$57K-\$94K

Environmental consultant \$54K-\$100K

Marine biologist \$46K-\$102K

Geologist \$74K-\$143K\*

\*Salaries according to [payscale.com](https://www.payscale.com)



**CLAIRE ORLOV  
GEOSCIENTIST**

At school, Claire was into sport, art, design, history and science, among many other things!

"For most of my time at school I wanted to be a fashion or costume designer, or maybe an artist, but by my final year I'd really switched gears and I knew I wanted to be a geologist," Claire says.

Now, she studies volcanoes for a living in a job that's both creative and tech driven. Just goes to show that science careers can combine diverse interest areas.

Claire's research involves trying to map and understand the geology of Mars using high-resolution satellite imagery.

"Specifically, I look at faults we can see on the surface to try and understand how and when a huge volcanic area of Mars developed. This is because, unlike Earth, Mars doesn't have plate tectonics, so other forces like giant volcanoes are responsible for the structures we see," she says.

For Claire, geology is an inherently creative field, but in her role she gets to flex her artistic side even more than normal, making maps and figures.

"I love spatial data and I think it's because I like seeing things in a visual way. Any time I read

## GEOLOGY DOESN'T HAVE BLACK AND WHITE ANSWERS"

something with data in it, I automatically want to see it on a map as that's where it makes sense to me."

"It's not something that has black and white answers, which is great and also frustrating, because it's hard to come to a single truth. But that's where creative thinking is involved."

Claire gets to do fieldwork in amazing places, from outback Australia to the lava fields of Iceland.

Her advice to anyone considering a science career is to envisage the lifestyle you want, not the job title.

She also says being interested in lots of things is a strength, not a weakness: "Don't worry if you don't have a single passion – you don't have to pick just one thing and stick with it forever!" – Charis Palmer

**BACHELOR OF SCIENCE (GEOLOGY), UNIVERSITY OF NSW**

**GEOSCIENTIST, GEOSCIENCE AUSTRALIA**

**PHD IN PLANETARY GEOSCIENCE, UNIVERSITY OF LEEDS**



**GIDYEA VENNER**  
GRADUATE HYDROGEOLOGIST

# PUTTING IN THE GROUNDWORK

STUDYING ENVIRONMENTAL SCIENCE AT QUT LED **GIDYEA VENNER** STRAIGHT INTO AN AWESOME GROUNDWATER GIG!

**G**idyea was inspired to study a Bachelor of Science (Environmental Science) at QUT after meeting a group of Australian Geographic and Queensland Herbarium scientists during his gap year in the Kimberley. He loved that this degree allowed him to be in the field and that it satiated his curiosity about the natural world.

In his current role as a graduate hydrogeologist for Australasian Groundwater and Environmental (AGE), Gidyea is helping to supervise drilling efforts for monitoring wells on a major infrastructure project in Queensland. This involves advising on casing and development, and regular sampling and monitoring tests.

He's also just completed a hydrogeological honours project, where he submitted a thesis on mapping the shallow springs of the Great Artesian Basin; a geophysical, hydrochemical and hydrogeological investigation with a case study on Turraburra, a native title property near Aramac, in Queensland. He's excited about how this partnership with the Yambangku Aboriginal Cultural Heritage and Tourism Development Aboriginal Corporation (YACHATDAC) on Turraburra may evolve into the future after the announcement of the new Faculty of Indigenous Knowledges and Culture at QUT.

His favourite thing about his job is being in new environments all the time. "Plus, continuing to operate within the cultural interface between Indigenous and Western knowledge systems whenever I have the opportunity," he adds.

For those who want to follow in his footsteps, Gidyea believes there are exciting opportunities in the rapid improvement of groundwater modelling. "It's becoming much more sophisticated and reliable, and increasing computing power aids this."

And when he's not working? Gidyea (who's named after a native tree) is flexing his creative talents playing folk and country music! – Louise Meers

**"I OPERATE BETWEEN INDIGENOUS AND WESTERN KNOWLEDGE SYSTEMS"**



**STUDY SCIENCE AT QUT. FIND OUT MORE**

BACHELOR OF SCIENCE (HONOURS), QUT  
GRADUATE HYDROGEOLOGIST, AGE

BACHELOR OF SCIENCE (ENVIRONMENTAL SCIENCE), QUT

BACHELOR OF JOURNALISM / BACHELOR OF ARTS (PHILOSOPHY), UNIVERSITY OF QUEENSLAND

# TO THE MOON AND BACK

GEOSCIENTISTS LIKE **BROOKE NORTH** ARE WORKING WITH CUTTING-EDGE TECH NOT JUST ON EARTH BUT IN SPACE TOO!

Fueled by a childhood love of rocks and a lightbulb moment about geologists, Brooke always knew she'd end up studying geology at uni.

Now, armed with her science degree from the University of Adelaide, she's working with a bunch of brainiacs crafting space tech in Adelaide, aiming to sling Aussie tech onto the Moon! Who knew geology could be this intergalactic?

"My job is to help our clients, who are mostly mineral exploration companies, to use our product called ExoSphere and get the most value out of its results through utilising my geoscience skills," Brooke says.

ExoSphere helps companies look for new critical metal deposits by producing models of the subsurface using seismic sensors and space satellites. Critical metals are essential for all sorts of things like mobile phones, solar panels and electric cars.

Brooke says you won't really know what your job will be like until you've started, so it's important to keep an open mind. "That's how I ended up at Fleet." — Charis Palmer



**BROOKE NORTH**  
SPACE GEOLOGIST

**CHECK OUT SCIENCE STUDY OPTIONS AT THE UNIVERSITY OF ADELAIDE**



**BACHELOR OF SCIENCE (MINERAL GEOSCIENCE) (HONOURS), UNIVERSITY OF ADELAIDE**

**STUDENT GEOLOGIST, OZ MINERALS**

**GRADUATE EXPLORATION GEOLOGIST, OZ MINERALS**

**EXPLORATION GEOLOGIST, OZ MINERALS / BHP**

**MINERAL EXPLORATION ACCOUNT SPECIALIST, FLEET SPACE TECHNOLOGIES**

## Rock solid job opportunities

**Study Mineral Geoscience**

CRICOS 00123M  
Australian University  
Provider Number PRV12105



THE UNIVERSITY  
of ADELAIDE

**make  
history.**

# INDIGENOUS INSIGHTS

Discover how Indigenous knowledge is shaping contemporary science and creating promising career paths

**A** boriginal and Torres Strait Islander people have developed and passed down vast bodies of knowledge over tens of thousands of years, drawing on their deep connection to the land and its ecosystems.

Australian universities are offering a growing number of courses that delve into Indigenous science and knowledge systems. Graduates can work alongside Indigenous communities, in environmental conservation, sustainable agriculture and more.

Today, understanding and applying Indigenous science isn't just about preserving the past; it's about building a more sustainable future. – *Gemma Chilton*



## A BURNING QUESTION

**How the ancient practice of cultural burning is informing modern fire management**

For thousands of years, Indigenous Australians have harnessed the power of fire, using a technique known as cultural burning. These deliberately lit, low-intensity fires clear away dead vegetation, breathe life back into soils, create conditions that help specific plants thrive, and establish diverse habitats that can boost biodiversity. Applying cultural burning today can help us reduce the risk of high intensity bushfires and the carbon emissions that come with them.

## DEADLY INNOVATION AT MONASH UNIVERSITY

Monash University's National Indigenous Innovation Challenge connects researchers with Indigenous communities to develop sustainable solutions in areas like land remediation, traditional agriculture and plant conservation. Six Indigenous groups from across the country joined the 2023 initiative, pitching ideas such as ancient agricultural recovery and apps to tackle antisocial behaviour. The challenge merges traditional knowledge with advanced research.

**SCIENCE + FIRST NATIONS + STUDY**

Bachelor of **Science (Advanced) (Honours) (Indigenous Science and Knowledges)**, Australian National University

Bachelor of **Environmental Science – Wildlife and Conservation Biology (Indigenous Studies)**, Deakin University

Bachelor of **Applied Science (Indigenous Professional Practices)**, Curtin University

Graduate Certificate in **Education (Indigenous Education)**, QUT Online

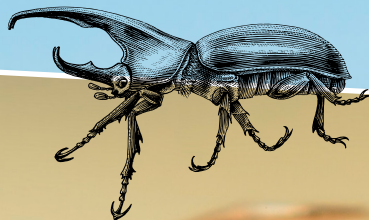
**SCIENCE + FIRST NATIONS + JOBS**

**Ecologist**  
\$55K–\$82K

**Healthcare consultant**  
\$56K–\$114K

**Park ranger**  
\$38K–\$99K\*

\*Salaries according to [payscale.com](https://www.payscale.com)



# INSECT ENTHUSIAST

**KINJIA MUNKARA-MURRAY TRANSFORMED SELF-DOUBT INTO A SUCCESSFUL SCIENCE CAREER**

Raised in Garramilla (Darwin), Kinjia is a proud Tiwi and Rembarrnga woman who spent her childhood exploring the lush tropical undergrowth of Darwin and the Tiwi Islands. “If you couldn’t find me outside in nature, I was probably inside raising caterpillars into butterflies or feeding mushy bananas to rhinoceros beetles,” she says.

Given this early enthusiasm, you might think a study and career path into science would’ve been a given – but Kinjia’s journey was far from straightforward.

## DISCOVERING SCIENCE

Kinjia held back from pursuing her interest in science because she didn’t believe she was “smart enough”. Thankfully, conversations with mentors eventually inspired her to enrol in a Bachelor of Science Extended course.

Kinjia soon landed a summer internship at engineering consultancy GHD. “The first thing they did was sit me down in front of a microscope and teach me all about aquatic insects!” she says.

In her final year of uni, Kinjia came across a paper that described the Tiwi Islands as a ‘biodiversity hotspot’. Inspired, she contacted the author of the paper – who went on to become the supervisor of her own Master of Bioscience research project! “That was my highlight at university,” Kinjia says.

A long way from the high school student who thought she wasn’t cut out for science, Kinjia graduated from her Master’s degree with Distinction.

**KINJIA MUNKARA-MURRAY**  
**AQUATIC ECOLOGIST**



**STUDYING INSECTS IS MY PASSION, AND I GET TO WORK WITH THEM DAILY**

## SHIFTING PERSPECTIVES

Kinjia is now a full-time graduate aquatic ecologist at GHD, and gets to monitor ‘macroinvertebrates’ – aquatic lifeforms including insects and crustaceans – in Victorian waterways.

“Studying insects is my passion, and being able to work with them on a daily basis is the absolute best.”

Reflecting on her path, Kinjia highlights the importance of ensuring Indigenous people are represented in STEM. “Having more Indigenous role models would’ve helped eliminate my feelings of ‘not being smart enough’ to study science,” she says.

**BACHELOR OF SCIENCE (ZOOLOGY, ANIMAL BIOLOGY)**  
**UNIVERSITY OF MELBOURNE**

**MASTER OF SCIENCE (BIOSCIENCE)**  
**UNIVERSITY OF MELBOURNE**

**INTERN, GHD**

**GRADUATE SCIENTIST, GHD**

# START YOUR SCIENCE PATH HERE

Hatch your study + career plan on this page.

Good luck, future scientist!

## 1 What science career is for you?

If you need more inspo, take our 'What science career is for you?' quiz at [bit.ly/science-career-quiz](http://bit.ly/science-career-quiz)

## 2 Which 'X' (passion, hobby, interest or other area) is your favourite?

- Agriculture
- Creativity
- Something else: \_\_\_\_\_
- Earth
- Health
- First Nations



## 3 Can't decide? Scan the QR code to take our fun 'What's your STEM + X' quiz!

## 4 Where would you like to study science?

- Charles Sturt University
- QUT
- Through VET
- Macquarie University
- The University of Adelaide
- Somewhere else: \_\_\_\_\_

## 5 Which ANSTO scientist had the coolest job?

### To-do list

Make notes about what you can do next to further your future science career. You might want to have a chat with your careers advisor, explore TAFE and uni options, find a mentor, or head to [CareerswithSTEM.com](http://CareerswithSTEM.com) to check out more options.

1. \_\_\_\_\_
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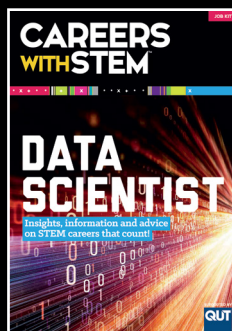
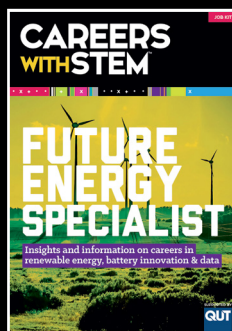
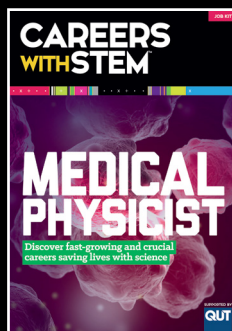
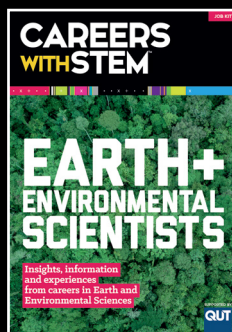
### What's that job?

Want to find out more about specific science careers? Check out our growing stack of **Careers with STEM job kits**: our eight-page e-mags introducing individual STEM jobs.

Visit [CareerswithSTEM.com/job-kits](http://CareerswithSTEM.com/job-kits)

## WHAT'S THAT STEM JOB?

Did you know you can download our free, eight-page **Careers with STEM** job kits for a full low-down on specific STEM jobs? Get them at [CareerswithSTEM.com/jobkits](http://CareerswithSTEM.com/jobkits)



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We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past, present and emerging.

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