SAM IMPACTS INDUSTRIES AND INDIVIDUALS

In his work, Bachelor of Electrical and Electronic Engineering (Honours) student Sam combines empathy and empowerment with engineering. As an intern at NASA, Sam built software to expand human understanding of aerospace technology. And as an exchange student at The University of Pittsburgh, he studied devices that decode a patient's brain activity to control prosthetics – groundbreaking technology that could potentially give people who have lost function of their limbs life-changing independence and access. For his final year project, he's using the University's world-class facilities and technology to further his understanding of what he calls "the most complicated electrical circuit on the planet" - the human brain.

Recently named a 2020 Susan and Isaac Wakil John Monash Scholar, Sam's been recognised for the outstanding work he's contributing to his chosen field. The scholarship, designed to enable Australian students to complete postgraduate study at overseas universities, will help Sam further explore his passions. With his sights set on world-renowned MIT and Brown University, Sam plans to follow up his final year project with PhD studies – diving deeper into Brain Computer Interface Neuroprosthesis.

Sam
Bachelor of Electrical and Electronic Engineering (Honours)
ENGINEERING

The role of an engineer is ever-changing. From building complex computer systems and influencing the infrastructure we use every day, to finding new ways to harness energy or even designing prosthetic limbs to help amputees – engineers play a critical role in overcoming the challenges our world faces. Challenges like food and water security, climate change, data protection and the increasing impact growing populations have on society. As a global leader in engineering higher education, including being ranked No. 8 in the world for Automation and Control Engineering, this is the place to develop world-changing solutions.

newcastle.edu.au/study/engineering

DEGREE OPTIONS

Bachelor of Aerospace Systems Engineering (Honours)
Bachelor of Chemical Engineering (Honours)
Bachelor of Civil Engineering (Honours)
Bachelor of Computer Systems Engineering (Honours)
Bachelor of Electrical and Electronic Engineering (Honours)
Bachelor of Engineering (Mining Transfer program)
Bachelor of Environmental Engineering (Honours)
Bachelor of Mechanical Engineering (Honours)
Bachelor of Mechatronics Engineering (Honours)
Bachelor of Medical Engineering (Honours)
Bachelor of Renewable Energy Engineering (Honours)
Bachelor of Software Engineering (Honours)
Bachelor of Surveying (Honours)

ALSO CONSIDER

Bachelor of Technology (Renewable Energy Systems)

No. 1 IN NSW
for educational experience and teaching quality

No. 8
in the world for Automation and Control Engineering

GE3
One of only three Australian member institutions of the Ge3 - Global Engineering Education Exchange program

1 The Good Universities Guide 2020
2 ShanghaiRanking’s Global Ranking of Academic Subjects 2019
FREE PATHWAYS

We’re proud to be the largest provider of enabling programs in Australia.

If you don’t have the qualifications required for direct entry, you still have the opportunity to access university studies through our pathway programs, regardless of your background or level of previous education. The programs are offered free of charge and upon successful completion, you’re guaranteed entry to over 40 undergraduate degrees at the University of Newcastle.

• Newstep
  If you didn’t complete Year 12, or missed the chance to get the marks needed for university entry, our Newstep program offers the perfect pathway between secondary schooling and university. Study on campus at Newcastle or the Central Coast.

• Open Foundation
  If you’ve never studied at university before and you’re considering a degree qualification after time in the workforce or caring for family, or just looking to further your interests, our Open Foundation program can help make this happen.

• Yapug - Aboriginal and Torres Strait Islander Students
  Yapug is a pathway program providing Aboriginal and Torres Strait Islander people with skills for entry into undergraduate degrees, including a pathway into Medicine. Start your university experience in a culturally appropriate learning environment, supported by Indigenous peers and staff.

newcastle.edu.au/enabling

LIFESTYLE

Our coastline is world famous. Enjoying downtime at one of Newcastle’s pristine beaches and three coastal baths is made easy with long stretches of uncrowded sand, accessible public transport, and plenty of free parking. A creative hub, Newcastle is home to the bright ideas of countless innovators and entrepreneurs. Enjoy all that Newcastle has to offer – a dynamic art and music scene, chilled-out cafes, eclectic markets, microbreweries and small bars. The people are friendly, the beaches are picture perfect and the coffee culture is taken seriously.

CAMPUS LIFE

On campus, you have access to a wide range of cafes, food outlets and bars. The University is also home to over 150 clubs, societies and social groups – giving you the chance to regularly participate in fun activities.

Great health and fitness facilities await you at The Forum University (Callaghan) and Harbourside (Newcastle City). You’ll find a 50m indoor heated swimming pool, fitness classes, state-of-the-art equipment, indoor courts and casual or structured social sport competitions all year. No matter which campus you study at, there’s always something happening during the semester. There are plenty of events from Orientation Party to festivals and local gigs. You could attend study workshops, guest lectures or kick back and enjoy watching a movie by moonlight.

newcastle.edu.au/uonstudentliving

ACCOMMODATION

While the thought of moving away from your home town to study might seem daunting, we’re here to make this transition as easy as possible. We offer students secure, affordable and comfortable accommodation while studying.

newcastle.edu.au/accommodation

YEAR 12 SUBJECT SPOTLIGHT EARLY ENTRY PROGRAM

We believe that your ATAR doesn’t define who you are – it is your unique passions, abilities and ambitions that matter. Our Year 12 Subject Spotlight program rewards you with an early offer for your hard work and strong results in individual subjects related to your degree.

So, you can take some of the stress out of your final school exams, knowing your ATAR isn’t all that matters. There is no separate application for the program – simply apply through UAC to qualify.

You can find more information on subjects aligned to specific degrees online.

newcastle.edu.au/subject-spotlight
STUDY ABROAD

Are you keen to take your studies around the world?

When you study here, you’ll have the chance to travel and get credit for your degree at the same time. There are opportunities for international experiences across every area of study, whether it’s an overseas exchange program, study tour or work placement. Discover new cultures, try new food and make friends from all over the world. With more than 100 partner universities across all major continents, it really is the chance of a lifetime.

newcastle.edu.au/studyoverseas

CAREER-READY GRADUATES

Sometimes it’s best to dive straight in. That’s why exciting industry experience and Work Integrated Learning is at the core of all our degrees. Our strong partnerships with local and global organisations ensure everything you study is shaped by the real world and you graduate ready for a career in your field. Our Career Services Team are also on hand to help you out with everything from resumes and employment workshops to advice on your career goals.

THE MA & MORLEY SCHOLARSHIP PROGRAM

Minerva has travelled far and wide over the past few years – embracing the opportunities presented through her Bachelor of Engineering (Chemical). In 2017, she completed her first New Colombo Plan mobility scholarship to live and study in Singapore. A second scholarship in 2018 saw her study disaster risk reduction and sustainable development goals in the Republic of South Korea. In 2019, Minerva travelled to Borneo to learn about tropical ecology and forest rehabilitation. Back home, Minerva volunteers for the Engineering faculty. Her keen interest in sustainable development led her to studying chemical engineering and she hopes to use this to forge a successful career.

Minerva Bailey
Bachelor of Engineering (Honours) (Chemical)

SCHOLARSHIPS

You might be bursting with new ideas, passion and potential. But without support, attending university can sometimes seem impossible.

The University of Newcastle’s scholarship programs have been designed to provide this support and give you the opportunity to develop your talent and explore your potential.

We have over 1,000 individual scholarships on offer including:

• scholarships for academic achievement
• support for individuals facing financial hardship and educational disadvantage
• support for Indigenous students
• opportunities to travel, perform, play sport, relocate, or gain global experience.

Visit the website to find a scholarship that fits for you

ewcastle.edu.au/scholarships

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Minerva Bailey
Bachelor of Engineering (Honours) (Chemical)

SHAPING FUTURES SCHOLARSHIPS

The Shaping Futures Scholarship Fund provides support for students who are most in need – helping them to overcome disadvantage to pursue and maintain their achievements.

Scholarships are offered to academically gifted students facing educational disadvantage such as financial hardship, relocation from a regional or remote area, a long term or recurrent medical condition or illness, carer or sole parenting responsibilities, an asylum seeker recently completing a University of Newcastle enabling program, or a combination of these factors.

ABORIGINAL AND TORRES STRAIT ISLANDER SCHOLARSHIPS

The Aboriginal and Torres Strait Islander Scholarships were established through contributions from the University, industry donors, community organisations and the annual Reconciliation Scholarship Dinner Dance. These scholarships provide Australian Aboriginal and Torres Strait Islander students financial support to assist with completing their studies.

newcastle.edu.au/scholarships
**WHY ENGINEERING?**

Engineers apply maths and science to find creative solutions to complex problems and bring exciting innovations to life. They are the people who make great ideas happen – finding quicker, better and more efficient ways to do things.

There is a world of opportunity out there as engineering is one of only a few fields that the Australian Bureau of Statistics predicts to keep growing into 2020 and beyond.

Engineers work on a huge range of tasks in industries like electronics, energy, biomedics and construction. You could work for yourself, a big company, the government or a research organisation like CSIRO. You also have the flexibility to choose the kind of work you do, be it fieldwork on-site, design and development, or a corporate leadership role managing people and projects. Remarkably engineering is the most commonly held degree among the highest performing Fortune 500 CEOs¹ – think Google, Microsoft, PayPal and Tesla Motors.

Engineering touches many parts of modern life and there is a need for a range of different professional specialisations. From chemical to civil, environmental to electrical and electronic engineering - there’s an area to match your passion.

**ARE YOU LOOKING FOR**

- An in-demand profession with fast progression
- Opportunities to solve the world’s biggest problems
- Flexibility to work in and out of the office

Engineering could be the industry for you.

**HIGH DEMAND**

NSW currently has the highest demand for engineers in Australia²

**HIGH PAY**

Engineers receive some of the highest graduate salaries in Australia³

93% of Engineering graduates found employment within four months³

**COMMENCING STUDENT SCHOLARSHIPS**

At the Faculty of Engineering and Built Environment, we want to help you realise your potential. That’s why we offer a range of scholarships to help you make the transition to university.

newcastle.edu.au/febescholarships

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¹ Business Insider
² Engineers Australia - Australian engineering vacancies report 2019
³ QILT Graduate Outcomes Survey 2019
NEW DEGREES

Our innovative engineering degrees offer exciting learning opportunities that are future-focused and related to real-world challenges.

The unique structure of our programs offers opportunities and experiences unlike any other Australian university. Through this training, University of Newcastle engineering graduates become bold, agile and entrepreneurial. They’re big-picture thinkers who are equipped to help solve the world’s greatest challenges.

YEARS 1–4
Bachelor Degree (Honours)

BUILD AN ENGINEERING KNOWLEDGE-BASE
Lay the foundation for your future career with fundamental engineering and practice knowledge – a core requirement for professional recognition with Engineers Australia.

EXTEND YOUR PROFESSIONAL SKILLS
Our professional practice courses will prepare you for the professional world. Inbuilt into each year of your degree, they help you develop critical thinking, complex problem solving, communication skills and entrepreneurism.

Learn project management through case studies delivered entirely by guest lecturers from companies like Aurecon, Ampcontrol, Bluezone, Laing O’Rourke and BAE Systems.

BROADEN YOUR KNOWLEDGE
Choose elective pathways to complement your engineering knowledge and diversify your skills. Future-proof your career with complementary studies in design, computer science or entrepreneurship. Or go on international exchange and strengthen your global employability.

GET HANDS-ON EXPERIENCE
Not only will you learn hands-on from day one with our professional practice courses, but you’ll be able to put your learning into practice through 12 weeks of industry experience. Take up free membership with Engineers Australia and be paired with a mentor or attend their networking events. Plus, you could choose to take an international humanitarian engineering internship or apply for a summer research scholarship.

PROJECT-BASED LEARNING
Put your engineering and high level problem-solving skills into practice with our capstone project courses. At the end of your degree you will test your skills with an experimental or theoretical investigation or develop a solution to an engineering design problem.

YEAR 5
Masters (Optional)

PROGRESS YOUR CAREER
You can choose to add only one extra year of study and graduate with your Master of Professional Engineering. This is an exciting opportunity for anyone who wants quick career progression.

* This pathway is not yet available for Aerospace Engineering, Medical Engineering and Renewable Energy Engineering.

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* This pathway is not yet available for Aerospace Engineering, Medical Engineering and Renewable Energy Engineering.
Aerospace systems engineering involves a systems approach to the design, efficient operation and modification of high-tech devices for the aeronautical and defence industries.

A key challenge for the development of aerospace systems is the need to be as light-weight as possible, yet highly reliable. Aerospace systems engineers need to understand and control the response of aerospace vehicles and manage complex interactions between sensors, controllers, actuators and other aircraft subsystems. Aerospace systems engineering principles deal with the complementary design of aircraft subsystems to ensure they work in unison, without conflict and with the high levels of reliability required in aerospace operations.

2020 SELECTION RANK
80.25 | Median 85.95

CAREER EXAMPLES
• Aerospace Systems Engineer
• Satellite Engineer
• Systems Engineer
• Various positions within aircraft design and manufacturing companies, Australian and international airlines, airworthiness organisations and the Australian Defence Force.

ACCREDITATION
This program is seeking provisional accreditation with Engineers Australia.

PRACTICAL EXPERIENCE
All University of Newcastle engineering students must complete 12 weeks of professional practice during their degree. Through your work placement, you’ll build important professional networks and put your learning into practice.
The aerospace companies who maintain and upgrade Australia’s new F-35 Joint Strike Fighters are based in Newcastle.

This degree was designed in collaboration with industry partners to serve the unprecedented local demand for specialist aerospace engineering skills.

POWERFUL ADVANCEMENTS FOR SMALL WIND TURBINES

From turbines to Tasmanian tigers, Associate Professor Phil Clausen is proof that the field of engineering knows no bounds.

Through the design of a high efficiency, lightweight blade, his research is making small wind turbines just as powerful as their larger counterparts. And when he’s not busy helping create cheaper, more accessible renewable energy technology, Associate Professor Clausen is using computational biomechanics to learn more about the evolution of skeletal morphology. From investigating how the dingo outlived the Tasmanian tiger on mainland Australia, to modelling the bite force in great white sharks, to researching skull mechanics of the Komodo dragon – there’s never a dull day.

Associate Professor Clausen has been instrumental in getting this new and exciting degree off the ground.

Associate Professor Phil Clausen
School of Engineering (Mechanical Engineering)
Want to use mathematics, science and creativity to overcome challenges and find solutions? Chemical engineers help develop everyday products like toothpaste, puff pastry, chocolate, lipstick, paracetamol and petrol.

With a Bachelor of Chemical Engineering (Honours), you could work as part of a team developing high-efficiency insulation products that improve heating and cooling. You could work on biofuel production in remote communities, assisting with both waste disposal and energy production. Or, you might work in the food industry, refining products for people with special dietary needs. The possibilities are diverse and exciting. The possibilities are diverse and exciting.

2020 SELECTION RANK
80.15 | Median 90.50

CAREER EXAMPLES
• Biotechnology Engineer
• Chemical Safety Manager
• Environmental Remediation consultant
• Mineral Processing Engineer
• Nuclear Engineer
• Water Treatment Designer

ACCREDITATION
Our degree is accredited through Engineers Australia and the Institution of Chemical Engineers (UK), meaning graduates can work almost anywhere in the world.

COMBINE THIS DEGREE WITH
• Bachelor of Business
• Bachelor of Mathematics
• Bachelor of Science

8TH
in Australia for Chemical Engineering

1 QS World University Rankings by Subject 2019
Currently completing her fourth year of a Bachelor of Engineering (Chemical), Janita is driven by a desire to create change and make the world better.

“I think the most exciting thing about my degree is that as an engineer, I will be in the perfect position to help people.”

The University’s focus on networking and real-world experience has allowed her to thrive – and even helped her secure an internship with Hunter Water. She has also embraced the opportunity to take her studies global – last July she spent a month studying at one of the University’s partner institutions in Lyon, France.

“I studied project management and innovation with a group of international students, teaching me how to work with a multicultural group of people – while learning the importance of global collaboration,” Janita said.

Janita
Bachelor of Chemical Engineering (Honours)
Civil engineers are responsible for the physical infrastructure that enables modern societies to function. Buildings, highways and railways, tunnels, airports, power generation facilities and harbour facilities are all designed, built and managed by civil engineers. At the University of Newcastle, we educate our engineers to meet the global challenges of the future. With a Bachelor of Civil Engineering (Honours), you could engineer energy efficient buildings, or help develop sustainable and resilient infrastructure in developing countries. You might even design Australia’s first high-speed train network to connect communities and reduce carbon emissions.

2020 SELECTION RANK
80.35 | Median 87.95

CAREER EXAMPLES
• Civil Engineering Designer
• Geotechnical Engineer
• Stormwater Engineer
• Structural Engineer
• Transport Systems Engineer
• Urban Development Engineer

ACCREDITATION
Professional recognition through Engineers Australia qualifies you as a professional engineer who can work almost anywhere in the world

COMBINE THIS DEGREE WITH
• Bachelor of Business
• Bachelor of Environmental Engineering (Honours)
• Bachelor of Mathematics
• Bachelor of Surveying (Honours)

TOP 150
in the world for Civil and Structural Engineering

1. QS World University Rankings by Subject 2018
TARA’S STORY

Tara is proving that it doesn’t have to be one or the other when it comes to study and elite sport. The Newcastle Jets Westfield W-League midfielder recently graduated from a Bachelor of Civil Engineering (Honours) and she wants to inspire other young women to consider engineering as a career path.

Tara’s passion for understanding how things work started early on. She loved helping her dad with maintenance jobs around the house and once she realised civil engineering incorporated her passion for maths, science and hands-on problem solving, she decided it was the right degree for her.

After completing a professional placement course with Australian Rail Track Corporation (ARTC), Tara was offered a three-year graduate engineer position with the corporation. Working with ARTC, Tara will continue to broaden her engineering experience while working on real-world projects.

Tara
Bachelor of Civil Engineering (Honours), 2019
Computer systems engineers combine creativity with technology to develop solutions to some of the world’s greatest challenges. They are essential in a wide range of industries like computer design, defence applications, communication networks and internet development.

With a Bachelor of Computer Systems Engineering (Honours), you might find yourself developing advanced computing equipment for industrial or business systems. Or, you could design and maintain a banking data centre to run internet banking services.

CHANGE 2019 TO 2020
86.30 | Median 86.30

CAREER EXAMPLES
• Computer Systems Analyst
• Computer Systems Specialist
• Information and Communications Engineer
• Information Technology Manager
• Network Engineer
• Web Developer

PROFESSIONAL RECOGNITION
Professional recognition through Engineers Australia and the Australian Computer Society. You will be qualified as a professional engineer who can work almost anywhere in the world.

COMBINE THIS DEGREE WITH
• Bachelor of Business
• Bachelor of Computer Science
• Bachelor of Electrical and Electronic Engineering (Honours)
• Bachelor of Mathematics
• Bachelor of Science (Physics major only)

REAL-WORLD EXPERIENCE
All University of Newcastle engineering students must complete 12 weeks of professional practice during their degree. Through your work placement you’ll build important professional networks and put your learning into practice.
JOIN THE TEAM

The University’s NUbots team develops software for robotic soccer and competes each year in the international RoboCup competition.

The goal of RoboCup is to foster artificial intelligence and robotics research – with the ultimate goal of developing a team of fully autonomous humanoid robots that can win against the human world soccer champion team by 2050.

NOEL’S STORY

Noel wants to contribute to the future of technology. He wants to be part of the next big thing. And he plans to use his Bachelor of Computer Systems Engineering (Honours) to do just that.

With a passion for addressing the needs of the future, Noel is also focusing on prolonging the resources we have for generations to come.

His studies have allowed him to develop an understanding of the importance of technical communication – from project management to complex problem-solving. And he’s complemented his theoretical knowledge with hands-on experience – working in labs on the design of computer systems and electrical circuits that could power things like autonomous reverse parking.

Noel believes that this combination of knowledge and experience will prepare him well for a job in the industry. Currently in his final honours year, Noel plans to pursue a career as a software developer when he graduates.

Noel
Computer Systems Engineering (Honours)
Electrical and electronic engineers design and build systems and machines that generate, transmit, measure, control and use electrical energy essential to modern life.

With a Bachelor of Electrical and Electronic Engineering (Honours), you could work with power systems and renewable energy technologies, industrial electronics, robotics, control systems, telecommunications or embedded systems. You might develop precision agriculture technology to increase food production efficiency and even build smart grid systems to help manage alternative energy resources. Or, follow in the footsteps of our team of researchers and develop life-changing medical technology – like the artificial pancreas.

2020 SELECTION RANK
83.30 | Median 92.95

CAREER EXAMPLES
- Automatic Systems Designer
- Biomedical Instrumentation Designer
- Electrical Design Engineer
- Robotics Engineer
- Telecommunications Equipment Designer

ACCREDITATION
Professional recognition through Engineers Australia qualifies you as a professional engineer who can work almost anywhere in the world

COMBINE THIS DEGREE WITH
- Bachelor of Business
- Bachelor of Computer Systems Engineering (Honours)
- Bachelor of Mathematics
- Bachelor of Mechatronics Engineering (Honours)
- Bachelor of Science (Physics)
JODIE’S STORY

The idea of working as an engineer was ignited during Jodie’s primary school days – stirred on by her love for everything maths and science.

Her combined undergraduate degree in electrical engineering and mathematics, gave her the opportunity to explore new skills in diverse areas. Electronics was challenging at first and she was nervous going into a laboratory not knowing how to use all the instruments. “It’s great to look back and realise how much I’ve learnt in my studies,” says Jodie.

Jodie participated in a six-month student exchange program in Singapore where she was able to complete an internship at ST Electronics. Towards the end of her studies she gained employment with CSIRO Energy Centre, where she was able to apply what she’d learnt in her degree and develop valuable connections within the industry. Another highlight of her degree was studying on exchange at one of the top Universities in Singapore and completing an internship with the global technology, defence and engineering group, ST Electronics.

Determined to use science and technology to improve people’s lives, she is now completing her PhD in Mechatronic Engineering. She is developing a tool to predict the recovery outcomes for patients undergoing knee replacement surgery, and is also part of a peer mentoring program that helps first-year students adjust to university life.

Jodie
Electrical and Electronic Engineering (Honours)
As an environmental engineer you may help rehabilitate land impacted by mining or work on the clean-up of an oil spill that threatens ecosystems. You could even help prevent flooding of some of the world’s fast-growing cities. Environmental engineers apply their knowledge of chemistry, geomechanics, hydrology and land surface processes to find solutions for complex environmental problems. With a Bachelor of Environmental Engineering (Honours), you’ll be responsible for developing sustainable engineering practices that have a profound impact on health and quality of life – working with other specialists to optimise the use of resources and minimise long-term environmental impacts.

2020 SELECTION RANK
81.20 | Median 87.25

CAREER EXAMPLES
• Environmental Impact Consultant
• Environmental Remediation Technician
• Sustainable Fisheries Consultant
• Toxic Materials Control Engineer
• Water Reclamation Project Designer

ACCREDITATION
Professional recognition through Engineers Australia qualifies you as a professional engineer who can work almost anywhere in the world

COMBINE THIS DEGREE WITH
• Bachelor of Civil Engineering (Honours)
• Bachelor of Science

No.1
Australia for Quality Overall Experience

1 2019 Student Experience Survey, Engineering study area
RUBY’S STORY

It was a combination of factors that led Ruby on her path to studying a combined degree in civil and environmental engineering. Her love of maths and design and passion for the environment meant the double degree was the perfect fit – allowing her the freedom of a diverse career once she graduates.

As a New Colombo Plan Scholarship recipient, Ruby was able to see how engineering practices were being applied in different countries. Not only did she complete an exchange program with leading university KAIST in South Korea, but she also gained key experience through an industry placement with international engineering firm, AECOM in Indonesia.

Now, with a more in-depth understanding of how she can better serve communities, Ruby is looking to pursue a career in humanitarian engineering programs such as Engineers Without Borders, so she can ensure basic human necessities are met for all.

Ruby
Bachelor of Civil Engineering (Honours)/Bachelor of Environmental Engineering (Honours)
Mechanical engineers design, manufacture and optimise specialist machines and processes. They solve important problems using robotics, new advanced materials, the fundamental laws of energy generation and transmission and the computer control of physical systems – from nano to mega-tonne scale. They work on everything from power plants, to air conditioners, aircraft engines and race cars. With a Bachelor of Mechanical Engineering (Honours), you could design self-driving farm machinery for ultra-efficient food production, or build revolutionary biomechanical solutions for people with disabilities.

2020 SELECTION RANK
80.05 | Median 90.85

CAREER EXAMPLES
• Engineering Project Manager
• Mechanical Engineering Designer
• Mechanical Systems Supervisor
• Mechanical Technology Engineer
• Operating Plant Manager

ACCREDITATION
Professional recognition through Engineers Australia qualifies you as a professional engineer who can work almost anywhere in the world

COMBINE THIS DEGREE WITH
• Bachelor of Business
• Bachelor of Mathematics
• Bachelor of Mechatronics Engineering (Honours)
• Bachelor of Science

TOP 200
in the world for Mechanical Engineering¹

¹ Shanghai Ranking’s global ranking of academic subjects 2018
Bernard Ting Jian We
Bachelor of Mechanical Engineering (Honours)

BERNARD’S STORY

International student Bernard knows there are multiple ways to solve a problem – and finding the right answer can be enhanced through collaboration and listening to multiple voices.

Coming from Malaysia to study a Bachelor of Mechanical Engineering (Honours) at the University of Newcastle has enabled Bernard to pursue his passion for understanding mechanical systems.

“I’ve always been fascinated by how mechanical systems are designed, so this degree really suited my interests. At the start of the program, I thought that I’d be learning theories involving systems in an ideal world but I’ve been amazed by how much the theory component has been balanced with practical studies,” Bernard said.

Bernard has drawn inspiration from many local and international students he’s met during his studies. These interactions have not only helped broaden his perspective but will prepare him well for his future career.

“Spending time with them has definitely taught me different perspectives from different cultural backgrounds. The procedure to solve a problem may seem normal to you, but when someone from a different background offers their opinion, having a different approach can help ensure the best solution succeeds.”

Bernard Ting Jian We
Bachelor of Mechanical Engineering (Honours)
The Bachelor of Mechatronics Engineering (Honours) focuses on the synergy of electrical, computer and mechanical technologies that lead to new solutions to industrial problems.

You might build robots or unmanned aircraft, design bionic implants or even energy harvesting equipment. Mechatronics engineers are involved in the technical design, automation and operational performance of the electromechanical systems used in industries such as defence, advanced manufacturing, mining and health.

2020 SELECTION RANK
82.90 | Median 90.70

CAREER EXAMPLES
- Avionics Engineer
- Industrial Automation Engineer
- Robotics Designer
- Smart Infrastructure Designer

ACCREDITATION
Professional recognition through Engineers Australia qualifies you as a professional engineer who can work almost anywhere in the world

COMBINE THIS DEGREE WITH
- Bachelor of Business
- Bachelor of Electrical and Electronic Engineering (Honours)
- Bachelor of Mathematics
- Bachelor of Mechanical Engineering (Honours)
- Bachelor of Science (Physics)

No.8 in the world for Automation and Control

No.1 in Australia for Automation and Control

1. Shanghai Ranking's global ranking of academic subjects 2019
SAHIL’S STORY

Bachelor of Engineering (Mechatronics) (Honours) alumnus Sahil is bringing to life new technologies that improve the world we live in.

While studying, Sahil took advantage of the University’s entrepreneurial and networking opportunities – undertaking leadership courses at the Three76 Innovation Hub, going on exchange to Germany, and becoming President of the University of Newcastle’s Exchange Student Network.

With a focus on autonomous vehicle control, Sahil co-founded Elite Robotics. The startup designs mobile service robots for commercial lawnmowers, land surveying and package delivery systems – with a vision to eliminate life’s most tedious and repetitive tasks.

Sahil
Bachelor of Engineering (Mechatronics) (Honours), 2016
Medical engineers take new technology and create health-oriented solutions.

With a Bachelor of Medical Engineering (Honours), you’ll apply engineering principles and design processes to find novel solutions to healthcare problems. As a medical engineer, you’ll strive to make medical innovations more effective, efficient, safer and affordable. Combine your creativity, critical thinking and complex problem-solving skills to improve technology and human systems in medical settings. The University of Newcastle offers the only medical engineering degree in NSW, so our graduates are uniquely placed to improve lives both locally and around the world.

2020 SELECTION RANK
81.25 | Median 91.70

CAREER EXAMPLES
Depending on your area of specialisation, you could work with:
- app-based health detection and diagnostic tools
- artificial organs
- biomechanical devices
- digital medical records
- electrical and computing systems for radiotherapy, respiration or dialysis
- nanotechnology drugs and tests
- prosthetic limbs
- surgical equipment
During his high school years, Elliot had a keen interest in both medicine and engineering and debated which path to follow when searching for an undergraduate degree. However, the introduction of the new Bachelor of Medical Engineering (Honours) at the University of Newcastle solved this problem – offering the perfect middle ground for Elliot to pursue both passions.

Drawn to the ways in which medical engineering can impact lives for the better, Elliot originally hoped to work with prosthetics. But throughout his studies, he’s been able to expand his passion and is now interested in exploring how electrical engineering is used in the development of medical devices.

Complementing his studies, Elliot recently completed an internship with Fledge Innovation Labs and also had the opportunity to participate in a study abroad tour to Singapore where he interned with Singapore Eye Research Institute.

For Elliot, having access to the University’s support networks, partners like the Hunter Medical Research Institute (HMRI) and opportunities for international travel and study, has also allowed him to gain important experience in the medical research field and make valuable connections with industry.

Elliot
Bachelor of Medical Engineering (Honours)
One of the biggest challenges humankind faces is the transition to a renewable energy economy. The success of this evolution depends on the creative solutions of a new generation of renewable energy engineers with specialised skills. Spanning the disciplines of chemical, electrical and mechanical engineering, the Bachelor of Renewable Energy Engineering (Honours) will equip you to work across the whole spectrum of technologies for renewable energy capture, conversion, storage, delivery and management. You'll also choose courses in related areas of climate change policy, law and economics and environmental sciences.

2020 SELECTION RANK
85.90 | Median 93.85

CAREER EXAMPLES
• Energy Accounting/Auditing
• Energy Management Consultant
• Energy Policy Development Officer
• Renewable Energy Engineer
• Renewable Energy Innovation
• Renewable Energy Systems Design

ACCREDITATION
This program has been granted provisional accreditation through Engineers Australia

REAL-WORLD EXPERIENCE
All University of Newcastle engineering students must complete 12 weeks of professional practice during their degree. Through your work placement you’ll build important professional networks and put your learning into practice.
FINDING SOLUTIONS TO OUR GLOBAL WATER CRISIS

Sometimes it takes a team approach. Led by Professor Behdad Moghtaderi, the University’s Hydro Harvest Operation is set to solve the planet’s global water shortage crisis.

Made up of Professor Moghtaderi, Dr Priscilla Tremain, Dr Andrew Maddocks, Dr Cheng Zhou and Associate Professor Elham Doroodchi, they were recently announced as the only Australian team to reach the finals of the worldwide Water Abundance XPRIZE competition. The two-year competition challenges teams to create decentralised access to water, with a goal to give people the power to access fresh water wherever it is needed.

Hydro Harvest Operation is working to develop a low-cost, energy-efficient prototype, utilising 100 percent renewable energy, that will be able to convert the air’s humidity into drinkable water. The team’s ambition is that the technology will be able to work anywhere in the world without being bound to climate – transforming the future of water generation around the globe. Through collaboration with like-minded people, you too can make a global impact.

Team Hydro Harvest Operation
Professor Behdad Moghtaderi, Dr Priscilla Tremain, Dr Andrew Maddocks, Dr Cheng Zhou and Associate Professor Elham Doroodchi
Software engineering is behind much of the everyday technology we take for granted – from our tablet devices, computer software and mobile phones through to digital televisions, computer games and online banking.

With the Bachelor of Software Engineering (Honours) you might develop software for digital forensics analysis to help fight crime, or work in defence and combat cyber attacks. You could design wearable health management devices or write the software that powers e-commerce websites.

**2020 SELECTION RANK**

80.30 | Median 84.85

**CAREER EXAMPLES**

- Applications Software Developer
- Internet and Web Engineer
- Software Development Manager
- Software Engineer
- Telecommunications Engineer

**ACCREDITATION**

Professional recognition through Engineers Australia and the Australian Computer Society means graduates will be qualified as professional engineers who can work almost anywhere in the world.

Employment in computer system design and related services industries is forecasted to grow by 24.6% by 2022.¹

¹ Department of Jobs and Small Business
A NEW USE FOR GAMING TECHNOLOGY

Virtual reality expert Dr Shamus Smith is exploring the reuse of gaming technologies for hazardous environment simulation and healthcare.

Dr Smith is specifically interested in advanced software interfaces – and the interaction opportunities such systems enable. His current research interests include the evaluation of in-situ user experiences, the impact of virtual reality technology, simulation and serious games, and eHealth.

A software engineer, Dr Smith takes his research and applies it to the real world through interdisciplinary and industry-based research collaborations.

Dr Shamus Smith
Senior Lecturer
School of Electrical Engineering and Computing
(Computer Science and Software Engineering)
Surveyors specialise in the measurement, management, analysis and display of spatial information describing the Earth and its physical features.

The work of surveyors knows no bounds and could see you play an important role both locally and globally. They maintain the integrity of the land records system (cadastre), which underpins the economy of the nation. With the Bachelor of Surveying (Honours), you could be involved in projects like preparation for building of a new tunnel, or mapping of flood areas for disaster preparedness. Your work as a surveyor could see you involved in the prediction of earthquakes and mapping of the ocean floor.

2020 SELECTION RANK
82.60 | Median 86.28

CAREER EXAMPLES
- Engineering and Construction Surveyor
- Engineering Surveyor
- Geospatial Specialist
- Geographic Information Systems Specialist
- Hydrographic Surveyor
- Photogrammetrist
- Registered Land or Mining Surveyor
- Town Planning

ACCREDITATION
This degree program is accredited by the Council of Reciprocating Surveying Boards of Australia and New Zealand, and meets the requirements of the Board of Surveying and Spatial Information (BOSSI). This degree program is also accredited and recognised by the Land Surveyors Board, Malaysia.

COMBINE THIS DEGREE WITH
- Bachelor of Business
- Bachelor of Civil Engineering (Honours)

SEARCHING FOR CLIMATE CHANGE ANSWERS IN THE SEA

With research projects funded by the likes of NASA, the European Space Agency and French government space agency, Associate Professor Xiaoli Deng is improving satellite radar data in coastal zones.

Through the development of altimetry waveform re-tracking algorithms, Dr Deng also specialises in monitoring sea levels around Australia, and investigating the influence on climate change. With her team of three PhD students, she is breaking new ground in coastal altimetry and its applications, sea level change, satellite geodesy in natural hazard mitigation, and the marine gravity field.

Associate Professor Xiaoli Deng
School of Engineering (Surveying)
ELIZABETH’S STORY

Bachelor of Surveying (Honours) student Elizabeth is making her mark on the surveying and engineering industries and wants to inspire other women to do the same. Awarded the 2018 NSW Surveyor General’s Women in Surveying Undergraduate Scholarship, Elizabeth hopes she can be a role model for women wanting to pursue a career in the engineering sector.

"Having strong female leaders and mentors in engineering gives women an avenue to start the conversation without fear of judgement, whilst encouraging an honest and empowering environment."

When Elizabeth set out on her journey to further study, she wanted something that would be challenging, growing, and diverse. And that’s just what she found – cementing her decision to pursue a career in surveying. Through her scholarship, Elizabeth is engaging with industry contacts and women making an impact in engineering – hoping that she, too, can encourage other young females to forge a path in surveying or engineering.

Elizabeth
Bachelor of Surveying (Honours)
Mining engineering is the design, supervision and management of coal, mineral and metal mines and their associated infrastructure, with minimal damage to environments.

You will gain a sound understanding of civil and mining engineering concepts in preparation for a career as a professional engineer. The mining engineering program involves two years of study at the University of Newcastle with the remaining two years undertaken at the University of New South Wales (UNSW) or the University of Wollongong (UOW).

2020 SELECTION RANK
93.55 | Median 95.48

CAREER EXAMPLES
• Development Superintendent
• Mining Engineer
• Mining Superintendent
• Strategic Mine Planning Engineer
• Underground Mining Engineer

ACCREDITATION
Once you complete your Bachelor of Engineering (Honours) (Mining) at UNSW or UOW, you will qualify for professional recognition through Engineers Australia.

No.26 in the world for Mineral and Mining Engineering
No.8 in Australia

1 ShanghaiRankings global ranking of academic subjects 2019
REAL-WORLD EXPERIENCES

University of Newcastle Engineering students have access to a whole range of rich experiences during their studies, from overseas tours and collaborative projects, to robotics groups and challenges.

ENGG1500
All engineering students have the opportunity to complete this first-year professional practice course. Tackling large-scale global issues from the start, students work in teams to develop, pitch and create a project that will help solve real problems.

ROBOTX CHALLENGE
Join the Maritime RobotX Challenge team and develop systems for an autonomous boat. You could travel overseas to complete against robotics enthusiasts from Pacific Rim countries.

NEWCASTLE UNIVERSITY WOMEN IN ENGINEERING (NUWIE)
If you’d like to meet like-minded people and be part of a broader network of female engineers, NUWIE hosts a range of activities and communicates a variety of opportunities, such as seminars with female graduates and site visits.

GET HACKING
Get involved with a hackathon and develop your teamwork, ideation and pitching skills. Sow the seeds for your own startup.

MAKERSPACE
If creative projects are your thing then get involved with the University of Newcastle’s Makerspace. This is where students work on their own projects, share ideas, equipment and technical knowledge.

THE ART OF PROBLEM SOLVING
Our student showcase exhibition shares some of the University’s most exciting engineering and computing innovations - from sensor gloves that teach sign language to satellites that map the effects of climate change, this event is not to be missed.

GO GLOBAL
Join a study tour and explore another country with your fellow students. You’ll get insight into another culture and improve your global employability.
RELATED DEGREES

You may also be interested in one of the following degrees that touch on the Engineering study area.

BACHELOR OF TECHNOLOGY (RENEWABLE ENERGY SYSTEMS)

This pathway program will allow you to build on the knowledge gained from your TAFE Associate Degree of Engineering (Renewable Energy Technologies), and finish with a bachelor degree after one year of university study.

For further information on this program refer to the Computing, Maths and Technology brochure or visit newcastle.edu.au/study/computing-maths-and-technology

BACHELOR OF COMPUTER SCIENCE

Computer science is fundamental to many everyday technologies like mobile phones, learning systems, online shopping, navigation systems, social media, computer games and programmable appliances. Computer scientists work across fields such as artificial intelligence, robotics, computer graphics, digital forensics, bioinformatics, web development, cryptography and data security.

For further information on this program refer to the Computing, Maths and Technology brochure or visit newcastle.edu.au/study/computing-maths-and-technology

CONNECT WITH OUR GLOBAL ALUMNI NETWORK

Spanning 144 countries, the University of Newcastle’s global alumni network is making a positive difference to the world.

This diverse group of global professionals provides invaluable support for our students by sharing their time and expertise. Whether it’s through a mentoring program, industry experience or attending a networking event, you’ll be inspired and empowered by those who have blazed the trail before you. And, when you graduate, you’ll be in good company. You will join this outstanding group of over 148,000 alumni around the world. Because wherever you are, whatever you’re doing, you are always part of our global alumni community.

newcastle.edu.au/alumni

IF YOU’RE READY TO CHASE YOUR DREAMS AND THRIVE, NOW IS THE TIME.

For full information and to find out how to apply, visit newcastle.edu.au/study