WHERE WILL NEW TAKE YOU?

STUDY AREA
ENGINEERING

THE UNIVERSITY OF NEWCASTLE AUSTRALIA
New is never boring. It's an opportunity to solve complex problems and make our planet a better place. The role of an engineer is ever-changing. They have a critical part to play in overcoming the unprecedented challenges our world faces today. Challenges like food and water security, climate change, data security and our ageing population. When you study engineering at the University of Newcastle, you’ll be in the right place to discover life-changing solutions.

**NO.1**

in Australia for overall quality and No.2 for good teaching

**20%**

employment growth for Engineering 2015-2020

Group of Eight Australia - Engineering Associate

One of only three Australian member institutions of the Ge3 – Global Engineering Education Exchange program.

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1 Quality Indicators for Learning and Teaching 2017
2 Australian Bureau of Statistics 2016

newcastle.edu.au/study/engineering
NEW PROGRESSES

Bachelor of Engineering (Electrical and Electronic) (Honours), 2016 and Master of Professional Engineering (Electrical and Electronic) graduate Eric is driven to push technology into uncharted territories. While studying, he designed a search and rescue robot that uses virtual reality technology to allow rescue personnel to reach victims without placing themselves in danger. Eric leveraged the University’s environment of innovation and future-forward facilities to engineer this invention and others – not only for the sake of progress, but to save lives.

Eric
Bachelor of Engineering (Electrical and Electronic) (Honours), 2016
Master of Professional Engineering (Electrical and Electronic), 2017
NEW LIFESTYLE
Our coastline is world famous. Enjoying downtime at 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 a dynamic art and music scene, chilled-out cafes, eclectic markets, micro-breweries 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 - offering an opportunity to meet new people, socialise, and be part of something new. The Forum, our on-campus gym, has something for everyone including a 50-metre indoor pool, cardio and strength training zones, rock-climbing wall, cycle zone, group fitness classes and multi-purpose courts.

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.

YOUR PATHWAYS
We are proud to be the largest provider of enabling programs in Australia.

If you do not have the qualifications required for direct entry, we offer you the opportunity to access university studies, 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 selected undergraduate degrees at the University of Newcastle.

• Newstep - aged 18-20 years
  If you were unable to complete Year 12 due to adverse circumstances or missed the chance to get the marks needed for university entry, our Newstep program offers another pathway for you.

• Open Foundation - aged 20 years+
  If you are seeking a new career direction, considering attending university after time in the workforce or looking to further pursue your interests, our Open Foundation program can help make this happen.

• Yapug - Aboriginal and Torres Strait Islander Students
  Yapug is a pathway program designed to help Aboriginal and Torres Strait Islander people gain skills for entry into undergraduate degrees.

newcastle.edu.au/studentliving
newcastle.edu.au/accommodation
newcastle.edu.au/enabling
At school, Jarred would take things apart to see how they were made. He’d then think about how they could be improved, or used in other combinations to make a more effective product. Now as an electrical engineering student, Jarred still takes things apart – it’s only the scale that has changed. Inspired by global innovators like Elon Musk, Jarred is excited by the future of electric vehicles. As part of his final year project, Jarred is focusing on improving the performance and efficiency of multi-level inverter technology. He hopes that these improvements can be utilised in the Hunter Valley Electric Vehicle competition and by the NU Racing team. Jarred is dedicated to improving humanity through his innovative work, volunteering and other community initiatives.

Jarred
Bachelor of Electrical and Electronic Engineering (Honours) and Bachelor of Science (Physics)
Ma & Morley Scholar

STUDENT JOURNEY
Your journey as a university student begins the minute you gain entry into a degree program.

Whether you choose to go directly into the workforce once you complete your bachelor (or undergraduate) degree, or continue studying is up to you. The options available to continue studying are vast. Even if you decide to take a break from studying, you can always come back if you would like to specialise in a new area, learn more, or refine a specific skill set.

Upon completion of your bachelor degree, you may wish to further your study with Honours - an additional year of study dedicated to research on a specific area of interest. Honours programs are highly regarded, they can enhance career prospects and prepare you for a Higher Research Degree. Your next step in studying may include include a Master of Philosophy or a Doctor of Philosophy (PhD) in your area of choice. In doing so, you will open up incredible opportunities to advance your career, champion breakthrough discoveries and solve the world’s greatest challenges.

Additional coursework (non-research) prospects are also available after completing your bachelor degree. The University of Newcastle offers over 70 postgraduate degree options to expand your career options and follow a path with the potential to make a global impact in your field of choice.

STUDY ABROAD
Are you adventurous? Keen to see the world and continue your studies at the same time?

Studying overseas is an experience that will stay with you forever. It’s a chance to open up your world, expand your academic horizons and connect with people from around the globe. Whether it be a semester exchange, a short course or even an internship, there is an overseas experience out there to suit everyone.

newcastle.edu.au/studyoverseas

SCHOLARSHIPS
Through our scholarship programs, we are able to open up a world of possibility for those who might have all the talent in the world, but sometimes lack the opportunity to develop and explore it.

Our scholarship programs provide:

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

Many of our scholarships have been created as a result of generous philanthropic donations to the University of Newcastle, from individuals and organisations who share our belief that everyone with talent and dedication deserves the chance to pursue their dreams.

newcastle.edu.au/scholarships

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

MA & MORLEY SCHOLARSHIP PROGRAM

At school, Jarred would take things apart to see how they were made.

He’d then think about how they could be improved, or used in other combinations to make a more effective product. Now as an electrical engineering student, Jarred still takes things apart – it’s only the scale that has changed. Inspired by global innovators like Elon Musk, Jarred is excited by the future of electric vehicles. As part of his final year project, Jarred is focusing on improving the performance and efficiency of multi-level inverter technology. He hopes that these improvements can be utilised in the Hunter Valley Electric Vehicle competition and by the NU Racing team. Jarred is dedicated to improving humanity through his innovative work, volunteering and other community initiatives.

Jarred
Bachelor of Electrical and Electronic Engineering (Honours) and Bachelor of Science (Physics)
Ma & Morley Scholar
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 CEOs – 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 passions.

ARE YOU LOOKING FOR

• An in-demand profession with fast progression
• Average starting salaries of $80,000+
• Opportunities to solve the world’s biggest problems
• Flexibility to work in and out of the office

Perhaps this could be your new?

NO.1 profession for career satisfaction (Engineering)¹

NO.1 job family on the rise (Architecture and Engineering)²

75% of the fastest growing occupations now require Science, Technology, Engineering and Maths skills³

COMMENCING STUDENT SCHOLARSHIPS

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

newcastle.edu.au/febescholarships

¹ The Guardian 2015
² World Economic Forum 2016
³ PricewaterhouseCoopers 2015
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.

**NEW DEGREES**

**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 entrepreneurship.

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.*
Aerospace 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 lightweight as possible, yet highly reliable. Aerospace engineers need to understand and control the response of aerospace structures to complex interactions using a broad range of technologies. Students can focus on design and high-performance materials or concentrate on the control of complex interacting aerospace systems.

**2018 SELECTION RANK**

NA | Median NA

**CAREER EXAMPLES**

- Aerospace 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**

We are seeking provisional accreditation for this program through Engineers Australia in 2018.

**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.
NEW SOARS

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. How might he inspire you?

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. You might 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.
Dr Jessica Allen is developing an alternate method of generating electrical energy that is more than twice as efficient as coal-fired power stations. Dr Allen is working alongside her colleague and mentor Professor Scott Donne to spearhead the development of a commercial scale model of a direct carbon fuel cell (DCFC). The DCFC will extract energy from fossil fuel sources with higher efficiency – to reduce environmental impact and extend reserves. The approach converts chemical to electrical energy in a single step, extracting over 80 per cent of the energy from coal compared to just 40 per cent generated by power stations. Dr Allen’s work is improving commercial energy technologies for today and into the future.

Dr Jessica Allen
Lecturer,
School of Engineering
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. 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.

2018 SELECTION RANK
80.50 | Median 84.28

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

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

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

TOP 150
in the world for Civil and Structural Engineering

1 QS World University Rankings by Subject 2018
Joss believes in the potential of renewable energy to make lives better. After completing his Bachelor of Engineering (Civil) (Honours) and spending time working in the industry, Joss recognised a need to be more energy self-sufficient. In order to find new ways to achieve this, he returned to study to diversify his skills. Currently undertaking a PhD in Mechanical Engineering, he has designed and optimised a powerful small-scale wind turbine – breaking new ground in energy efficiency. Not only is Joss's work positively impacting the environment and the cost of electricity, it’s allowing entire communities to access it for the first time. Through an understanding of our environmental needs, and a passion for creating a sustainable future, Joss is creating a better, more energy-efficient world for generations to come.

Joss
Bachelor of Engineering (Civil) (Honours)/Bachelor of Engineering (Surveying) (Honours), 2011
Electrical and electronic engineers design and build systems and machines that generate, transmit, measure, control and use electrical energy essential to modern life.

As an electrical and electronic engineer, you could help 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 currently under development at the University of Newcastle.
ANDREAS’S STORY

Andreas has made his mark on Australia’s burgeoning space programs, finding an innovative way to make affordable satellites. It all started with Andreas applying entrepreneurial thinking to his final year electrical engineering project which saw him develop startup business – Obelisk Systems. Andreas and his team also helped create hands-on technologies to bring science, technology, engineering and maths (STEM) industries into the classroom to inspire future generations.

It’s a natural progression for Andreas, who helped run STEM education activities while he was studying at the University of Newcastle. Now, with a keen focus still set on space operations, Andreas is helping reduce the barriers to space – making it more accessible to people on Earth as a Lead Avionics Engineer at Saber Astronautics.

Andreas
Bachelor of Engineering (Electrical and Electronic)
(Honours)/Bachelor of Business, 2016
As an environmental engineer you could help rehabilitate land damaged by mining, or work on the clean-up of an oil spill that threatens ecosystems.

You might even help prevent inundations on 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. They're responsible for developing sustainable engineering practices that have a profound impact on health and quality of life. They work with other specialists to optimise the use of resources and minimise long-term environmental impacts.

**ACCREDITATION**

Professional recognition through Engineers Australia and the Washington Accord qualifies you as a professional engineer who can work almost anywhere in the world.

**TOP 300**

in the world¹

*(top 400 in 2017)*

¹ ARWU Shanghai Ranking's Global Ranking of Academic Subjects 2018 - Environmental Science and Engineering
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 megatonne scale. They work on everything from power plants, to air conditioners, aircraft engines and race cars. As a mechanical engineer, you could design self-driving farm machinery for ultra-efficient food production, or build revolutionary biomechanical solutions for people with disabilities. The possibilities are vast and exciting.

**TOP 200 in the world for Mechanical Engineering**

1 ARWU Shanghai Ranking’s Global Ranking of Academic Subjects 2018 – Mechanical Engineering

You could design, build and race your own formula style race car on the UON NU Racing Team.

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**2018 SELECTION RANK**

80.55 | Median 83.35

**COMBINE THIS DEGREE WITH**

- Bachelor of Business
- Bachelor of Mechatronics Engineering (Honours)
- Bachelor of Mathematics
- Bachelor of Science

**CAREER EXAMPLES**

- Mechanical Engineering Designer
- Mechanical Systems Supervisor
- Mechanical Technology Engineer
- Operating Plant Manager
- Engineering Project Manager

**ACCREDITATION**

Professional recognition through Engineers Australia and the Washington Accord qualifies you as a professional engineer who can work almost anywhere in the world.

newcastle.edu.au/study/engineering
ALEX’S STORY

With a penchant for tweaking tones and self-crafted pedal boards, guitarist and mechatronics student Alex is proof that when you combine technical skills with a lifelong passion, great things can happen. While studying, Alex co-founded Z² DSP – a tech startup that designs high quality digital guitar effects pedals for a boutique market. The business targets guitar enthusiasts and audiophiles like Alex, so he understands his customer base implicitly. Alex’s path shows you don’t need to wait until graduation to start pursuing your passion. Your pursuit of new can begin right now.

Alex

Bachelor of Mechanical Engineering (Honours)/Bachelor of Mechatronics Engineering (Honours)
Join the Maritime RobotX Challenge team and develop systems for an autonomous boat.

2018 SELECTION RANK
83.85 | Median 91.03

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

CAREER EXAMPLES
• Industrial Automation Engineer
• Robotics Designer
• Smart Infrastructure Designer
• Avionics Engineer
• Data Communications Engineer

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

Mechatronics engineering is concerned with the synergy of electrical, computer and mechanical technologies that lead to new solutions to industrial problems.

You might create robots, unmanned aircrafts, bionic implants or an energy harvester. 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, health and more.

NO.8 in the world\(^1\)
NO.1 in Australia\(^1\)
(up from no.10)

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1 ARWU Shanghai Ranking’s Global Ranking of Academic Subjects 2018 – Automation and Control

Join the Maritime RobotX Challenge team and develop systems for an autonomous boat.

newcastle.edu.au/study/engineering
Bachelor of Engineering (Mechatronics) (Honours) graduate 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 better solutions.

With a Bachelor of Medical Engineering (Honours), you’ll apply engineering principles and design processes to find innovative solutions to healthcare’s biggest challenges. As a medical engineer, you’ll strive to make medical treatment more effective, efficient, safer and affordable. You might work on the development of life-saving artificial organs, design more advanced surgical equipment, prosthetic limbs, or electrical and computing systems for radiotherapy or dialysis. Our graduates are uniquely placed to save and improve lives around the world.

CAREER EXAMPLES
Depending on their area of specialisation, a medical engineer could work with:
• biomechanical devices
• surgical equipment
• nanotechnology drugs and tests
• prosthetic limbs
• artificial organs
• electrical and computing systems for radiotherapy, respiration or dialysis

ACCREDITATION
We are seeking provisional accreditation for this program through Engineers Australia in 2018.
Growing up, Jessica was certain that she wanted to help people and make the world a better place. As a young social justice leader, she was twice awarded the Australian Defence Force Long Tan Leadership Award and enjoyed taking part in many advocacy and volunteering initiatives. After attempting to complete a Bachelor of Nursing despite significant health problems, Jessica made the difficult decision to change career paths. She went on to complete the intensive Open Foundation course at the University’s Central Coast campus and is now studying a Bachelor of Medical Engineering. For Jessica, the most important leadership qualities are empathy and commitment. Motivated by her own experience, she is driven to help alleviate the suffering that can be caused by illness and to make a difference to others.

Jessica
Bachelor of Medical Engineering (Honours)
Ma & Morley Scholar
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, this degree 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.

2018 SELECTION RANK
NA | Median NA*
*This is a new degree which is undergoing final University approval

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

ACCREDITATION
We are seeking provisional accreditation for this program through Engineers Australia in 2018.

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.
NEW TRANSFORMS

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 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.
Software engineering is behind much of the everyday technology we take for granted – from our iPads, computer software and mobile phones, through to digital televisions, computer games and online banking.

With this degree you might develop software for digital forensics analysis to help fight crime, or work in the defence industry to combat cyber attacks. You could design wearable health management devices, write the software that powers robotically-assisted surgery or something new entirely.

2018 SELECTION RANK
83.15 | Median 83.88

CAREER EXAMPLES
- Internet and Web Engineer
- Telecommunications Engineer
- Software Development Manager
- Control Systems Engineer
- Applications Designer

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

24.6% EMPLOYMENT GROWTH
Employment in the Computer System Design and Related Services industries is forecasted to grow by 24.6% by 2022

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1 Department of Jobs and Small Business
NEW REALITIES

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. You could be involved in projects like preparation for building of a new tunnel, or mapping of flood areas for disaster preparedness, or you might end up working around the world – helping to predict earthquakes or mapping of the ocean floor.

ACCREDITATION

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

**2018 SELECTION RANK**
81.15 | Median 87.03

**CAREER EXAMPLES**
- Underground Mining Engineer
- Strategic Mine Planning Engineer
- Mining Engineer
- Mining Superintendent
- Development Superintendent

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

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NO.26 in the world\(^1\)  
NO.8 in Australia\(^1\)  
(up from no.29)

\(^1\) ARWU Shanghai Ranking’s Global Ranking of Academic Subjects 2018 - Mineral and Mining Engineering
NEW 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.

UON 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.

ROBOGALS
The world needs more female engineers. RoboGals is a student-run STEM organisation that aims to encourage more girls to get involved with engineering through fun and educational activities.

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

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

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.

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 SYSTEMS ENGINEERING (HONOURS)

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.

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

ALWAYS NEW

#UONalumni

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