



Mining career information pack

Mining, exploration and geoscience sector



Regional
NSW

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Foreword



Mining is a strong and vibrant industry providing opportunities to work in diverse fields across NSW, in other parts of Australia and internationally. Regional NSW has a thriving mining and exploration sector, generating in excess of \$31 billion in value annually.

We have a plentiful supply of in-demand resources, we're world leaders in geoscience, and we're pioneers in mining equipment, technology and services. For young people considering their career paths, now is a great time to think about getting involved in mining.

Mining companies are continuing to build strong regional workforces and are seeking to employ young people from regional NSW who have the right skills. I'm passionate about ensuring young people have access to the support, education and employment pathways they need to pursue these career opportunities in their hometowns.

There are many starter jobs available in the mining industry for school leavers, and for TAFE and university graduates. These range from boilermaking to geology, from human resources to finance, and from engineering to communications.

The skills needed to work in mining today and into the future are very different to the past. Today, mining is becoming more automated and there's growing emphasis on social and environmental sustainability over the life of a mine. This means there are exciting opportunities for university graduates in areas as varied as data analysis, software development, environmental science, geology and engineering.

Modern careers require flexibility and agility. The skills learned in the mining industry create opportunities to transfer in and out of mining over the course of a career.

This information pack showcases the many and varied career paths available in the mining sector, and the diversity of study pathways to help students unlock these opportunities. It also provides links to many more excellent resources that are available online.

I hope this provides inspiration and encourages students to choose a career in mining in regional NSW, a truly great place to live, work and play.

Michael Wright

Deputy Secretary

Mining, Exploration and Geoscience

Department of Regional NSW

A woman with long brown hair is shown in profile, looking down at a smartphone she is holding. The background is dark with a glowing blue and red candlestick chart overlay, suggesting a financial or mining context. The overall mood is professional and focused.

01

**There's more to
mining**



Modern mining careers

Thought you knew what a career in mining looked like? Think again!

- ▶ The mining industry is changing rapidly to meet the demands of the future, adopting innovative technologies to solve complex problems. This means the way we mine – from exploration to processing and operations – looks different than it did 50 years ago.
- ▶ A modern mining career might see you using virtual reality technology to simulate hazardous training, deploying drones to survey mine sites, or using 3D laser scanning to build geological maps.
- ▶ Although traditional occupations and skills in the mining sector will remain important, the mining jobs of tomorrow are using automation, robotics, artificial intelligence and data analytics to improve efficiency, reduce costs and increase safety.

We need highly-skilled young people to fill the jobs of tomorrow

- ▶ The mining industry is a significant employer in regional NSW. The sector provides around 29,600 direct jobs and supports tens of thousands more jobs in around 7,000 mining supplier businesses across the state.
- ▶ Thousands of new jobs will be created in the coming years, both within existing and expanded mine sites and as planned mining projects become operational.

- ▶ Mining companies need young people with relevant skills to fill these future jobs. These jobs will be from entry level to tertiary qualified, from engineers and geologists to environmental scientists and workplace health and safety managers. The opportunities are endless.

Studying STEM subjects will unlock these career opportunities

- ▶ Enrolling in science, technology, engineering and mathematics (STEM) subjects is the first step on your mining career pathway.
- ▶ STEM subjects equip you with practical skills, encourage critical thinking and promote creative problem solving.
- ▶ The future mining workforce will require a broad suite of skills and capabilities that are underpinned by science, technology, engineering and mathematics.
- ▶ After school, there are many different pathways into mining careers. You may choose to continue your studies at university, enrol in vocational education and training or start an apprenticeship or traineeship at a mine site.

STEM Industry School Partnerships



STEM Industry School Partnerships

Engaging, inspiring, developing and cultivating the next generation of mining professionals

Through the connection of education and industry, the STEM Industry School Partnerships (SISP) program is inspiring students to study STEM in preparation for careers in mining, exploration and geoscience.

A career in the mining industry can include a range of roles, such as Mechatronic Specialists, Drone Pilots, Environmental Scientists and even Social Media Managers. The foundations of knowledge for these professions is STEM, hence the selection of STEM subjects in Years 11 and 12 is vital.

We are working in regions across NSW with major industry partners such as Bengalla Mining Company, BlueScope Steel, Thiess, WesTrac and Engineers Australia to create an industry-informed STEM school curriculum, and nurture real-world skills in our STEM students.

Mining is a great industry offering many career choices. It is important as a society that we encourage a love of STEM in our children to support the global improvement in living standards. At Bengalla we fully support the SISP program and are happy to be a part of the team engaging and inspiring our kids in everything STEM.

General Manager, Bengalla Mining Company

Get involved and learn more about local career opportunities, contact your regional SISP Project Officer or visit sispprogram.schools.nsw.gov.au



SISP PROJECT OFFICERS

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Illawarra

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andrew.laidler@det.nsw.edu.au



Geoscience careers

Data geoscientists collect, analyse and interpret geoscience data to better understand Earth's processes and resources, sometimes applying machine learning.

Environmental geoscientists investigate soil, rock and water chemistry to better understand environmental processes.

Exploration geologists do fieldwork and desktop studies in search of mineral and petroleum deposits.

Gemmologists assess gemstones and identify treatments to enhance gem quality.

Geochemists analyse chemistry of natural materials for mineral and petroleum exploration, environmental management and research to understand Earth processes.

Geochronologists specialise in dating rocks and sediments to better understand geological and human history.

Geomorphologists study landforms and the processes that shape them.

Geophysicists record physical properties of rocks in the field or lab and analyse the data to interpret Earth's structure and composition.

Hydrogeologists investigate the flow, distribution and quality of water in groundwater systems.

Mineralogists study the chemical and physical properties of minerals to better understand their formation and mineral resources.

Mine geologists work at mine sites, sometimes in remote areas and underground, predicting the location of mineralised rock to guide mine development.

Palaeontologists study the remains of all lifeforms and traces they have left behind, to understand Earth's history, past climates and the evolution of life.

Spatial/3D geoscientists collect and analyse a range of geographical and spatial data to create maps, 3D models and animations.

Volcanologists work in the field or in the laboratory to understand how volcanoes form and erupt.

More information

jobactive

www.jobsearch.gov.au

myfuture

www.myfuture.edu.au

Minerals Council of Australia (MCA)

www.minerals.org.au

Australasian Institute of Mining and Metallurgy (AusIMM)

www.ausimm.com



02

Career pathways



Bachelor of Engineering (Honours) Mining

CAMPUS	DURATION	ATAR - SR	IB	UAC	CRICOS	STARTS IN
Wollongong	4yrs	80 / 95 S*	28 / 37 S*	755615 / 755601	083339G / 083341C	Session 1 (February) Session 2 (July)

* This rank is the minimum ATAR - SR or IB required for consideration and does not provide guaranteed entry.
S - Scholars option is available

Mining engineers apply science, geoscience, engineering and technology to the efficient extraction of minerals from the earth, turning raw materials into valuable products. Minerals are a major component of all manufacturing and construction, and the demand for minerals will continue into the future.

Mining engineers play an essential role in applying their knowledge of mine design and mining practices to ensure the safety of workers, the protection of the environment and effective rehabilitation at the end of a mine's life.

THIS DEGREE

You will study a common core of subjects during your first year allowing you to learn the fundamentals of engineering and the different applications of engineering before deciding upon a particular engineering discipline to study. The common first year provides you with sound fundamentals in mathematics, statistics, physics, computing, engineering science and communication, mechanics and materials. You then focus on your chosen major / specialisation from second year onward.

The degree is also available as a double degree with options including Arts, Computer Science, Commerce, Mathematics, Science, Journalism and Law. You can also choose a double major with civil, environmental, materials or mechanical.

WHAT YOU WILL STUDY

At UOW, Mining Engineering focuses on the design of engineering systems, with an emphasis on mining methods, ventilation, environmental engineering, rock mechanics, ore reserve estimation, computer modelling and simulation, mineral beneficiation and mining economics.

The final sessions of the course are professionally orientated with the inclusion of subjects such as mine planning, work health and safety, mine rehabilitation and green mining technology, the environmental sustainability of mining operations and project management.

ACCREDITATION

UOW's engineering programs are accredited by Engineers Australia and relevant world engineering bodies through the Washington Accord. This ensures recognition by equivalent professional engineering bodies in the USA, UK, Hong Kong, Japan, New Zealand, Canada, South Africa, Ireland, Korea, Malaysia, Singapore and other countries. This recognition ensures that graduates from this course are admitted, on application, to the grade of Graduate Membership of Engineers Australia. The degree is also recognised by the Australasian Institute of Mining and Metallurgy (AUSIMM).

INDUSTRY READY

Your degree includes a 12-week hands-on industry placement or internship. You may gain credit for relevant work experience, either in Australia or overseas, by participating in our Professional Options Program.

For more information visit
go.uow.edu.au/beng_min



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

Why choose this course

BE GLOBAL

Engineers solve problems all over the world. Your degree provides you with the opportunity to go on overseas study tours, and be part of humanitarian projects helping disadvantaged communities anywhere in the world.

WORLD CLASS FACILITIES

As an engineering student at UOW you will have access to fully-equipped laboratories and the latest computer-aided software that is used in modern industrial workplaces. Our academics are leading experts in their fields and internationally respected and recognised.

ENTRY REQUIREMENTS

Assumed Knowledge: Any 2 units of English, HSC Mathematics (not Mathematics General 2).

Recommended Studies: HSC Mathematics Extension 1, Physics, Chemistry, and Engineering Studies.

Bridging courses in Physics and Chemistry are held in February each year.

CAREERS

- Consultant
- Drill and Blast Engineer
- Geotechnical Engineer
- Government Policy and Planning
- Machinery Automation
- Mineral Engineer
- Mining Engineer
- Mine Planner and Developer
- Mining Safety Engineer
- Operations and Tunneling Manager
- Project Manager
- Researcher
- Ventilation Engineer



As a mining student, you will have access to industry sponsored scholarships provided by South32, Glencore, Anglo America and Yancoal Australia, as well as work opportunities with these mining companies.

BELONG TO ONE OF THE BEST

Top 24

UOW ranked 24th in the world for Mineral and Mining Engineering in the QS World University Rankings by subject 2020.

3rd in NSW/ACT

UOW Engineering ranked second in NSW/ACT on the federal governments Quality Indicators for Learning and Teaching (QILT) 2020.

Key dates

UOW Early Admission	20 July - 14 August
UOW Virtual Open Day	8 August
UAC Early Bird applications close	30 September
UAC December Round 2 offers close	17 December

Learn more

go.uow.edu.au/beng_min



UNIVERSITY OF WOLLONGONG AUSTRALIA

The University of Wollongong attempts to ensure the information contained in this publication is correct at the time of production (June 2020); however, sections may be amended without notice by the University in response to changing circumstances or for any other reason. Check with the University for any updated information. UNIVERSITY OF WOLLONGONG CRICOS: 00102E

Bachelor of Science (Geology)

COURSE OVERVIEW

Geology is the scientific study of the physical structure and composition of the Earth and the tectonic processes that shape our planet. Geologists play a critical role in the discovery, sustainable extraction and management of Earth's resources.

The Bachelor of Science major in Geology combines a range of skills including fieldwork, laboratory techniques and problem-solving skills to address key questions relating to our planet. These range from mapping the Earth from space, to monitoring natural hazards or finding critical metals required for high-tech industry and renewable energy storage.

This degree will provide numerous potential career pathways as exploration and resource geologists in mining and energy industries, geohazard mitigation, environmental remediation (e.g. waste management, water), geotechnical engineering, government and cutting-edge research in universities.

ATAR

75

LENGTH OF COURSE

Three years full-time

KEY EMPLOYABILITY SKILLS

- Demonstrate broad and coherent knowledge of the principles and concepts associated with geology.
- Demonstrate technical and cognitive skills in locating, discriminating and explaining information in relation to geology.
- Exercise critical thinking and problem solving.
- Demonstrate how knowledge and skills can be applied in scientific or scholarly works.
- Communicate knowledge and ideas to others clearly and coherently.

PROFESSIONAL CAREER OPTIONS

- Geologist
- Geochemist
- Geophysicist
- Engineering geologist
- Hydrogeologist
- Field/exploration geologist
- Environmental scientist
- Geoarchaeologist
- Geoscience technician
- Mine site geologist
- Paleontologist
- Pollution control
- Surveying
- Volcanologist
- Government scientist
- National Parks ranger
- Research scientist
- Banking (energy and resources)



UNIVERSITY
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AUSTRALIA

Bachelor of Science (Geology)

POTENTIAL EMPLOYERS

Auswide Projects, BHP Billiton, Boral National Overlay, Coffey Geoscience, Department of Defence Earth Data, Environmental Consulting Services, Geological Solutions Geos Mining, Hydrographic Sciences Australia, Meridian Minerals Ltd, Pacific International Mining Solutions, Rio Tinto, RMS, Sensis, Sydney Gas, Triassic Geological Services, WMA Media.

“

The Bachelor of Science (Geology) equipped me with the theoretical knowledge and importantly, practical experience in the lab and the field which has really benefited me in my career.

Since graduating, I have commenced a role with Nexus Mining in base level project management. Having practical experience was one of the most recognised factors of my academic record. I truly believe I got my job because of the practical skills that I learnt at UOW.

ANDREW JOHNSON

Project Management
Peabody Metropolitan Coal Mine, Helensburgh



POSTGRADUATE STUDY OPTIONS

Upon completion, high performing students considering further study or a career in research should consider the one year Bachelor of Science (Honours) program.

Further postgraduate study may include Master of Earth and Environmental Sciences or Master of Engineering Management.

PROFESSIONAL BODIES AND ASSOCIATIONS

Australian Academy of Science, Australian Conservation Foundation, Australian Geoscience Information Association, Australian Institute of Geoscientists, The Australasian Institute of Mining and Metallurgy (AusIMM), Environment Institute of Australia and New Zealand, Geological Society of Australia, Institute of Australian Geographers, Mapping Sciences Institute, Mineral Council of Australia.

MORE INFORMATION

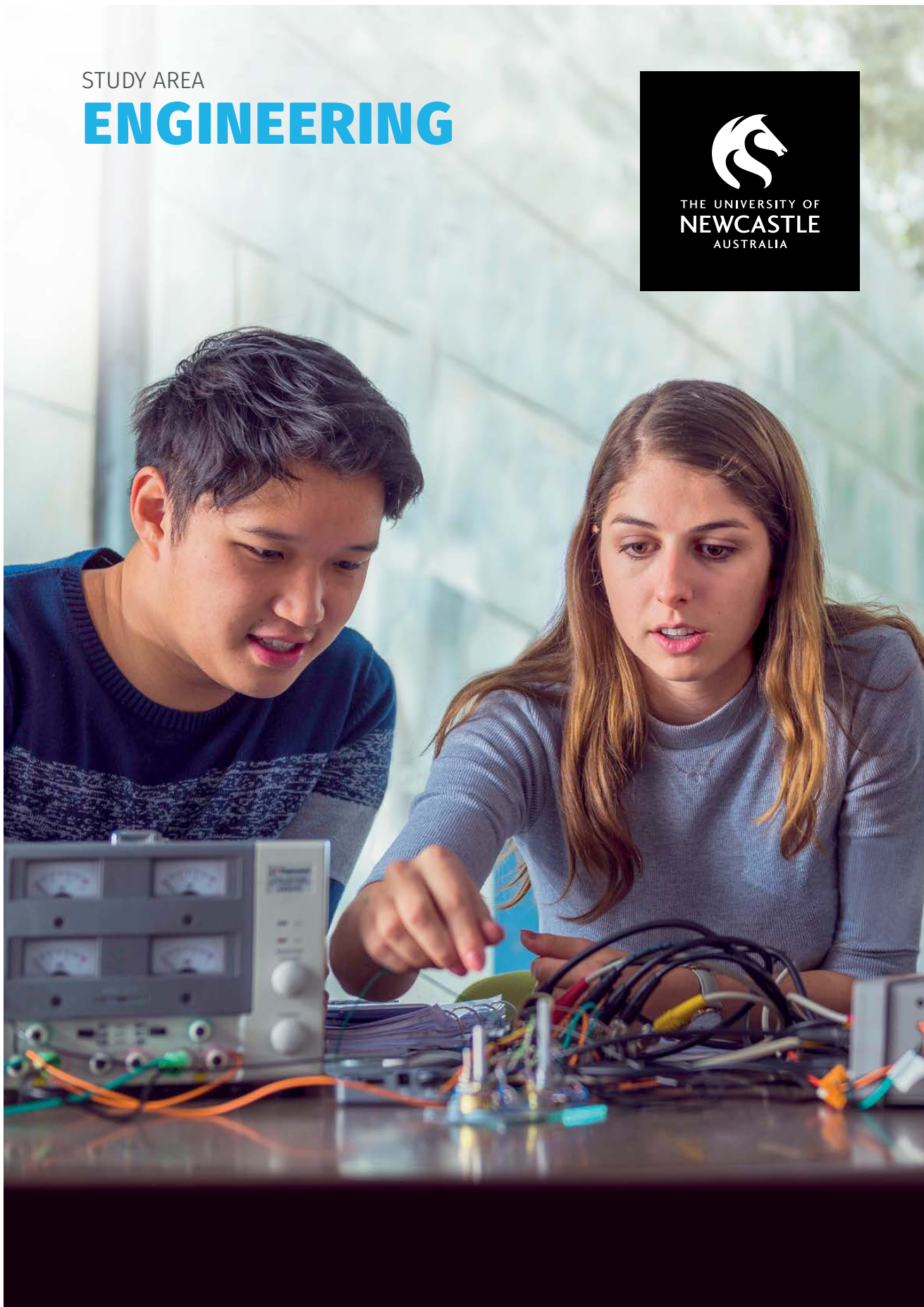
For more information please visit: go.uow.edu.au/bsci-geol



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

STUDY AREA

ENGINEERING





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

No. 1 IN NSW

for educational experience
and teaching quality¹

No. 8

in the world for Automation
and Control Engineering²

GE3

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

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)

¹ The Good Universities Guide 2020

² ShanghaiRanking's Global Ranking of Academic Subjects 2019

YOUR JOURNEY STARTS HERE

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

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

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
newcastle.edu.au/scholarships

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

6

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.

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

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.

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

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 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.

2020

INVENT THE FUTURE

FACULTY OF
ENGINEERING



UNSW
SYDNEY

Australia's
Global
University

experience
first

Katherine Lo

Katherine Lo is studying for a Bachelor of Engineering (Hons)/Bachelor of Commerce at UNSW.

During her studies, Katherine has taken advantage of our real world engineering approach by securing a position with multinational engineering firm AECOM, where she works in transport planning.

Lecturers link the learnings to real life examples, so you get to see the practical application of the theory. We get opportunities for local and international internships because of the links and connections that UNSW Sydney has in Australia and globally she explains.

“UNSW is always one step ahead of everyone else – the teachers, tutors and opportunities really drew me in.”

KATHERINE LO
Bachelor of Engineering (Hons)/
Bachelor of Commerce



FIVE STAR RATING

Highest ranked university in Australia with a five star plus rating for research, employability, teaching, facilities, internationalisation, innovation and inclusiveness.
QS Stars University Ratings 2019



TOP 50 IN THE WORLD

In the 2019 QS World rankings for subjects, these UNSW Engineering subjects rank in the top 50: Minerals and Mining, 6th in the world; Civil Engineering, 12th in the world, and 1st in Australia; Chemical Engineering, 42nd in the world; Electrical Engineering, 36th in the world.



LARGEST ENGINEERING FACULTY IN AUSTRALIA

Offering 25 undergraduate degrees and 100+ degree combinations.



Real-world engineering

UNSW Engineering degrees don't just focus on theory. From day one, students begin to develop their acumen as engineers through the classroom, hands-on practical learning and by forming valuable networks with industry.

Opportunities include learning from industry leaders in lectures, undertaking a project in our Makerspaces, participating in a Student-led Project or the Maker Games, receiving industrial training, attending recruitment events, or learning from international exchanges or experiences. This means you get valuable real-world experience while completing your degree. It all looks great on your resume, equipping you for a successful career in industry or research.

Meeting global challenges

Make a positive difference in the world through world-class education and research, UNSW Engineering brings passion and creativity to meet global challenges. We combine the world's best facilities and research with an exciting education experience to open doors for our graduates.

Industry engagement

At UNSW Engineering, we're committed to bridging the gap between university and industry. Students are equipped with the skills and competencies for success in industry. Each year, we host over 16 industry and student networking events, empowering you to build professional networks and kickstart your career!

Student-led societies

UNSW Engineering's flagship societies, EngSoc and WIESoc, host a variety of professional development programs, professional networking events and social activities throughout the year. Student-Led Societies aim to enrich the student experience whilst developing student skills.

More degrees, more choice

We have more engineering degree specialisations than anywhere else in Australia. You can explore more than 20 undergraduate engineering degree specialisations, with multiple dual degree combinations – including architecture, arts, science, commerce and media.

Women in Engineering

We pride ourselves on providing a dedicated support network to the Women in Engineering (WIE) community. You can even attend WIE workshops and inspiring events on campus before you start university. With industry scholarships, bespoke mentoring, development opportunities and a calendar packed with industry events, we aim to ensure our female engineering students emerge from UNSW as highly employable and qualified professionals.

Find out more at unsw.to/wie.

Student-led projects

Student-led Projects encourage our students to have fun working on practical, real-world engineering projects while completing their degree. From space technology to robotics to humanitarian initiatives, each of our Student-Led Projects come with their own unique set of opportunities. Student-Led Projects are a fantastic way to build friendships and make the most of your university experience.

Find out more at unsw.to/engslp.

Industrial training

Students undertake 60 days of work experience in their chosen field of study to qualify for accreditation from Engineers Australia, giving them real experience in an engineering environment to develop skills and contacts for their future career.

Find out more at unsw.to/experience-eng.

Bachelor of Science (Computer Science)

Duration 3 years

2019 Lowest ATAR¹ 86.45

2019 Lowest Selection Rank² 93.00

2020 GE Rank³ 93.00

Assumed knowledge Mathematics Extension 1

Alternative pathway

The Faculty of Engineering Admissions Scheme (FEAS)⁴ is available for this degree. Find out more at unsw.to/feas.

In this degree you will study the design, construction and use of computer systems. You'll gain expertise in the basic principles

Structure

16 Computer Science courses

+

Elective/General
Education electives (8 courses)

+

Possible minor in Accounting, Finance, Information Systems, Marketing, Maths, Psychology

behind computing tools, operating systems, compilers, translators and computer hardware, and learn about the design and development of hardware and software tools for developing computer applications.

Career opportunities

Graduates are employed in fields such as software engineering and development, digital security, database development, game development and systems analysis.

Study areas

- Artificial Intelligence
- Human-computer Interactions
- Computer Networks

- Databases Systems
- E-commerce
- Robotics
- Programming Languages
- Embedded Systems
- Security Engineering

Combine this degree with:

Advanced Mathematics (Hons), Advanced Science (Hons), Arts, Commerce, Engineering (Hons), Law, Media Arts, Science

Bachelor of Engineering (Honours)

Duration 4 years

2019 Lowest ATAR¹ 86.10

2019 Lowest Selection Rank² 93.00

2020 GE Rank³ 93.00

Assumed knowledge Mathematics Extension 1 and Physics (except where specified)

Alternative pathway

The Faculty of Engineering Admissions Scheme (FEAS)⁴ is available for this degree. Find out more at unsw.to/feas.

Structure

Chosen discipline, including thesis project in final year

+

Electives

+

General Education electives

+

60 days industrial training

Combining mathematics, natural sciences and computing, this degree is the foundation for a variety of specialised pathways into different engineering disciplines. You will learn how to apply yourself in engineering design and enquiry projects as well as professional practice, management and research for your thesis. There's flexibility in the first year for students who haven't yet decided their engineering specialisation.

Flexible first year stream

The Bachelor of Engineering (Honours) program includes a Flexible First Year stream.

This stream is designed for those students who wish to study engineering but would like to delay their choice of which branch of engineering to study until the end of Year 1. The first year of engineering study has a common core of courses, plus a wide choice of electives which allows you to study a number of areas that appeal to you without making a formal commitment until the end of your first year. This is ideal for students who know they want to be an engineer, but are unsure which direction to take.

Aerospace Engineering (Honours)

Immerse yourself in the science and practice of air and space flight with this exciting degree. You'll cover design, development, testing and production of aerospace vehicles, maintenance and operation of aircraft, and aerospace research. In your final year you'll execute a team project, applying your skills through internationally-approved industry training.

Career opportunities

Graduates pursue careers in a number of fields such as the space industry, national security, transportation, airlines, maritime construction and consulting.

Study areas

- Aerodynamics
- Flight Mechanics
- Propulsion
- Space Craft
- Structures
- Systems

This degree is professionally recognised.

Bioinformatics Engineering (Honours)

Assumed knowledge Mathematics Extension 1, Physics and Chemistry

Master the foundational disciplines of bioinformatics, a field at the convergence of computing and life sciences. In this degree you will learn how to develop technologies for storing, extracting, organising and interpreting the tsunami of genetic information to which we now have access.

Career opportunities

Bioinformatics graduates work in a variety of industries including bioinformatics, pharmaceutical, agritech, banking and finance, big data, consulting, development, digital services, education, health, I.T., logistics, research, software engineering and computer security.

Study areas

- Computing
- Mathematics
- Biology
- Bioinformatics (the integration of computing maths and biology)

Chemical Engineering (Honours)

This broad degree covers the critical steps in a product's creation, from the pure chemistry to the economics. You will discover how to design and develop chemical processes and equipment, optimise and control industrial operations, work with nanoparticles, determine environmental effects and pollution control – and much more.

Career opportunities

Chemical engineers work in a variety of fields including food and drink development, environmental management, mining and minerals, oil and gas, paper and packaging, pharmaceuticals, water treatment and recycling.

Study areas

- Chemical Engineering

Chemical Product Engineering (Honours)

Assumed knowledge Mathematics Extension 1, Physics and Chemistry

With a focus on product design and development, Chemical Product Engineering is the new frontier for chemical engineers. You'll graduate from this degree with everything you need to create products across a wide range of industries.

Career opportunities

As a Chemical Product Engineer you can pursue a career as a Chemical and Materials Engineer, Chemist, Food and Wine Scientist, Production Manager (Manufacturing), Production or Plant Engineer, Product Tester, Research and Development Manager.

Study areas

- Industrial Chemistry

Civil Engineering (Honours)

Civil engineers are responsible for projects that enhance the overall quality of life. In this degree you'll learn how to design, construct, manage, operate and maintain the infrastructure that supports modern society.

Career opportunities

Graduates are employed by professional consulting firms, construction companies, large public companies, government organisations and financial and management consultancies.

Study Areas

- Civil Engineering
- Engineering Construction and Management
- Geotechnical Engineering
- Structural Engineering
- Transport Engineering
- Water Engineering

We are ranked 12th in the world, and 1st in Australia for Engineering – Civil and Structural. QS World University Rankings by Subject, 2019.

Mining Engineering (Honours)

This degree gives you a comprehensive understanding of how complex mining systems work together to service the global need for minerals. You will acquire a solid foundation of engineering principles and the essential elements of mining, including geomechanics, ventilation, mine planning and minerals processing.

Career opportunities

Graduates enjoy fruitful careers in areas such as drilling, project management, sustainability, quarry and tunnelling, community relations and management consulting in mining companies, investment firms, finance, banking and government organisations.

Study areas

- Mining Engineering
- Geotechnical Engineering
- Mine Design and Planning
- Mining Management and Sustainability
- Mining Systems
- Mining Technologies
- Rock Breakage

We are ranked 6th in the world for Engineering – Mineral and Mining. QS World University Rankings by Subject, 2019

Electrical Engineering (Honours)

This degree focuses on the design, development, manufacture and management of complex hardware and software systems. With courses in telecommunications, photonics, microelectronics and more.

Career opportunities

Electrical Engineering opens up a huge range of challenging and rewarding career paths in fields such as electronics, quantum computing, networking, power distribution and robotics and control.

Study areas

- Energy Systems
- Microsystems
- Photonics
- Systems and Control
- Signal Processing
- Wireless and Data Networks

We are ranked 36th in the world for Engineering – Electrical. QS World University Rankings by Subject, 2019.

Environmental Engineering (Honours)

Combine a broad knowledge of engineering and environmental processes in this unique degree. You'll learn to identify environmental problems and impacts caused by engineering projects and to develop effective solutions. Your work will be at the centre of an exciting multidisciplinary field including biologists, ecologists, geologists and engineers.

Career opportunities

There is a broad range of career opportunities available to Environmental Engineers across the water, construction, energy, and manufacturing industries. Graduates also seek employment in humanitarian engineering and sustainability with both government organisations and in the private sector.

Study areas

- Environmental Engineering
- Environmental Studies
- Geotechnical Engineering
- Transport Engineering
- Water and Waste Engineering

Mechanical and Manufacturing Engineering (Honours)

Bridge the gap between new designs and their execution with Mechanical and Manufacturing Engineering. You'll learn how to design and manage the construction, operation and maintenance of equipment used in many industries – nearly anything that people drive, play with or live in.

Career opportunities

Graduates work in a variety of industries such as automotive, defence, aerospace, transport, power generation, insurance, railway systems and management consultancy.

Study areas

- Computer Aided Manufacturing (CAM)
- Computer Aided Design (CAD)
- Materials Science
- Process Technology and Automation
- Process Modelling and Simulation
- Reliability and Maintenance Engineering
- Fluid Dynamics
- Thermodynamics
- Mechanics of Solids

Mechanical Engineering (Honours)

Any design you could dream of can be brought to reality by a mechanical engineer. Mechanical engineers apply scientific and engineering knowledge to develop, manufacture and operate machines and tools, which can then be used to develop things. This degree teaches you how to design and manage the construction, operation and maintenance of machines used in many industries.

Career opportunities

There is high demand for Mechanical Engineering graduates in a wide range of industries such as power generation, transport, construction, mining, manufacturing, insurance and appliances.

Study areas

- Composite Structures
- Computer Aided Design (CAD)
- Computer Aided Manufacturing (CAM)
- Fluid Dynamics
- Heat Transfer
- Materials Science
- Noise and Vibration
- Power Generation
- Thermodynamics

Mechatronic Engineering (Honours)

This degree teaches you the full spectrum of smart machine design. You'll graduate with skills in the development of autonomous systems like self-operating robots and vehicles, and a thorough knowledge of industrial automation which can be applied throughout the evolving field of smart machines and systems.

Career opportunities

Mechatronic Engineers work in many industries such as manufacturing, automotive, aerospace, defence, mining, cargo handling and agriculture. You may also work in companies that design and manufacture consumer devices and technology such as mobile phones, video game consoles and biomedical devices.

Study areas

- Computing
- Control Systems
- Electronics
- Mechanical Design Skills
- Microprocessors

Computer Engineering (Honours)

Computer Engineering will empower you to make a difference in today's world, where the internet, cars and phones are a fundamental element of people's lives. Your study combines computer science with elements of electrical engineering, while designing programs and building hardware

Career opportunities

Computer Engineering graduates work in a variety of industries including technology manufacturing, research laboratories, I.T., digital consulting firms, agritech businesses, health and education industries, VLSI Design and embedded systems.

Study areas

- Embedded Systems
- Telecommunications
- Electronics
- System and Control
- Advanced Computing

Photovoltaics and Solar Energy Engineering (Honours)

In this degree you'll immerse yourself in the manufacture and use of solar cells, which capture and convert sunlight into electricity. Courses in technology development, manufacturing, quality control, reliability, policy, system design and more will prepare you for varied, high-level work in an industry that is vital for humanity's future.

Career opportunities

Graduates work in fields such as manufacturing, quality control and reliability, computer-aided design of devices and systems, policy formation, programs for developing countries, solar cells and system design in organisations such as integration companies and research organisations.

Study areas

- Cell Interconnection and Encapsulation
- Manufacturing
- Photovoltaics
- Policy Development
- Quality Control
- Reliability and Life-Cycle Analysis
- Renewable Energy Technologies
- Solar Cell Applications
- Solar Energy
- Technology Development

Renewable Energy Engineering (Honours)

Explore the best ways to make use of renewable energy technologies in this cutting-edge degree. From solar thermal systems and photovoltaics to winds and biomass, you'll draw resources from all around UNSW to prepare you for research and professional work in this crucial, ever-growing industry.

Career opportunities

Graduates can work in a wide range of fields and companies in designing, installing and operating renewable energy generating systems such as wind, solar, biomass or hydro systems, as well as construction of energy efficient technology or buildings, policy, programs for developing countries and research organisations.

Study areas

- Biomass
- Energy Efficiency and Appliances
- Geothermal Systems
- Hydro Turbine
- Photovoltaics
- Renewable Energy
- Solar Architecture
- Solar Thermal Systems
- Tidal and Wave Energy
- Wind Power

Surveying (Honours)

Surveying: a perfect combination of indoors and outdoors, from supporting construction and infrastructure engineering to mapping and monitoring the landscape. In this degree you'll learn how to use GPS, laser scanners, mapping drones and surveying robots to create high-definition 3D models of both the built and natural environments.

Career opportunities

Surveying graduates work in a variety of fields including urban and rural development, oil and gas exploration, mining and engineering construction, climate change monitoring, land management and planning, cadastral surveying and land law, hydrographic surveying as well as aerial imaging and cartography.

Study areas

- Engineering and Mining Surveying
- Cadastral Surveying and Land Law
- Modern Geodesy
- Navigation and Earth Observation
- Precise GPS/GNSS Positioning
- Satellite and Airborne Imaging
- Surveying Applications and Design
- Business Management
- Sustainable Land Development and Management
- Water and Soil Engineering

Petroleum Engineering (Honours)

Become an expert at solving problems and designing technologies that work kilometres underground. In this degree you'll learn to apply practical science to the challenges and problems associated with oil and gas exploration, drilling and production. You'll also study courses that engage you in the socio-political context of the industry.

Career opportunities

Graduates may pursue careers in the oil and gas industry, oil service companies, reservoir development, computer-generated modelling, environmental organisations, and, banking and finance.

Study areas

- Computer Modelling and Simulation of Oil and Gas Resources
- Drilling Engineering
- Formation Evaluation
- Integrated Field Development
- Natural Gas Engineering
- Petroleum Geology and Geostatistics
- Petroleum Economics
- Reservoir Engineering

Software Engineering (Honours)

Assumed knowledge

Mathematics Extension 1

Become an expert in the processes, methods and tools for the design and development of high-quality, reliable software systems, from code-writing to delivery. This degree involves the application of software specification, design, implementation, testing and more, including workshops for team-based projects that will give you hands-on experience.

Career opportunities

As a Software Engineer you can pursue a career in big data, logistics, security, defence and telecommunications in various industries including education, health, banking and finance.

Study areas

- Software Engineering
- Software Development
- Software Process
- System Design

Telecommunications (Honours)

In this degree you'll learn all aspects of theory and application for a broad range of telecommunications systems such as telephone and data networks, radio and TV, satellites and deep space applications. You'll learn how to design, develop and maintain the transmission of information via different methods across the world.

Career opportunities

Graduates pursue careers with telecommunications service providers, major equipment and device manufacturers, large private industrial groups as well as small to medium service and technology providers or startups.

Study areas

- Data Communications Systems
- Data Encoding
- Compression and Encryption
- Satellite and Optical Fibre Networks
- Voice Communication Systems

Bachelor of Civil Engineering with Architecture (Honours)

Duration 4 years

2019 Lowest ATAR¹ 87.95

2019 Lowest Selection Rank² 95.00

2020 GE Rank³ 95.00

Assumed knowledge Mathematics Extension 1 and Physics

Structure

Civil Engineering discipline, including thesis project in final year

+

Architecture subjects

+

60 days industrial training

Extend your civil engineering bachelor degree with this program's courses in architecture. You'll get a foundation in architectural principles and learn about the connection between architects and engineers, inspiring you to become a conceptual thinker with both aesthetic and structural expertise – and to challenge the traditional boundaries of structural design.

Career opportunities

Graduates are employed by specialist structural engineering consultants, construction and contracting companies, federal, state, and local government organisations, airport and harbour authorities, project developers, financial organisations and management consultancies.

Study areas

- Civil Engineering
- Architecture

Bachelor of Food Science (Honours)

Duration 4 years

2019 Lowest ATAR¹ 89.90

2019 Lowest Selection Rank² 93.00

2020 GE Rank³ 93.00

Assumed knowledge Mathematics Extension 1 and Chemistry

Alternative pathway

The Faculty of Engineering Admissions Scheme (FEAS)⁴ is available for this degree. Find out more at unsw.to/feas.

Structure

Food Science and Technology or Food Science and Nutrition, including thesis project in final year + Electives + General Education electives

This degree will provide you with a solid background in mathematics, natural science and applied science to equip you for a career in a variety of food-related professions. You'll work on food product design, professional food practice, food systems management and more, in addition to conducting research for a thesis.

Career opportunities

Graduates of Food Science pursue careers in food technology, product development, quality assurance, product testing, production and laboratory management, as dietitians or safety inspectors.

Study areas

- Food Science and Technology
- Food Science and Nutrition

Bachelor of Engineering (Honours)/Master of Engineering (Electrical Engineering)

Duration 5 years

2019 Lowest ATAR¹ 92.05

2019 Lowest Selection Rank² 96.00

2020 GE Rank³ 96.00

Assumed knowledge Mathematics Extension 1 and Physics

In this five-year integrated program in Electrical Engineering you will extend your knowledge whilst working on cutting edge projects. You can also take a broadening discipline (minor) in an area such as mechatronics, computing, commerce, photovoltaics, music, satellite systems, mathematics, psychology or nuclear engineering. With around 35 undergraduate

Structure

Integrated Electrical Engineering Bachelor and Master degree, including two theses + Minor (4 6 courses) + General Education electives + 60 days industrial training

and postgraduate electives to choose from – the widest choice in Australia – you can tailor the program to suit your interests.

Career opportunities

Graduates can work in a huge variety of fields such as electronics, quantum computing, networking, power distribution, and robotics and control. Potential employers include energy service industries, large private industrial companies such as transport manufacturers, aerospace companies, mining companies, infrastructure service companies, electronics, networking and computing companies and small, innovative private firms specialising in the application of new technologies, services or products.

Study areas

- Energy Systems
- Microsystems
- Photonics
- Systems and Control
- Signal Processing
- Wireless and Data Networks

Broadening (minor) disciplines available

- Computing
- Mathematics
- Mechatronics
- Physics
- Commerce
- Languages
- Music
- Photovoltaics
- Psychology

Bachelor of Engineering (Honours)/Master of Biomedical Engineering

Duration 5 years

2019 Lowest ATAR¹ 86.10

2019 Lowest Selection Rank² 93.00

2020 GE Rank³ 93.00

Assumed knowledge Mathematics Extension 1 and Physics

Alternative pathway

The Faculty of Engineering Admissions Scheme (FEAS)⁴ is available for this degree. Find out more at unsw.to/feas.

Structure

Bachelor degree with chosen discipline, including thesis project + Master of Biomedical Engineering + General Education electives + 60 days industrial training

The Bachelor of Engineering (Honours) component of this double degree will give you a solid background in mathematics, natural sciences and computing, while in the Master of Biomedical Engineering you will learn principles as they apply to the development of technologies and solutions in healthcare-related fields such as implantable bionics and robotic surgery.

Career opportunities

Graduates pursue careers with pharmaceutical companies, hospitals, scientific research

institutions in fields such as medical device manufacturing and biotechnology.

Disciplines

- Bioinformatics Engineering
- Chemical Engineering
- Computer Engineering
- Electrical Engineering
- Mechanical Engineering
- Mechatronic Engineering
- Software Engineering
- Telecommunications

This degree is professionally recognised.

Double degrees

Some other double degree options include:

- Bachelor of Engineering (Hons)/Bachelor of Arts
- Bachelor of Engineering (Hons)/Bachelor of Commerce
- Bachelor of Engineering (Hons)/Bachelor of Science (Computer Science)
- Bachelor of Engineering (Hons)/Bachelor of Engineering Science (Civil/Mining or Mining/Civil)
- Bachelor Engineering (Hons)/Bachelor of Engineering Science (Environmental/Civil or Civil/Environmental)
- Bachelor of Engineering (Hons)/Master of Biomedical Engineering
- Bachelor of Engineering (Hons)/Master of Engineering (Electrical Engineering)
- Bachelor of Engineering (Hons)/Bachelor of Science
- Bachelor of Engineering (Hons) (Civil)/Bachelor of Surveying

How to apply

Getting offered a place is competitive and entry into our undergraduate degrees is based on academic merit. Entry is assessed by your performance in a qualification such as the HSC, VCE, IB or any other recognised qualifications. For more information, visit futurestudents.unsw.edu.au/how-to-apply.

Domestic applicants

(Australian citizens, Australian permanent residents, Australian permanent humanitarian visa holders and New Zealand citizens)

All applications for undergraduate study by domestic applicants are made through the University Admissions Centre (UAC). To lodge your application, visit uac.edu.au/undergraduate/apply.

As a domestic student, you may be eligible for adjustment factors including HSC Plus, Elite Athletes, Performers and Leaders and the Educational Access Scheme. To find out more about adjustment factors and how to apply, visit futurestudents.unsw.edu.au.

Guaranteed Entry Rank (ATAR + adjustment factors) allows us to tell you what selection rank will guarantee you a place in a particular degree at UNSW. For more information, visit unsw.edu.au/ge.

Alternate pathways to UNSW Engineering

The 2019 Guaranteed Entry Rank for engineering degrees at UNSW are among the highest in the country. If you don't achieve the selection rank required for Guaranteed Entry, we recognise that this doesn't mean you can't become a successful engineer. You could still enrol through an alternative pathway.

Faculty of Engineering Admission Scheme (FEAS)

We know that things don't always go to plan, and sometimes you need to take a different route. If you are expecting an ATAR (or equivalent including applicable adjustment factors) between 83.00 to 92.95 and want to study Engineering at UNSW, we encourage you to apply for FEAS. There's still a chance you can enrol at UNSW Engineering.

We will evaluate your ability in mathematics, physics and other sciences, design and problem solving, as well as attitude and motivation towards engineering studies.

FEAS applies to most UNSW Engineering undergraduate programs, including the double degrees with a GE of 93.

For more information, visit unsw.to/feas.

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The information contained in this publication with regard to Assumed Knowledge pertains to HSC subjects. For students studying a different but equivalent qualification please contact the Universities Admissions Centre (UAC) for further information.

The information contained in this publication applies to Australian citizens, Australian permanent residents, Australian permanent humanitarian visa holders and New Zealand citizens only. All international students should contact UNSW Future Students on 1300 864 679 for admission procedures and degree information.

NOTES

1. The 2019 Lowest ATAR is the lowest ATAR (before adjustment factors were applied) to which an offer was made.
2. The 2019 Lowest Selection Rank is the adjusted rank (ATAR plus adjustment factors) you would have needed to gain entry to this degree in 2019. To see a complete picture of UNSW offer data, visit degrees.unsw.edu.au.
3. For more information on Guaranteed Entry, please visit unsw.edu.au/ge.
4. The Faculty of Engineering Admissions Scheme (FEAS) is available for most UNSW Engineering undergraduate programs, including the double degrees with a GE of 93. For more information, visit unsw.to/feas.

UNSW Engineering

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DIPLOMA OF UNDERGROUND COAL MINING MANAGEMENT

COURSE CODE RII50915

EXPLORE. ENQUIRE. ENROL.
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131 601



TAFE NSW

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TAFE
NSW

Diploma of Underground Coal Mining Management

National Course Code: RII50915 | TAFE NSW Code: RII50915-01V02-20KUR-039

Qualification Level	Diploma
Study Type	Part Time Day
Course Start Date	Enquire Now
Hours Per Week	11.2
Duration	36 Weeks
Delivery Locations	Kurri Kurri

Subsidised Prices

Course Fees	First Qualification: \$3,780.00
	Subsequent Qualification: \$4,260.00
	Traineeship: \$1,000.00
	<small>You may be eligible for the NSW Smart & Skilled Fee Free Traineeship which will be verified at enrolment.</small>
Course Features	Nationally Recognised Training
	Traineeship Allowed
	This training is subsidised by the NSW Government VET Student Loans Available

Course Description

This qualification reflects the role of mine managers who work in an underground coal mine who perform tasks involving a high level of autonomy and requiring the application of significant judgement in planning and determining the selection of equipment/roles/techniques for themselves and others. They are required to demonstrate the application of a broad range of technical, managerial, coordination and planning skills and implement safety management plans.

Licensing, legislative, regulatory and certification requirements that apply to this qualification can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the qualification.

Entry Requirements

When you study with TAFE NSW, we want you to succeed. Entry requirements allow us to make sure that you have the right pre-existing knowledge and skills to achieve your chosen qualification. You will need to provide evidence that you meet the requirements listed in this section.

There are no formal entry requirements for this course.

It is assumed that you have literacy, numeracy and technical skills at Certificate IV level for success in this course. Contact your TAFE NSW campus if you have any questions about your suitability.

To be enrolled in this course, you need to be able to provide evidence that you have:

- employment in an underground coal mine as a deputy or in a supervisory position of an underground mining team

To successfully complete this course, you will need:

- to be employed at an underground coal mine
- a minimum Language, Literacy and Numeracy (LLN) of 3 or have completed the HSC or equivalent

Information Sessions and more about the course

INFORMATION SESSIONS

There are no information sessions currently scheduled for this course.

STUDY COMMITMENT

This is a part time day or part time evening course. You will need to attend approximately 4.5 hours of class, over 1 day a week, for 36 weeks. As well as the in-class component, you will need to complete approximately 6.7 hours of other study per week.

You may also be required to complete approximately 13.3 hours of additional study each week outside of class hours, including private study, research and assignment preparation.

IS THIS COURSE RIGHT FOR YOU?

This course offering is designed for people who:

- are already employed as a deputy, supervisor or a team leader in an underground coal mine and are wishing to step up to the role of an underground coal mine undermanager

SERVICES AND STUDY SUPPORT

There are additional learning and study tools available for this course, including:

- Multicultural Support
- International Student Support
- Careers, Counselling and Pathways Support
- Disabilities Support
- Aboriginal Engagement Services

We offer student services and study support to ensure you can achieve your goals. Learn about TAFE NSW [Student Services](#)

As a TAFE NSW student in this course, you will have access to:

- LinkedIn Learning (formerly Lynda.com)
- Studiosity - online access to a real life tutor
- Easy computing online short courses
- Access to local TAFE libraries
- Accessibility and Disability Support Services
- Access to Read&Write learning support software at TAFE and at home

Attendance

To keep you safe while studying, some of our face to face classes may be replaced with online or connected learning. We have also modified our face to face classes to meet physical distancing

requirements and increased cleaning on campus. As restrictions ease, the way you attend your class may change again. If work placement and the demonstration of practical skills are requirements of your course, due to the impacts of COVID 19 there may be a delay or modification in being able to undertake these aspects of your course in the planned timeframe. Be assured, we'll keep you informed every step of the way.

This course is currently scheduled on Thursday from 8.30am to 1.00pm or 4.30pm to 9.00pm, to suit shift workers. You can alternate between day and night sessions as needed. This timetable may change and will be confirmed by your teacher.

Fee Details

SMART AND SKILLED FEES

This course is government-subsidised, meaning you pay a portion of the full course fee to TAFE NSW and the NSW Government will pay the balance. However, you must meet certain eligibility criteria for this to apply.

Depending on your previous qualifications and experience, your fee may be less than the maximum fee quoted. Your actual fee and eligibility for concession/exemption will be calculated and confirmed during the enrolment process.

For further information about eligibility and explanations of the different fee categories, visit [Are You Eligible?](#)

PAYMENT OPTIONS AND ASSISTANCE

This course is approved for a Commonwealth VET Student Loan (VSL). If you meet the VSL eligibility and academic suitability requirements, you are able to apply to the Commonwealth for a loan to cover all or part of your course fee. We will ask you whether you would like to apply for a VET Student Loan when you enrol and advise you of the process.

To complete your VET Student Loan application, you will need to provide:

- Your Tax File Number (TFN). If you don't have a TFN, [click here](#) for information on how to apply for one. You can complete your loan application with a Certificate of Application for a TFN, but must provide your TFN as soon as it is issued. If you don't provide your TFN before your first census day, you will need to pay the tuition fees for that unit of study.
- Your Commonwealth Higher Education Student Support Number (CHESSN). If you have previously accessed a loan via the Higher Education Loan Program (HELP), either at TAFE or university, you will already have a CHESSN. You must use the same CHESSN whenever you access a student loan. If you don't have CHESSN, we will allocate one on your behalf.

To be eligible for a VET Student Loan, you will need to be assessed as academically suitable to undertake high level VET study. You will need to provide:

- A copy of your Australian Year 12 Certificate; OR
- A copy of a certificate showing that you have been awarded a qualification at level 4 or above in the Australian Qualifications Framework (where the language of instruction was English). If you previously completed a Certificate IV or higher qualification at TAFE NSW, just let us know where and when you studied in your application; OR
- Display competence at Exit Level 3 in the Australian Core Skills Framework in both reading and numeracy through an approved Language, Literacy and Numeracy test. We will let you know if this is required once you apply.

If you intend to apply for a VET Student Loan, it's important you know your [student obligations](#).

ADDITIONAL RESOURCES

You will need to provide for yourself the following resources which you will keep when you complete your study:

- Stationery, pens, USB drive: \$40.00

- A scientific calculator: \$40.00

Find out more about [VET Student Loans](#)

Direct payment by Unit of Study instalments is available for this course.

The Units of Study and associated fees for this course are detailed above. Fees are charged on the census day for each Unit of Study. To secure a loan for part or all of your course, you must be eligible and submit a valid application to the Commonwealth for a VET Student Loan. You may withdraw prior to the census date without incurring a fee.

READ BEFORE YOU ENROL

Learn about TAFE NSW [Fees](#)

Learn about TAFE NSW [Payment/Funding](#)

RECOGNITION

Recognition is a process of acknowledging previously completed qualifications, skills, knowledge or experience relevant to your course. This may reduce the amount of learning required, reduce your course fees and allow you to achieve your qualification faster.

Learn about Recognition at TAFE NSW [Recognition](#)

How to Enrol

Enquire now for Semester 2 2020 and be notified when enrolments open.

TAFE NSW is open for business so to find out more information on this course including when it will start and how it will be delivered (face-to-face, in a virtual classroom, self-paced, online or a mixture), submit an online enquiry by clicking the Enquire Now button on this page. You can also call 131 601 during business hours* to chat with a member of our friendly customer service team.

*** Our customer service team are available from Monday to Friday, 9am to 5pm AEST.**

Units

RIIRIS402D	Carry out the risk management process
RIIRAI501D	Implement mine transport systems and production equipment
RIIRAI503D	Implement site services and infrastructure systems
RIIMCU502D	Implement the gas management plan
RIIMCU506D	Implement the strata management plan
RIIERR501D	Implement underground coal mine emergency preparedness and response systems
RIIMCU501D	Implement the spontaneous combustion management plan
RIIMCU505D	Implement the inrush management plan
RIIUND501D	Implement the ventilation management plan
RIIMCU503D	Implement the gas drainage management plan
RIIBLA302D	Conduct shotfiring operations in underground coal mines
RIIMCU504D	Implement the outburst management plan

Career Opportunities

Mine Surveyor.

WHY CHOOSE TAFE NSW?



Opens career doors. Our industry relationships lead many students directly into work with a range of employers including agencies, studios, galleries and fashion houses.



Global prospects. TAFE NSW graduates possess the technical knowledge, creative-thinking and specialised skills that are highly sought after by employers around the world.



State-of-the-art facilities. Purpose-built creative studios and industry standard software mean you will master the same tools of the trade as leading professionals.



Industry exposure. TAFE NSW partners with industry to provide you with hands-on experience through networking, sponsor programs, competitions, talks, lectures and other creative industry events.



Recognised and respected. TAFE NSW has built its reputation on delivering trusted, industry aligned and nationally recognised training for over 130 years.

EXPLORE. ENQUIRE. ENROL.

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131 601

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Additional study and training options in New South Wales

University

Macquarie University

- ▶ Department of Earth and Planetary Sciences, mq.edu.au/about/about-the-university/faculties-and-departments/faculty-of-science-and-engineering/departments-and-centres/department-of-earth-and-planetary-sciences

University of New England

- ▶ School of Environmental and Rural Science, une.edu.au/about-une/faculty-of-science-agriculture-business-and-law/school-of-environmental-and-rural-science/courses/geoscience

University of Newcastle

- ▶ Ask a student newcastle.edu.au/study/ask-a-student

University of NSW

- ▶ School of Biological, Earth and Environmental Sciences bees.unsw.edu.au

University of Sydney

- ▶ School of Geosciences sydney.edu.au/science/schools/school-of-geosciences.html
- ▶ High school outreach sydney.edu.au/engineering/industry-community/high-school-outreach.html
- ▶ Information for careers advisers sydney.edu.au/engineering/industry-community/high-school-outreach/teachers-and-career-advisers.html

University of Wollongong

- ▶ School of Earth Atmospheric and Life Sciences uow.edu.au/science-medicine-health/schools-entities/school-of-earth-atmospheric-and-life-sciences

Vocational education and training

- ▶ TAFE NSW Natural Resources Courses tafensw.edu.au/courses/natural-resources-courses

Apprenticeships and traineeships

- ▶ Training Services NSW training.nsw.gov.au
- ▶ A guide for apprenticeships and traineeships training.nsw.gov.au/forms_documents/apprenticeships_traineeships/thriving_in_your_apprenticeship_and_traineeship.pdf
- ▶ Apprenticeship and traineeship search [online.training.nsw.gov.au/vtu/vto/vtoEnquiry.do?command=goToVTOSearch](https://training.nsw.gov.au/vtu/vto/vtoEnquiry.do?command=goToVTOSearch)
- ▶ Information for students training.nsw.gov.au/apprenticeships_traineeships/students/index.html

03

Additional Resources



Additional Resources

There's more to mining than you think

- ▶ Minerals Council of Australia's More to Mining Careers Guide minerals.org.au/welcome-more-mining-careers-guide
- ▶ Modern mining careers: short videos of mining engineers using gaming technology, drones and 3D models to do their jobs careerswithstem.com.au/mining-careers
- ▶ A 'Day in the Life' of South32 graduates gradaustralia.com.au/graduate-employers/south32/day-in-the-life
- ▶ 30 things in modern life that Australian mining makes possible youtube.com/watch?v=xOA_xbqSSr0
- ▶ What is STEM really all about and why is it important? careerswithstem.com.au/what-is-stem-explainer-animation
- ▶ AusEarthEd - free resources available for the Earth and Environmental Science curriculum ausearthed.com.au
- ▶ Geoscience Australia - free geoscience classroom resources ga.gov.au/education/classroom-resources

NSW Government maps

- ▶ **High-tech metals resources of NSW map**
This map shows areas in NSW that currently produce, or have the potential to produce, high-tech metals search.geoscience.nsw.gov.au/product/9234
- ▶ **Mineral resource projects of NSW map**
This map shows metallic, industrial mineral and exploration discoveries deposit data search.geoscience.nsw.gov.au/product/9220
- ▶ **Renewable energy resources in NSW map**
This map shows sources of renewable energy in NSW resourcesandgeoscience.nsw.gov.au/miners-and-explorers/geoscience-information/products-and-data/renewable-resources-map

- ▶ Interactive resources and geoscience maps and models resourcesandgeoscience.nsw.gov.au/miners-and-explorers/geoscience-information/services/online-services

Peak and research bodies

- ▶ Association of Mining and Exploration Companies (AMEC) - national association representing over 275 member companies from across Australia amec.org.au
- ▶ Australasian Institute of Mining and Metallurgy (AusIMM) - peak body for people working in the resources sector ausimm.com
- ▶ Australian Institute of Geoscientists - professional institute representing geoscientists aig.org.au
- ▶ CSIRO (Commonwealth Scientific and Industrial Research Organisation) - Australia's national science research agency - solving challenges using innovative science and technology csiro.au/en/Research/MRF
- ▶ Geological Society of Australia gsa.org.au
- ▶ Minerals Council of Australia - leading advocate for Australia's minerals industry minerals.org.au



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www.resourcesandgeoscience.nsw.gov.au/mining_careers_pack