INVENT THE FUTURE

FACULTY OF ENGINEERING
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!

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.

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.

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 ATAR** 86.45
**2019 Lowest Selection Rank** 93.00
**2020 GE Rank** 93.00
**Assumed knowledge** Mathematics Extension 1

**Alternative pathway**
The Faculty of Engineering Admissions Scheme (FEAS) is available for this degree. Find out more at [www.tofeas](http://www.tofeas).

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

**Elective/General Education electives (8 courses)**
- Computer Networks
- Human-computer Interactions
- Artificial Intelligence

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

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Bachelor of Engineering (Honours)

**Duration** 4 years
**2019 Lowest ATAR** 86.10
**2019 Lowest Selection Rank** 93.00
**2020 GE Rank** 93.00
**Assumed knowledge** Mathematics Extension 1 and Physics (except where specified)

**Alternative pathway**
The Faculty of Engineering Admissions Scheme (FEAS) is available for this degree. Find out more at [www.tofeas](http://www.tofeas).

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.

**Career opportunities**
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.

**Structure**
- Chosen discipline, including thesis project in final year
- Electives
- General Education electives
- 60 days industrial training

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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.**

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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)

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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
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

We are ranked 12th in the world, and 1st in Australia for Engineering – Civil and Structural. 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

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

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

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

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, agri-tech businesses, health and education industries, VLSI Design and embedded systems.

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

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

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.

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
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 Turbines
- Photovoltaics
- Renewable Energy
- Solar Architecture
- Solar Thermal Systems
- Tidal and Wave Energy
- Wind Power

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 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

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

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)

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

**Duration**
4 years

**2019 Lowest ATAR** 87.95
**2019 Lowest Selection Rank** 95.00
**2020 GE Rank** 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
Bachelor of Food Science (Honours)

Duration 4 years

- 2019 Lowest ATAR1 89.90
- 2019 Lowest Selection Rank1 93.00
- 2020 GE Rank1 93.00

Assumed knowledge Mathematics Extension 1 and Chemistry

Alternative pathway
The Faculty of Engineering Admissions Scheme (FEAS)1 is available for this degree. Find out more at unsydney.

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

Study areas
- Food Science and Technology
- Food Science and Nutrition

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.

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.

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

Duration 5 years

- 2019 Lowest ATAR1 92.05
- 2019 Lowest Selection Rank1 96.00
- 2020 GE Rank1 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 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

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

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

Bachelor of Engineering (Honours)/Master of Biomedical Engineering

Duration 5 years

- 2019 Lowest ATAR1 86.10
- 2019 Lowest Selection Rank1 93.00
- 2020 GE Rank1 93.00

Assumed knowledge Mathematics Extension 1 and Physics

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 disciplines

This degree is professionally recognised.

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

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.