



THE UNIVERSITY  
OF QUEENSLAND  
AUSTRALIA

CREATE CHANGE

# CAREERS IN ENGINEERING

THE UNIVERSITY OF QUEENSLAND

# WHERE ARE YOU GOING?

A career in engineering can be extremely rewarding, where you'll be at the forefront of design, development and implementation.

At UQ, we will teach you the skills you'll need to meet the world's most complex challenges and engineer a better future for us all. We will empower you with the fearlessness and creativity to innovate where others fall short.

The demand for innovative and forward-thinking engineers has never been so great.

## SKILLS YOU NEED



Problem-solving



Analytical thinking



Creativity



Critical thinking



Innovation



Communication

## FOCUS AREAS

### ADVANCED MANUFACTURING

Be a part of a growing industry – think manufacturing of food and beverages, natural resources, plastics and automobiles.



### BUILT ENVIRONMENT

Reimagining urban infrastructure, designing smart sustainable buildings or focusing on people and improving quality of life.



### DIGITAL DESIGN + TECHNOLOGY

Hone your technological skills, master the digital, and prepare yourself for a lifetime of success in the digital design and technology space.



### ENERGY

Tackle our world's global energy challenges. Design new ways to harness and store energy for a sustainable future.



### ENVIRONMENT

Gain a deeper understanding of our planet and how to protect, manage and maintain the delicate balance of life.



### HEALTH

Join the exciting world of biomedical engineering and develop materials, devices and processes that improve and save lives.



### RESOURCES

Through automation and sustainable processes, build the most environmentally-friendly and productive resource sector we've ever seen.



### SPACE

A career in space could be anything from designing and manufacturing aircrafts, satellites and drones, to developing more efficient rockets.



# DEGREES TO GET YOU THERE

As one of the most comprehensive engineering degrees in Australia, UQ's Bachelor of Engineering (Honours) will put you at the forefront of established and emerging engineering disciplines.

## Bachelor of Engineering (Honours)

2021 Entry Requirements

ATAR 86 / IB 31

Qld Year 12 (or equivalent) English, Mathematical Methods, and one of Chemistry or Physics

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

2021 Entry Requirements

ATAR 97 / IB 39

Qld Year 12 (or equivalent) English, Mathematical Methods, and one of Chemistry or Physics

## Dual degrees

Bachelor of Engineering (Honours) with:

- Arts
- Biotechnology
- Business Management
- Commerce
- Computer Science
- Design
- Economics
- Information Technology
- Mathematics
- Science

### SPECIALISATIONS



Chemical



Civil



Electrical



Mechanical



Mechatronic



Software

### MAJORS



Aerospace



Biomedical



Bioprocess



Environmental



Fire Safety



General Civil



Geotechnical



Materials



Metallurgical



Mining



Structural



Transport



Water + Marine

## Starting salary by industry\*



## Our engineering student experience\*\*

84.4% were positive about their skills development

88.3% were happy with facilities and resources

83.2% rated teaching practices positively

UQ ENGINEERING GRADUATES EMPLOYED

**89%**

\*Source: Undergraduate median-full time salary 2020  
QILT 2020 Graduate Outcomes Survey

\*\*Compared



# ADVANCED MANUFACTURING

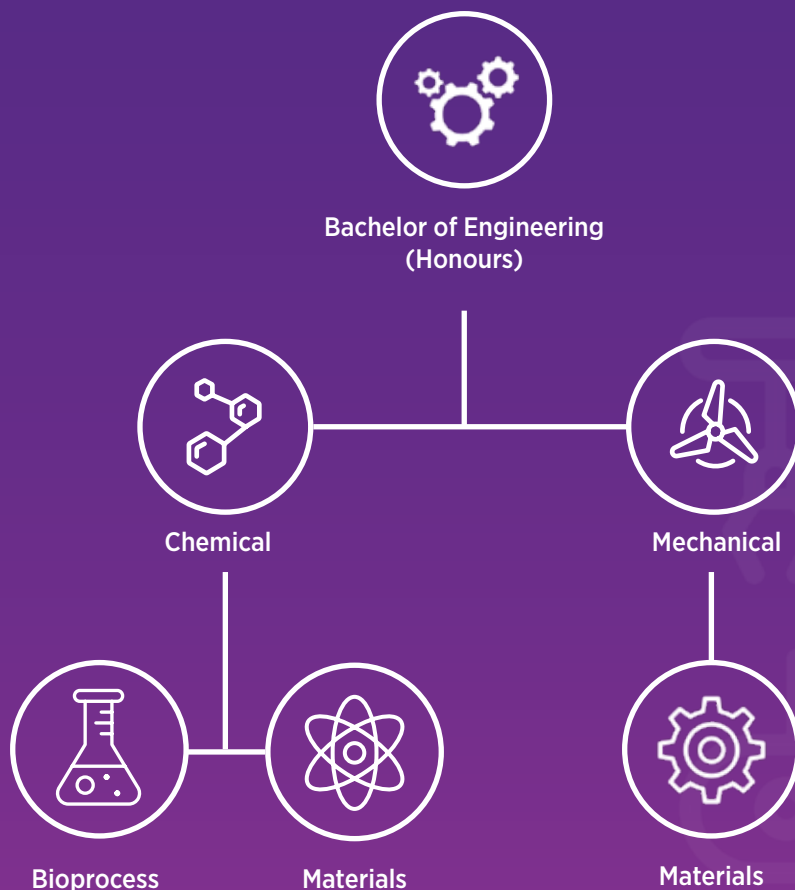
As one of Australia's largest and most diverse industries, advanced manufacturing is a key part of our thriving economy.

Advanced manufacturing uses and integrates new technologies, design and innovative production systems to produce high-value products and smart services for sectors including agriculture, biotechnology, defence, foods, fuels, pharmaceuticals, consumer products and the resources industry.

The industry is currently in a period of exciting change. Advances in digitisation and automation mean these engineers are now working smarter, not harder, bringing their understanding and creativity to new process designs, supply chain management and maintenance.

At UQ, we're equipping our graduates with skills to re-think traditional manufacturing processes and implement new technologies such as advanced robotics, AI, and big data to improve the products we rely on every day and help create a better world.

## WHAT TO STUDY





## CAREERS IN ADVANCED MANUFACTURING

An engineer who works in the advanced manufacturing industry specialises in designing and developing processes, equipment and machinery to optimise an organisation's manufacturing operations.

Think companies like Anatomics, Seafarms Group, Toyota, Electrolux and Bayer.

These companies employ highly skilled chemical and mechanical engineers to help manufacture and produce products for mass consumption.

### Chemical Engineering

Chemical engineers working in advanced manufacturing related areas could be employed to:

- Develop longer lasting electric batteries to power the vehicles of the future
- Help to develop renewable fuel alternatives and minimise our reliance on conventional chemical and fossil fuel refining processes
- Repurpose existing materials to make brand new products, reducing landfill
- Improve food safety through new process and system designs
- Develop sustainable building materials
- Make chemical processing workplaces and processes safer.

### Mechanical Engineering

Mechanical engineers working in advanced manufacturing related areas could be employed to:

- Produce life-changing biomedical devices, such as the Cochlear implant
- Manufacture remotely piloted aircraft in the aerospace industry
- Use advanced robotics, AI, automation and new technologies such as 3D printing to improve manufacturing processes
- Manufacture bioproducts from waste resources, such as sustainable fuels, textiles, and building materials
- Improve mineral processing in the resources industry through automation.



*“Reflecting on all the opportunities I had – studying engineering, science and languages, being a student leader, an executive member for a student society, studying abroad in Hong Kong and representing the uni through dance – I’ve realised there truly is something for everyone at UQ!”*

### Pamela Cheok

Bachelor of Engineering (Honours) (Mechatronic) (Minor: Biomedical Engineering) / Bachelor of Science (Biomedical Science) / Diploma in Languages (Chinese)

Manufacturing Engineer II,  
Boston Scientific, Galway (Ireland)



# BUILT ENVIRONMENT

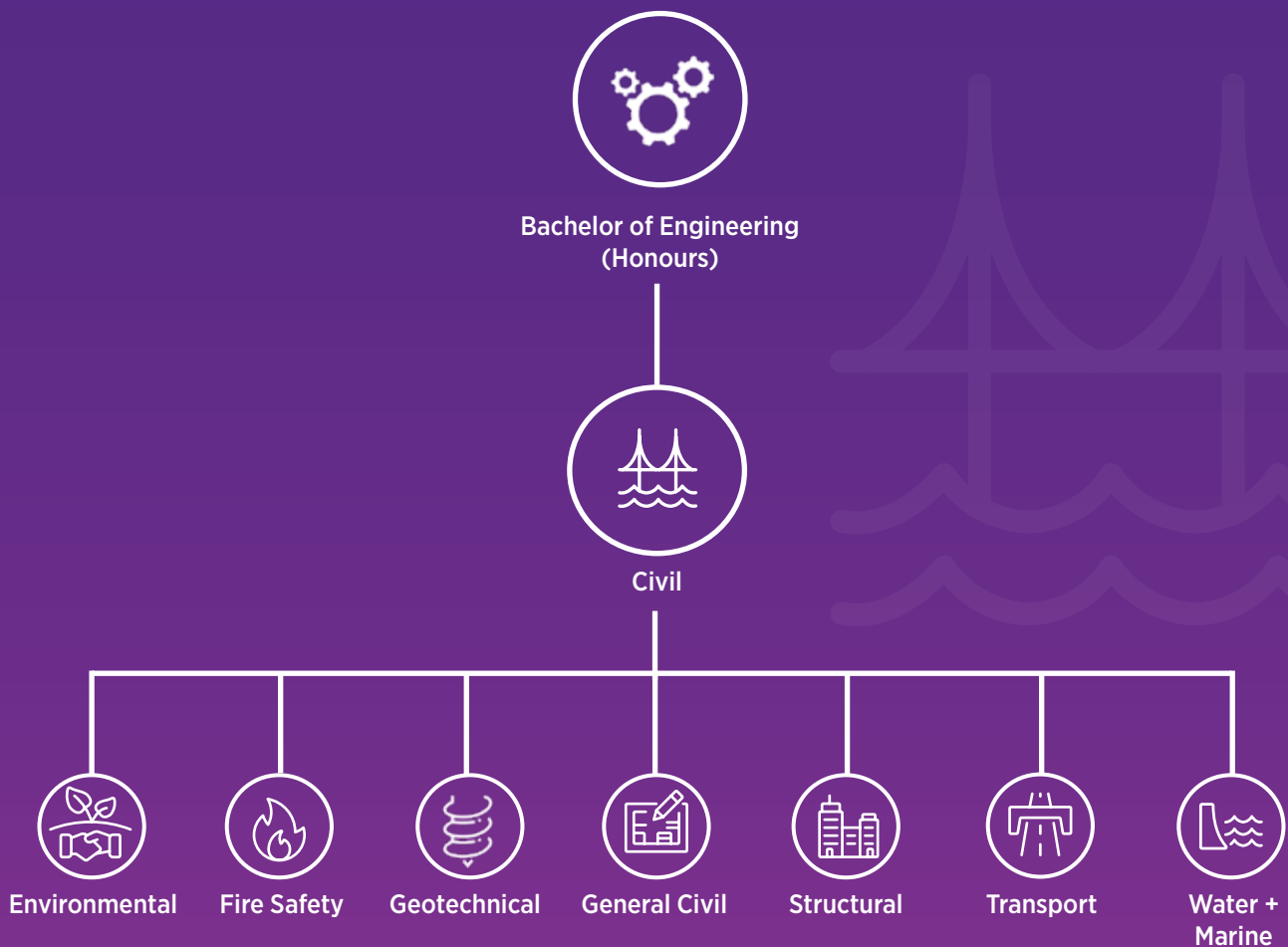
Get ready to shape the world we live in.

As Australia's population grows and our built environments become more diverse, there's an increasing need for more space, bigger cities, and smarter structures.

These demands put significant pressures on our urban and natural environments.

At UQ, we're preparing our graduates to help design and build new environments that are beautiful, functional, and sustainable – to benefit communities and reduce our carbon footprint for a healthier world.

## WHAT TO STUDY



## CAREERS IN BUILT ENVIRONMENT

An engineer who works in the built environment industry specialises in planning, designing, constructing and maintaining infrastructure.

They work to design new spaces and help to keep infrastructure running smoothly while meeting new challenges such as population growth, climate change and environmental disasters. They also help to protect and improve the natural environment while meeting the needs of society.

Think companies like Lendlease, Nexus Infrastructure, Hutchinson Builders, AECOM, and Morphum.

These companies employ highly skilled civil engineers in the fields of environmental, structural, or transport engineering, or seek out specialists in areas including fire safety and water and marine engineering, to work on infrastructure such as buildings, dams, airports and transport networks.

Civil engineers work in built environment related areas such as:

- Designing green buildings that help to lower city temperatures
- Developing fire-proof skyscrapers
- Assessing traffic patterns and improving the flow of cities
- Providing safe drinking water to communities
- Preventing beach erosion.

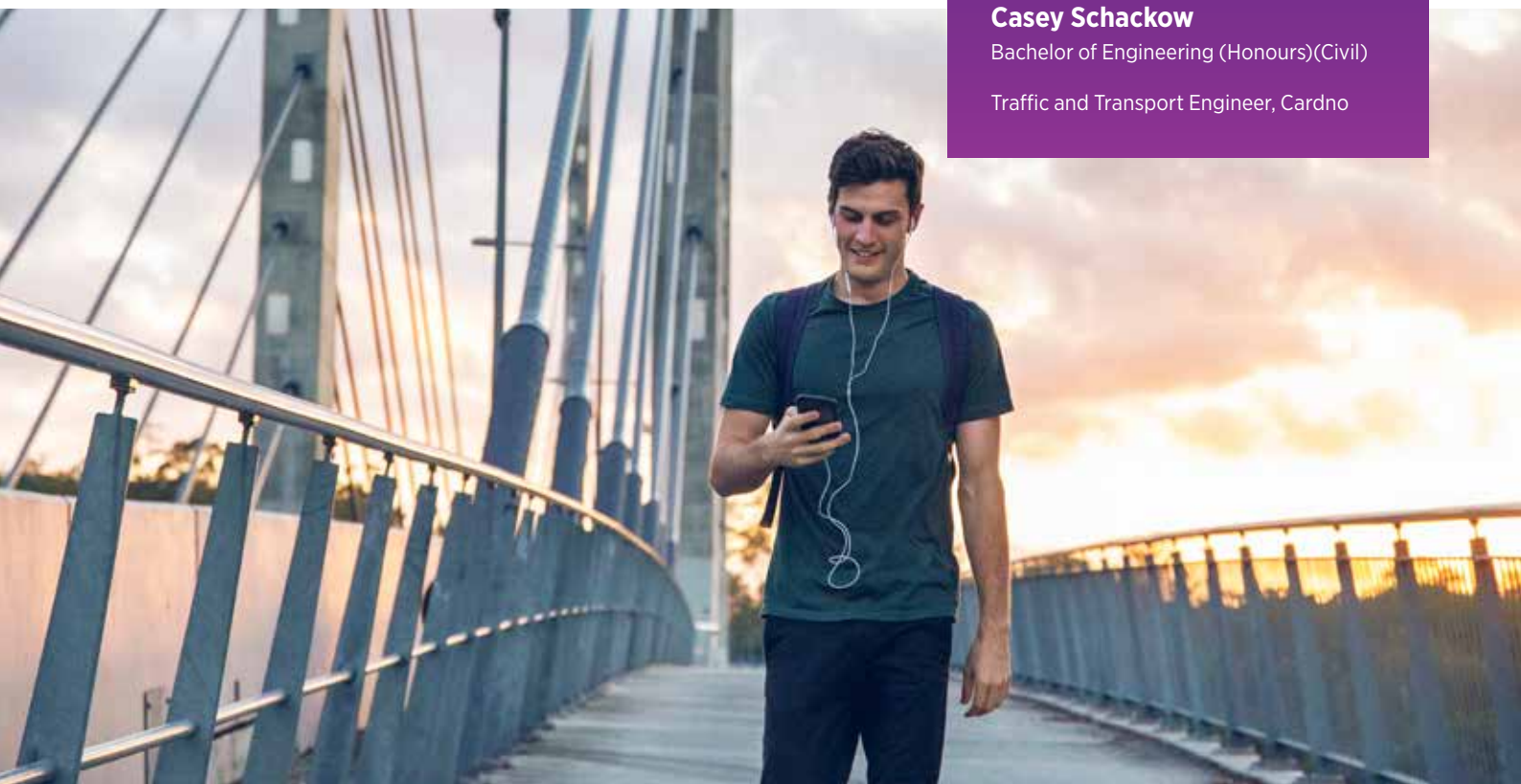


*“I was always infatuated with structures and architecture, I love city skylines and extraordinary engineering projects. I was lucky enough to have a teacher in high school who introduced the reality of engineering to me. I took his engineering course at school in year 11 and I knew I was set to be an engineer. UQ has a well-structured first year that allows you to get a taste of different engineering disciplines. As a result of this for me, the move into the civil and then traffic field was made clear.”*

### **Casey Schackow**

Bachelor of Engineering (Honours)(Civil)

Traffic and Transport Engineer, Cardno





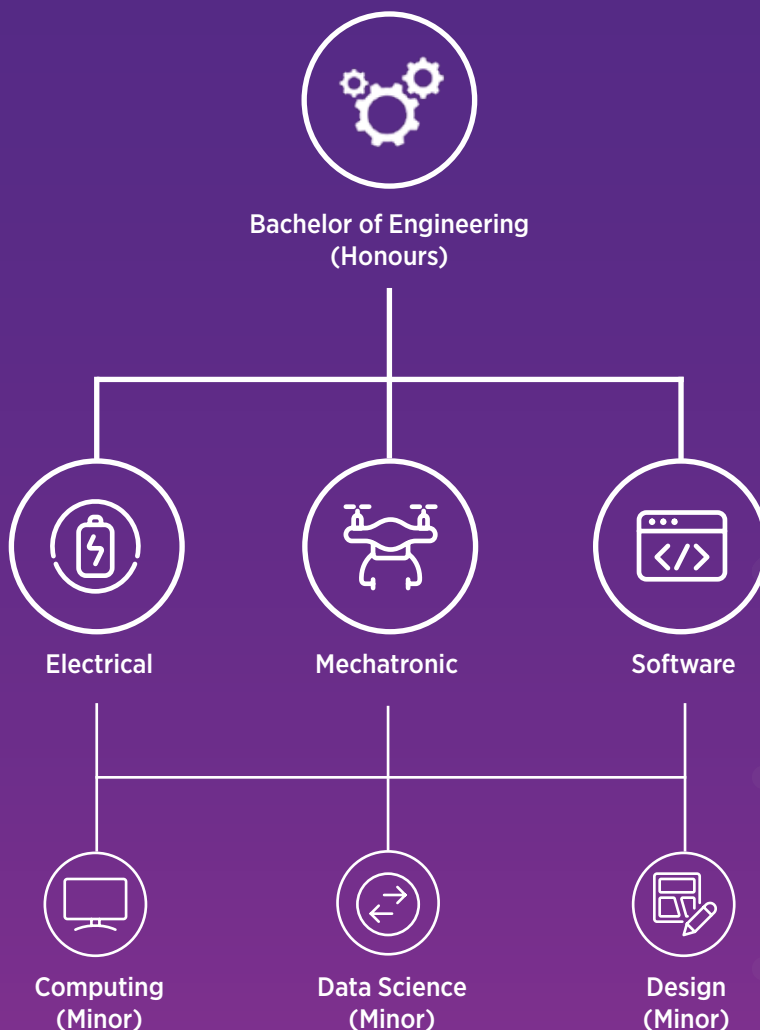
# DIGITAL DESIGN + TECHNOLOGY

Get ready to push the boundaries of imagination and creativity in a rapidly growing industry. Innovations in the technology industry such as big data, blockchain, artificial intelligence, and virtual reality mean we are now able to process data faster and deliver solutions that better meet user needs.

They also bring new challenges. Engineers in digital design and technology are visualising, building and delivering advanced solutions to society's most pressing tech issues – cyber security, energy poverty, and data privacy.

At UQ, we'll equip you with the skills and knowledge to meet these challenges head on and design a better tomorrow.

## WHAT TO STUDY







## CAREERS IN DIGITAL DESIGN + TECHNOLOGY

An engineer who works in the digital design and technology industry specialises in designing, building, testing and developing technologies that touch every aspect of our lives, from health, to banking, retail, agriculture, mining, tourism, and transport.

Think companies like Atlassian, Xero, Siemens, Google and Uber.

These companies employ highly skilled electrical, mechatronic and software engineers to design and produce systems, software, and products – everything from life saving medical devices to smart watches and self-driving cars.

### Electrical Engineering

Electrical engineers working in digital design and technology related areas could be employed to:

- Design medical imaging equipment
- Develop lasers for high-speed communication
- Create the next generation iPads
- Build the computers that control satellites.

### Mechatronic Engineering

Mechatronic engineers working in digital design and technology related areas could be employed to:

- Create life saving biomedical devices
- Develop self-driving cars
- Design robots to recover submarines
- Build autonomous drones.

### Software Engineering

Software engineers working in digital design and technology related areas could be employed to:

- Develop new video games
- Help to protect data as a cyber security analyst
- Architect an app for a financial tech company
- Design the next search engine.



*“There are so many options within software engineering. As technology advances, programming is not restricted to engineering firms alone, as most industries now require some form of software development. This allows for a lot of flexibility.”*

### Jessica Rock

Current student, Bachelor of Engineering (Honours) (Software)



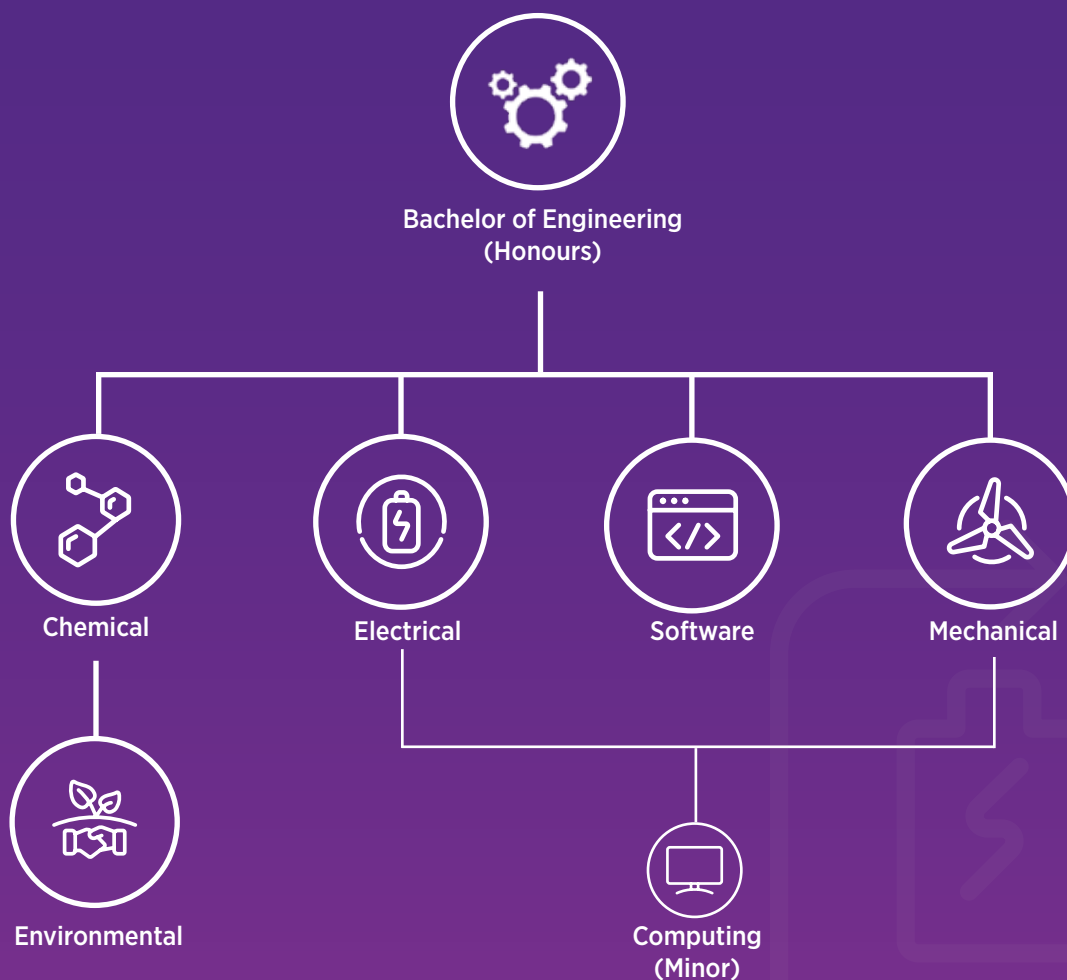
# ENERGY

Tackle global energy challenges and drive sustainable change.

Providing sufficient and sustainable energy to meet the requirements of higher living standards and a growing population will require major advances in energy supply and efficiency in the future. Doing this while mitigating the risks of climate disruption will be even more challenging.

At UQ, our graduates are powering up with the advanced skills and knowledge to meet the energy needs of a changing world.

## WHAT TO STUDY



# CAREERS IN ENERGY

## Chemical Engineering

Chemical engineers working in energy related areas could be employed to:

- Design safer, more efficient and sustainable chemicals and products in petroleum and petrochemical industries.
- Develop new energy sources such as biofuels and hydrogen as an energy source
- Manufacture better photovoltaic cells
- Design sustainable energy plants
- Develop sustainable energy policy
- Utilise natural resources for energy sector.

## Electrical Engineering

Electrical engineers working in energy related areas could be employed to:

- Power generation and conversion
- Control systems for energy efficiency, renewable energy, and green building design
- Power electronics for better solar, electric vehicles, or grid-level power systems
- Use data to design sustainable energy systems.

## Mechanical Engineering

Mechanical engineers working in energy related areas could be employed to:

- Design wind turbine components and systems
- Design machines that convert energy efficiently
- Work with solar thermal and geothermal energy
- Produce hydro electricity
- Create energy storage solutions
- Deliver automated machines.

## Software Engineering

Software engineers manage any device that has a computer embedded in it. This can be applied to energy systems such as:

- Solar inverters and energy storage units
- Distributed energy asset controls
- Design and maintenance.



*“Electrical engineering was particularly appealing to me as I had a special interest in the power industry.*

*UQ has equipped me with the knowledge and practical experience I needed to kick-start my career. My role requires me to work closely with a multi-disciplinary team of engineers and clients to deliver innovative, clean energy solutions.”*

### **Neha Moturi**

Bachelor of Engineering (Honours)  
(Electrical)

Graduate Electrical Engineer, Renewables  
Team, AECOM





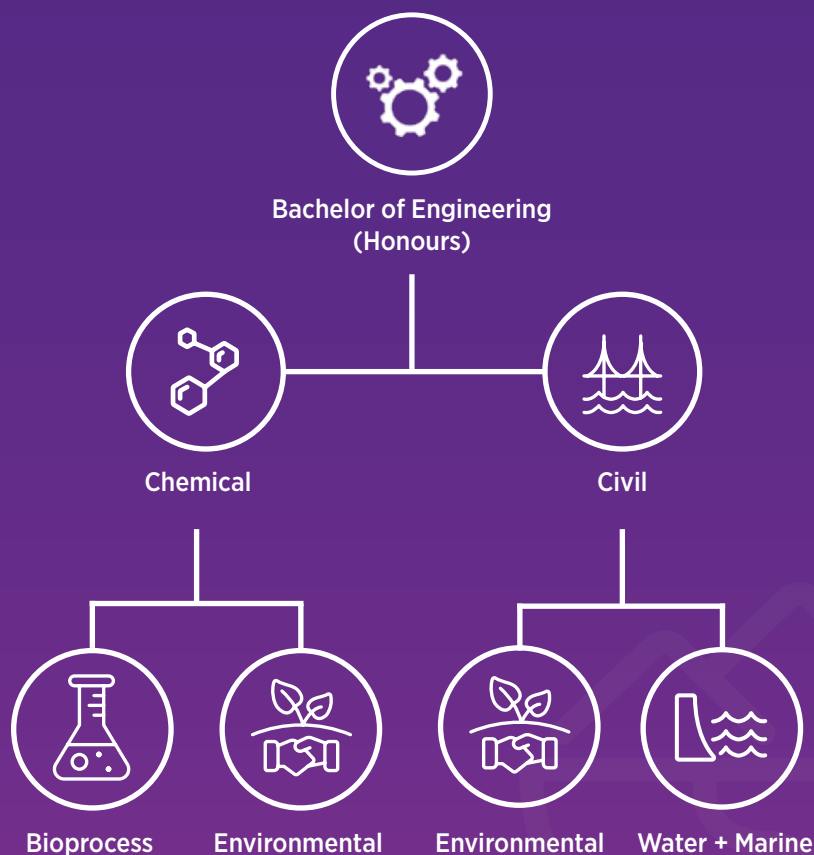
# ENVIRONMENT

Australia is a land like no other. We boast one of the most environmentally rich and diverse continents in the world. From scorched deserts to tropical rainforests, we are surrounded by land and oceans plentiful with life.

Meeting the challenges of managing and maintaining our continent's rich beauty, growing population and natural resources has never been more critical for us and the next generations to come.

At UQ, we'll show you how to embrace the challenges of tomorrow's changing world – in a way that benefits your career, the environment and communities all over the world.

## WHAT TO STUDY





## ENVIRONMENTAL CAREERS

Engineers working in the environment space can expect to find employment in environmental protection, management and safety, natural resource use and the energy sector, and the petroleum and petrochemical industries.

Think companies like Thiess, Origin Energy, The Dow Chemical Company, Manildra and Dalby Bio-Refinery.

These companies employ highly skilled civil and chemical engineers to work on a variety of disciplines.

### Chemical Engineering

Chemical engineers working in environmental related areas could be employed to:

- Develop strategies to mitigate environmental impacts
- Balance innovation, design and develop environmental considerations
- Transform materials to create production efficiencies and reduce emissions and waste
- Design and manufacture advanced materials, with a strong focus on efficiency and sustainability
- Create processes and products that support the development of a healthy and sustainable world.

### Civil Engineering

Civil engineers working in environmental related areas could be employed to:

- Contribute to policy development and explore how new processes evolve to implementation
- Assess, measure and develop solutions for managing resources such as energy, water, building materials, food and waste in an efficient and cost-effective way without harming the environment
- Predict and mitigate the risk of coastal flooding, land loss and beach erosion.



*“In the future chemical engineers are going to be crucial in the production of sustainable biofuels and clean fuels such as hydrogen, which is an area that I’m particularly interested in.”*

### Kailin Graham

Bachelor of Engineering (Honours)  
(Chemical and Environmental)

Graduate Engineer



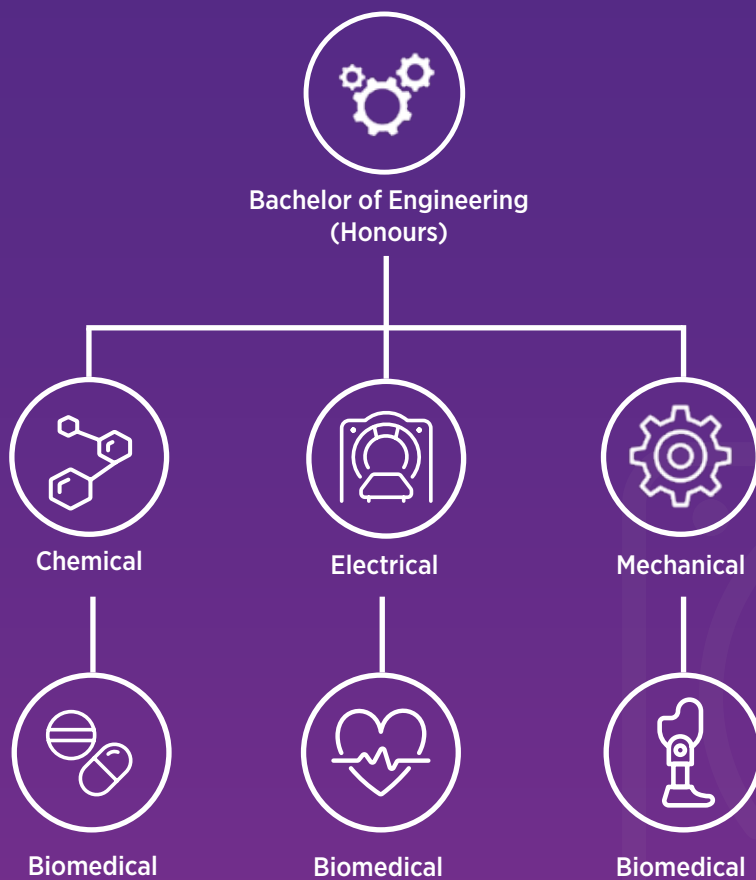
# HEALTH

Australia's health care system is one of the best in the world, providing safe and affordable care for all. But our system is facing significant challenges. Chronic disease, an ageing population, and the demand to improve health outcomes efficiently and sustainably all put pressures on our health care system.

As these demands grow so too does the need for bright engineers to design, develop and deliver improved prevention, diagnosis and treatment for illnesses.

At UQ, we're equipping our graduates with the skills to innovate new solutions, develop new technologies and imagine a healthier world.

## WHAT TO STUDY



# CAREERS IN HEALTH

Engineers are making change in the health industry within the field of biomedical engineering.

Some work to improve and develop new drug delivery systems or implantable devices. Others endeavour to create more reliable medical equipment, such as robotic-assisted surgery or better diagnostic tools.

More comfortable patient beds, advanced monitoring equipment and electronic devices such as pacemakers are types of products that often begin as concepts developed by biomedical engineers.

Possible careers across each specialisation include:

## Chemical Engineering

- Develop cutting-edge technologies for new drug therapies and medicines
- Design engineered tissues and organs
- Develop therapeutics focused on reducing the reliance on healthcare and improving quality of life.

## Electrical Engineering

- Design and build equipment, devices and computer software for use in the health care industry
- Design and maintenance of instrumentation such as medical imaging equipment and augmented reality technologies
- Evaluate the safety, efficiency and effectiveness of biomedical equipment.

## Mechanical Engineering

- Design replacements for body parts such as prosthetic limbs
- Design, manufacture, install, monitor and maintain medical and surgical equipment
- Consult on correct equipment use and patient safety issues.



*“I chose my degree because I wanted to do something in medicine but I also knew I was interested in engineering, so electrical and biomedical seemed like the perfect mix. Since graduating, I now work as a biomedical engineer with a team of technicians, engineers, and contractors in hospital facilities to install and commission equipment.”*

### **Evan Burns**

Bachelor of Engineering (Honours)  
(Electrical and Biomedical)

Service Technician, Device Technologies





# RESOURCES

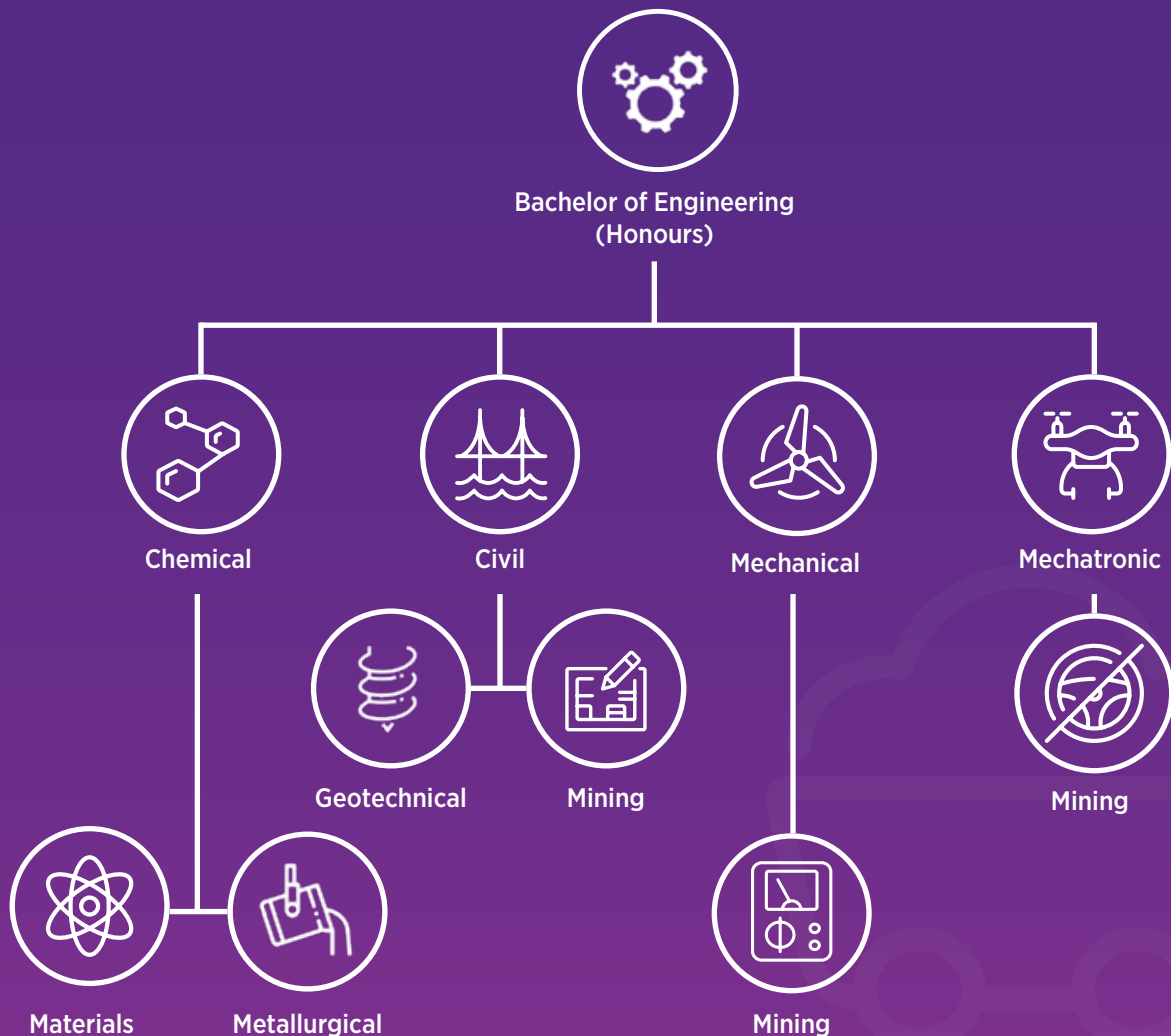
Few challenges are more important than building a lower-emissions based, clean-carbon world. And, in a time when progress is vital, access to critical resources will drive the pace of change.

That future is already here – and we need engineers who can question every process and action.

You'll learn about the increasing role of data science and new technologies, and how to lead the digital transformation happening right across the sector.

Our aim is to produce graduates prepared to make an impact. To think innovatively about sustainable solutions that produce zero harm – and build the most environmentally-friendly and productive resources sector we've ever seen.

## WHAT TO STUDY







## CAREERS IN RESOURCES

An engineer who works in the resources industry specialises in designing and developing equipment, machinery and processes to optimise an organisation's mining operations.

Engineers in the resource sector can find themselves working in a wide range of industries, government departments and private consultancies in areas such as:

- Mining and extraction
- Energy generation (renewable and non-renewable)
- Equipment maintenance
- Rehabilitation and conservation
- Transport
- Processing
- Exploration
- Export

### Civil Engineering

- Site planning, operations and management
- Determining the most suitable methods of ore extraction.

### Chemical Engineering

- Chemical, gas, petroleum and power plant operators
- Oil and gas exploration
- Designing methods of controlling the flow of oil and gas from wells.

### Mechanical Engineering

- Designing mechanical equipment, machines, components, products for manufacture, and plant and systems for construction
- Developing specifications for manufacture, and determining materials, equipment, piping, material flows, capacities and layout of plant and systems.

### Mechatronic Engineering

- Drones, virtual reality, computer modelling, robotics and artificial intelligence.



*“Mining will always be a big part of our lives. Any kind of innovation that can change mining engineering for the better would be well received in the industry as this ultimately provides a flow-on positive effect to the consumers of mining – our society.*”

*My favourite thing about being a mining engineer is how dynamic and fast paced my job is. Everyday I'm dealing with new challenges – it keeps it very interesting and I'm never bored!”*

#### **Gracie Liao**

Bachelor of Engineering (Honours)  
(Mining)

Graduate Mining Engineer, South32



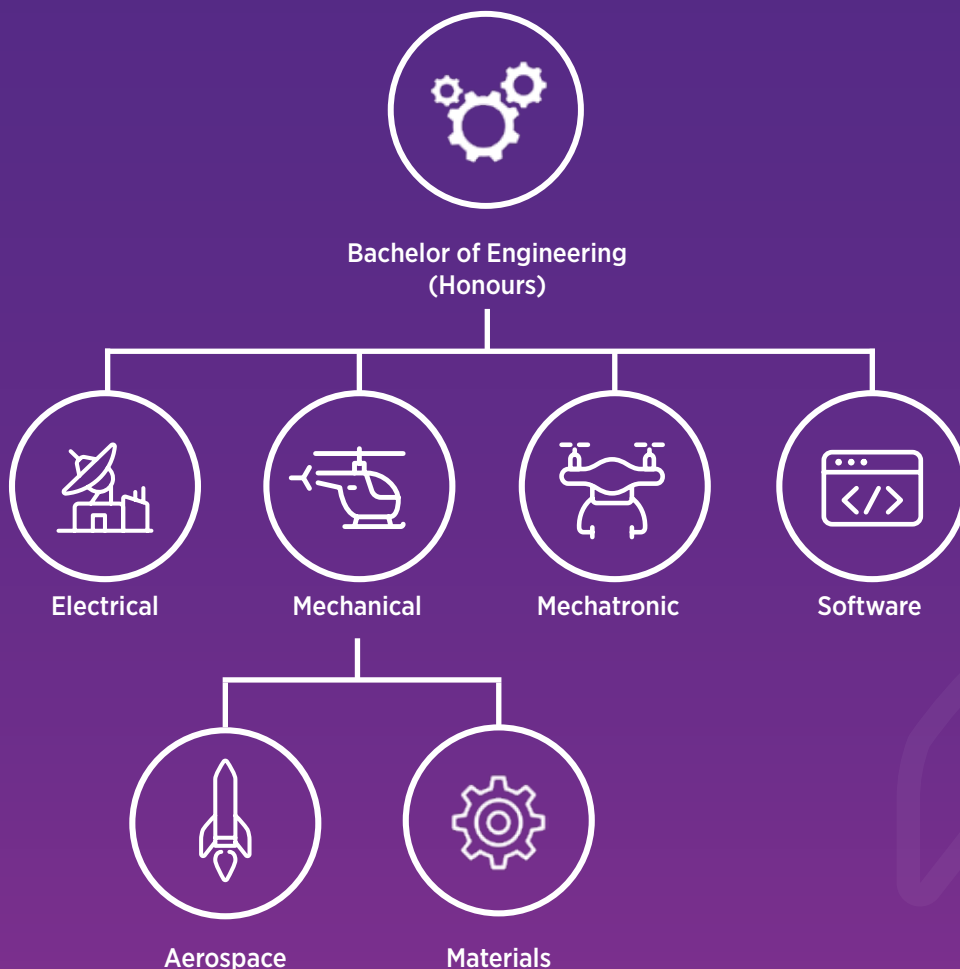
## SPACE

Space is a broad and rapidly expanding industry that needs a huge range of skillsets and support to operate.

As well as designing aircraft, space vehicles and space stations, engineers also create and maintain the satellites that fuel our communications, banking, security and agricultural industries. They develop the software that powers robots and the materials used to build effective spaceships.

UQ is equipping tomorrow's engineers with the knowledge they'll need to take the space industry to new heights. You'll develop skills across in-demand fields such as robotics, automation and hypersonics and build powerful industry connections to help your career really take off.

## WHAT TO STUDY



# CAREERS IN SPACE

A career in space could be anything from designing more affordable satellites for better communication or monitoring water pollution on the Great Barrier Reef, to designing faster rockets that use fuel more efficiently.

Space data and technologies also enable the modern economy to function by providing us with everyday essentials such as internet access, weather and location information. The career opportunities are literally out of this world.

## Electrical Engineering

Electrical engineers working in space related areas could be employed to:

- Design electronic and electrical systems for aircrafts
- Develop hardware for cybersecurity, wired and wireless communications, control systems, signal processing, and propulsion control
- Design guidance systems, communication systems and networks, radar and ground stations or even entire satellites.

## Mechanical Engineering

Mechanical engineers working in space related areas could be employed to:

- Design improved materials, architectures, mechanisms, methods and processes for aerospace innovation
- Work in hypersonics, aerodynamics, propulsion, guidance, navigation and control.

## Mechatronic Engineering

Mechatronic engineers working in space related areas could be employed to:

- Build, install, operate, test and maintain robots, robotic components, devices and systems.
- Build autonomous systems for space, terrestrial, and underwater hardware.

## Software Engineering

Software engineers working in space related areas could be employed to:

- Code systems on aircraft, helicopters and satellites
- Develop virtual simulations and systems.



*“What I didn’t realise was there are so many different career opportunities within the industry. It’s not just pilots, astronauts and engineers. It’s operations staff, air traffic control, business, law – you name it.”*

### **Brock Little**

Bachelor of Engineering (Honours) (Mechanical and Aerospace)/Master of Engineering

Aerospace Engineer, HeliMods, Sunshine Coast





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CREATE CHANGE

**Disclaimer**

The information in this Guide is accurate as at August 2021. However, the University has many programs and courses, and refreshes and updates its programs and course offerings from time to time and without notice. It is your responsibility to visit [future-students.uq.edu.au](https://future-students.uq.edu.au) for up-to-date information.

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