THE UNIVERSITY OF SYDNEY

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Engineering and Computer Science

Undergraduate guide 2020

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THE UNIVERSITY OF SYDNEY

Join us

Courses

Opportunities to excel

How to apply

WHY CHOOSE SYDNEY?

At the University of Sydney, we provide you with the highest technical skills through practical, future-focused learning. You will develop exceptional expertise in engineering, computing or project management, and apply it to problems beyond the classroom.

Our industry connections will open up internship placements, international study tours, and consultancy opportunities to strengthen your knowledge and experience in engineering and computer science and prepare you for the jobs of the future.

Professional degrees
Our engineering, advanced computing and project management courses are 'professional degrees', meaning they follow a specific study pattern that leads to professional accreditation. This enables you to work anywhere in the world with a globally recognised qualification.

1st in Australia, **4th** in the world for graduate employability[1]

Top 3 universities in Australia, **37th** in the world for research innovation[2]

600 hours of professional engagement for engineering students
(see page 5)

Top 60 universities in the world for engineering and technology[3]

$10 million in scholarships offered every year[4]

Connect with a network of **1200+** engineering, technology and government organisations

More than 2x the national average of women engineering, computing and project management students

Study at the university ranked the most beautiful in Australia[5]

Join a network of **26,550+** engineering, computer science and project management alumni

1 QS Graduate Employability Rankings 2020
2 Thomson Reuters' Top 75: Asia's Most Innovative Universities 2019
3 QS World University Rankings 2019
4 Total for scholarships offered across all degrees in the Faculty of Engineering
5 Times Higher Education survey of the 10 most beautiful universities in Australia, 2018

SYDNEY TRANSFORMED

We’re making a multimillion-dollar investment in your future.

At the University of Sydney, we are determined to foster a healthy learning environment that keeps students engaged, motivated and inspired. To achieve this, we are undertaking a major redevelopment project, transforming our engineering and computer science precinct with contemporary architecture and facilities designed to enhance the student experience.

You can soon expect to find yourself working in an exciting new environment. Our new home will include:

- advanced teaching facilities and laboratories
- specialised research facilities
- unique, vibrant study spaces
- activated public space incorporating food outlets and recreation areas.

Image: Artist’s impression of our new engineering and computer science precinct

PROFESSIONAL EXPERIENCE

At Sydney, your career comes first. We'll help you develop your skills in critical thinking, networking and leadership throughout your degree so you can enter the workforce with confidence.

Professional Engagement Program (for engineering streams only)
Throughout your degree, you'll complete a minimum of 600 hours of professional engagement activities as part of our Professional Engagement Program. This can include workshops, site visits, engineering and IT conferences, work experience, and a six-week minimum internship in your final year. Partner organisations include Abergeldie, Commonwealth Bank, GHD, Douglas and Partners, Mirvac, John Holland, TFNSW, Lendlease, and ResMed.

All engineering students complete **600 hours** of professional engagement

Jacaranda Flame Consulting
Engineering and computer science students can gain insights into the life of a working professional by joining Jacaranda Flame Consulting.

You will work in a team to devise solutions to real-life problems proposed by leading commercial companies. The program is designed to provide valuable practical experience that contributes to your overall coursework.

Engineering Sydney Industry Placement Scholarship
Spend six months working on site with a leading organisation, through the Engineering Sydney Industry Placement Scholarship (ESIPS), which places high-achieving students with a leading organisation in Australia or overseas.

In this way, your honours thesis could take you to Saudi Arabia to work with Dow Chemical, or to NASA's Jet Propulsion Laboratory in California.

The scholarship also provides financial support so you can focus on gaining the practical skills and real-world knowledge that will help you meet the challenges faced by industry.

To be eligible for the ESIPS program, you need to maintain a distinction average (75+) or better during your studies.

LIFE IN ENGINEERING AND COMPUTER SCIENCE

"Throwing yourself into student societies is one of the best ways to make the most of your experience at university. Engineering is a warm and welcoming environment for absolutely anyone and it's our societies that lead the charge."

James Broe
Engineering honours (mechatronic)/ science student
President, Sydney University Mechatronics Organisation (SUMO)

University life is more than studying hard and attending class. Our clubs and societies help you make the most of your university experience. They prepare you for the workforce by providing you with networking opportunities and allowing you to develop your leadership and communication skills.

Whatever course you choose to study, there is a related society to join. You will find plenty of people who share your interests and can introduce you to others. To find a society that suits you, go to:

– sydney.edu.au/engineering/socs

In your first semester at the University of Sydney, you'll have the opportunity to go on a camp for first-year students with your chosen student society. A fun few days away is the perfect way to transition from high school and get to know your new classmates.

There are currently two societies designed to empower and encourage women in engineering, both academically and personally: Sydney Women in Engineering and Sydney Women in Aerospace Engineering. These groups offer support and opportunities to network with your fellow female students and industry alumni.

There is also a range of sporting, social and other clubs that allow you to pursue your other interests. There's even a club for motorsport enthusiasts who construct and race a small, open-wheeled Formula SAE racing car.

There are loads of great eateries and cafés in and around the engineering and computer science precinct. You can then head to the nearby Sydney Uni Sports & Aquatic Centre and burn off some calories.

GLOBAL OPPORTUNITIES

Whether you'd like experience in humanitarian aid or to study abroad for a semester, our global opportunities will broaden your horizons.

Spend a year overseas, learn a language and immerse yourself in new cultures. We encourage students to expand their perspectives and challenge their worldview through travel. This may include field trips, overseas internships, or student exchanges with more than 170 partner universities worldwide.

There are more than 30 countries to choose from, and scholarships, grants and loans to help you get there. Our Propel Mobility Scholarship could be the perfect way to start financing your overseas experience (see page 49).

Read more about our study abroad and exchange programs:

- sydney.edu.au/sydney-abroad

Read more about our exchange scholarships:

- sydney.edu.au/scholarships/current/exchange

Humanitarian Engineering major

Our Humanitarian Engineering major* could take you to India to help build earthquake-proof homes, or to Samoa to help provide communities with water sanitation solutions. Master your technical skills, realise your potential and make a difference.

* This major is recommended for the Civil stream of the Bachelor of Engineering Honours (page 26)

"The impact we had on those communities opened my eyes to the difference we can make as engineers."

Annette Bui
Engineering (mechatronic)/ project management student, completed fieldwork in India for a humanitarian engineering project

SHARED POOL OF MAJORS AND MINORS

The shared pool of majors and minors allows you to explore a wide range of study areas as you acquire multidisciplinary knowledge and critical analytical skills that complement your primary major.

Architecture, design and planning

- Biological Design
- Design

Arts and social sciences

- American Studies
- Ancient Greek
- Ancient History
- Anthropology
- Arabic Language and Cultures
- Archaeology
- Art History
- Asian Studies
- Australian Literature*
- Biblical Studies and Classical Hebrew
- Celtic Studies*
- Chinese Studies
- Criminology
- Cultural Studies
- Digital Cultures
- Diversity Studies*
- Econometrics
- Economic Policy
- Economics
- English
- Environmental, Agricultural and Resource Economics
- European Studies
- Film Studies
- Financial Economics
- French and Francophone Studies
- Gender Studies
- Germanic Studies
- Hebrew (Modern)
- History
- Indigenous Studies
- Indonesian Studies
- International and Comparative Literary Studies
- International Relations
- Italian Studies
- Japanese Studies
- Jewish Civilisation, Thought and Culture
- Korean Studies
- Latin
- Linguistics
- Modern Greek Studies
- Philosophy
- Political Economy
- Politics
- Sanskrit*
- Social Policy*
- Socio-legal Studies
- Sociology
- Spanish and Latin American Studies
- Studies in Religion
- Theatre and Performance Studies
- Visual Arts
- Writing Studies*

Business

- Accounting
- Banking**
- Business Analytics
- Business Information Systems
- Business Law
- Finance**
- Industrial Relations and Human Resource Management
- International Business
- Management
- Marketing

Education and social work

- Education

If you are a Bachelor of Advanced Computing student, you can choose to take a major or minor from the shared pool below, in addition to your primary major.

If you are a Bachelor of Project Management student, you can choose a second major (but not a minor).

Engineering and computer science

- Computer Science
- Information Systems
- Project Management
- Software Development

Music

- Music

Medicine and health

- Anatomy and Histology
- Applied Medical Science
- Disability and Participation
- Health
- Hearing and Speech
- Immunology*
- Immunology and Pathology**
- Infectious Diseases
- Neuroscience
- Pathology*
- Pharmacology
- Physical Activity and Health
- Physiology

Science

- Animal Health, Disease and Welfare
- Animal Production
- Biochemistry and Molecular Biology
- Biology
- Cell and Developmental Biology
- Chemistry
- Data Science
- Ecology and Evolutionary Biology**
- Environmental Studies
- Financial Mathematics and Statistics
- Food Science
- Genetics and Genomics
- Geography
- Geology and Geophysics
- History and Philosophy of Science
- Marine Sciences
- Mathematics
- Medicinal Chemistry
- Microbiology
- Nutrition Science
- Physics
- Plant Production
- Plant Science*
- Psychological Science
- Quantitative Life Sciences
- Soil Sciences and Hydrology
- Statistics
- Virology*
- Wildlife Conservation*

* Available as a minor only (minors not available in the Bachelor of Project Management)
** Available as a major only

WHERE WILL YOUR DEGREE LEAD YOU?

Launch into the world of engineering, computing and project management.

For the latest course information, visit **sydney.edu.au/courses**

ADVANCED COMPUTING

Job title
Big data developer
Information security analyst
Software project manager
Systems analyst
Computer programmer
Web developer
Data scientist
App developer
Network and database administrator
Chief technology officer

Field
Health
Banking and finance
Information technologies
Government and defence
Retail
Startups
Software development

Graduate salary
$52–57k

ENGINEERING (AERONAUTICAL)

Job title
Aeronautical engineer
Aerodynamicist
Design engineer
Navigation systems engineer
Automotive designer
Aircraft engineer

Field
Space industry
Aviation and aerospace industry
Agriculture
Automotive industry
Manufacturing
Defence
Mining
Construction
Farming
Agriculture
Civil aviation safety

Graduate salary
$52–60k

ENGINEERING (ELECTRICAL)

Job title
Computer hardware designer
Design engineer
Power supply design engineer
Product development engineer
Substation engineer
Telecommunications engineer
Web development engineer

Field
Energy sector
Telecommunications sector
Defence
Power generation industry
Aviation and aerospace industry
Construction
Fast-moving consumer goods
Electronics industry

Graduate salary
$65–67k

ENGINEERING (MECHANICAL)

Job title
Mechanical engineer
Space vehicle engineer
Biomedical implant engineer
Automated airport facilities engineer
Automotive engineer

Field
Energy sector
Health
Travel
Rail and transportation
Automotive
Mining
Manufacturing
Environment biotechnology
Power generation and energy
Construction
Air conditioning and refrigeration

Graduate salary
$62–66k

ENGINEERING (BIOMEDICAL)

Job title
Design engineer
Test engineer
Quality or regulatory manager
Product support engineer
Prosthetist
Rehabilitation engineer
Chief technical officer
Sports biomechanical engineer
Tissue engineer
Forensic engineer
Clinical support specialist
Instrumentation engineer
Medical device assessor
Patent examiner
Field service engineer

Field
Health
Government
Industry
Research institutes
Health technology organisations
Medical device companies

Graduate salary
$63k

ENGINEERING (CHEMICAL AND BIOMOLECULAR)

Job title
Energy engineer
Food engineer
Water treatment engineer
Combustion engineer
Environmental consultant
Environmental engineer
Petroleum engineer
Smelting engineer

Field
Health
Government
Production
Mining
Banking and finance
Non-government organisations

Graduate salary
$68–72k

ENGINEERING (CIVIL)

Job title
Aid worker
Construction manager
Construction project manager
Façade drafter
Foundation and piling design specialist
Geotechnical consultant
Humanitarian architect
Principal transport planner
Road network system planner
Senior environmental consultant
Senior structural engineer
Emergency management specialist
Sustainability specialist
Town planner
Transport operations planner

Field
Construction
Mining
Humanitarian aid
Environmental
Transport
Coastal and marine
Agriculture
Water and public health

Graduate salary
$62k

ENGINEERING (MECHATRONIC)

Job title
Robotics and automation engineer
Mechatronic engineer
Process monitoring and plant systems engineer
Renewable energy systems engineer
Software development consultant
Software designer
Automobile manufacturer

Field
Robotics
Product design and development
Mining
Biotechnology
Manufacturing
Traditional and non-traditional automation
Computer system and software design
Transportation
Power systems
Defence
Agriculture
Farming

Graduate salary
$60–63k

ENGINEERING (SOFTWARE)

Job title
Information security specialist
Database programmer
Software analyst
Software engineer
System test engineer
Web developer

Field
Banking and finance
Defence
Telecommunications sector
Power generation industry
Electronics industry
Fast-moving consumer goods
Healthcare
Information technologies

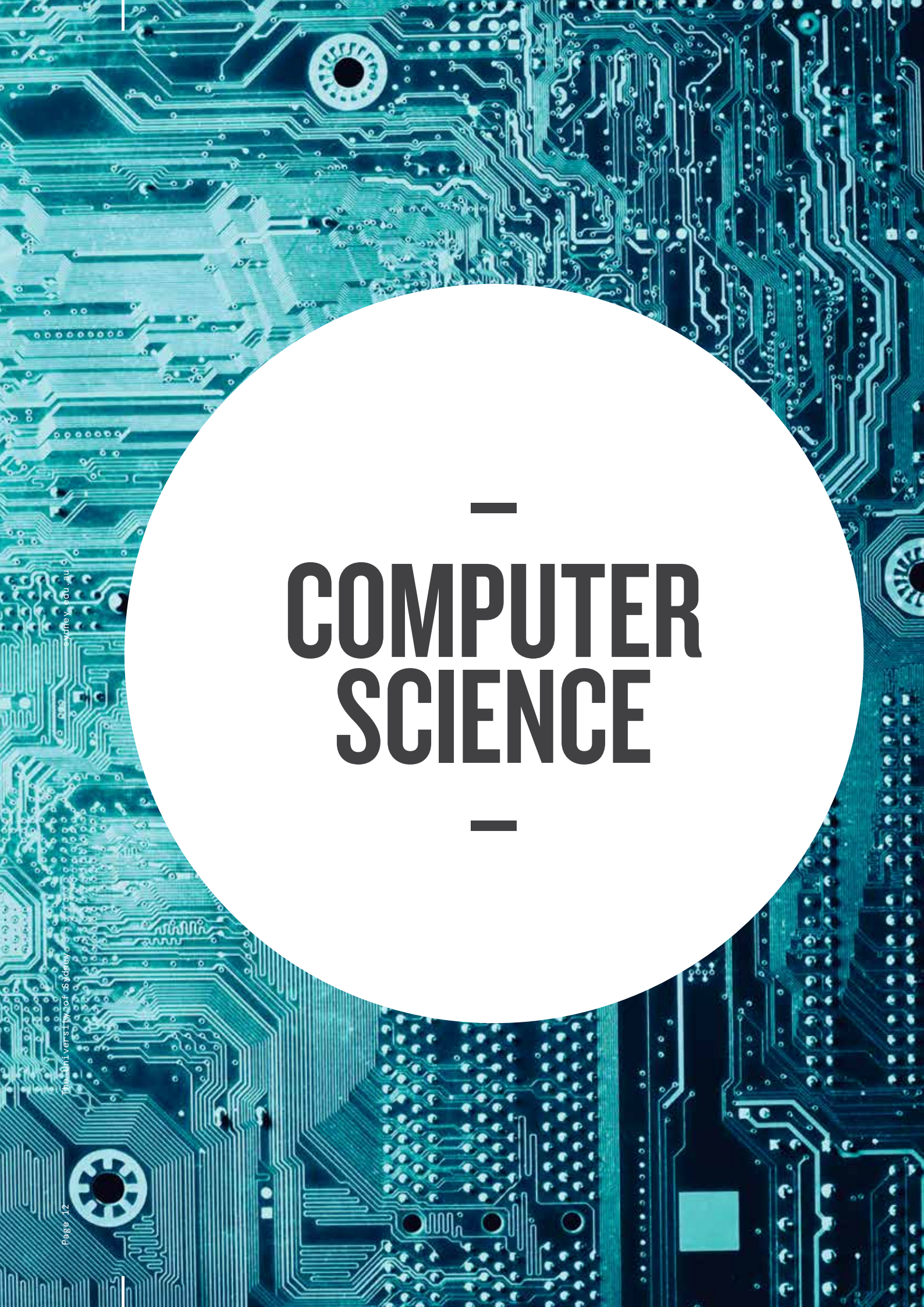
Graduate salary
$53–57k

PROJECT MANAGEMENT

Job title
Construction project controller
Document controller
Head of projects
Program director
Project manager
Events director

Field
Construction
Mining
Humanitarian aid
Environmental
Entertainment
Banking and finance
Government
Healthcare
Business

Graduate salary
Varies by industry



COMPUTER SCIENCE

BACHELOR OF ADVANCED COMPUTING

From intelligent drones, virtual reality apps and the internet of things, learn the design principles and programming techniques to build the systems behind emerging technologies.

This is no ordinary computing degree. This is computing education redesigned for a diverse technological world that's growing exponentially. Develop the creativity, originality and fast problem-solving skills that are growing in demand, and find your industry niche along the way.

Our course combines theory with practice and is taught by industry leaders across a wide spectrum of computing disciplines. The first year of the course will introduce the core skills required to become a computing professional before specialising in one of four computing majors.

In subsequent years you will focus on more advanced topics, a thesis project, and an optional second major from the adjacent list or from the shared pool on pages 8–9.

You will also learn to program in languages such as Python, Java, C and C++.

If you're keen to get into the workforce after three years, you have the option to graduate with a Bachelor of Computing degree.

Majors

Computer Science

Explore exciting new technologies and create fundamentally new solutions to complex challenges. Learn the key concepts of computing, the principles and techniques needed to solve tasks efficiently with computation, and how to express those solutions in software.

Information Systems

Design, implement and evaluate enterprise software systems to meet an organisation's needs. You will experience working with clients to make computer systems function within the broader socio-technical context.

Software Development

Develop the understanding and skills to design and deliver reliable, high-quality software systems that lead the next wave of technical innovation. This major includes the design, testing, bug-fixing and creating applications for mobile and desktop devices.

Computational Data Science

Develop your mathematical, analytical and technical skills to create solutions that guide data-driven decision making. The statistical, data management and machine learning skills you'll master are highly translatable across any industry or science.

CAREER SNAPSHOT

Write software for organisations of all sizes, invent new types of code, consult on information communications technology (ICT) decision-making or develop new ways to process large complex datasets.

Work in an established company or launch your own.

This career is a great choice for both creative and analytical minds.

See the direct positive impact of your work, potentially for millions of people around the world.

Flexible work hours and a dynamic work environment make for a good work–life balance.

To be successful, combine your technical knowledge and practical, hands-on experience with communication skills.

Enjoy global work opportunities, right from the first years of your career.

Graduate salaries for both men and women start at $52–57K per annum.*

* Graduate Careers Australia survey

Gain experience beyond the lecture hall

Programs to foster entrepreneurship

We offer many opportunities for you to combine your computing skills with entrepreneurial drive to launch something exciting.

A recent survey by Startup Muster revealed more Australian startup founders studied at the University of Sydney than any other Australian university. To help get your ideas up and running, we offer support through our startup accelerator program, Incubate.

Hands-on industry projects

In final year, you'll work with one of our 1200 industry partners on a real business challenge. This capstone project will spark your passion for innovation, improve your teamwork and communication skills, and give you the experience and networking opportunities to improve your career prospects.

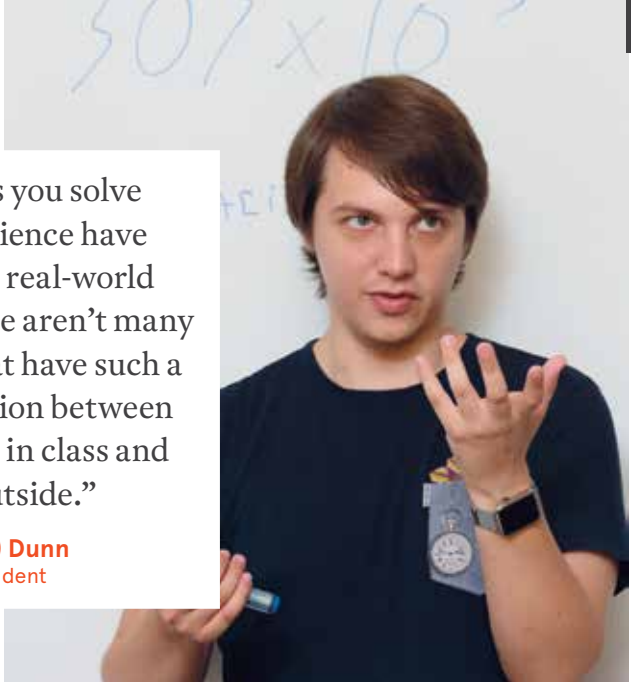
If you're considering a research-based computing career, you can turn your innovative ideas into credit towards a major thesis.

"Having a specialisation in other fields and combining it with programming and data science will produce innovative businesses and projects we couldn't imagine or comprehend today."

Tinlok (Tiny) Pang
Computer science/science graduate
Senior Data Scientist, Canva

"Whether I decide to pursue a career as a developer, consultant or researcher, I know that I will be well equipped to meet any challenge thrown at me."

Deanna Arora
Computer science student



> “The problems you solve in computer science have applications in real-world scenarios; there aren’t many other fields that have such a direct connection between what you learn in class and what you do outside.”

Konstantin (Kosta) Dunn
Computer science student

Find your niche

Unlike many computing courses, this flexible degree allows you to select a second major from the University of Sydney’s shared pool of majors (see pages 8–9). Whether it’s ‘fintech’, ‘edtech’, ‘biotech’ or ‘medtech’, you can combine computing with more than 100 cross-disciplinary majors to cultivate specialist industry knowledge and computing expertise. The table below shows what one combination looks like.

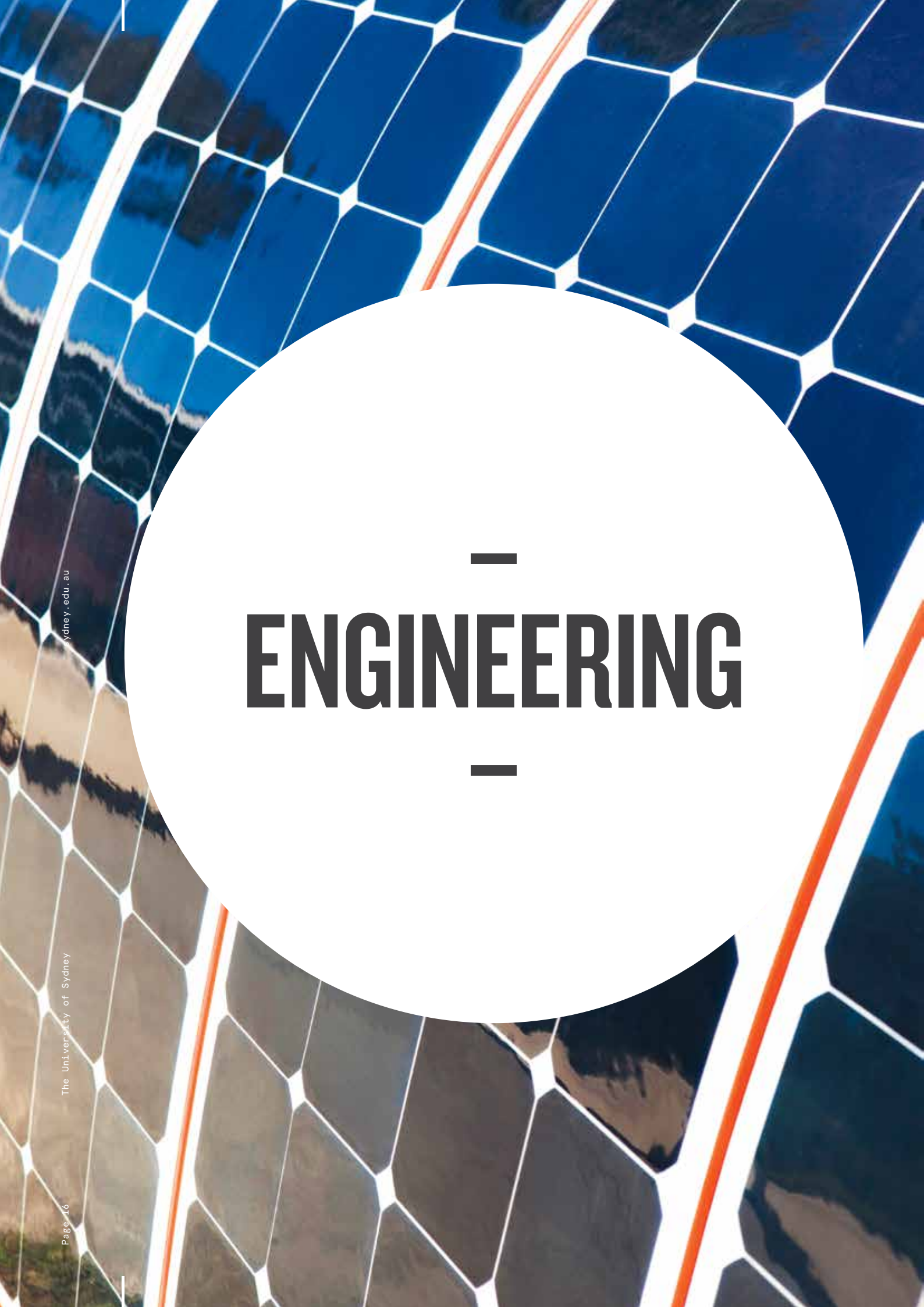
Sample course structure

Bachelor of Advanced Computing with majors in Computer Science and Design

Year	Semester	Unit of study				
1	1	Computing 1A – Professionalism	Introduction to Programming	Linear Algebra	Calculus of One Variable	Foundations of Data Science
	2	Computing 1B OS & Network Platforms	Object-Oriented Programming	Introduction to Computer Systems	Discrete Mathematics for Computation	
2	1	Computing 2 – Usability and Security	Data Structures and Algorithms	Systems Programming	Principles of Design	
	2	Agile Software Development Practices	Programming Languages, Logic, and Models	Data and Information Management	Design Theory and Culture	
3	1	Computing 3 – Management	Algorithm Design	Distributed Systems*	Visual Communication	
	2	Computer Science Project	Design Thinking	Web and Interface Design	STEM Communications, Understanding Creativity, Business Entrepreneurship*	
4	1	Thesis A	Computing 4 – Innovation	Design Innovation Studio	Data Design Studio	
	2	Thesis B	Information Design and Visual Storytelling	Multimedia Design and Authoring	Machine Learning and Data Mining	

■ Degree core ■ Major 1 (Computer Science) ■ Major 2 (Design) ■ Degree core/Major 1
■ Advanced elective ■ Open Learning Environment (OLE)

* These units are just some of the many electives available to students. Units are indicative only.



ENGINEERING

BACHELOR OF ENGINEERING HONOURS (AERONAUTICAL)

Aeronautical engineering is the design, production, testing and maintenance of aircraft, aerospace vehicles and their systems. This includes conventional fixed-wing aircraft and helicopters, missiles, rockets and spacecraft, as well as drones.

With the growth in commercial air and space travel and the demand for high-speed travel on the rise, the opportunity to revolutionise the next generation of aircraft and become a leader in the aerospace industry is all yours.

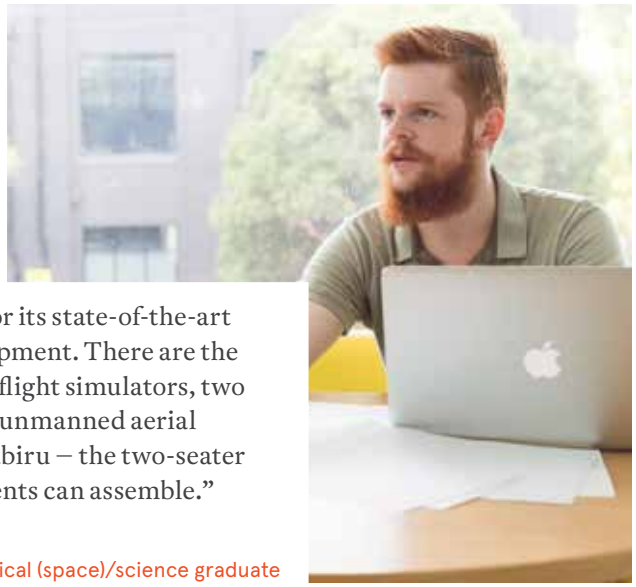
Let your ambitions soar

Our Bachelor of Engineering Honours (Aeronautical) will give you an in-depth understanding of the design and operation of aircraft and aerospace systems in the Earth's atmosphere and in space.

Combining hands-on experiential learning and industry experience, this program prepares you for the aerospace industry's next evolution.

You will develop an understanding of flight vehicle design, including aerodynamics, lightweight structures, flight mechanics and control, propulsion, and aircraft design.

During your degree, you will construct a light aircraft and learn about aeronautical design, operations and regulations.



"I chose Sydney for its state-of-the-art facilities and equipment. There are the motion and static flight simulators, two wind tunnels, the unmanned aerial systems lab and Jabiru – the two-seater aircraft that students can assemble."

Jeremy Cox
Engineering aeronautical (space)/science graduate

CAREER SNAPSHOT

Design, build and fly aircraft or even work in the space industry.

Take your skills into the defence industry, specialising in military aircraft, rockets, satellites, and helicopters.

Improve flight safety, fuel efficiency and operational systems, looking into the environmental impact of air travel.

Design, build and test new designs for small unmanned aerial vehicles (UAVs), also known as drones.

As an aerodynamicist or design engineer, you can design and develop products in fields such as formula and endurance racing, or the automotive industry.

As aircraft are the same all over the world and your degree is accredited internationally, you can work anywhere.

Work for renowned companies like Boeing, Airbus and Qantas, or start your own business.

Graduate salaries start at $52–60K per annum.*

* Graduate Opportunities (published by Graduate Careers Australia)

Majors

There are more than 20 engineering majors. The majors that best align with the aeronautical engineering stream are as follows:

Space Engineering

The Space Engineering major at Sydney is the only program of its kind offered in Australia. It looks into the world of orbital mechanics, space vehicles, space avionics and robotics.

Through this major, you could become a space engineer in the aerospace, defence, environmental or research industries, designing and building satellite subsystems, robotic programs and interplanetary space systems.

This major is open to students with an ATAR of 99.0 or more.

Computational Engineering

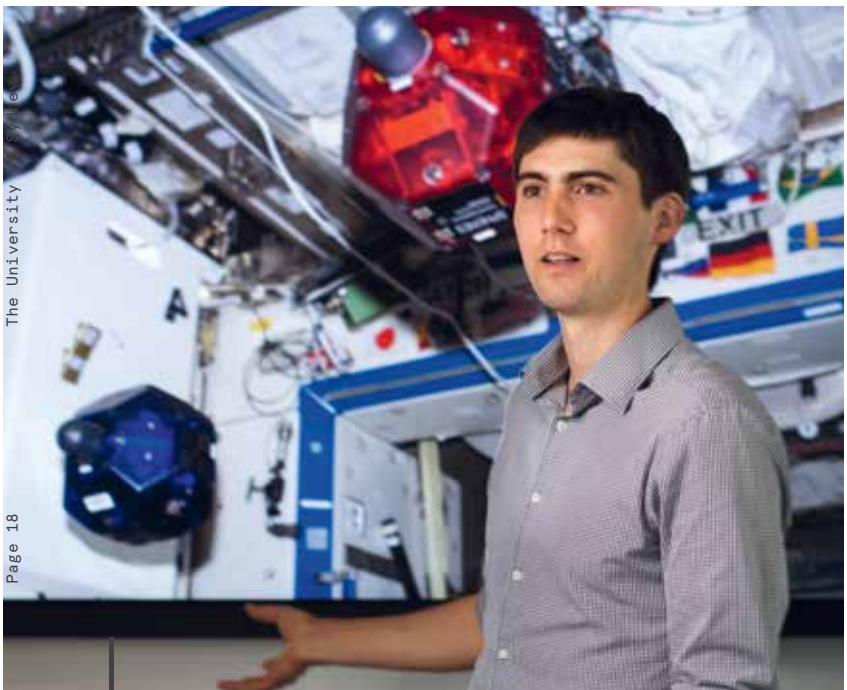
Gain a thorough grounding in the fundamental numerical and computational techniques used in fluids and structures engineering packages, combined with the use of engineering modelling based on physical principles. Develop the skills and knowledge base to select appropriate and accurate numerical algorithms for a range of problems, and write software to implement and run algorithms on parallel computer hardware. There is also an opportunity to undertake a major project in a specialist area of computational engineering.

Engineering Design

Consolidate your skills in design and manufacturing. With technology rapidly replacing traditional engineering skills, the 21st century engineer needs to be more creative and equipped to provide unique solutions using a wide range of communication skills. This major will prepare you to become a highly sought-after multidisciplinary design engineer.

Gain experience beyond the lecture hall

From first year, undergraduate students studying aeronautical engineering have many unique opportunities to enhance their aerospace engineering training. This includes building Jabiru, a two-person single-engine aircraft. Students design and assemble the airplane components, as well as working with flight simulators, flight operations training, and developing and operating drones.



"I led a team of students from the faculty who mentor high school students competing in the international Zero Robotics competition. These mentors had the amazing experience of helping their students program robots that live on the International Space Station."

Ben Morrell
Aerospace PhD graduate

"The airline industry is always changing and evolving, and makes for an exciting career. Currently, I'm working on a new and innovative flight planning system that will improve the way flight plans are calculated. When it launches, it will be the most advanced of its kind in the world."

David Boyd
Engineering honours (aeronautical)/science (computer science and mathematics) graduate
Fleet Performance Engineer, Qantas

Sample course structure

Bachelor of Engineering Honours (Aeronautical) with a major in Engineering Design

Year	Semester	Unit of study				
1	1	Engineering Computing	Linear Algebra	Calculus of One Variable	Integrated Engineering 1	Introduction to Aerospace Engineering
	2	Engineering Mechanics	Introduction to Aircraft Construction and Design	Statistics	Multivariable Calculus and Modelling	Materials 1
2	1	Instrumentation	Engineering Dynamics	Fluid Mechanics 1	Engineering Analysis*	
	2	Mechanics of Solids 1	Mechanical Design 1	Thermal Engineering 1	Aircraft Performance and Operations	Integrated Engineering 2
3	1	System Dynamics and Control	Aerospace Design 1	Propulsion	Aerospace Structures 1	
	2	Flight Mechanics 1	Aerodynamics 1	Aerospace Design 2	Engineering Methods*	Integrated Engineering 3
4	1	Thesis A	Aerospace Design 3	Aerodynamics 2*	Flight Mechanics Test and Evaluation	Integrated Engineering 4
	2	Thesis B	Advanced Aircraft Design Analysis	Flight Mechanics 2*		

Professional Engagement Program

■ Degree core ■ Major (Engineering Design)
■ Elective ■ Degree core/Major

* These units are just some of the many electives available to students. Units are indicative only.

"My main area of interest is space exploration and during my degree I was lucky enough to learn about the orbital mechanics required to put a rocket into orbit. This was an extraordinary experience."

Caroline Hamilton Smith
Engineering honours (aeronautical) student

BACHELOR OF ENGINEERING HONOURS (BIOMEDICAL)

Cochlear implants, heart pacemakers, magnetic resonance imaging, hip and knee replacement, laser surgery and bionic organs – these innovations, once thought impossible, were made a reality by biomedical engineering.

Biomedical engineering is one of the fastest-growing branches of engineering and it's easy to see why. Combining a wide range of engineering disciplines with the life sciences of medicine and human biology, biomedical engineers are the technologists whose work underpins the health system, working with doctors and medical professionals to make a real difference in people's lives.

Biomedical engineers design and manufacture implantable medical devices, including orthopaedic, cardiovascular and drug delivery systems. Bionic organs, robotic limbs, heart assist pumps and heart valves delivered in non-invasive day-surgery procedures are just some of the latest innovations that biomedical engineers have recently brought to the world.

What sets our course apart

At the University of Sydney, your biomedical engineering training starts from day one, and you'll finish your biomedical engineering degree and be ready to work in just four years. You'll learn from and collaborate with leading researchers across many disciplines.

Sample course structure

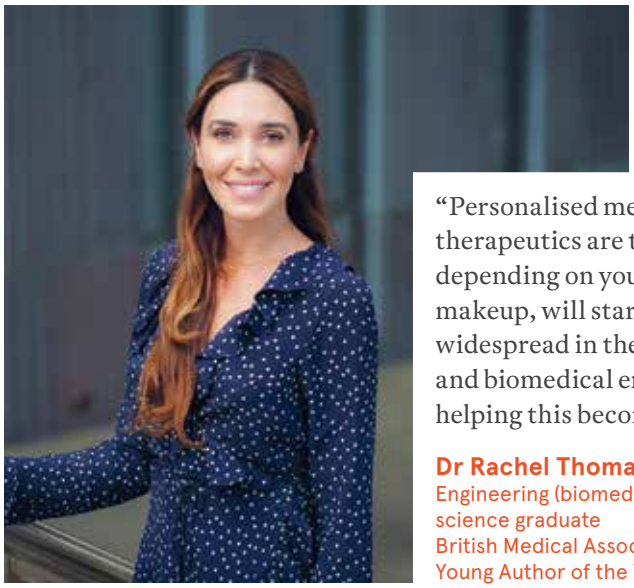
Bachelor of Engineering Honours (Biomedical) with a major in Mechatronic Engineering

Year	Semester	Unit of study				
1	1	Linear Algebra	Calculus of One Variable	Biomedical Engineering 1A	Introduction to Programming	Integrated Engineering 1
	2	Biomedical Engineering 1B	Engineering Mechanics	Statistics	Multivariable Calculus and Modelling	Introduction to Mechatronic Design
2	1	Biomedical Engineering 2	Fundamentals of Electrical and Electronic Engineering	Chemistry 1A	Engineering Dynamics	
	2	Anatomy and Physiology for Engineers	Biomechanical Design	Materials 1	Mechatronics 1	Integrated Engineering 2
3	1	Biomanufacturing	System Dynamics and Control	Mechatronics 2	Object-Oriented Programming*	
	2	Electronic Devices and Circuits	Mechanics of Solids 1	Mechatronics 3	Biomedical Design and Technology	Integrated Engineering 3
4	1	Thesis A	Tissue Engineering	Experimental Robotics*	Advanced Bionics*	Integrated Engineering 4
	2	Thesis B	Biomechanics and Biomaterials	Introduction to Biomechatronics		

Professional Engagement Program

■ Degree core ■ Major (Mechatronic Engineering)
■ Elective ■ Degree core/Major

* These units are just some of the many electives available to students. Units are indicative only.



"Personalised medicine, where therapeutics are targeted depending on your genetic makeup, will start becoming more widespread in the next five years – and biomedical engineers will be helping this become a reality."

Dr Rachel Thomas
Engineering (biomedical)/ science graduate
British Medical Association's Young Author of the Year 2016

The course combines mechanical, mechatronic, electronic, chemical and materials engineering, allowing you to specialise in the areas that you like the most.

You will be able to contribute to innovative discoveries within fields such as biomedical technology, orthopaedic or tissue engineering, bioelectronics and the computational simulation of biomedical systems.

Throughout this four-year degree you can specialise in a wide range of biomedical engineering electives, across the spectrum of advanced biomedical computing to e-medicine, biomechatronics, neuromodulation, advanced bioelectronics, biotechnology, biophysics, membrane science and biomedical product development.

In your fourth year you will complete an honours thesis, which involves designing, manufacturing and demonstrating an innovative biomedical engineering system, in collaboration with industry specialists and hospitals.

Majors

Completing a major in a related engineering discipline is not a requirement for graduation, but is an opportunity that many students take up. There are more than 20 engineering majors to choose from.

The majors that best align with this stream are:

- Chemical Engineering
- Electrical Engineering
- Information Technology
- Mechanical Engineering
- Mechatronic Engineering.

As an alternative to a major, you can choose to take up to 10 biomedical specialist electives. There are 25 electives available, 20 of which are at the master's level.

These specialist electives take you to the forefront of innovation and include units such as Biomedical Product Development, Advanced Bioelectronics, and Experimental Robotics. Even if you choose a major, you can still select two biomedical specialist electives.

CAREER SNAPSHOT

Work with surgeons and technical staff in the public or private hospital systems; for an organisation that designs and manufactures medical devices; or as a part of a research team looking to solve a medical problem.

Combine your aptitude for engineering with a passion to help people with illnesses or disabilities.

This career is perfect for people who like problem-solving and investigating how things work in detail.

A career with growing demand. Emerging technologies can be applied to meet the health challenges of the future.

A recession-proof career. While people may spend less on cars, appliances, infrastructure and construction in hard times, healthcare is an essential service.

Equally popular with both men and women. In 2017, more than 50 percent of Sydney biomedical engineering students were women.

Biomedical engineers can go on to study the graduate-entry Doctor of Medicine and Doctor of Dentistry, or undertake a Master of Health Technology Innovation or research postgraduate degree.

Graduate salaries start around $63k per annum.*

* Graduate Opportunities (published by Graduate Careers Australia)

"I was able to spend the summer researching and developing a novel abdomen-powered 3D printed prosthetic hand with industry partners and the University. The project was rewarding as I had the freedom to be creative and it gave me insight into the challenges of translating academia into a commercially viable product."

Kristina Mahony
Engineering honours (biomedical) student

Gain experience beyond the lecture hall

Tour key Australian biomedical companies

During this semester-long tour, students visit biomedical organisations across Australia to connect with field experts, and gain a unique insight into their operations and facilities. In recent years, we've visited Cochlear, ResMed, Nanosonics, Saluda Medical, Global Orthopaedics, Corin, Stryker, Zimmer-Biomet, Medtronic and Abbot.

Medtech Innovation Competition

Partnering with Westmead Hospital and Sydney clinical and industry experts, students have a great opportunity to present their innovative solutions to today's medical problems. As a member of a student team, you'll have the opportunity to present your innovative research proposals with interactive prototype and project displays to our industry partners.

"The biomedical engineering program at the University of Sydney gave me a lot of connections to industry, which have been very valuable in my career so far."

Dr Brad Miles
Engineering honours (biomedical)/PhD graduate
Co-founder and Chief Technical Officer,
360 Knee Systems

BACHELOR OF ENGINEERING HONOURS (CHEMICAL AND BIOMOLECULAR)

Chemical and biomolecular engineers use chemistry, biology, mathematics and physics to turn raw materials into useful products for everyday life. They manage resources, help protect the environment, and improve health and safety.

Chemical and biomolecular engineers research raw materials and their properties as well as design and develop equipment and processes to more efficiently and sustainably manufacture products such as pharmaceuticals, foods, fuels and household and industrial chemicals.

Create life-changing, sustainable solutions

Our Bachelor of Engineering Honours (Chemical and Biomolecular) degree combines collaborative learning and research with first-hand industry experience, enabling you to meet the challenges faced by the chemicals, minerals, energy and agriculture, food, beverage and pharmaceutical sectors.

As a chemical and biomolecular engineering student, you will learn from leading professionals and researchers as you develop a sophisticated knowledge of chemical, environmental, energy, food and water engineering. You will understand how to transform raw materials into beneficial products using chemistry, biology, physics and mathematics.

Throughout your studies you will also discover the emerging fields of nanotechnology and molecular biology, which are revolutionising energy and storage systems, food production and the healthcare industry.

Your four-year degree combines practical learning, industry projects and specialised electives to enable you to become a catalyst in creating a sustainable society. The professional engagement program will give you invaluable practical experience to complement your comprehensive technical knowledge.

An embedded honours thesis enables you to design your own research project in a field of your choice.

CAREER SNAPSHOT

Work in a large-scale plant improving the production of food, plastic, ceramic, pharmaceutical, glass, metal or biomedical products.

–

Explore the boundaries of energy storage, creating the next generation of batteries to power our homes and our lives.

–

Protect the environment through pollution control or decontamination projects.

–

Lead innovation in healthcare, such as tissue engineering.

–

Embrace a broad range of international work opportunities, from providing water in third-world communities to improving energy production in multinational fuel companies.

–

Graduate salaries start at $68–72k per annum.*

* Graduate Opportunities (published by Graduate Careers Australia)

"I wanted to pursue a career where I could use my talents in maths and science to benefit the environment. Chemical and biomolecular engineering helped me do just that. In a world where resources are growing scarce; it's chemical engineers who are finding ways to do more with less."

Sally Rewell
Chemical Engineer (Team Leader), Sydney Water

Majors

There are more than 20 engineering majors to choose from. The majors that best align with this degree are as follows:

Water and Environmental Treatment Processes

Tackle two important global challenges: providing safe drinking water; and managing urban and industrial pollution.

In this major you will explore emerging technologies in water purification and resource recovery, and learn how to solve the water and waste-treatment issues affecting key industries.

Process Intensification

Process intensification is transforming established and emerging industries such as bulk chemicals, pharmaceuticals, food, agriculture and renewable energy.

In this major you will learn how to make industrial processes cleaner, more energy efficient and more productive. You'll gain an in-depth understanding of technology integration, process modelling techniques, equipment design and the evaluation of industrial operating conditions.

Food and Bioprocessing

Deepen your knowledge of bioreactors, bio-commodities, pharmaceuticals, food process design, food product creation, food quality, food safety and food industry innovation.

In this major, you will explore a range of new and emerging technologies in processing, extraction technologies used in the production of food and bioproducts, and the application of bioprocesses. You'll learn how to select, adapt, and evaluate food and bioprocessing options.

Beyond the lecture hall

Week in industry

Spend a week working with one of our industry partners and experience chemical and biomolecular engineering in practice. You'll be assigned your own project and a workstation, and you'll have a mentor to guide you.

Plant tours

Our plant tours allow you to take a closer look at large-scale processes in the water, waste, oil refining and pharmaceutical industries, giving you a taste of your future as a chemical engineer.

Industry placements

We connect with organisations such as Dow Chemical (pharmaceutical), BOC Gas (energy), Visy (packaging), AB Mauri (food production) and Parkes Shire Council (water and waste). Maintain a distinction average and you could earn a scholarship to intern with one of these organisations through an Engineering Sydney Industry Placement Scholarship (ESIPS) (see page 5).

Sample course structure

Bachelor of Engineering Honours (Chemical and Biomolecular) with a major in Process Intensification

Year	Semester	Unit of study				
1	1	Linear Algebra	Calculus of One Variable	Engineering Computing	Introduction to Chemical Engineering	Chemistry 1A
	2	Conservation of Mass and Energy	Chemistry 1B	Integrated Engineering 1	Statistics	Multivariable Calculus and Modelling
2	1	Fluid Mechanics	Molecular Reactivity and Spectroscopy*	Applied Maths for Chemical Engineers	Heat and Mass Transfer	
	2	Chemical Engineering Thermodynamics	Engineering for a Sustainable Society	Separation Processes	Chemical Structures and Stability*	Integrated Engineering 2
3	1	Process Dynamics and Control	Reaction Engineering	Particle Processing	Engineering Macromolecules & Nanocomposites*	
	2	Biochemical Engineering	Risk Management for Chemical Engineering	Process Plant Design	Laboratory and Industrial Practice*	Integrated Engineering 3
4	1	Thesis A	Chemical Engineering Design A	Advanced Process Modelling & Simulation*	Particles and Surfaces	Integrated Engineering 4
	2	Thesis B	Chemical Engineering Design B	Process Systems Engineering*		

Professional Engagement Program

■ Degree core ■ Major (Process Intensification)
■ Elective ■ Degree core/Major

* These units are just some of the many electives available to students. Units are indicative only.

"At the University of Sydney you have the opportunity to be selected for ESIPS, a six-month industry placement in Australia or overseas, with the chance to work in leading companies such as Dow Chemical and BOC. Chemical engineering teaches you a new way of problem solving that applies to many aspects of life, opening the door to a vast range of career opportunities."

William North
Engineering honours (chemical and biomolecular) student

BACHELOR OF ENGINEERING HONOURS (CIVIL)

The homes we live in, the roads we travel on and the bridges we cross are all designed and planned by civil engineers. Dubai's towering Burj Khalifa, Beijing's 'Bird's Nest' National Stadium and Sydney's iconic Opera House and Harbour Bridge are all feats of civil engineering.

Civil engineering is a broad profession that combines functional solutions with creativity and innovation to improve society. Civil engineers are responsible for the design and construction of such things as buildings, towers and transport infrastructure as well as the design and management of gas and water systems, sewerage schemes, irrigation systems and mines.

Design and build your own future

Our Bachelor of Engineering Honours (Civil) provides you with a suite of embedded technical and professional skills to create infrastructure that improves lives throughout the world. Learn from leading experts within various fields as you pursue a career in construction, mining, consultancy, project management or public works. Complementing this technical knowledge will be a range of professional skills in management, finance and problem solving.

Throughout this four-year degree you will study a series of core units as you master the foundations of civil engineering, before specialising in an optional major.

In second year, a surveying camp will allow you to develop your technical skills in a practical, team-based environment.

In fourth year, you will undertake further specialised civil engineering subjects and complete an embedded honours thesis, which enables you to design a research project in an area that interests you.

"Sydney is in the middle of an exciting transformation and growth period which is creating demand for additional civil and transport engineers."

Win Myint Kyaw
Engineering honours (civil) graduate

Majors

The faculty offers more than 20 engineering majors. The majors that best align with this stream are as follows.

Construction Management

Gain the knowledge and vital skills required in the application of projects and programs in the construction industry. You'll learn about organisation and management, design and construction, the economics of construction projects and project administration systems.

Environmental Engineering

Environmental engineers are concerned with protecting the environment by assessing the impact a project has on the air, water, soil and noise levels in its vicinity.

In this major, you will be able to take advanced units of study related to areas such as environmental solutions to human-caused problems, ocean and coastal engineering, water resources and hydrology and environmental geotechnics.

Humanitarian Engineering

See description on page 7.

Geotechnical Engineering

Get your hands dirty determining the physical and chemical properties of soil and rock layers as you learn how to design foundations and earthworks structures for buildings, roads and other types of projects. This major can lead you to work on a commercial building site in the city one day and drilling at a river crossing in Far North Queensland the next.

Structures

Refine your mathematical, analytical and technical skills to find innovative solutions to the many natural and human-caused problems faced when designing and planning for building. A major in Structures can be applied across various areas of work, including bridges and tunnels, buildings, or large constructions such as oil installations.

Transport Engineering

This major explores the planning, design, operation and management of infrastructure to achieve safe, economical and environmentally sustainable movement of people and goods. It combines mathematical and engineering methods with multidisciplinary issues such as environmental and social impact, economics and government policy.

CAREER SNAPSHOT

Build green-efficient buildings using the latest technologies, work on water purification and sanitation in developing countries, help people travel safely and quickly, or plan the next amusement park.

Work in an established company, government or not-for-profit organisation.

Apply technical skills, including mathematics and physics, to identify and solve engineering problems, such as accurately determining how much weight can be safely distributed throughout a bridge.

Help farming communities in developing nations by planning, implementing and maintaining important infrastructure, such as irrigation systems for crop harvesting.

Enjoy a dynamic working environment, with opportunities to work and travel overseas.

Graduate salaries start about $62k per annum.*

* Graduate Opportunities (published by Graduate Careers Australia)

"The University of Sydney gave me more than an engineering degree: it provided the foundation for a diverse and rewarding career spanning infrastructure, mining, utilities and heavy industry across Australia and internationally. It also underpinned my professional development from site engineer to CEO through the broad experiences of university life."

Mark Elliott
Engineering honours (civil) graduate
CEO, Northwest Rapid Transit

Gain experience beyond the lecture hall

Boundary Layer Wind Tunnel

You will have the opportunity to create solutions to complex wind engineering problems at the project design stage using this state-of-the-art facility. Students from various civil engineering majors can watch how their building designs fare in real-world environmental conditions by generating wind velocities of up to 100 kilometres per hour.

Design Summit

Apply your humanitarian engineering knowledge to design and create positive change within disadvantaged communities overseas. Working with Engineers Without Borders, students embark on a two-week educational study tour and interact with local communities, attend workshops and develop solutions to real-world problems. They also gain a deeper understanding of how design and technology play an important role in the developing world.

Immersive Learning Lab

Our virtual reality lab brings civil engineering education to life. Interact with 3D models of steel structures, travel to urban settlements, or safely test laboratory risk scenarios, using Oculus Rifts in this dedicated technology classroom.

Sample course structure

Bachelor of Engineering Honours (Civil) with a major in Humanitarian Engineering

Year	Semester	Unit of study				
1	1	Introduction to Civil Engineering	Integrated Engineering 1	Engineering Computing	Calculus of One Variable	Linear Algebra
	2	Engineering Geology 1	Statics	Engineering Construction and Surveying	Statistics	Multivariable Calculus and Modelling
2	1	Transport Systems	Linear Mathematics and Vector Calculus	Structural Mechanics	Materials	
	2	Project Appraisal	Introductory Fluid Mechanics	Soil Mechanics	Environmental Engineering	Integrated Engineering 2
3	1	Concrete Structures 1	Fluid Mechanics	Humanitarian Engineering	Project Scope, Time and Cost Management*	
	2	Engineering Design and Construction	Steel Structures 1	Disaster Relief Operations	Structural Analysis*	Integrated Engineering 3
4	1	Thesis A	Civil Engineering Design	Global Engineering Fieldwork	Project Formulation*	Integrated Engineering 4
	2	Thesis B	Engineering for Sustainable Development	Structural Rehabilitation and Timber Design*		

Professional Engineering Program

■ Degree core ■ Major (Humanitarian Engineering)
■ Elective ■ Degree core/Major

* These units are just some of the many electives available to students. Units are indicative only.

BACHELOR OF ENGINEERING HONOURS (ELECTRICAL)

Create a brighter future by exploring the branch of engineering concerned with harnessing electricity.

Electrical engineers design the electronic devices, computers, communications systems and power systems that have, and continue to, transform society. This covers everything from the computers and networking equipment enabling the internet to the power stations providing electricity to your home.

Be prepared for future technology jobs

The Bachelor of Engineering Honours (Electrical) will provide you with the necessary professional skills to create better sensors and computing devices, more efficient energy networks and the latest communications technology.

Learn from industry-leading professionals spanning various fields as you pursue a career in telecommunications, computer engineering or power engineering.

Throughout this four-year degree you will gain core skills in physics, mathematics, computer science and basic electrical engineering principles, before specialising in a variety of fields within the discipline.

In third and fourth years, you can take electives to add breadth and depth to your studies. A minimum six-week internship will give you invaluable industry experience and the opportunity to forge industry connections. This is complemented by an embedded honours thesis, which enables you to design a research project in an area that interests you.

"The energy industry is undergoing a lot of change and there are many new opportunities for electrical engineers to work on renewable energy projects and electricity transmission infrastructure, and provide advice to investors."

Aaron Ramsden
Engineering honours (electrical) graduate
Project Engineer, TransGrid

CAREER SNAPSHOT

Develop the next generation of infrastructure and devices based on the internet of things.

Exercise your creativity by networking mobile devices within vehicles, buildings and other electronic products.

Apply your technical skills in power systems to develop cost-effective renewable energy sources in developing nations.

Work for a multinational company, power distribution company or within the telecommunications industry.

Take opportunities to work abroad to enhance your skills and experience.

$65–67k per annum.*

* Graduate Opportunities (published by Graduate Careers Australia)

"Nearly every week I discover a new problem in electrical engineering that I want to understand, work on and ultimately solve. The degree feeds my curiosity about the way the world works and highlights the important role electrical engineers play in shaping it."

Sarah Murphy
Engineering honours (electrical)/ science (mathematics) student

Majors

The faculty offers more than 20 engineering majors. The majors that best align with this stream are as follows:

Computer Engineering

Learn how to design and develop software and hardware for embedded, mobile and server based systems by specialising in computer engineering. A wide range of electives is also available, including studies in computer architecture, signal processing and biomedical devices.

Intelligent Information Engineering

This major focuses on the latest technologies in information engineering such as machine learning and artificial intelligence (AI), video and speech recognition, multimedia and sensory signal processing. It builds on foundations in mathematics, electrical engineering and computer and software engineering principles.

Internet of Things

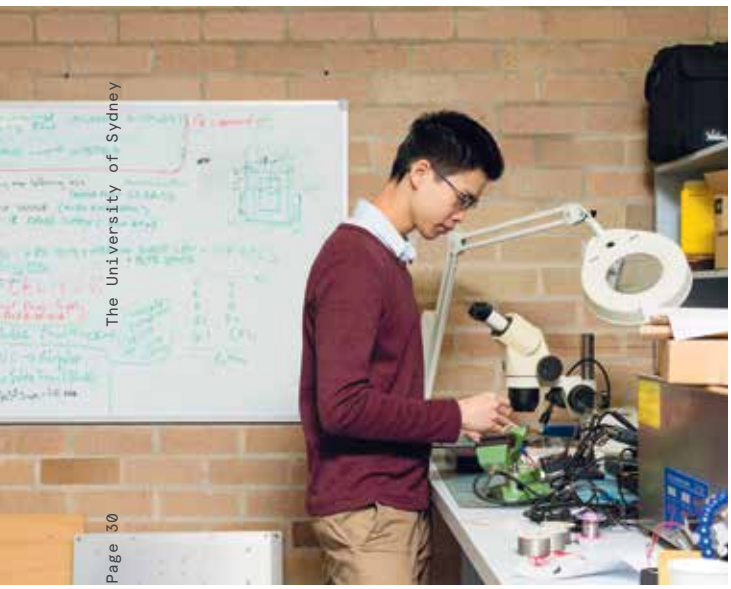
The internet of things (IoT) refers to the interconnection via the internet of computing devices embedded in objects, enabling them to send and receive data. This exciting major covers the three key aspects of IoT by combining the study of telecommunications, electrical and computer engineering, with an emphasis on wireless communications, networks, sensor devices, data technologies and its applications in smart grids and critical infrastructure.

Power Engineering

Learn the skills to plan, design, construct, operate and maintain power systems and equipment that generate, transport and distribute electricity. This major has been designed in consultation with key industrial partners and is complemented with real-world project work.

Telecommunications Engineering

This major covers the design, planning, commissioning and monitoring of complex telecommunications networks and broadcasting equipment. Explore the theory and application for a broad range of systems, including telephone and data networks, radio and television broadcasting, satellite and deep space applications.



"The Bachelor of Engineering Honours (Electrical) degree provides the technical proficiency to prepare you for the future. The new internet of things (IoT) specialisation is upskilling students in one of the largest and fastest growing markets in communication."

Ignatius Widjaja
Engineering honours (electrical) student

Gain experience beyond the lecture hall

Sir William Tyree Laboratory

Students studying the Power Engineering major have the opportunity to use the state-of-the-art facilities in the Sir William Tyree laboratory. This modern work area is ideal for students wanting to learn the design, construction and maintenance methods of power systems in a hands-on environment under the guidance of industry-leading professionals.

Centre for Internet of Things and Telecommunications

Connect with this centre to be at the forefront of innovation in broadband telecommunications, wireless engineering and networking.

The centre was created to foster world-class research and education. Students undertaking majors in either Telecommunications Engineering or the Internet of Things can use it to develop their required final-year project, under the direction of research specialists.

Sample course structure

Bachelor of Engineering Honours (Electrical) with a major in Telecommunications Engineering

Professional Engineering Program

Year	Semester	Unit of study				
1	1	Calculus of One Variable	Linear Algebra	Physics 1 (Regular)	Integrated Engineering 1	Introduction to Programming
	2	Multivariable Calculus and Modelling	Statistics	Physics 1 (Technological)	Introduction to Computer Systems	Object-Oriented Programming
2	1	Fundamentals of Electrical and Electronic Engineering	Digital Logic	Linear Mathematics and Vector Calculus	Data Structures and Algorithms	
	2	Simulation and Numerical Solutions in Engineering	Electronic Devices and Circuits	Signals and Systems	Physics 2EE	Integrated Engineering 2
3	1	Digital Signal Processing	Communications	Electronic Circuit Design*	Power Electronics and Applications*	
	2	Communications Electronics and Photonics	Data Communications and the Internet	Management for Engineers*	Control*	Integrated Engineering 3
4	1	Thesis A	Digital Communication Systems	Optical Communication Systems	Mobile Networks	Integrated Engineering 4
	2	Thesis B	Antennas and Propagation	Satellite Communications Systems*		

■ Degree core ■ Major (Telecommunications Engineering)
■ Elective ■ Degree core/Major

* These units are just some of the many electives available to students. Units are indicative only.

BACHELOR OF ENGINEERING HONOURS (MECHANICAL)

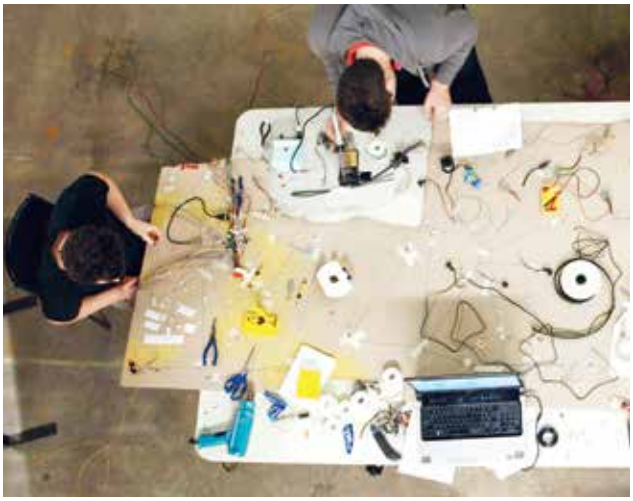
Mechanical engineers design and develop everything you think of as a machine – from supersonic fighter jets, space vehicles and car engines to elevators and air conditioners.

With the growing demand for mechanical engineers in the environmental, biomedical, aerospace and nanotechnology fields, a mechanical engineering career can be diverse, with opportunities to innovate around every corner.

Design the machines of tomorrow

Our Bachelor of Engineering Honours (Mechanical) will develop your ability to design and maintain a wide range of mechanical applications. You will learn about all aspects of mechanical engineering, including power generation, transport, building services, machinery, manufacturing, computer-aided design, advanced materials and environmental studies.

Through practical learning and industry experiences, you will be ready to transform the use of machines across a range of innovative and emerging industries.



"What I love most about my mechanical degree is that what I learn can be seen in the world around us, like material properties or force distribution in structures."

Borison Choy
Engineering honours (mechanical)/ commerce student

"I love the diversity a mechanical engineering degree offers; that I can go from a manufacturing lecture to one about designing efficient wind farms. There are so many great electives to choose from, letting you sample everything from early on."

Leah Cooke
Engineering honours (mechanical)/arts graduate

Majors

The faculty offers more than 20 engineering majors.
The majors that best align with this stream are as follows:

Energy and the Environment
The provision of reliable, affordable and sustainable energy is one of the most important engineering challenges of the 21st century. In this major you will develop the skills required to design efficient energy generation and conversion systems, and assess and quantify the environmental impacts of these systems.

Fluids Engineering
This major will help you to develop a range of skills in fluids engineering topics, from fundamental fluid dynamics and thermal engineering, to advanced concepts in turbulence, experimental methods, and computational fluid dynamics.

In an interdisciplinary context, you will learn to optimise engineering devices and systems that rely on fluid flows. In major projects, you may engage in applications ranging from energy conversion, transport and propulsion, environmental water flows and management, pharmaceutical drug delivery flows and aerospace.

Material Science and Engineering
This major focuses on the development, characterisation and process modelling of novel materials such as light metals, polymers and composites with improved properties. The activities of the materials engineer range from materials production to the design, development, processing and recycling of materials for use in aerospace, transportation, electronics, energy conversion and biomedical systems.

Engineering Design
See description on page 18.

Computational Engineering
See description on page 18.

Space Engineering
See description on page 18.

CAREER SNAPSHOT

Develop and improve mechanical systems such as biomedical devices, automatic control systems, environmental pollution control devices, clean combustion, underwater exploration and space vehicles.

Lead the development of technologies that improve our world within the fields of health, the environment, travel and renewable energy.

Apply your knowledge across a variety of fields, taking your career into health, transport, the environment, automotive industry or renewable energy.

Work for small startups or large corporations like Google, Honeywell, Boeing, Lockheed Martin Corporation, Ford, Rio Tinto or NSW Transport.

Employment for mechanical engineers has risen by 18.8 percent over the past five years and is expected to keep growing.*

Graduate salaries start at $62–66k per annum.^

* Open Universities Australia report
^ Graduate Opportunities (published by Graduate Careers Australia)

Gain experience outside the lecture hall

Formula SAE

Interested in building race cars? Each year, students from a variety of our engineering disciplines design and construct their own internal combustion or electric racing car to compete in Formula SAE (Society of Automotive Engineers), a four-day international engineering competition.

By participating, our students develop their skills in design, management, manufacturing, communication, research and business operations, as though they were working for a startup in the automotive industry.

Engineering Sydney Industry Placement Scholarship

We connect with reputable organisations in the industry such as NASA, Accenture, Qantas and Google. Maintain a distinction average and you could find yourself interning with one of these organisations through the ESIPS program (see page 5).

"I was fortunate to undertake a work placement while at the University of Sydney, prototyping a solar collector. I graduated and went on to build a solar system in the Hunter Valley, which attracted the investment of Silicon Valley venture capitalists to the tune of about $50 million. That saw me move over to the United States, where I have been working in renewable energy."

Andrew Tanner
Engineering honours (mechanical)/
commerce (business) graduate
Vice President of Business Development, Geli

Sample course structure

Bachelor of Engineering Honours (Mechanical) with a major in Energy and the Environment

Year	Semester	Unit of study				
1	1	Linear Algebra	Calculus of One Variable	Integrated Engineering 1	Introduction to Mechanical Engineering	Engineering Computing
	2	Statistics	Multivariable Calculus and Modelling	Engineering Mechanics	Materials 1	Mechanical Construction*
2	1	Engineering Dynamics	Instrumentation	Fluid Mechanics 1	Engineering Analysis	
	2	Mechanics of Solids 1	Mechanical Design 1	Thermal Engineering 1	Human-Centred Engineering Design*	Integrated Engineering 2
3	1	Materials 2	Manufacturing Engineering	Fluid Mechanics 2	System Dynamics and Control	
	2	Mechanics of Solids 2	Mechanical Design 2	Thermal Engineering 2	Engineering Methods*	Integrated Engineering 3
4	1	Thesis A	Computational Fluid Dynamics	Energy and the Environment	Engineering Management*	Integrated Engineering 4
	2	Thesis B	Renewable Energy	Computational Nanotechnology*		

Professional Engineering Program

■ Degree core ■ Major (Energy and the Environment)
■ Elective ■ Degree core/Major

* These units are just some of the many electives available to students. Units are indicative only.

BACHELOR OF ENGINEERING HONOURS (MECHATRONIC)

Mechatronic engineering combines mechanical, electronic and software engineering to create computer-controlled machines and smart products. It underpins the technology behind robotics and autonomous systems, automated manufacturing and intelligent microprocessor-based technologies.

Mechatronic engineers work with electrical and mechanical systems to solve a variety of problems across engineering disciplines. Their skills in computer hardware, software and networking establish them as versatile problem solvers.

When your washing machine senses the size of your washing and adds just the right amount of water, or an autonomous vehicle navigates an urban environment and successfully avoids hazards in its path, it's due to the work of a mechatronic engineer.

Lead the next generation of machine design

Our Bachelor of Engineering Honours (Mechatronic) enables you to design and create computer-controlled machines and smart consumer technologies. Combining industry experience and management skills, you will be equipped to tackle the exciting challenges of this rapidly evolving field.

As a mechatronic engineering student, you will develop skills in digital electronics, microprocessors, computer control, electrical machines, machine dynamics and design, robotic systems and software design, as well as a range of professional skills in management and communications.

Self-driving autonomous vehicle developed at the University of Sydney

CAREER SNAPSHOT

Design and create control systems, robots and innovative machines and products that make people's lives easier and their work more efficient.

–

Choose from a wide range of industries including product design and development, mining, biotechnology, manufacturing, automation, computer system and software design, transportation, power systems and defence.

–

Revolutionise industries like agriculture, farming, mining and transport by developing automated systems that improve reliability and increase productivity.

–

Work for the latest startup or established corporations like ResMed, Honeywell, Hyundai, Tesla, Lockheed Martin, Rockwell Automation, Thales, Bayer or Austcorp.

–

Graduate salaries start at $60–63k per annum.*

* Australian Government - Gradstats starting salaries 2015

Majors

The faculty offers more than 20 engineering majors. The majors that best align with this stream are as follows:

Space Engineering

See description on page 18.

Robotics and Intelligent Systems

This major allows you to delve into the fields of robotics and intelligent systems and gain a deep insight into how these systems are built and operated and the impact they have within society.

You will study engineering science in the areas of control, mechatronic systems development, programming and digital systems.

You can also choose to take specialist electives in computer vision, robotics, machine learning, sensors and intelligent systems.

"The most exciting thing about my degree is the hands-on opportunities to apply what I've learned in the classroom. Last year, I had the chance to work with researchers on a self-driving car project through the Australian Centre for Field Robotics, assisting with the design and programming."

Sholto Douglas
Engineering honours (mechatronic)/commerce (business analytics/economics) student

Sample course structure

Bachelor of Engineering Honours (Mechatronic) with a major in Robotics and Intelligent Systems

Year	Semester	Units of study				
1	1	Linear Algebra	Calculus of One Variable	Introduction to Mechatronic Engineering	Engineering Computing	Integrated Engineering 1
	2	Statistics	Multivariable Calculus and Modelling	Introduction to Mechatronic Design	Mechatronics 1	Engineering Mechanics
2	1	Mechatronics 2	Engineering Dynamics	Fundamentals of Electrical and Electronic Engineering	Engineering Analysis*	
	2	Electronic Devices and Circuits	Mechanical Design 1	Mechanics of Solids 1	Materials 1	Integrated Engineering 2
3	1	Manufacturing Engineering	Power Electronics and Applications	System Dynamics and Control	Electronic Circuit Design*	
	2	Mechatronic Systems Design	Mechatronics 3	Mechanical Design 2	Introductory Thermofluids*	Integrated Engineering 3
4	1	Thesis A	Experimental Robotics	Advanced Control and Optimisation	Multidimensional Signal Processing	Integrated Engineering 4
	2	Thesis B	Sensors and Signals	Computer Vision and Image Processing		

Professional Engineering Program

■ Degree core ■ Major (Robotics and Intelligent Systems)
■ Elective ■ Degree core/Major

* These units are just some of the many electives available to students. Units are indicative only.

Gain experience beyond the lecture hall

Australian Centre for Field Robotics (ACFR)

One of the largest robotics research institutes in the world, this University of Sydney centre is at the forefront of research and development in autonomous robots and systems. Undergraduate students can work with researchers from this world-class innovation hub on projects such as developing an autonomous car.

The Fabrication Lab (FAB Lab)

This laboratory was developed so students could continue to learn and apply their skills outside the lecture theatre. This 'maker space' gives students the resources and facilities to design and build their own innovations using a variety of contemporary manufacturing technologies.

"My mechatronic degree is helping me reach my career aspirations because I'm building the technical knowledge I'll need to go into industry. It is also helping me to problem solve, deal with a high volume of work, prioritise and remain organised. Those skills are an important part of achieving my goals for the future."

Edward Fay
Engineering honours (mechatronic) /science (advanced) student

"Completing my undergraduate and postgraduate engineering studies at Sydney provided both the theoretical and practical skills necessary to be competitive on the world stage. This led me to move to the United States, where I'm working on autonomous airborne systems in some of the most cutting-edge aerospace projects."

Daniel Wilson
Engineering honours (mechatronic) graduate
Co-Founder/CEO, OCI Technologies

BACHELOR OF ENGINEERING HONOURS (SOFTWARE)

From web browsers to computer programs, mobile applications and digital media platforms, software refers to all the information processed by computer systems. Software engineering focuses on the design and maintenance of software systems that are reliable and efficient, cost effective and meet the needs of users.

Be prepared for the industries of tomorrow

Our Bachelor of Engineering Honours (Software) will equip you with the essential skills to stand out in a rapidly evolving industry. Leaders in this industry will teach you practical skills and theoretical knowledge across all aspects of software production, from strategy and design to coding, quality and management.

Throughout this four-year degree, you will acquire skills that provide the foundation for further studies in software design, development, security and management. You'll learn programming and computer languages, data structures, algorithms and databases and software project management.

In your third year, an internship of at least six weeks will provide you with invaluable industry experience and the chance to network with practising professionals.

In your fourth year, you will complete an embedded honours thesis in which you will undertake a research project in an area that interests you.

Majors

The faculty offers more than 20 engineering majors. The major that best aligns with this stream is as follows:

Computer Engineering

Learn how to design and develop software and hardware for embedded, mobile and server-based systems by specialising in computer engineering. A wide range of electives is also available, including studies in computer architecture, signal processing and biomedical devices.

"Software is all around us and impacts society in many different ways. Studying at the University of Sydney introduced me to many contacts and gave me the foundations to continue building amazing software products."

Simon Ratner
Engineering (software)/science graduate
Founder and Chief Technical Officer, Martians Inc.

Gain experience beyond the lecture hall

Design and create your own software

Develop the essential design and practical skills every software engineer needs by participating in exciting hands-on projects embedded throughout your degree.

Students in this major are required to complete several group-based assignments that may include creating remote-controlled fire-fighting robots or building bioamplifiers that measure electrical brain activity.

CAREER SNAPSHOT

Apply your computer coding skills to develop the latest mobile phone application, video game or web browser used across the world.

–

Use your analytical skills to make existing software more streamlined and user compliant.

–

Work for a multinational company, governmental sector or launch your own startup.

–

Embrace global work opportunities across sectors including defence, security finance, telecommunications and electronics.

–

A career in software engineering is ideal for creative and analytical thinkers who enjoy coding and teamwork.

–

Graduate salaries for both men and women start at $53–57k per annum.*

* Australian Government Gradstats – Starting salaries 2015

Sample course structure

Bachelor of Engineering Honours (Software)

Year	Semester		Units of study				
1	1	Professional Engineering Program	Calculus of One Variable	Linear Algebra	Introduction to Programming	Integrated Engineering 1	Foundations of Data Science*
	2		Statistics	Multivariable Calculus and Modelling	Introduction to Computer Systems	Object-Oriented Programming	Accounting, Business and Society*
2	1		Discrete Mathematics and Graph Theory	Analysis and Design of Web IS	Data Structures and Algorithms	Elective: Digital Logic*	
	2		Data and Information Management	Software Construction and Design 1	Agile Software Dev. Practices	Data Analytics: Learning from Data*	Integrated Engineering 2
3	1		Systems Programming	Software Construction and Design 2	Graphics and Multimedia*	Introduction to Artificial Intelligence*	
	2		Internet Software Platforms	Software Development Project	Principles of Security and Security Engineering	Operating Systems Internals*	Integrated Engineering 3
4	1		Thesis A	Enterprise Scale Software Architecture	Software Quality Engineering	E-Business Analysis and Design	Integrated Engineering 4
	2		Thesis B	Object Oriented Application Frameworks	Visual Analytics*		

■ Degree core ■ Elective

* These units are just some of the many electives available to students. Units are indicative only.

"The Bachelor of Engineering Honours (Software) degree combines analytical thinking with my passion to create real-world products that will benefit society. It's more than just learning about coding – you gain valuable project management, communication and teamwork skills that will assist you in the workplace."

Justin Dang
Engineering honours (software) student

BACHELOR OF ENGINEERING HONOURS (FLEXIBLE FIRST YEAR)

Still uncertain which engineering stream to take? No rush. Our Bachelor of Engineering Honours (Flexible First Year) allows you to dabble in each and decide on your area of specialisation later – and still complete your degree in the usual four years.

Get a taste of each discipline before choosing one

The Flexible First Year Program allows you to explore different engineering disciplines before deciding upon your ultimate course of study.

You will undertake a common set of units before transferring into your preferred stream.

Flexible First Year can also be taken with a combined degree (see page 46).

The Bachelor of Engineering Honours (Flexible First Year) allows you to sample the following areas before choosing your preferred stream:

- Aeronautical
- Biomedical
- Chemical and Biomolecular
- Civil
- Electrical
- Mechanical
- Mechatronic
- Software.

Enjoy all the same benefits

In all streams, you will undertake a mandatory industry placement (of at least six weeks), plant and site visits, and develop significant professional relationships with industry partners. An embedded honours thesis or research project will allow you to further specialise in an area of interest. You also have the option to complete one or more majors throughout your degree, choosing from more than 20 different options, depending on your stream.

"I chose the Flexible First Year program as I had no idea which stream I wanted to study. It definitely helped me, as I was able to experience all the disciplines over a semester and discover which one I enjoyed the most. I don't think I would ever have thought of choosing mechanical engineering, my current stream, if I hadn't done the program."

Ella Kerr
Engineering honours (mechanical) student

PROJECT MANAGEMENT

BACHELOR OF PROJECT MANAGEMENT

Project managers make sure things get done. They help organisations deliver new products, services and infrastructure, implement new systems and processes and ultimately effect change.

Project management skills are highly regarded and sought after because they can be applied to everything from creative industries to engineering and finance.

Enjoy a unique experience

Our multidisciplinary Bachelor of Project Management is the only program of its kind in Australia not tied to a single industry. You will learn fundamental project management skills, theories and methods required in today's complex business environment, with the option to specialise in areas such as construction, international development, infrastructure, and design practice and management.

Learn from experts who will equip you to understand the dynamics of how projects are scoped, delivered and managed, and apply these skills to a range of industries.

During this three-year degree, you will study multiple core subjects including project finance, analytics, risk management, organisational behaviour, psychology and stakeholder management.

You also have the option to complement your project management knowledge with a major from the 100+ available as part of the University's shared pool (see page 8–9).

In your final year, you will complete a capstone project, liaising with industry subject matter experts and working in a team to initiate, plan, execute, control and close a real-world project. You can also extend your studies a further year to graduate with honours.

CAREER SNAPSHOT

Oversee the delivery of large-scale projects across a number of industries including engineering, computer programming, health, construction, major events management, mining or finance.

Apply leadership skills and best practice principles to oversee schedules, costs, scope balance and staff.

Work in an established company, government agency or not-for-profit sector.

Skills are transferable across industries so your career prospects will be many and diverse.

Enjoy a dynamic working environment with opportunities to travel overseas for employment.

Graduate salaries vary by industry sector.

Majors and minors

This course provides the opportunity to pursue a major in a specialised area. A major can be chosen from the shared pool (see pages 8–9). Minors for this degree include People and Change and Project Controls. For the latest information on available majors and minors for your degree, visit:

– sydney.edu.au/courses

Bachelor of Project Management with a major in Information Systems

Year	Semester	Unit of study			
1	1	Introduction to Project Management	Effective Project Communication	Project Initiation & Scope	Introduction to Programming
	2	Systems Thinking in Projects	Project Time, Cost and Resources	Facilitation & Stakeholder Engagement	Object-Oriented Programming
2	1	Project Acceptance	Project Analytics	Critical Thinking for Projects	Analysis and Design of Web Info Systems
	2	Executing Projects	Project Conflict Management	Reframing Projects	Data and Information Management
3	1	Adapting to Project Context	Information Technology Evaluation	Agile Project Management	Sustainability & Knowledge Management
	2	Legal Aspects of Projects	Information Systems in the Internet Age	Decision Analytics and Support Systems	Information Systems Project

■ Degree core ■ Major (Information Systems)
■ Project Management elective

* These units are just some of the many electives available to students. Units are indicative only.

"The Bachelor of Project Management is providing me with a broad skill set that will prepare me to work within a broad variety of industries, including construction, in which I hope to pursue a career."

Zhili Guo
Project management/engineering honours (civil) student

Gain experience beyond the lecture hall

Project management placements

You will have the option to gain important on-the-job experience by participating in industry placements that contribute to your overall degree.

These opportunities demonstrate first hand the correct practices involved in overseeing a project, from conception to completion. Placements may range from assisting in the delivery of a large sporting event or construction project to helping implement the latest software systems.

"Project delivery capability is critical to the successful implementation of strategy for all organisations. Project management is now a core management discipline across all industries, from telecommunications to banking, health, defence, computing, government, engineering or construction."

Alicia Aitkin
Transformation and Change Capability, ANZ

COMBINED DEGREES

Broaden your career prospects further by combining your computing, engineering or project management degree with a second degree. By studying across other disciplines, you can build your skills and be better equipped to meet the complex challenges facing industry today and into the future.

Combined degrees prepare you for a diverse range of careers by developing your professional expertise alongside the skills to adapt and drive change and innovation.

You can cultivate a diverse skill set and breadth of knowledge, alongside expertise in a professionally accredited field, by combining your professional degree with a liberal studies degree.

Alternatively, you can take your professional degree in combination with another professional or specialist degree to develop expert knowledge and effectiveness in a given field or profession.

Examples include combined law degrees, double degree medicine courses and the Bachelor of Design in Architecture (Honours)/Master of Architecture.

A combined degree typically adds one year of full-time study, which means you can graduate with two degrees in 4-5 years, depending on the courses you choose.

"Combining my engineering degree with science gave me a balanced workload at university. It helped me learn how to focus, even when managing different tasks. It shows employers that you can be responsive to your environment and able to see the bigger picture."

Gavin Barnes
Engineering honours (civil)/science graduate
Project Engineer, Lendlease

OUR SCHOLARSHIPS

The University of Sydney offers more than 50 undergraduate scholarships each year. Our aim is to help you achieve your goals by giving you the financial freedom to focus on your studies.

The Faculty of Engineering and Computer Science provides more than $1 million in scholarships to commencing undergraduate students each year. This includes 15 faculty scholarships, four Indigenous scholarships and our prestigious Leadership Scholarship for high performers.

Leadership Scholarship program
The Leadership Scholarship is one of the most valuable engineering, information technologies and project management undergraduate scholarships in Australia for both financial support and leadership development.

As a scholarship recipient, you will have the chance to work with some of Australia's leading firms through industry placements and have access to helpful leadership resources, networking opportunities, international collaborations and mentoring. You'll also receive $19,000 in financial support each year of your studies.

Learn more about our scholarships:

- sydney.edu.au/scholarships
- sydney.edu.au/engineering/scholarships
- sydney.edu.au/engineering/leadership-scholarship

"My scholarship has enhanced my passion for engineering by offering me valuable leadership experience throughout my degree. I've had the opportunity to gain experience working in teams and with clients, develop my technical skills, and learn from industry mentors, all of which will set me up for a meaningful engineering career."

Elly Williams
Engineering honours (mechatronic)/science student
2017 Leadership Scholarship recipient

DALYELL SCHOLARS PROGRAM

For high-achieving students with an ATAR (or equivalent) of 98+, the Dalyell Scholars program gives you access to a range of enrichment opportunities that will challenge you alongside your most talented peers.

As a Dalyell Scholar you can draw on the rich interdisciplinary depth and breadth on offer at the University, cultivating the leadership and professional expertise to become part of our global network of leaders.

- sydney.edu.au/dalyell-scholars

Dalyell Scholars have the opportunity to collaborate and network with like-minded world influencers.

In addition to completing distinctive Dalyell units of study within the Faculty of Engineering and Computer Science and across the University, you will have access to enrichment opportunities, including:

- accelerated learning options, such as early access to advanced units of study
- access to specialised Language (Arts) and Mathematical Sciences (Science) programs (optional)
- tailored mentoring and professional skills development to enhance your study and career opportunities
- international experiences to develop your global perspective, including a $2000 global mobility scholarship.

Dalyell Scholar entry to a course is by UAC preference or invitation.

The following courses in engineering, advanced computing and project management are available to study as a Dalyell Scholar.

- B Advanced Computing
- B Advanced Computing/ B Commerce
- B Advanced Computing/ B Science
- B Advanced Computing/ B Science (Health)
- B Advanced Computing/ B Science (Medical Science)
- B Engineering Honours (all streams)
- B Engineering Honours with Space Engineering
- B Engineering Honours/B Arts
- B Engineering Honours/B Commerce
- B Engineering Honours (Civil)/ B Design in Architecture
- B Engineering Honours/ B Project Management
- B Engineering Honours/B Science
- B Engineering Honours/ B Science (Health)
- B Engineering Honours/ B Science (Medical Science)

'B' for 'Bachelor of'

Who was Elsie Jean Dalyell?

A highly distinguished University of Sydney medical graduate, Elsie Dalyell OBE (1881–1948) was the first full-time female academic in our Faculty of Medicine. After travelling to London on a University scholarship and serving in the First World War, she conducted pioneering work on childhood diseases with a medical team in Vienna, Austria. Her academic excellence and commitment to creating her own path are hallmarks of our Dalyell Scholars program.

Image: Elsie Jean Dalyell. Courtesy of State Records NSW: New South Wales Medical Board; NRS 9873, Photographs of doctors, 1888-1927. [Digital ID 9873_a025_a025000062] Elsie Jean Dalyell, no date

PROPEL

YOUR PASSPORT TO A CAREER IN STEM

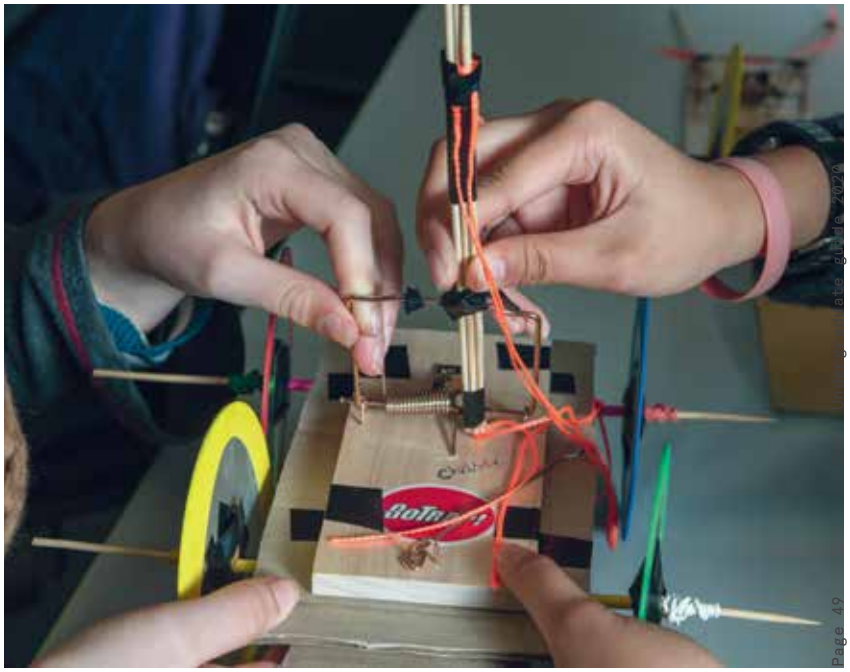
If you are a high school student interested in science, technology, engineering or mathematics, you can learn more about studying at the University of Sydney by joining us on campus at one of our many outreach activities. If you attend four approved events, you will be eligible for a $2000 mobility scholarship.

The Propel program allows you to learn about computing, programming, robotics, project management, technology and engineering, while having lots of fun. It's an enjoyable and interactive way to explore the diverse STEM fields to find the path that best suits you, before choosing a degree.

There are more than 20 approved outreach activities for students in Years 9–12. Take part in just four (or more, if you like), and you will be eligible for a $2000 Propel Mobility Scholarship once you begin your degree at the University. You can use this funding to study abroad on exchange, attend an international study tour or use it towards another global activity approved by the faculty.

Please visit our website for more information, including terms and conditions, a full list of events, and registration details.

– sydney.edu.au/engineering/propel



SUMMARY OF COURSES

Course name	UAC code	ATAR/IB 2018	Assumed knowledge	Duration in years
B Advanced Computing	513500	90/33	Mathematics or HSC Mathematics Extension 1	4
B Advanced Computing/ B Commerce	513505	95/36	Mathematics or HSC Mathematics Extension 1. Other assumed knowledge depends on Commerce subjects chosen.	5
B Advanced Computing/ B Science	513510	90/33	Mathematics or HSC Mathematics Extension 1. Other assumed knowledge depends on the Science areas or programs studied.	5
B Advanced Computing/ B Science (Health)	513515	90/33	Mathematics or HSC Mathematics Extension 1.	5
B Advanced Computing/ B Science (Medical Science)	513520	90/33	Mathematics or HSC Mathematics Extension 1, Chemistry and either Physics or Biology.	5
B Engineering Honours (Dalyell Scholars)	513571	98/40	Refer to relevant engineering stream	4
B Engineering Honours (Aeronautical)	513525	92/34	HSC Mathematics Extension 1 and Physics	4
B Engineering Honours (Biomedical)	513530	92/34	HSC Mathematics Extension 1, Physics and/ or Chemistry. Recommended studies: Biology	4
B Engineering Honours (Chemical and Biomolecular)	513535	92/34	HSC Mathematics Extension 1 and Chemistry	4
B Engineering Honours (Civil)	513540	92/34	HSC Mathematics Extension 1 and Physics	4
B Engineering Honours (Electrical)	513545	92/34	HSC Mathematics Extension 1 and Physics	4
B Engineering Honours (Flexible First Year)	513550	92/34	HSC Mathematics Extension 1, Physics and/or Chemistry	4
B Engineering Honours (Mechanical)	513555	92/34	HSC Mathematics Extension 1 and Physics	4
B Engineering Honours (Mechatronic)	513560	92/34	HSC Mathematics Extension 1 and Physics	4
B Engineering Honours (Software)	513565	92/34	HSC Mathematics Extension 1 and Physics	4
B Engineering Honours with Space Engineering	513570	99/42	HSC Mathematics Extension 1 and Physics	4
B Engineering Honours/B Arts	513575	92/34	HSC Mathematics Extension 1, Physics and/or Chemistry	5
B Engineering Honours/ B Commerce	513580	95/36	HSC Mathematics Extension 1, Physics and/or Chemistry	5
B Engineering Honours (Civil)/ B Design in Architecture	513585	95/37	HSC Mathematics Extension 1 and Physics. For Architecture: English (Advanced)	5
B Engineering Honours/B Laws	513800	99.5/ 43	HSC Mathematics Extension 1, Physics and/or Chemistry	6
B Engineering Honours/ B Project Management	513590	92/34	HSC Mathematics Extension 1, Physics and/or Chemistry	5
B Engineering Honours/ B Science	513595	92/34	HSC Mathematics Extension 1, Physics and/ or Chemistry. Other assumed knowledge depends on the science programs or areas studied.	5
B Engineering Honours/ B Science (Health)	513600	92/34	HSC Mathematics Extension 1, Physics and/ or Chemistry. For the Human Movement major: Chemistry and Mathematics. Other assumed knowledge depends on the science programs or areas studied.	5
B Engineering Honours/ B Science (Medical Science)	513605	92/34	HSC Mathematics Extension 1, Chemistry and either Physics or Biology. Other assumed knowledge depends on the science programs or areas studied.	5
B Project Management	513610	86/31	HSC Mathematics Extension 1	3

HOW TO APPLY

INFORMATION FOR DOMESTIC STUDENTS*

1. Choose your course

Visit sydney.edu.au/courses

2. Check the entry requirements of the course

Admission to the University of Sydney is highly competitive. You need to meet specific academic requirements before we can make an unconditional offer of admission.

For most undergraduate courses, entry is based on your Australian Tertiary Admission Ranking (ATAR), International Baccalaureate (IB), or an accepted equivalent secondary qualification.

Prerequisites, assumed knowledge and bridging courses

Some courses have prerequisites. The University is also introducing mathematics course prerequisites for some courses to help students thrive in their science, technology, engineering and mathematics-related degrees and prepare them to tackle future career challenges. For more information visit:

– sydney.edu.au/study/maths

Some courses expect you to have a certain level of knowledge in areas such as mathematics, physics, biology and chemistry. Refer to the course summary table on page 50 for specific requirements.

If you have not studied these subjects in high school, we offer bridging courses to get you up to speed.

– sydney.edu.au/ug-bridging

3. Explore your entry options

If you're not sure you'll achieve the ATAR that is required for your preferred course, visit the following website to find out if you're eligible to apply to the University through an admission pathway.

– sydney.edu.au/access

4. Submit your application with relevant documents

As a domestic student, you need to submit your application online through the Universities Admissions Centre website:

– www.uac.edu.au

Apply for scholarships

The Faculty of Engineering and Computer Science has 15 faculty scholarships, four Indigenous scholarships and a prestigious Leadership Scholarship for undergraduate students. For more details, see page 47.

Most scholarship applications are due by early October 2019, so you will apply for them around the same time you submit your university application to UAC.

Please note that deadlines and application requirements may differ depending on the scholarship.

– sydney.edu.au/scholarships

Visit us on Open Day

The best way to get a feel for the campus is to visit us on Open Day. Explore the campus, enjoy the atmosphere, and learn more about our courses and facilities by attending mini-lectures, activities and tours.

– sydney.edu.au/open-day

* You are a domestic student if you are an Australian or New Zealand citizen (including dual citizens), or an Australian permanent resident or humanitarian visa holder.

HOW TO APPLY
INFORMATION FOR INTERNATIONAL STUDENTS

1. Choose your course

Visit sydney.edu.au/courses

2. Check the entry requirements of the course

Admission to the University of Sydney is highly competitive. For most undergraduate courses, entry is based on an ATAR – Australian Tertiary Admission Rank – IB (International Baccalaureate) or the equivalent from your country.

If English is not your first language, you need to demonstrate that your English language skills meet the minimum level required for your chosen course. For more information please visit:

- sydney.edu.au/study/english-reqs

Prerequisites, assumed knowledge and bridging courses

Some courses have prerequisites. The University is also introducing mathematics course prerequisites for some courses to help students thrive in their science, technology, engineering and mathematics-related degrees and be prepared to tackle future career challenges. Learn more:

- sydney.edu.au/study/maths

Some courses expect you to have a certain level of knowledge in areas such as mathematics, physics, biology and chemistry. See the course summary table on page 50 for assumed knowledge requirements. If you have not studied these subjects in high school, we offer bridging courses to get you up to speed.

- sydney.edu.au/ug-bridging

3. Submit your application

Apply through the Universities Admissions Centre (UAC) if you are completing:

- a current Australian Year 12 secondary school examination (eg, NSW Higher School Certificate (HSC), Victorian Certificate of Education, Queensland Certificate of Education) in or outside Australia
- a current International Baccalaureate (IB) diploma in Australia
- a current New Zealand Certificate of Educational Achievement (NCEA) Level 3 qualification.

The University generally participates in all the UAC international offer rounds. Refer to the UAC website for key dates.

- www.uac.edu.au/international

Apply directly to the University if you are an applicant not covered in the above UAC categories. To apply directly to the University, click on the 'Apply now' button on the course page:

- sydney.edu.au/courses

For important information for international students, visit:

- sydney.edu.au/student-visas

If you would like to apply through a University-approved agent, we have partnered with a range of agents and representatives who can apply to the University and make arrangements on your behalf.

- sydney.edu.au/study/overseas-agents

Open Day

Join us on Saturday
31 August 2019 and get
immersed in campus
life for a day.

sydney.edu.au/open-day

If you read only one thing, read this.

Your journey to university is as unique as you are.

At the University of Sydney, you have the opportunity to forge your own path. You can customise your course, and get involved in extracurricular activities to personalise your uni experience

To learn more, please call our helpline or visit our website.

Contact details
sydney.edu.au/engineering
1800 SYD UNI (1800 793 864)

We acknowledge the tradition of custodianship and law of the Country on which the University of Sydney campuses stand. We pay our respects to those who have cared and continue to care for Country.

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The University of Sydney
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