

# Engineering & Information Technologies



Combined with a strong practical focus, close links to industry, and a fantastic student life, IT at Sydney is stimulating and enjoyable, and it will take you down paths you never would have found otherwise.

**Dominick Ng**  
Bachelor of Information Technology

## Why Sydney?

- We consult with national and international industry to maintain our expertise in cutting edge disciplines to ensure highly skilled industry-ready graduates.
- Our broad-based practically oriented courses offer you career flexibility and long-term prospects.
- A flexible first year (similar to that at Cambridge University in the UK) allows you to decide your engineering specialisation after completing your first year of study.
- Professional recognition around the world, as our programs are accredited by Engineers Australia, the professional engineering body in Australia.
- We are a leader in research with strong links with Australian and international industry.
- There are many opportunities for international exchange at universities, including those co-located with major aerospace industries in Seattle (Boeing), Kansas (Cessna), and Lyons (Aerospacial).
- Our research labs and computing facilities are state-of-the-art.
- Students benefit from least 12 weeks of practical experience. AeroMech students construct a Jabiru Ultralight aircraft and SAE racing car. Electrical Engineering students generate 3D sound.
- You will have opportunities for further study, including access to specialisations initially unavailable through direct UAI entry due to a high cut-off.

## Applying

Advanced engineering projects and specialisations are available to high performing students. Entry is by invitation from the Dean and generally requires a minimum UAI of 98.00.

## Your future

Our graduates enter careers in a wide range of sectors, including:

- aerospace manufacturing and assembly, design, research and certification
- aircraft industry
- artificial intelligence
- automatic control systems
- biomedical engineering
- biotechnology
- communications
- computer science
- construction
- design architecture
- environmental engineering (including recycling and conservation)
- field robotics
- hardware and software design
- information systems consultancy
- information technology
- manufacturing of pharmaceuticals, biochemicals, biotechnology, inorganic chemicals and petrochemicals
- mechanical engineering
- microelectronics and power systems
- network design and maintenance
- power engineering
- project management
- research
- robotics and automation for advanced manufacturing
- space systems
- transportation.

## CONTACT

### Faculty of Engineering and Information Technologies

Darlington Campus  
Phone: +61 2 9351 2534  
Email: [faculty@eng.usyd.edu.au](mailto:faculty@eng.usyd.edu.au)  
Website: [www.eng.usyd.edu.au](http://www.eng.usyd.edu.au)

Number of academic staff: 75  
Number of students: 2250

**DAY IN THE LIFE OF ... Janice Yousheyah, Bachelor of Engineering/Bachelor of Science**



**I** start work at 8am on a group assignment at the beautifully furnished SciTech library. Then after listening intently to my enthusiastic Structural Analysis lecturer for two hours and having a quick coffee at Engo cafe, I head across campus for a maths lecture in which my lecturer explains the complexities of mathematically modelling interfering sound waves – yikes!

For a much-deserved lunch, I head over to the familiar turf of engineering lawns for the Vegetarian Society buffet or the regular engineering barbecue.

Finally I visit the geotechnical labs to help out with a centrifuge test modelling the soil stability of a tunnel with interesting results. Afterwards I head into Newtown with friends for a cheap Thai meal – a great way to end another full and exciting day.

COURSE NAME	STUDY LENGTH	ASSUMED KNOWLEDGE*	MAJOR STUDIES
<b>Bachelor of Engineering Aeronautical</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Aerospace technology; control systems; low speed aerodynamics; materials; structural analysis
<b>Aeronautical (Space)</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Aerospace structures; composite materials; mechanics; propulsion; space electronics; space engineering
<b>Biomedical</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Biomedical technology; fundamentals of biomedical engineering; human biology; materials; mechanical design
<b>Chemical and Biomolecular</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Chemical process case studies; computations; flowsheets and optimisation; materials and corrosion; solid mechanics
<b>Civil</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Civil engineering design; concrete and steel structures; engineering geology; fluids; introduction to structural concepts; soil mechanics
<b>Civil (Construction Management)</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Project formulation; project management IT; project planning and tendering; structural mechanics; surveying; transport engineering and planning
<b>Civil (Environmental)</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Chemistry; environmental decision making; environmental mechanics; geotechnics; introduction to structural concepts; water resources engineering
<b>Civil (Geotechnical)</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Concrete and steel structures; environmental geotechnics; finite element methods; geology; geotechnical engineering; structural mechanics

table continues over page

COURSE NAME	STUDY LENGTH	ASSUMED KNOWLEDGE*	MAJOR STUDIES
<b>Civil (Project Engineering and Management)</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Contracts formulation and management; financial accounting principles; project planning and tendering; project scope, time and cost management
<b>Civil (Structural)</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Bridge engineering; concrete structures; introduction to structural concepts; steel structures; structural dynamics; structural mechanics
<b>Computer</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Circuit analysis; fundamentals of feedback control; operating systems; real time computing; switching devices and circuits
<b>Electrical</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Digital devices and circuits; digital system design; foundation of computer systems; foundations of electrical circuits; software development
<b>Flexible first-year entry</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Allows you to decide your eventual engineering specialisation after completing year 1
<b>Mechanical</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Industrial management; materials; mechanical design; mechanics of solids; system control; thermodynamics
<b>Mechanical (Space)</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Flight mechanics; mechanical dynamics; satellite communications systems; smart materials and structures; space engineering
<b>Mechatronic</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Electronic devices and circuits; industrial management; introductory electrics; mechanical design; power electronics and drives
<b>Mechatronic (Space)</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Computers in real time control; mechatronics; satellite communications systems; space engineering
<b>Electrical (Power)</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Power electronics and drives; engineering electromagnetics; electrical energy systems and management; digital signal processing; electronic circuit design; communications; embedded computing; management for engineers
<b>Software</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Data communications and the internet; network programming; operating systems; signals and systems; software validation and verification
<b>Telecommunications</b>	4 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Data communications and the internet; electronic devices and circuits; microcomputer systems; optical systems; satellite systems; signals and systems
<b>Bachelor of Computer Science and Technology</b>	3 years	Mathematics or HSC Mathematics Extension 1 (depending on subjects chosen)	Computer Science, Information Systems
<b>Bachelor of Computer Science and Technology (Advanced)</b>	3 years	Mathematics or HSC Mathematics Extension 1 (depending on subjects chosen)	See entry for Bachelor of Computer Science and Technology, but with study at advanced level
<b>Bachelor of Information Technology</b>	4 years	Mathematics or HSC Mathematics Extension 1 (depending on subjects chosen)	Computer Science, Information Systems (including major project in final year)
<b>Bachelor of Information Technology/ Bachelor of Commerce</b>	5 years	Mathematics or HSC Mathematics Extension 1 (depending on subjects chosen)	Computer Science, Information Systems, and majors from the Faculty of Economics and Business
<b>Bachelor of Information Technology/ Bachelor of Arts</b>	5 years	Mathematics or HSC Mathematics Extension 1 (depending on subjects chosen)	Computer Science; Information Systems, and majors from the Faculty of Arts
<b>Bachelor of Information Technology/ Bachelor of Science**</b>	5 years	Mathematics or HSC Mathematics Extension 1 (depending on subjects chosen)	Computer Science; Information Systems, and majors from the Faculty of Science
<b>Bachelor of Information Technology/ Bachelor of Medical Science</b>	5 years	Mathematics or HSC Mathematics Extension 1 (depending on subjects chosen)	A structured degree combining Computer Science, Information Systems and Medical Science
<b>Bachelor of Engineering/ Bachelor of Arts</b>	5 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Any engineering stream with majors from the Faculty of Arts
<b>Bachelor of Engineering/ Bachelor of Commerce</b>	5 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Any engineering stream with majors from the Faculty of Economics and Business
<b>Bachelor of Engineering/ Bachelor of Laws</b>	6 years	HSC Mathematics Extension 1, Physics and/or Chemistry	A structured degree combining Law and Engineering
<b>Bachelor of Engineering/ Bachelor of Medical Science</b>	5 years	HSC Mathematics Extension 1, Physics and/or Chemistry	A structured degree combining Medical Science and Engineering
<b>Bachelor of Engineering/ Bachelor of Science**</b>	5 years	HSC Mathematics Extension 1, Physics and/or Chemistry	Any engineering stream with majors from the Faculty of Science
<b>Bachelor of Engineering/ Bachelor of Design in Architecture</b>	5 years	HSC Mathematics Extension 1, Physics and/or Chemistry	A structured degree combining Engineering and Design Architecture

\* If you have not studied these subjects to HSC level, we strongly advise you undertake a bridging course. See page 6 for details. For assumed knowledge in combined Engineering degrees also see individual entries for the degree with which engineering is combined.

\*\* It is also possible to enrol in a Bachelor of Science (Advanced) or a Bachelor of Science (Advanced Mathematics) in a combined course. To do this, students must achieve a UAI sufficient for entry to a Bachelor of Science (Advanced) or a Bachelor of Science (Advanced Mathematics).