Dean’s message

I believe a university’s greatness is determined by the impact of its graduates: the leadership positions they hold in industry and the community, and how they improve a nation’s wealth and quality of life.

UNSW Engineering is the top-ranked and largest engineering faculty in Australia and is ranked in the top 50 in the world. We attract more than $50 million in research funding every year and offer the most diverse range of globally recognised postgraduate degrees in Australia. We educate engineers to become leaders in their fields, both here and internationally.

My goal is for UNSW Engineering to be a top-20 engineering faculty globally by 2020. This will be achieved through enhancing our reputation for world-leading research and further increasing our engagement through collaborations with academic and industry leaders, especially in Asia.

We will be bold, meet difficult challenges, encourage fresh ideas and risk-taking, and emphasise the value of teamwork. We will engage even more with industry, helping solve real-world problems through applied research, and increase our global impact through greater student mobility.

We have degree programs that are recognised globally through the Washington Accord and accredited with Engineers Australia. We have invested more than $1 billion in new facilities for students and research over the past five years and we have achieved a five-star rating for employability, teaching and research for the past three years. We also have the highest number of female students of any engineering faculty in Australia – 22 per cent in 2014 – and are aiming to increase this to 30 per cent by 2020.

We will continue to strive for excellence, and encourage our graduates to make a difference in this world.

Professor Mark Hoffman
Dean

“My goal is for UNSW Engineering to be a top-20 engineering faculty globally by 2020.”
Why UNSW Engineering?

UNSW Engineering is the largest engineering faculty in Australia, with the country’s most diverse range of postgraduate programs. Our world-class research places us at the forefront of innovation with award-winning researchers focusing on areas critical to the future. By continuing to foster and develop elite-level engineers across a broad range of disciplines, UNSW is recognised as Australia’s top engineering university.

Benefits of postgraduate study
Students embarking on a postgraduate degree make an important investment in their career and personal development. It shows employers they have the desire to be at the leading edge of their industry, and want a competitive advantage.

With the value of infrastructure projects in Asia alone predicted as $730 billion annually through to 2020 (Asian Development Bank Institute 2013), talented engineers have emerged as one of the most in-demand professionals for global recruiters to place.

Successful postgraduate engineering students:
- Gain enhanced technical knowledge and skills
- Learn innovative approaches in engineering management
- Interact with talented peers and industry experts
- See world-class research in a challenging learning environment

Why UNSW Engineering?

What UNSW Engineering offers
- **Broad range of specialisations:** We have the widest range of engineering degree course specialisations through nine engineering schools. Students are able to deepen their skills in a specific area or retrain and refocus their career.
- **Cutting-edge programs:** Research is at the centre of all of our programs, along with a strong emphasis on design and problem solving.
- **Real-world focus:** Students learn from industry experts, leading academics and award-winning researchers and teachers. With extensive links to key players in industry and government, our programs are continually updated to ensure students are equipped with the latest knowledge and techniques, using state-of-the-art facilities, to give them an advantage.
- **Flexibility:** The majority of our programs are tailored to suit individual interests, so students can choose electives from a range of areas. Students can start their postgraduate study in February or July, and in some cases classes run outside of business hours.

Australia’s top engineering faculty

Relevant industry training

In our Master of Engineering programs, students are required to complete 60 days of relevant industrial training. Students have the flexibility to do industrial training in Australia or elsewhere.

Largest faculty in Australia

Ours is the country’s largest and most diverse engineering faculty, providing students with opportunities that are not available at other universities.

Influential graduates

18% of the top 100 most influential engineers in Australia graduated from UNSW. Source: Engineers Australia Top 100 list in 2014

Most postgraduate specialisations

We offer more postgraduate engineering specialisations than any other Australian university, allowing students to develop career paths in multiple industries.

$1 billion

World-leading research facilities

Since 2009, more than $1 billion has been spent on creating facilities and equipment to enhance teaching and research.

Globally recognised degrees

Our Master of Engineering degrees are accredited with Engineers Australia and recognised through the Washington Accord.

Top-ranked faculty

Our engineering faculty is highly regarded, consistently ranked No.1 in Australia and in the top 50 globally.

Tyree Energy Technologies Building

The $123.5 million state-of-the-art Tyree Energy Technologies Building boasts a green-star rating of 6 and is home to the Australian Energy Research Institute. This world-class facility houses new laboratories, dedicated to photovoltaic technologies, sustainable clean fuels, smart grids, energy storage, energy economics and policy analysis.

Why UNSW Engineering?

Benefits of postgraduate study

Students embarking on a postgraduate degree make an important investment in their career and personal development. It shows employers they have the desire to be at the leading edge of their industry, and want a competitive advantage.

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- Gain enhanced technical knowledge and skills
- Learn innovative approaches in engineering management
- Interact with talented peers and industry experts
- See world-class research in a challenging learning environment
Master of Engineering Science
Our long-standing Masters degree is designed for those who have a four-year engineering honours degree and want to specialise further to progress their career. The large choice of specialisations covers a core of key subjects and electives that can be applied to many fields and student interests.

Master of Engineering
This two-year program is designed for those seeking accreditation to enter the engineering profession or practising engineers wanting to expand their skills. Study plans cover extensive specialist knowledge in Civil Engineering, Electrical Engineering, Environmental Engineering, Mechanical Engineering or Telecommunications, as well as developing skills in design, research and engineering management. The program also includes at least 60 hours of industrial training.

Other Masters programs
These programs are designed to provide further education in mining, biomedical engineering, information technology and food science and technology.

Other Masters programs
- Biomedical Engineering (p12-13)
- Food Science and Technology (including Nutrition) (p24-25)
- IT and Computing (p30-31)
- Mining Engineering (p26-29)
- Mine Geotechnical Engineering (p38)

Students wishing to study these specialisations could complete a Master of Engineering program in either Electrical Engineering or Civil Engineering by choosing electives in these areas.

At a glance

**Master of Engineering Science**
- Biomedical Engineering (see pages 12-13)
- Chemical Process Engineering (p14-15)
- Civil Engineering (p16-17)
- Electrical Engineering (p18-19)
- Energy Systems* (p20-21)
- Environmental Engineering (p22-23)
- Food Process and Technology (p24-25)
- Geospatial Engineering (p26-27)
- Geotechnical Engineering and Engineering Geology* (p28-29)
- Manufacturing Engineering and Management* (p32-33)
- Mechanical Engineering (p34-35)
- Nuclear Engineering (p40-41)
- Petroleum Engineering (p42-43)
- Photovoltaics and Solar Energy (p44-45)
- Project Management (p46-47)
- Renewable Energy Engineering (p44-45)
- Satellite Systems Engineering (p48-49)
- Structural Engineering* (p50-51)
- Sustainable Systems (p52-53)
- Systems and Control* (p18-19)
- Telecommunications (p54-55)
- Transport Engineering* (p56-57)
- Water Engineering: Catchments to Coast* (p58-59)
- Water, Wastewater and Waste Engineering (p60-61)

**Master of Engineering**
- Civil Engineering (p16-17)
- Electrical Engineering (p18-19)
- Environmental Engineering (p22-23)
- Mechanical Engineering (p34-35)
- Telecommunications (p54-55)

**Other Masters programs**
- Biomedical Engineering (p12-13)
- Civil Engineering (p16-17)
- Electrical Engineering (p18-19)
- Energy Systems
- Environmental Engineering
- Food Science and Technology
- Geospatial Engineering
- Geotechnical Engineering and Management
- IT and Computing
- Manufacturing Engineering and Management
- Mechanical Engineering
- Mining Engineering
- Nuclear Engineering
- Petroleum Engineering*
- Photovoltaics and Solar Energy
- Project Management
- Renewable Energy Engineering
- Satellite Systems Engineering
- Structural Engineering
- Sustainable Systems
- Systems and Control
- Telecommunications
- Transport Engineering
- Water Engineering: Catchments to Coast
- Water, Wastewater and Waste Engineering

* Students wishing to study these specialisations could complete a Master of Engineering program in either Electrical Engineering or Civil Engineering by choosing electives in these areas.
The Master of Engineering Science is designed for students with a four-year degree in engineering from a recognised institution. Some specialisations also offer a Graduate Diploma and Graduate Certificate.

This Masters degree is especially for professionals seeking to develop or diversify their careers through cross-training, re-training and specialisation – including a research component. * Students may apply for credit for up to 8 courses (or 48 UOC), reducing the time taken to one year.

The program is designed for students who have completed either of the following:
- A four-year non-accredited (under the Washington Accord) Bachelor of Engineering degree or equivalent
- A three-year degree, at least equivalent to the first three years of a relevant Engineering degree accredited under the Washington Accord (www.ieagreements.org/Washington-Accord/signatories.cfm)

The two-year Master of Engineering is for those wanting to develop their technical knowledge and skills and enter the engineering profession with an degree accredited with Engineers Australia*. The program is designed for students who wish to obtain an accredited engineering degree.

- 2 years only
- 5 specialisations
- Accredited program*
- Industrial training included

* Programs accredited or provisionally accredited with Engineers Australia
Our researchers

UNSW Engineering researchers are striving to solve the world’s biggest issues. Our fine international reputation has been enhanced through discoveries in quantum computing, mining safety equipment and techniques, geology mapping, photovoltaics, hybrid energy-storage systems and the bionic eye. Here are three UNSW researchers at the forefront of engineering science.

Scientia Professor Martin Green AM
Director, Australian Centre for Advanced Photovoltaics

Scientia Professor Martin Green’s challenge sounds simple enough: produce better and cheaper solar power cells so that we depend less on polluting fossil fuels. Martin and his team from the UNSW School of Photovoltaic and Renewable Energy Engineering already lead the world in silicon solar-cell development, having produced the first 25 per cent efficient silicon solar cell in 2008. The team’s latest ambitious goal is to improve the efficiency of these multi-layered cells. UNSW’s solar researchers recently converted over 40 per cent of the sunlight hitting a photovoltaic system into electricity – a world efficiency record. Reaching such high efficiency will transform the economics of power generation and help combat anthropogenic climate change.

The Australian Centre for Advanced Photovoltaics was created in partnership with four universities, including UNSW.

Dr Alice Lee
Co-director, ARC Training Centre for Advanced Technologies in Food Manufacture (ATFM)

Dr Alice Lee is passionate about harnessing the almost limitless potential of nanotechnology, which has revolutionised communications and improved everything from our health to the way we look after the environment. Already a leading expert in nanoelectronics and quantum computing technologies, Andrew is director of the NSW node of the Australian National Fabrication Facility (ANFF), a network of researches at university-based laboratories. ANFF researchers have already created the world’s first single-atom quantum-bit for super-powerful silicon quantum computers. These computers will be able to solve problems that are well beyond the capacity of today’s fastest machines, allowing for the efficient design of pharmaceuticals and medicines, and new, stronger materials for lightweight consumer products.

Research

Research is an essential part of the Masters program, allowing students to deepen their expertise in a particular area they are passionate about. Students build skills for further research or professional practice with the support of an active engineering researcher.

Student information

Study structure

UNSW has two main semesters per year and full-time students study 4 courses per semester. Each course requires students to study 10 hours per week, including face-to-face classes and independent, self-directed study. This workload equates to 6 units of credit (6 UOC) and students need to pass the required total UOC of the program to graduate.

Disciplinary Knowledge Courses

These courses are designed to develop core knowledge and skills in any chosen specialisation and prepare students for the Advanced Disciplinary Knowledge Courses. If a student is moving from a different discipline, these courses are particularly valuable. On the other hand, a student holding an undergraduate degree in a similar discipline may be granted advanced standing for some of these courses. For a list of courses, see individual program outlines on pages 12-61 of this guide.

Advanced Disciplinary Knowledge Courses

These courses are the core of a postgraduate education. They enhance a student’s knowledge in the discipline and foster deep analysis and problem-solving skills that prepare graduates to make a difference in their career. Students can take more of these courses as part of their elective choices (see program outlines, pages 12-61).

Electives

Electives are designed to help students tailor their program to what drives them personally, and provide extended training in key areas of technology management. Students must study at least one Engineering and Technical Management Course (see unsw.to/engtechcourses). Students must take 3 or more elective courses that can be from the Disciplinary or Advanced Disciplinary Course lists within their specialisation or from another discipline (with approval).

Research

Research is an essential part of the Masters program, allowing students to deepen their expertise in a particular area they are passionate about. Students build skills for further research or professional practice with the support of an active engineering researcher.

Entry requirements

Masters: Students need a recognised four-year Bachelor degree in an appropriate area of engineering with a minimum 65% average as determined by the UNSW Postgraduate Entry Score Calculator in a relevant discipline. Relevant field experience is highly desirable. (*Minimum 70% for students from a non-211 university or China.) Entry Score Calculator: unsw.to/pgentrycalculator

Graduate Diploma: Students will generally need a three- or four-year degree in a relevant discipline of engineering or science plus relevant professional experience. Graduate Certificate: Students will generally need a three- or four-year degree in a relevant discipline of engineering or science. Entry may also be granted based on relevant work experience (portfolio/interview may be required). See the UNSW Handbook for further details on entry requirements for each program.

Exemptions or advanced standing

Students may be granted credit for some courses. Those with a four-year honours degree can apply for credit for up to 48 UOC for the Masters, effectively reducing it to one-year full time, or up to 24 UOC for the Graduate Diploma.

Student information

THE LATEST INFORMATION ABOUT COURSES, ENTRY REQUIREMENTS AND OTHER DETAILS ABOUT SPECIFIC PROGRAMS IS IN THE UNSW HANDBOOK. WWW.HANDBOOK.UNSW.EDU.AU.
Biomedical engineering is the application of engineering principles to develop technologies and solve problems in a range of healthcare-related fields such as implantable bionics, drug-delivery systems, medical imaging, radiotherapies, orthopaedic devices, telemedicine, robotic surgery, cell and tissue engineering, records management and physical rehabilitation.

**Master of Engineering Science (Biomedical Engineering)**

This program is ideal for graduate engineers looking to extend their knowledge into the field of biomedical engineering.

**Disciplinary Knowledge Courses**

Students select up to 4 courses from relevant disciplines such as Electrical, Chemical and Mechanical Engineering. Students choose up to 2 foundational courses to provide necessary background (with program-authority approval). These could include 1 or 2 courses from:

- Fundamentals of Anatomy
- Principles of Physiology A
- Principles of Physiology B

**Advanced Disciplinary Knowledge Courses**

Students choose at least 5 courses from:

- Medical Imaging
- Biocompatibility
- Cellular and Tissue Engineering
- Introductory Polymer Chemistry
- Clinical Information Systems
- Biomechanics of Physical Rehabilitation
- Mechanical Properties of Biomaterials
- Biomedical instrumentation
- Biosensors and transducers
- Implantable Bionics
- Dynamics of the Cardiovascular System

**Electives**

Please refer to page 11.

**Research**

Please refer to page 11.

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**Master of Biomedical Engineering**

This flexible program is designed for students with either a medical/biological science background or an engineering/physical science background who wish to further their education in biomedical engineering.

**Specialisation courses and electives**

Students choose from the following options:

**Semester 1**

- Mass Transfer in Medicine
- Biocompatibility
- Cellular and Tissue Engineering
- Biomechanics of Physical Rehabilitation
- Biological Signal Analysis
- Biomedical instrumentation
- Dynamics of Cardiovascular Systems
- Modelling Organs, Tissues and Devices
- Engineering Statistics
- Modelling Organs, Tissues and Devices
- Biological Signal Analysis
- Mass Transfer
- Regulatory Requirements
- Clinical Laboratory Science
- Mechanics of the Human Body

**Semester 2**

- Medical Imaging
- Biomedical Systems Analysis
- Regulatory Requirements of Biomed Technology
- Clinical Laboratory Science
- Introductory Polymer Chemistry
- Clinical Information Systems
- Mechanics of the Human Body
- Mechanical Properties of Biomaterial
- Biosensors and transducers
- Implantable Bionics
- Engineering Statistics

*Please note semester offerings may vary.*

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FOR A TYPICAL PROGRAM STRUCTURE AND INFORMATION ON RESEARCH AND ENTRY REQUIREMENTS, SEE PAGES 8-11.
Chemical Process Engineering

Master of Engineering Science (Chemical Process Engineering)

This program looks at the efficient design and robust and objective analysis and monitoring of chemical plants, processes and operations including extensive coverage of current business and environmental issues in the chemical and food industries.

Disciplinary Knowledge Courses

Students must take:
- Topics in Polymer Technology
- Plus 3 courses from:
  - Membrane Processes
  - Instrumental Analysis
  - Topics In Business Management
  - Process Engineering In Petroleum Industry
  - Advanced Reaction Engineering
  - Advanced Particle Engineering
  - Plant Operations
  - Fuel And Energy
  - Environmental Chemistry
  - Advanced Transport Phenomena

Advanced Disciplinary Knowledge Courses

Masters students must take:
- Advanced Process Control
- Advanced Polymer Science and Research
- Complex Fluid Microstructure and Rheology
- Plus 1 course from:
  - Environmental Management
  - Sustainability Assessment

- Managing Energy Efficiency
- Operational Energy Efficiency
- Sustainable Electrical Energy Tech Assessment
- Engineering Decisions
- Life Cycle Engineering
- Ethics and Leadership in Engineering
- Engineering Statistics
- Maintenance Engineering
- Quality and Quality Systems
- Quality in Engineering
- Project Management Framework
- Project Management
- Engineering Economics and Financial Management
- Engineering Economics

Electives

Students may choose up to 4 courses. Please refer to page 11.

Research

Students must complete a research component equivalent to 3 courses. Please refer to page 11.

Academic in focus

Scientia Professor Rose Amal, School of Chemical Engineering

Rose is the leader of the Particle and Catalysis Group in the UNSW School of Chemical Engineering. She was recently awarded $2.38 million to develop technology to transform carbon dioxide into sustainable fuels—a process that could revolutionise the recycling of the greenhouse gas. Rose is the former director of the ARC Centre of Excellence for Functional Nanomaterials and is recognised as a pioneer and leading authority in the fields of fine-particle technology, photocatalysis and functional nanomaterials. She has won many awards, and was named in Engineers Australia’s top 100 most influential engineers.
Master of Engineering Science
(Civil Engineering)

This broad and flexible program has advanced study options across a wide range of civil engineering disciplines. It allows students to tailor their study in areas such as project management, transport engineering, water and wastewater, surveying and construction management.

Disciplinary Knowledge Courses

Students moving from a different discipline, or those who have not completed appropriate undergraduate courses, will be advised to take courses that offer preparatory disciplinary knowledge. This will prepare them for Advanced Disciplinary Knowledge Courses in subject areas such as project management, geotechnical engineering, structures, surveying, transport or water and wastewater. At least 4 courses from:

- Problem Solving for Engineers
- Operations and Project
- Engineering Contract
- Sustainability in Construction
- Rock and Slope Engineering
- Advanced Topics in Geotechnical Engineering
- Ground Improvement and Monitoring Techniques.
- Advanced Concrete Structures
- Structural Dynamics
- Deformation Monitoring Surveys
- Transport Systems - Part 1: Network Analysis
- Advanced Water Engineering
- Sustainable Infrastructure

Advanced Disciplinary Knowledge Courses

Students may take courses from any postgraduate specialisation offered from the School of Civil and Environmental Engineering, subject to any prerequisite requirements, including at least 4 courses from:

- Environmental Engineering
- Geotechnical Engineering & Geotechnical Geology
- Project Management
- Structural Engineering
- Transportation Engineering
- Water, Wastewater and Waste Engineering
- Water Resources (includes coastal engineering courses)

Electives

At least 1 course must be taken from the approved list of Engineering and Technical Management courses. We recommend:

- Engineering Economics and Financial Management
- Design of Construction Operations
- Project Management Framework
- Environmental Management
- Sustainability Assessment and Risk Analysis in Water and Energy Systems Planning

Three other electives may be chosen across the faculty, as long as an student is eligible.

Research

Students who have not completed a four-year degree, which included a thesis, must complete a two-course Masters thesis research component to deepen their understanding of a topic they are passionate about. The research will be supervised by an appropriate academic.

Master of Engineering
(Civil Engineering)

The two-year Master of Engineering is for those wanting to develop their technical knowledge and skills and enter the engineering profession with an degree accredited with Engineers Australia®.

This program requires students to complete at least 16 courses, including Professional Development courses in Engineering Management, Analysis and Design and Engineering and the Environment, plus more in-depth civil engineering specialisation and engineering management courses. Students also need to complete a compulsory design course and research project, plus 60 days of industrial experience.

^ Provisionally accredited

Year 1 – Professional Development – 8 courses^ Management

Students choose at least 2 courses from the following:

- Problem Solving for Engineers
- Operations and Projects
- Engineering Contracts

Analysis and Design

Students choose at least 2 courses from:

- Advanced Topics in Geotechnical Engineering
- Advanced Concrete Structures
- Advanced Water Engineering
- Transport Systems – Part 1: Network Analysis

Year 2 – Advanced Courses – 8 courses^ This includes a compulsory design course and research project:

- Design Practice
- Masters Project A
- Masters Project B
- Plus 5 elective courses taken from the following list (with no more than 3 courses taken from any 1 discipline group):

Project and Construction Management

- Engineering Economics and Financial Management
- Project Planning and Control
- Human Resources Management
- Contracts Management
- Management of Risk
- Dispute Avoidance
- Resource Management
- Marketing in Technology and Engineering
- Strategic Management for Engineering
- Problem Solving and Decision Making
- Design of Construction Operations
- Legal Studies and Professional Practice

Year 2 – Industrial training

Students must complete 60 days of Civil Engineering-related industrial experience.

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An optional research project:

- Design Practice
- Masters Project A
- Masters Project B
- Plus 5 elective courses taken from the following list (with no more than 3 courses taken from any 1 discipline group):

- Design Practice
- Masters Project A
- Masters Project B
- Plus 5 elective courses taken from the following list (with no more than 3 courses taken from any 1 discipline group):

- Engineering Economics and Financial Management
- Project Planning and Control
- Human Resources Management
- Contracts Management
- Management of Risk
- Dispute Avoidance
- Resource Management
- Marketing in Technology and Engineering
- Strategic Management for Engineering
- Problem Solving and Decision Making
- Design of Construction Operations
- Legal Studies and Professional Practice

Recommended courses for students without an adequate background in Geotechnics or Water Engineering should choose Fundamentals of Geomechanics (CVEN9525) or Fundamentals of Water Engineering (CVEN9625) or both.

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**For a typical program structure and information on research and entry requirements, see pages 10-11.**

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**PROGRAM OPTIONS**

<table>
<thead>
<tr>
<th>PROGRAM CODE</th>
<th>UNITS OF CREDIT</th>
<th>DURATION</th>
<th>BEGINS</th>
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<tr>
<td>CVENZ8338</td>
<td>96</td>
<td>2 YEARS</td>
<td>FEBRUARY, JULY</td>
</tr>
<tr>
<td>CVENAT5341</td>
<td>48</td>
<td>1 YEAR</td>
<td>FEBRUARY, JULY</td>
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<tr>
<td>CVENG73209</td>
<td>24</td>
<td>6 MONTHS</td>
<td>FEBRUARY, JULY</td>
</tr>
<tr>
<td>CVENZ8621</td>
<td>96</td>
<td>2 YEARS</td>
<td>FEBRUARY, JULY</td>
</tr>
</tbody>
</table>
Master of Engineering Science (Electrical Engineering)

The Master of Engineering Science program is designed for graduate engineers seeking to develop or enhance their careers through cross-training, re-training and specialisation. An extensive research component ensures students are armed with practical and analytical skills.

Disciplinary Knowledge Courses
Students must take 3 core courses:
- Continuous-Time Control System Design
- Computer Control Systems
- Real-Time Engineering

plus choose 1-2 courses from:
- Digital and Embedded Systems Design
- Microelectronic Design and Technology
- Solid State Electronics
- RF Electronics
- Power System Equipment
- Power System Analysis
- Electrical Drive Systems
- Power Electronics
- Advanced Digital Signal Processing
- Multimedia Signal Processing
- Optical Circuits and Fibres
- Network Performance
- Wireless Communication Technologies
- Mobile and Satellite Communication Systems

Advanced Disciplinary Knowledge Courses
Students may choose 4-5 courses from:
- Power System Protection
- Mixed Signal Microelectronics Design
- Radio Frequency Integrated Circuits
- Microsystems Design and Technology
- VLSI Technology
- Quantum Devices
- Power Electronics for Renewable and Distributed Generation
- High Voltage Systems
- Industrial and Commercial Power Systems
- Electricity Industry Planning
- Electricity Industry Operation
- Electrical Safety
- Digital Signal Processing Theory and Applications
- Digital Image Processing
- Speech Processing
- Robust and Linear Control Systems
- Analysis and Design of Non-linear Control Systems
- Real Time Computing and Control
- Special Topics in Electrical Engineering 1
- Special Topics in Electrical Engineering 2

*Note: Electives and research options are the same for Electrical Engineering and Systems and Control.

Telecommunications
- Optical Circuits and Fibres
- Network Performance
- Wireless Communication Technology
- Mobile and Satellite Communications System

Advanced Disciplinary Knowledge Courses
Students may choose 4-5 courses from:
- Power System Protection
- Mixed Signal Microelectronics Design
- Radio Frequency Integrated Circuits
- Microsystems Design and Technology
- VLSI Technology
- Quantum Devices
- Power Electronics for Renewable and Distributed Generation
- High Voltage Systems
- Industrial and Commercial Power Systems
- Electricity Industry Planning
- Electricity Industry Operation
- Electrical Safety
- Digital Signal Processing Theory and Applications
- Digital Image Processing
- Speech Processing
- Robust and Linear Control Systems
- Analysis and Design of Non-linear Control Systems
- Real Time Computing and Control
- Special Topics in Electrical Engineering 1
- Special Topics in Electrical Engineering 2

*Note: Electives and research options are the same for Electrical Engineering and Systems and Control.

Electives (both specialisations)
Please refer to page 11.

Research (both specialisations)
Please refer to page 11.

Program options

<table>
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<tr>
<th>Program Options</th>
<th>Program Code</th>
<th>Units of Credit</th>
<th>Duration</th>
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<tr>
<td>Master of Engineering Science (Electrical Engineering)</td>
<td>ELEC81338</td>
<td>96</td>
<td>2 Years</td>
<td>February, July</td>
</tr>
<tr>
<td>Master of Engineering Science (Systems and Control)</td>
<td>ELEC81338</td>
<td>96</td>
<td>2 Years</td>
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<tr>
<td>Graduate Diploma of Engineering Science (Electrical Engineering)</td>
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<td>48</td>
<td>1 Year</td>
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<td>ELECAS8621</td>
<td>96</td>
<td>2 Years</td>
<td>February, July</td>
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</tbody>
</table>

For a typical program structure and information on research and entry requirements, see pages B-11.

I was impressed by the flexibility of subject choices and the program offered a design course and industrial training, which are both crucial for an engineer. UNSW Engineering has the best professors teaching this course and they offer continuous guidance to students. The splendid campus and facilities were just a bonus.

Shah Apurva
Master of Engineering in Electrical Engineering

Professional development
Students choose 6 courses from a range of topics including Microelectronics, Energy Systems, Signal Processing, Control Systems and Engineering and Technical Management. These include:
- Digital and Embedded System Design
- Microelectronic Design and Technology
- Solid State Electronics
- Power System Equipment
- Electrical Drive Systems
- Power Electronics
- Multimedia Signal Processing
- Computer Control Systems
- Real-Time Engineering
- Entrepreneurial Engineering

Specialisation electives
Students choose 5 courses from a list including:
- Mixed Signal Microelectronic Design
- Radio Frequency Integrated Circuits
- Microsystems Design and Technology
- VLSI Technology
- Quantum Devices
- Advanced Power Electronics
- High Voltage Systems
- Digital Image Processing
- Speech Processing
- Robust and Linear Control Systems
- Analysis and Design of Non Linear Control Systems

Engineering and Technical Management
Students choose 2 courses from:
- Project Management
- Ethics and Leadership in Engineering
- Successful Innovation
- Project Management

Design
- Design Proficiency

Research
- ME Project A
- ME Project B

Work experience
Students must also complete 60 days of Electrical Engineering-related industrial experience.
Energy systems engineering is undergoing a renaissance due to the introduction of smart grids (intelligent power supply systems), the growing need to interface renewable energy generation sources with the conventional electricity grid, and the increasing use of electric motors in everything from smartphones to hybrid cars to satellites.

Master of Engineering Science (Energy Systems)

This program offers a broad range of theoretical and applications-based electives – including smart grids, power electronics for renewable energy engineering, power-system analysis and protection, high-voltage engineering, power-systems planning and economics, and electrical safety. Such a wide choice allows students to gain a deep, broad knowledge across several areas. It is a great avenue for electrical engineers wishing to upgrade their skills or further their knowledge.

Disciplinary Knowledge Courses

Students choose 4-5 courses from:
- Microelectronic Design and Technology
- Power System Equipment
- Power System Analysis
- Electrical Drive Systems
- Power Electronics
- Advanced Digital Signal Processing
- Continuous-Time Control Systems
- Optical Circuits and Fibres
- Mobile and Satellite Communication Systems

Graduate Diploma students have a slightly wider range to choose from. See the UNSW Handbook for details.

Advanced Disciplinary Knowledge Courses

Students choose 4-5 courses from:
- Power System Protection
- Power Electronics for Renewable and Distributed Generation
- High Voltage Systems
- Industrial and Commercial Power Systems
- Electricity Industry Planning
- Electricity Industry Operation
- Electrical Safety
- Smart Grids and Distribution Networks

Electives

Please refer to page 11.

Research

Please refer to page 11.
Environmental engineering is concerned with the safe, ecological, sustainable and ethical development of urban infrastructure. This discipline is for those who want to move their engineering career in the direction of environmental engineering or gain formal qualifications.

**Master of Engineering Science (Environmental Engineering)**

The Master of Engineering Science provides students with advanced study options in environmental engineering. Designed specifically to develop skills in analysis and design of sustainable environmental engineering. Designed specifically to be appealing for both practising engineers and recent graduates planning a career in environmental engineering.

**Disciplinary Knowledge Courses**
Students choose at least 4 courses from:
- Design Practice A
- Operations and Projects
- Engineering Contracts
- Sustainability in Construction
- Rock and Slope Engineering
- Deformation Monitoring Surveys

**Advanced Disciplinary Knowledge Courses**
Students complete these 4 courses:
- Environmental Management
- Sustainability Assessment
- Environmental Engineering Science 1
- Environmental Engineering Science 2

**Electives**
At least 1 course must be taken from the approved list of Engineering and Technical Management courses. We recommend:
- Engineering Economics and Financial Management
- Project Management Framework
All other electives may be chosen across the faculty, subject to approval. Some to consider:
- Solid Waste Management
- Hazardous Waste Management
- Water Treatment
- Wastewater Treatment
- Environmental Management
- Sustainability Assessment and Risk Analysis
- Water and Energy Systems Planning
- Water and Wastewater Analysis
- Urban Transport Planning Practice
- Transport Modelling
- Transport Systems – Part 2: Queuing Theory

**Environmental Engineering**

- Surface Water Hydrology
- Urban Hydrology
- Catchment and Water Resources Modelling
- Channels, Rivers and Estuaries
- Groundwater Engineering
- Waves and Beaches
- Energy Efficiency in the Water Sector

**Research**
Students who have not completed a four-year degree, which included a thesis, must complete a two-course Masters thesis research component to deepen their understanding of a topic they are passionate about. The research will be supervised by an appropriate academic.

**Geotechnical Engineering**
- Geotechnical Models and Site Investigation
- Geomechanics
- Advanced Foundation Engineering
- Numerical Methods in Geotechnical Engineering
- Slope Instability
- Rock Engineering
- Pavement Engineering
- Geotechnical Engineering of Dams

**Transport Engineering**
- Urban Transport Planning Practice
- Transport Modelling
- Transport Systems – Part 2: Queuing Theory
- Traffic Management and Control

**Water Engineering**
- Surface Water Hydrology
- Urban Hydrology
- Catchment and Water Resources Modelling
- Channels, Rivers and Estuaries
- Groundwater Engineering
- Waves and Beaches
- Water and Wastewater Analysis

**Year 2 – Advanced courses – 8 courses**
This includes a compulsory design course and research project:
- Design Practice
- Masters Project A
- Masters Project B
- plus 5 elective courses taken from the following list (with no more than 3 courses taken from any 1 discipline group):

**Environmental Engineering**
- Environmental Management
- Sustainability Assessment and Risk Analysis in Water and Energy Systems Planning
- Water and Wastewater Analysis
- Solid Waste Management
- Hazardous Waste Management
- Water Treatment
- Wastewater Treatment

**Project and Construction Management**
- Engineering Economics and Financial Management
- Project Planning and Control
- Human Resources Management
- Contracts Management
- Management of Risk
- Dispute Avoidance
- Resource Management
- Marketing in Technology and Engineering
- Strategic Management for Engineering
- Problem Solving and Decision Making
- Design of Construction Operations
- Legal Studies and Professional Practice
- International Project Management
- Project Management Framework

**PROJECT OPTIONS**

<table>
<thead>
<tr>
<th>PROGRAM OPTIONS</th>
<th>PROGRAM CODE</th>
<th>UNITS OF CREDIT</th>
<th>DURATION</th>
<th>BEGINS</th>
</tr>
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<tbody>
<tr>
<td>MASTER OF ENGINEERING SCIENCE (ENVIRONMENTAL ENGINEERING)</td>
<td>CVENMTB33B</td>
<td>96</td>
<td>2 YEARS</td>
<td>FEBRUARY, JULY</td>
</tr>
<tr>
<td>GRADUATE DIPLOMA OF ENGINEERING SCIENCE (ENVIRONMENTAL ENGINEERING)</td>
<td>CVENDT534I</td>
<td>48</td>
<td>1 YEAR</td>
<td>FEBRUARY, JULY</td>
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<tr>
<td>MASTER OF ENGINEERING SCIENCE (ENVIRONMENTAL ENGINEERING)</td>
<td>CVENLTB62I</td>
<td>96</td>
<td>2 YEARS</td>
<td>FEBRUARY, JULY</td>
</tr>
</tbody>
</table>

Sienna Youjia Xue
Master of Environmental Engineering

I hope I can be a good engineer, utilising my knowledge to make a change to others’ lives. UNSW has done a good job developing students’ leadership and technical skills.
Master of Engineering Science (Food Process Engineering)

This program is designed for engineers who want to specialise in the area of food science. It provides a thorough study of factors affecting the science, processes, operation technology and engineering of foods, and the life cycle of plants. Students also study issues that affect business decisions encountered in the food industry including a focus on efficient design and robust, objective analysis. It can also provide a solid postgraduate coursework program for the professional food scientist wishing to upgrade their skills or extend their knowledge.

Disciplinary Knowledge Courses
Students choose 4 courses from:
- Chemistry, Biochemistry and Microbiology of Food
- Food Processing Principles
- Advanced and Applied Nutrition
- Food Microbiology
- Food Diagnostics
- Advanced Food Engineering
- Nutrition
- Food Preservation
- Advanced Food Chemistry
- Product Design and Development
- Food Safety and Quality Assurance
- Food and Nutritional Toxicology
- Unit Operations in Food Processing

Advanced Disciplinary Knowledge Courses
Students choose 4 courses from:
- Advanced Process Control
- Advanced Processing Technologies
- Complex Fluid Microstructure and Rheology
- Life Cycle Engineering
- Ethics and Leadership in Engineering
- Maintenance Engineering
- Quality in Engineering
- Project Management Framework
- Engineering Economics

Electives
Please refer to page 11.

Research
Please refer to page 11.

In the spotlight
ARC Training Centre

The ARC Training Centre for Advanced Technologies in Food Manufacture (ATFM) works closely with the Australian food industry to ensure its companies can sustain a globally competitive position in markets that demand the highest level of product quality, freshness, taste and safety. The Centre focuses on developing a suite of industry-aligned and commercially relevant projects that will successfully compete for market share against manufacturers with inferior quality and safety. The projects undertaken are selected according to industry priorities and the Centre provides industry with a continuum of high-level skills through technological and engineering knowledge transfer.

Master of Food Science

The Master of Food Science program is designed for those with a science background who wish to deepen their knowledge in food science. It’s also designed for engineers who want to move into food science from a more science-based perspective. Students will gain a thorough understanding of theoretical aspects of the science, technology and engineering of foods, and have the opportunity to undertake an extensive research project.

Disciplinary Knowledge Courses
Students choose 4 courses from:
- Food Processing Principles
- Advanced and Applied Nutrition
- Food Microbiology
- Food Diagnostics
- Advanced Food Engineering
- Nutrition
- Food Preservation
- Advanced Food Chemistry
- Product Design and Development
- Food Safety and Quality Assurance
- Food and Nutritional Toxicology
- Environmental Management
- Sustainability Assessment
- Operational Energy Efficiency
- Engineering Decisions
- Life Cycle Engineering
- Ethics and Leadership in Engineering
- Maintenance Engineering
- Quality in Engineering
- Project Management Framework
- Engineering Economics

Electives
Students choose any courses as long as they are eligible to enrol. This could include any of the Disciplinary Knowledge Courses on the list for this program. Suggested electives include:
- Food and Nutritional Toxicology
- Unit Operations in Food Processing
- Advanced Disciplinary Knowledge Courses
- Masters students are required to take:
- Advanced Processing Technologies
- Complex Fluid Microstructure and Rheology
- Sensory Analysis of Foods
- Advanced Food Microbiology

Research
Students must complete a research component that gives them the opportunity to deepen their understanding of something that they are passionate about through practical application with the close support of a practising researcher.

Program Options

<table>
<thead>
<tr>
<th>Program Options</th>
<th>Program Code</th>
<th>Units of Credit</th>
<th>Duration*</th>
<th>Begins</th>
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<td>Master of Engineering Science (Food Process Engineering)</td>
<td>FOODNS8338</td>
<td>96</td>
<td>2 YEARS</td>
<td>FEBRUARY, JULY</td>
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<tr>
<td>Graduate Diploma of Engineering Science (Food Process Engineering)</td>
<td>FOODNS5341</td>
<td>48</td>
<td>1 YEAR</td>
<td>FEBRUARY, JULY</td>
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<tr>
<td>Master of Food Science</td>
<td>8037</td>
<td>96</td>
<td>2 YEARS</td>
<td>FEBRUARY, JULY</td>
</tr>
<tr>
<td>Graduate Diploma of Food Science</td>
<td>5037</td>
<td>48</td>
<td>1 YEAR</td>
<td>FEBRUARY, JULY</td>
</tr>
</tbody>
</table>
Geospatial Engineering

Master of Engineering Science (Geospatial Engineering)

The program provides critical knowledge about the science and practice of geospatial engineering. This knowledge is required for students moving to industry or staying in the graduate program to pursue their PhD studies.

Disciplinary Knowledge Courses
Students choose at least 4 courses from:
- Problem Solving for Engineers
- Deformation Monitoring Surveys
- Geospatial Information Science*
- Precise GPS Positioning
- Engineering Statistics
- Principles of Programming

Advanced Disciplinary Knowledge Courses
Students choose at least 4 courses from:
- Fundamentals of Geopositioning*
- Modern Geodesy and Applications
- Aerial and Satellite Imaging Systems
- Computer Vision
- Database Systems
- Remote Sensing*
- Microwave Remote Sensing

Electives
At least 1 course must be taken from the approved list of Engineering and Technical Management courses. We recommend:
- Engineering Economics and Financial Management
- Project Management Framework
- Environmental Management
- Geomatics
- Structural Stability
- Modern Geodesy and Applications
- Aerial and Satellite Imaging Systems

- Microwave Remote Sensing
- Computer Vision
- Database Systems
- Data Structures and Algorithms
- Transport Applications of GIS
- GIS for Built Environment

Research
Students who have not completed a four-year degree that included a thesis must complete a Masters thesis research component. This gives them the opportunity to broaden their understanding of a topic that they are passionate about. The research will be supervised by an appropriate academic.

* Compulsory courses

For a typical program structure and information on research and entry requirements, see pages 8-11.

Geospatial Engineering facilities

- There are a number of specific Surveying and Geospatial Engineering facilities within the Satellite Navigation and Positioning (SNAP) Lab including:
  - State-of-the-art computing facilities essential to this IT-intensive discipline
  - A wide variety of GPS/GNSS equipment for tracking GPS, Glonass, Galileo, QZSS and Beidou
  - Leica CS5 Laser scanner and software
  - SenseFly Swinglet Unmanned Aerial Vehicle and software
  - Spirent GSS6560 GPS RF signal simulator with INS upgrade
  - Two GPS software receivers: the DataFusion Matlab receiver, and the NordNav R30
  - Several Altera FPGA development systems
  - Several GPS Software Development Kits, inertial navigation sensors, pseudolites, wireless comms and UHF radio equipment, and a range of ancillary equipment to support research into GPS and other wireless location technologies
  - A range of GPS software systems (many developed in-house) as well as the GAMIT and Bernese software packages
  - Software for SAR and InSAR data processing (some developed in-house) as well as the APP and EV InSAR (Atlantic, Canada), PuP SAR (Phoenix Systems, UK), ROIPAC (JPL, USA) and DORIS (Delft University of Technology, Netherlands)
  - Software packages to aid teaching and research for field-to-finish surveying systems: Leica Geomatics Office, GEOCOMP, CIVILCAD and AUTOCAD
  - Other software support, such as MATLAB, RTKLib and others.
For those seeking ways to expand their career options in geotechnical engineering and engineering geology, or those who would like to move their existing engineering career in a new direction, the Master of Engineering Science will provide the advanced skills and knowledge required.

**Geotechnical Engineering and Engineering Geology**

This specialisation has been developed for practitioners to enhance and deepen their practical and theoretical knowledge. Academic and industry experts teach courses with a one-week only attendance requirement at the UNSW campus for each course.

**Master of Engineering Science (Geotechnical Engineering and Engineering Geology)**

Students choose at least 4 courses from:
- Design Practice A
- Fundamentals of Geomechanics*
- Operations and Projects
- Rock and Slope Engineering
- Advanced Topics in Geotechnical Engineering
- Ground Improvement and Monitoring Techniques
- Advanced Concrete Structures
- Structural Dynamics
- Deformation Monitoring Surveys
- Must be chosen by students without an adequate background in Geomechanics

**Disciplinary Knowledge Courses**

- Geotechnical Models
- Geomechanics
- Advanced Foundation Engineering
- Numerical Methods Geotechnical Engineering
- Slope Instability
- Rock Engineering
- Pavement Engineering
- Geotechnical Engineering of Dams

**Electives**

At least 1 course must be taken from the approved list of Engineering and Technical Management courses.

We recommend:
- Engineering Economics and Financial Management
- Project Management Framework
- Environmental Management
- Sustainability Assessment and Risk Analysis in Water and Energy Systems Planning

All other electives may be chosen to complement a student’s interests, subject to eligibility. Some possibilities:

**Project and Construction Management**
- Engineering Economics and Financial Management
- Management of Risk
- Design of Construction Operations
- Project Management Framework
- Environmental Management
- Sustainability Assessment and Risk Analysis in Water and Energy Systems Planning

**Structural Engineering**
- Structural Stability
- Prestressed Concrete Design
- Reinforced Concrete Design
- Computational Structural Mechanics
- Steel and Composite Structures
- Advanced Materials Technology

**Transport Engineering**
- Urban Transport Planning Practice
- Transport Modelling
- Transport Systems – Part 2: Queuing Theory
- Traffic Management and Control

**Water Engineering**
- Catchment and Water Resources Modelling
- Urban Hydrology
- Surface Water Hydrology
- Channels, Rivers and Estuaries
- Groundwater Engineering
- Waves and Beaches
- Water and Wastewater Analysis

**Research**

Students who have not completed a four-year degree that included a thesis must complete a Masters thesis research component that gives them the opportunity to broaden their understanding of a topic that they are passionate about. An appropriate academic will supervise the research.

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**Program Options**

<table>
<thead>
<tr>
<th>Program Options</th>
<th>Program Code</th>
<th>Units of Credit</th>
<th>Duration*</th>
<th>Begins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Engineering Science (Geotechnical Engineering and Engineering Geology)</td>
<td>CVENRT8338</td>
<td>96</td>
<td>2 Years</td>
<td>February, July</td>
</tr>
<tr>
<td>Graduate Diploma of Engineering Science (Geotechnical Engineering and Engineering Geology)</td>
<td>CVENST5341</td>
<td>48</td>
<td>1 Year</td>
<td>February, July</td>
</tr>
</tbody>
</table>

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*Must be chosen by students without an adequate background in Geomechanics.
Information technology provides students with the skills to use today’s technology as well as create the technology of tomorrow. Graduates are trained to anticipate future needs and develop applications, frameworks, products and services to meet those needs in areas such as networking, data mining, robotics and internet services.

Master of Information Technology
This program provides engineering and science students with a broad-based IT education and specialised knowledge, enabling them to work in a range of positions in the IT industry. It is perfect for students with no or minimal prior computing experience who want to obtain an IT qualification, or students with a computing-related bachelor degree who want to obtain a broader understanding of computing or specialise in an area. Students with prior IT and computing experience may be eligible for up to one year’s advanced standing.

Majors available
- Artificial Intelligence
- Bioinformatics
- Database Systems
- e-Commerce Systems
- Geospatial
- Information Technology
- Internetworking

Graduate Diploma of Information Technology
This is intended for students with no or little prior computing experience. Students with some computing background who want to obtain a broad understanding of computing might also find this program attractive. The program consists of 12 courses selected from across the Master of Information Technology program course list – with a recommended focus on the Advanced Disciplinary Knowledge Courses and research option. Students may also choose up to 2 majors. Two electives are permitted and can be chosen from outside the school.

Graduate Certificate of Computing
This is an option if you aren’t eligible for entry to the Graduate Diploma of Information Technology, or wish to take a shorter postgraduate qualification. The Graduate Certificate of Computing develops students’ knowledge and skills in IT, and can lead to the Masters program.

The program consists of four courses selected from the Master of Information Technology program course list. Students can choose any course for which they are eligible to enrol.

FOR A TYPICAL PROGRAM STRUCTURE AND INFORMATION ON RESEARCH AND ENTRY REQUIREMENTS, SEE PAGES 8-11.

Specialisation courses
- Engineering Project Management
- Foundations of Computer Science
- Principles of Programming
- Data Structures and Algorithms
- Microprocessors and Interfacing
- Database Systems
- Artificial Intelligence
- Computer Networks and Applications

Advanced Disciplinary Knowledge Courses
Students can select from the following list of courses, some of which have one or more prerequisites.
- Bioinformatics Methods and Applications
- Advanced Topics in Software Verification
- Security Engineering
- Human Computer Interaction
- Engineering Decision Structures
- Knowledge Representation and Reasoning
- (In-)Formal Methods: The Lost Art
- Software Construction: Techniques and Tools
- Digital Circuits and Systems
- Web Applications Engineering
- System Capacity Planning
- Computer Graphics
- Computational Bioinformatics
- Object-Oriented Software Development
- Theory of Computation
- Experimental Robotics
- Game Design Workshop
- User Interface Design and Construction
- Information Retrieval and Web Search
- Geometric and Graph Theoretic Data Processing
- Design and Analysis of Algorithms
- Programming Languages and Compilers
- Advanced Graphics
- Foundations of Concurrency
- Concepts of Programming Languages
- Object-Oriented Programming
- Language-based Software Safety
- Comparative Concurrency Semantics
- Algorithmic Verification
- Operating Systems
- Extended Operating Systems
- Computer Architecture
- Database Systems Implementation
- Data Warehousing and Data Mining
- Web Data Compression and Search
- Web Applications Engineering
- Network Routing and Switching
- Wireless Mesh and Sensor Networks
- Mobile Data Networking
- Machine Learning and Data Mining
- Robotic Software Architecture
- Neural Networks
- Security Engineering Workshop
- Computer Vision
- Distributed Systems
- Service-Oriented Architectures
- e-Enterprise Project

Electives
Students are permitted to take up to 3 electives from outside the school. All non-CSE electives must be approved.

Research
This degree provides significant exposure to research and many of our courses contain research components. Students can either complete 6 Advanced Disciplinary Knowledge Courses or replace 2-3 courses with a project of equal value in their final semester (subject to approval).

PROGRAM OPTIONS

<table>
<thead>
<tr>
<th>PROGRAM OPTIONS</th>
<th>PROGRAM CODE</th>
<th>UNITS OF CREDIT</th>
<th>DURATION</th>
<th>BEGINS</th>
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<tr>
<td>MASTER OF INFORMATION TECHNOLOGY</td>
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<td>2 YEARS</td>
<td>FEBRUARY, JULY</td>
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<td>GRADUATE DIPLOMA OF INFORMATION TECHNOLOGY</td>
<td>5543</td>
<td>72</td>
<td>1.5 YEAR</td>
<td>FEBRUARY, JULY</td>
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<tr>
<td>GRADUATE CERTIFICATE OF COMPUTING</td>
<td>7543</td>
<td>24</td>
<td>6 MONTHS</td>
<td>FEBRUARY, JULY</td>
</tr>
</tbody>
</table>

Venture space
- The School of Computer Science and Engineering (CSE) has established a Venture Space to encourage students and recent graduates to apply their technical skills to the economy or society. This subsidised-cost space is available to approved students and alumni who wish to develop ideas into business models, products or services. CSE is also supporting the development of ideas that have been generated in the school’s research laboratories into commercially viable products, services or ventures, and supporting the aspirations of those who wish to explore the commercial viability of ideas.
Manufacturing engineers are involved in all facets of production and have a broad knowledge of the design and operation of machines and systems, which means they often manage multidisciplinary teams. This program integrates engineering, technology and management, providing students with a grounding in everything from product design to manufacture, sales and distribution.

**Master of Engineering Science (Manufacturing Engineering and Management)**

This program covers a range of essential topics in product and process design, manufacture and delivery process aimed at achieving quality, timely delivery, minimum cost and flexible manufacturing through good manufacturing practices. Courses are especially suited to engineers in management roles with operational, engineering or research and development responsibilities.

**Disciplinary Knowledge Courses**
Students choose 4-5 courses from:
- Design and Analysis of Product-Process Systems
- Reliability and Maintenance Engineering
- Process Modelling and Simulation
- Strategic Manufacturing Management
- Engineering Management

**Advanced Disciplinary Knowledge Courses**
Students choose 4-5 courses from:
- Industrial Management
- Operations and Supply Chain Management in Engineering
- Production Planning and Control
- Computer Aided Design / Computer Aided Manufacture
- Concurrent Product and Process Design

**Electives**
Please refer to page 11.

**Research**
Please refer to page 11.
Mechanical Engineering offers unique opportunities to combine various disciplines to develop and improve products, processes and systems – and change the world for the better. Our programs provide students with the knowledge, tools and strategies to design engineering systems and manage a product’s lifecycle.

Master of Engineering Science (Mechanical Engineering)
This program covers the design, development, construction, operation and maintenance of machines, tools, plants and factories, including power generation, propulsion or manufacture of goods.

Disciplinary Knowledge Courses
Students choose 4-5 courses from:
- Mechanical Design 2
- Engineering Mechanics 3
- Computational Fluid Dynamics
- Refrigeration and Air Conditioning
- Mechanics of Fracture and Fatigue
- Fundamental and Advanced Vibration Analysis
- Finite Element Methods
- Engineering Management

Advanced Disciplinary Knowledge Courses
Students choose 4-5 courses from:
- Computer Aided Design/Computer Aided Manufacture
- Fundamentals of Acoustics and Noise
- Composite Materials and Mechanics
- Introduction to Micro Electromechanical Systems
- Solar Thermal Energy Design
- Automobile Engine Technology
- Machine Condition Monitoring

Electives
Please refer to page 11.

Research
Please refer to page 11.

The degree has helped me discover what my strengths and weaknesses are and has allowed me to narrow my interests to a few subjects. Doing my thesis on improving noise barriers helped increase my knowledge of the subject and land an amazing internship. It definitely improves your employability.

Adrian Allan Pinto
Master of Engineering Science in Mechanical Engineering

FOR A TYPICAL PROGRAM STRUCTURE AND INFORMATION ON RESEARCH AND ENTRY REQUIREMENTS, SEE PAGES 8-11.

Data Envelopment Analysis (DEA)
Mining Engineering

Master of Mining Engineering

The Master of Mining Engineering provides advanced study in mining engineering, with various entry points and pathways of study depending on the student’s background. Designed to cater for people with an engineering or technical background, the program can be undertaken on either a part-time or full-time basis.

The program provides an opportunity for mining engineering graduates and minerals industry professionals to continue their professional development in specialised areas. Students have a choice of doing a Master of Mining Engineering with a component of Mine Geomechanics or a Mine Management plan. Those interested in a specialist qualification in Mine Geomechanics should review the Master of Mine Geotechnical Engineering (see page 38). Students can choose the Masters program or enter via the Graduate Diploma and step up to the Masters at a later time.

Mine Geomechanics plan

Core Courses
Masters students take these 5 core courses and Graduate Diploma students choose 4 core courses from:
- Fundamentals of Mining Engineering
- Hazard Identification, Risk and Safety Management in Mining
- Mining Processes and Analysis
- Mine Ventilation
- Uranium Mining Fundamentals
- Mine Water and Waste Management
- Uranium Mining Fundamentals
- Mine Ventilation
* Not required unless students wish to articulate to the Masters program.

Electives
Masters students choose 7 electives and Graduate Diploma students choose 4 electives from these Advanced Disciplinary Knowledge Courses:
- Fundamentals of Mining Engineering
- Hazard Identification, Risk and Safety Management in Mining
- Mining Processes and Analysis
- Mine Ventilation
- Uranium Mining Fundamentals
- Mine Water and Waste Management
- Uranium Mining Fundamentals
- Mine Ventilation
* Not required unless students wish to articulate to the Masters program.

Mine Management plan

Core Courses
Masters students take these 5 core courses and Graduate Diploma students choose 4 core courses from:
- Fundamentals of Mining Engineering
- Hazard Identification, Risk and Safety Management in Mining
- Mining Processes and Analysis
- Mine Ventilation
- Uranium Mining Fundamentals
- Mine Water and Waste Management
- Uranium Mining Fundamentals
- Mine Ventilation
* Not required unless students wish to articulate to the Masters program.

Electives
Masters students choose 7 electives and Graduate Diploma students choose 4 electives from these Advanced Disciplinary Knowledge Courses:
- Fundamentals of Mining Engineering
- Hazard Identification, Risk and Safety Management in Mining
- Mining Processes and Analysis
- Mine Ventilation
- Uranium Mining Fundamentals
- Mine Water and Waste Management
- Uranium Mining Fundamentals
- Mine Ventilation
* Not required unless students wish to articulate to the Masters program.

The best way to advance in the mining industry is to be armed with the latest skills and knowledge. Postgraduate coursework programs can make a significant difference for those working in the mining industry or planning a career change.

Graduate Certificate of Mining Engineering

Core Courses
Students choose 3 courses from:
- Foundation Disciplinary Knowledge Courses
  - Introduction to Academic Study Skills
  - Fundamentals of Mining Engineering
  - Hazard Identification, Risk and Safety Management in Mining
- Mining Technology in Mining
- Management Systems – Projects, Processes, Contracts, Contractors
- Mine Design and Feasibility
- Environmental Management for the Mining Industry
- Advanced Mineral Economics and Project Evaluation
- Mine Geology and Geophysics for Mining Operations
- Mineral Processing

Electives
Students choose 1 of these Advanced Disciplinary Knowledge Courses:
- Mining Industry Research Project**
- Mining and Resources Law
- Technology Management in Mining
- Management Systems – Projects, Processes, Contracts, Contractors
- Mine Design and Feasibility
- Environmental Management for the Mining Industry
- Advanced Mineral Economics and Project Evaluation
- Mine Geology and Geophysics for Mining Operations
- Mineral Processing

** Not required unless students wish to articulate to the Masters program.

Program Options

Program Code | Units of Credit | Duration | Begins
--- | --- | --- | ---
MASTER OF MINING ENGINEERING + MINE GEOMECHANICS PLAN + MINE MANAGEMENT PLAN | 8335 MINES5059 MINEN5059 | 72 | 1.5 YEARS | FEBRUARY
GRADUATE DIPLOMA OF MINE ENGINEERING + MINE GEOMECHANICS PLAN + MINE MANAGEMENT PLAN | 5335 MINER5535 MINED5535 | 48 | 1 YEAR | FEBRUARY
GRADUATE CERTIFICATE OF MINE ENGINEERING | 7335 MINES7335 | 24 | 0.5 YEARS | FEBRUARY
MASTER OF MINE GEOTECHNICAL ENGINEERING + COAL MINE STRATA CONTROL + UNDERGROUND GROUND CONTROL | 8059 MINES8059 MINETS8059 | 72 | 1.5 YEARS | FEBRUARY
GRADUATE DIPLOMA OF MINE GEOTECHNICAL ENGINEERING + COAL MINE STRATA CONTROL + UNDERGROUND GROUND CONTROL | 5059 MINER5509 MINED5509 | 48 | 1 YEAR | FEBRUARY
GRADUATE DIPLOMA OF MINE VENTILATION | 5046 | 48 | 1 YEAR | FEBRUARY
Mining Engineering

Master of Mine Geotechnical Engineering

This program is designed for those who work within the underground hard rock or underground coal mining industry and who may have particular responsibilities in the field of strata control. It has been designed to cater for those with both engineering and scientific backgrounds and may be undertaken on either a part-time or full-time basis.

Students study fundamental principles of rock mechanics and geotechnical engineering, followed by a comprehensive coverage of practical strata control applications. For entry into the Masters program, students need to first complete the part-time Graduate Diploma. There are two plans offered: Underground Ground Control and Coal Mine Strata Control.

This program does not allow international students to enrol on a student visa.

Underground Ground Control plan

CORE COURSES
Masters and Graduate Diploma students take these 6 courses:
- Foundation Disciplinary Knowledge Courses
  - Fundamentals of Rock Behaviour
  - Geotechnical Assessment
  - Geotechnical Data Collection and Analysis
- Advanced Disciplinary Knowledge Courses
  - Mining Excavations in Rock
  - Applied Geomechanics (coal)
  - Ground Control Principles (coal)
  - Operational Geotechnical Management
- Mining Geotechnical Project (research specific to Underground Ground Control)

ELECTIVES*
Masters students choose 2 of these (the Graduate Diploma has no elective component):
- Drilling, Blasting and Machine Excavation
- Numerical Methods in Mine Geomechanics
- Plus 1 non-geotechnical mine course or a civil engineering geotechnical course may be accepted as an elective in this stream, subject to approval. *Some electives may only be offered every two years.

RESEARCH
A research thesis specific to Underground Ground Control is required for the Masters.

Coal Mine Strata Control plan

CORE COURSES
Masters and Graduate Diploma students take these 8 courses:
- Foundation Disciplinary Knowledge Courses
  - Fundamentals of Rock Behaviour
  - Geotechnical Assessment
  - Geotechnical Data Collection and Analysis
- Advanced Disciplinary Knowledge Courses
  - Mining Excavations in Rock
  - Applied Geomechanics (coal)
  - Ground Control Principles (coal)
  - Operational Geotechnical Management
- Mining Geotechnical Project (research specific to Coal Mine Strata Control)

ELECTIVES*
Masters students choose 2 of these (the Graduate Diploma has no elective component):
- Drilling, Blasting and Machine Excavation
- Numerical Methods in Mine Geomechanics
- Plus 1 non-geotechnical mine course or a civil engineering geotechnical course may be accepted as an elective in this stream, subject to approval.

RESEARCH
A research thesis specific to Coal Mine Strata Control is required for the Masters.

Graduate Diploma of Mine Ventilation

This flexible program is delivered in a predominantly distance format and provides professional development in mine ventilation and the environment for mining engineers and others who work in the mining industry. The program covers the needs of the metalliferous and coal-mining sectors.

This program is based on a theoretical and operational perspective, and the aim is that the course content will be immediately relevant to industry. As this is a professional development course, it is essential that the student is working at a mine site because assessments are geared to practical evaluation of mine ventilation systems. Some electives may only be offered every two years and some face-to-face tutorials are incorporated into the program. Students can take the statutory Coal Mine Ventilation Officers course (non-award) qualification without enrolling in an award program such as the Graduate Diploma. See mining.unsw.edu.au for more information.

Students take these 8 courses:
- Ventilation and Mine Services*
- Environmental Contaminants*
- Heat in Underground Mines
- Ventilation System Management*
- Mine Ventilation Legislation
- Mine Hazards and Control
- Spontaneous Combustion and Reactive Ground*
- Mine Ventilation Practices

* Offered for Ventilation Officers’ professional development

FOR A TYPICAL PROGRAM STRUCTURE AND INFORMATION ON RESEARCH AND ENTRY REQUIREMENTS, SEE PAGES 8-11.
Nuclear engineering continues to be a growing field. In addition to the increasing number of “new build” proposals in the Western world, existing reactors require maintenance, servicing, operations and eventual decommissioning; waste needs to be managed and the fuel cycle requires servicing and handling. All of this requires engineers with an understanding of what makes the nuclear environment unique.

Master of Engineering Science (Nuclear Engineering)

This program educates and informs engineering graduates in the underpinning theory behind nuclear engineering techniques, technologies and processes, and provides a stream that allows engineering graduates from traditional engineering disciplines to prepare for a career in nuclear engineering. Students learn from national and international experts in the Nuclear Engineering sector including staff from the Centre for Nuclear Engineering at Imperial College, London, and the Australian Nuclear Science and Technology Organisation (ANSTO) in Australia.

Disciplinary Knowledge Courses

With approval, students choose 4-5 subjects from relevant disciplines such as Maths, Physics, Electrical, Mechanical, Civil, and Mining. Up to 2 foundational Disciplinary Knowledge Courses may be taken to provide necessary background (with program-authority approval). Sample list for an electrical engineer:

- Power System Equipment
- Power System Analysis
- Electricity Industry Planning
- Electrical Industry Operation
- Sustainable Energy Technology Assessment

Advanced Disciplinary Courses

Students take the following 3 core courses:
- Introduction to Nuclear Engineering
- Reactor Physics for Engineers
- Fuel Cycle, Waste Management and Life-cycle Management

Plus 1-2 advanced electives:
- Nuclear Safety, Security and Safeguards
- Uranium Mining Fundamentals

Electives

Please refer to page 11.

Research

Please refer to page 11.

UNSW Engineering has extensive links with the industry and government, thus the programs are continually updated to ensure students are equipped with the latest knowledge and skills, using world-class facilities.

Mike Yang
Master of Engineering Science in Nuclear Engineering

For a typical program structure and information on research and entry requirements, see pages 8-11.
Master of Engineering Science (Petroleum Engineering)

The program caters for those working in the industry who want to deepen their knowledge and improve their technical understanding. We also offer courses individually that can be completed online or on campus.

Disciplinary Knowledge Courses
Students choose 4 courses from:
- Overview of the Petroleum Industry
- Introduction to Petrophysics
- Reservoir Engineering A
- Petroleum Geology
- Petroleum Geophysics

Advanced Disciplinary Knowledge Courses
Students choose 5 courses from:
- Well Pressure Testing
- Numerical Reservoir Simulation
- Field Development Geology
- Well Drilling Equipment and Operations
- Natural Gas Engineering
- Petroleum Production Engineering
- Drilling Fluids and Cementing Techniques
- Well Completions and Simulation
- Reservoir Characterisation
- Drilling Systems Design
- Enhanced Oil Recovery
- Blow-Out Control and Prevention
- Coal Seam Gas Engineering

Electives
Students take 2 Technical Management courses plus 2 other electives. Please refer to page 11.

Research
Please refer to page 11.

Petroleum Engineering is the development and integration of new technology for the oil and gas industry. This specialisation prepares an engineer from a non-petroleum background to work in a role that requires petroleum engineering knowledge, and enables students from a petroleum engineering background to extend and broaden their knowledge.
Master of Engineering Science (Photovoltaics and Solar Energy)

This specialisation suits engineers from other disciplines attracted to the booming solar photovoltaic energy industry. It includes courses about photovoltaic devices and systems, applications and integration with electricity systems.

Disciplinary Knowledge Courses
Students choose 3-5 courses from:
- Low Energy Buildings and Photovoltaics
- Solar Cell Technology and Manufacturing
- Solar Cells
- Grid-Connected Photovoltaics
- Sustainable Energy in Developing Countries
- Photovoltaics

Advanced Disciplinary Knowledge Courses
Students choose 3-5 courses from:
- Advanced Photovoltaic Manufacturing
- Advanced Photovoltaics
- Advanced Solar Cell Characterisation

Master of Engineering Science (Renewable Energy Engineering)

This specialisation suits engineers attracted to the renewable energy industry. Students undertake courses in renewable energy and energy efficiency, including technology, systems engineering, integration with existing energy systems, and assessment frameworks.

Disciplinary Knowledge Courses
Students choose 3-5 courses from:
- Low Energy Buildings and Photovoltaics
- Grid-Connected Photovoltaics
- Biomass
- Wind Energy Converters
- Energy Efficiency
- Photovoltaics
- Advanced Thermofluids

Advanced Disciplinary Knowledge Courses
Students choose 3-5 courses from:
- Renewable Energy System Performance Modelling and Analysis
- Hybrid Renewable Energy Systems
- Integrated Design Studio 4 High Performance Buildings
- Solar Thermal Energy Design
- Electricity Industry Planning and Economics
- Electricity Industry Operation and Control
- Advanced Photovoltaics

Electives (both specialisations)
Please refer to page 11.

Research (both specialisations)
Please refer to page 11.
Project Management

Postgraduate study in Project Management provides students with the skills to excel in a professional career in the public or private sectors, and from strategic to details management. Designed as a professional qualification for practitioners, this program enables graduates to take a leading role in the industry.

Master of Engineering Science (Project Management)

The program, developed with extensive industry consultation, covers the fundamentals and applications in project management including planning, risk, contracts, people, equipment, materials, legal, finances and economics.

Disciplinary Knowledge Courses

Students choose at least 4 courses from:
- Problem Solving for Engineers
- Operations and Projects
- Engineering Contracts
- Sustainability in Construction
- Rock and Slope Engineering
- Deformation Monitoring Systems
- Advanced Concrete Structures
- Advanced Water Engineering
- Structural Dynamics
- Transport Systems – Network Analysis
- Groundwater Investigations

Advanced Disciplinary Knowledge Courses

Students choose at least 4 courses from:
- Project Planning and Control
- Management of Risk
- Project Management Framework
- Problem Solving and Decision Making
- Engineering Economics & Financial Management
- Strategic Management for Engineering
- Design of Construction Operations
- International Project Management

Electives

Students choose at least 1 course from the Engineering and Technical Management courses. We recommend:
- Engineering Economics and Financial Management
- Project Management Framework
- Environmental Management
- Sustainability Assessment and Risk Analysis in Water and Energy Systems Planning

Other electives may be chosen to complement a student’s interests, subject to eligibility. Some possibilities:
- Urban Transport Planning Practice
- Transport Modelling
- Transport Systems Part 1

- Traffic Management and Control
- Geotech Models and Site Investigations
- Geomechanics
- Advanced Foundation Engineering
- Slope Instability and Stabilisation
- Rock Engineering
- Geotechnical Engineering of Dams
- Surface Water Hydrology
- Urban Hydrology
- Catchment and WR Modelling
- Channels, Rivers and Estuaries
- Groundwater Hydrology
- Structural Stability
- Prestressed Concrete Design
- Reinforced Concrete Design
- Computation Structural Mechanics
- Steel Structures
- Advanced Materials Technology
- Water and Wastewater Analysis
- Water Treatment
- Wastewater Treatment
- Solid Waste Management
- Environmental Engineering Science 1
- Environmental Management
- Sustainability Assessment
- Principles of Geographic Information Systems and Science
- Fundamentals of Geopositioning

Research

Students who have not completed a four-year degree that included a thesis must complete a Masters thesis research component that gives them the opportunity to broaden their understanding of a topic that they are passionate about. An appropriate academic will supervise the research.

Program Options

<table>
<thead>
<tr>
<th>Program Options</th>
<th>Program Code</th>
<th>Units of Credit</th>
<th>Duration</th>
<th>Begins</th>
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</thead>
<tbody>
<tr>
<td>Master of Engineering Science (Project Management)</td>
<td>CVENFT8338</td>
<td>96</td>
<td>2 years</td>
<td>February, July</td>
</tr>
<tr>
<td>Graduate Diploma of Engineering Science (Project Management)</td>
<td>CVENET5341</td>
<td>48</td>
<td>1 year</td>
<td>February, July</td>
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</table>

For a typical program structure and information on research and entry requirements, see pages 8-11.
Master of Engineering Science (Satellite Systems Engineering)

This program focuses on the systems engineering aspect of satellites before delving into satellite applications. Through core and elective courses, and a year-long practical project, students gain a comprehensive foundation in satellite systems engineering from the space segment to the ground segment and typical applications.

Disciplinary Knowledge Courses
Students take 4-5 courses from:
- Space Systems Engineering
- Space Systems Architectures and Orbits
- Space Mission Development
- Space Law and Radio Regulations

Including 1 course from:
- Advanced Aerospace Structures and Vibrations
- Principles of GPS Positioning
- Mobile and Satellite Communications Systems

Advanced Disciplinary Knowledge Courses
Students take 4-5 courses from:
- The Space Segment
- The Ground Segment and Space
- Space Applications 1
- Satellite Applications 2

Including 1 course from:
- Digital Image Processing
- Remote Sensing Applications
- GPS Receivers
- Satellite Navigation
- Requirements Engineering

Electives
Please refer to page 11.

Research
Please refer to page 11.

The space industry and global leaders in education have designed this program. The focus is on producing "industry savvy" satellite professionals with knowledge of satellite engineering, from management and law, satellite mission development, launch, operations and maintenance, through to satellite applications.

FOR A TYPICAL PROGRAM STRUCTURE AND INFORMATION ON RESEARCH AND ENTRY REQUIREMENTS, SEE PAGES 8-11.

Australia’s niche space engineering program

The Masters in Satellite Systems Engineering is Australia’s only comprehensive postgraduate program in space systems. It is one of only a handful globally dedicated to space systems. A joint project between UNSW and major players in the industry – Optus, Thales Alenia Space (France) and the Institut Supérieur de l’Aéronautique et de l’Espace – the program was developed to help boost the emerging space industry in Australia and to keep talented students here.

A predominant feature of the program is a year-long project where students work on developing a CubeSat platform – micro-satellites that could provide Australia with a niche entry point into the space industry.

FOR A TYPICAL PROGRAM STRUCTURE AND INFORMATION ON RESEARCH AND ENTRY REQUIREMENTS, SEE PAGES 8-11.
This discipline suits practising structural engineers and recent graduates planning a career in structural engineering. Students develop their skills in the analysis and design of steel and concrete structures, and an understanding of modern materials.

Master of Engineering Science (Structural Engineering)

This program allows students to develop advanced and professional skills in computational analysis and design of steel, reinforced, composite and prestressed concrete structures.

Disciplinary Knowledge Courses

Students choose at least 4 courses from:
- Problem Solving for Engineers
- Operations and Projects
- Engineering Contracts
- Sustainability in Construction
- Rock and Slope Engineering
- Advanced Topics in Geotechnical Engineering
- Geotechnics
- Contaminated Site Engineering
- Advanced Concrete Structures
- Structural Dynamics
- Deformation Monitoring Surveys
- Transport Systems – Network Analysis
- Fundamentals of Traffic Engineering
- Groundwater Investigations
- Advanced Water Engineering

Advanced Disciplinary Knowledge Courses

Students choose at least 4 courses from:
- Structural Stability
- Prestressed Concrete Design
- Computational Structural Mechanics
- Reinforced Concrete Design
- Steel and Composite Structures
- Advanced Materials Technology

Electives

Students choose at least 1 course from the Engineering and Technical Management courses. We recommend:
- Engineering Economics and Financial Management
- Project Management Framework
- Environmental Management
- Sustainability Assessment and Risk Analysis in Water and Energy Systems Planning

All other electives may be chosen to complement the student’s interests, as long as the student is eligible to enrol. Some possibilities:

- Project and Construction Management
- Engineering Economics and Financial Management
- Management of Risk
- Design of Construction Operations
- Project Management Framework
- Environmental Management
- Sustainability Assessment and Risk Analysis in Water and Energy Systems Planning

Geotechnical Engineering

- Geotechnical Models and Site Investigation
- Geotechnics
- Advanced Foundation Engineering
- Numerical Methods in Geotechnical Engineering
- Slope Instability
- Rock Engineering
- Pavement Engineering
- Geotechnical Engineering of Dams

Transport Engineering

- Urban Transport Planning Practice
- Transport Modelling
- Transport Systems – Part 2: Queueing Theory
- Traffic Management and Control

Water Engineering

- Surface Water Hydrology
- Urban Hydrology
- Catchment and Water Resources Modelling
- Channels, Rivers and Estuaries
- Groundwater Engineering
- Waves and Beaches
- Water and Wastewater Analysis

Research

Students who have not completed a four-year degree that included a thesis must complete a Masters thesis research component that gives them the opportunity to broaden their understanding of a topic that they are passionate about. An appropriate academic will supervise the research.

FOR A TYPICAL PROGRAM STRUCTURE AND INFORMATION ON RESEARCH AND ENTRY REQUIREMENTS, SEE PAGES 8-11.
Sustainable Systems

Sustainable systems engineering and industrial ecology take environmental engineering to the next level. This new discipline examines how engineers discover holistic and effective solutions to unsustainable practices.

Master of Engineering Science (Sustainable Systems)

This program enables students to specialise and gain deeper knowledge across a broad range of disciplines, including sustainable systems engineering, industrial ecology, sustainability and environmental sciences and sustainability management. Core subjects are coupled with a choice of electives from several UNSW faculties covering non-technical topics essential for sustainability, such as environmental economics, policy and law, ethics and corporate social responsibility. The program structure strongly encourages holistic thinking and multidisciplinarity.

Disciplinary Knowledge Courses

Students must take 1 core course:
- Ethics and Leadership in Engineering

Plus 2-4 courses from:
- Environment and Sustainability
- Environmental Principles and Systems
- Engineering Computations for Civil Engineers
- Transport Engineering & Environmental Sustainability
- Engineering Computations for Environmental Engineers
- Sustainable Transport and Highway Engineering
- Water and Wastewater Engineering
- Environmental Frameworks, Law and Economics
- Solid Wastes and Contaminant Transport
- Environmental Engineering Practice
- Sustainability in Construction
- Advanced Water & Wastewater Treatment
- Planning Sustainable Infrastructure
- Hazardous Waste Treatment
- Sustainable Land Development
- Society, Environmental Policy and Sustainability
- Tools for Environmental Management
- Environmental Management: Law Fundamentals, Physical Science Fundamentals and Social Science Fundamentals
- Sustainable & Renewable Energy Technologies
- Low Energy Buildings and Photovoltaics

Electives

Students take 4 courses in sustainability management and implementation from an extensive list. Themes covered include:
- assessing and interpreting sustainable development
- reporting and promoting sustainability
- social sustainability, policies and solutions
- sustainable management of natural, man-made and human resources
- sustainable technologies
- organisational sustainability

General focus

- Problem Solving & Decision Making
- Principles of GI Systems and Science or Geospatial Information Science
- Engineering Statistics and Experimental Design
- Managing Greenhouse Gas Emissions
- Time Series
- Introduction to Probability and Stochastic Processes
- Impairments for a Sustainable Future
- Sustainable Development and the Urban Environment

Advanced Disciplinary Knowledge Courses

Students take 1 course from:
- Sustainability Assessment and Risk Analysis
- Life Cycle Engineering
- Life Cycle Assessment

Plus 2 advanced courses:
- Industry Ecology and Sustainable Engineering
- Engagement, Ethics and Society

Students choose 1-2 courses from:
- Wastewater Treatment
- Solid Waste Management
- Hazardous Waste Management
- Environmental Management
- Environmental Impact Assessment
- Managing Energy Efficiency
- Energy Storage and Alternative Generation
- Operational Energy Efficiency
- Energy Efficient Lighting and Equipment
- Sustainable Elec. Energy Technology Assessment
- Frameworks For Environmental Management
- Scenarios Development & Analysis for Sustainability
- Sustainable and Renewable Energy
- Resources, Materials and Sustainability

Research

Please refer to page 11.

FOR A TYPICAL PROGRAM STRUCTURE AND INFORMATION ON RESEARCH AND ENTRY REQUIREMENTS, SEE PAGES 8-11.

PROGRAM OPTIONS

<table>
<thead>
<tr>
<th>PROGRAM CODE</th>
<th>UNITS OF CREDIT</th>
<th>DURATION</th>
<th>BEGINS</th>
</tr>
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<tbody>
<tr>
<td>ENGAS8338</td>
<td>96</td>
<td>2 YEARS</td>
<td>FEBRUARY, JULY</td>
</tr>
</tbody>
</table>

Media Advocacy and Public Education
- Environment and Development
- Reporting for Climate Change and Sustainability
- Renewable Energy Policy
- Sustainable Energy for Developing Countries
- Managing the Sustainable Built Environment

* Students may select 1 Engineering and Technical Management elective from the consolidated faculty list with approval.
Telecommunications

Master of Engineering Science (Telecommunications)
This program focuses on recent and advanced aspects of telecommunications, including protocols used in networks such as the internet, the operation and control of such networks, and the design and operation of switches and routers within such networks. It also covers aspects of advanced wireless communications, such as modulation techniques, coding techniques and information theory.

Disciplinary Knowledge Courses
Students choose 4-5 courses from:
- Advanced Disciplinary Knowledge Courses
- Advanced Networking
- Quantum Communications

Plus up to 2 courses from:
- GPS Positioning
- GPS Receivers
- Receivers and Systems
- GeoIT and Info Appns

Electives
Please refer to page 11.

Research
Please refer to page 11.

Master of Engineering (Telecommunications)
The two-year Master of Engineering is for those wanting to develop their technical knowledge and skills and enter the engineering profession with an degree accredited with Engineers Australia.

Professional development
Students choose 6 courses from:
- Network Systems Architecture
- Advanced Wireless Communication
- Network Operations and Control
- Advanced Disciplinary Knowledge Courses
- Digital Modulation and Coding

Advanced Disciplinary Knowledge Courses
Students choose 3-5 courses from:
- Microelectronic Design and Technology
- Power System Analysis
- Advanced Digital Signal Processing
- Continuous-Time Control System Design
- Optical Circuits and Fibres
- Photonic Networks
- Network Performance
- Wireless Communication Technology
- Mobile and Satellite Comm System
- Digital Modulation and Coding

Electives
Please refer to page 11.

Research
Please refer to page 11.

Wireless Communication Technology
- Mobile and Satellite Communications System
- Digital Modulation and Coding
- Strategic Leadership and Ethics
- Entrepreneurial Engineering

Specialisation electives
Students choose 5 courses from:
- GPS Positioning
- GPS Receivers
- Receivers and Systems
- GeoIT and Infomobility Applications
- Network Systems Architecture
- Network Operations and Control
- Advanced Wireless Communications
- Coding and Information Theory
- Microwave Circuits, Theory and Techniques
- Advanced Networking
- Quantum Communications

Engineering and Technical Management
Students choose 2 courses from:
- Project Management
- Ethics and Leadership in Engineering
- Successful Innovation
- Project Management

Design
- Design Proficiency

Research
- ME Project A
- ME Project B

Work experience
Students must also complete 60 days of Telecommunications Engineering-related industrial experience.

For those working in the booming telecommunications industry, or those who can see its potential opportunities, there’s no better way to gain a leading edge than through postgraduate study in Telecommunications Engineering. Our programs provide advanced training in the latest industry theory and application.

For a typical program structure and information on research and entry requirements, see pages 8-11.

Telecommunications facilities

- The School of Electrical Engineering and Telecommunications has a collection of facilities and labs that support faculty research and enhance the learning experience of students. These include:
  - High voltage
  - Power electronics and drives
  - Renewable energy systems
  - Signal processing
  - Mobile communication
  - Communication networks
  - Semiconductors nanofabrication facility (SNF)
  - CAD facilities
  - Silica optical fibre fabrication facility
  - Polymer optical fibre fabrication facility
  - Optical waveguide fabrication facility
  - Photonics factory
  - FBG fabrication facility
  - Industrial and process control
  - Systems neuroscience and biomedical engineering
  - Vision and control laboratory

For further information, visit the School’s website: eet.unsw.edu.au.
Master of Engineering Science (Transport Engineering)

This program provides students with advanced study options in transport engineering – from transport planning, ITS and land use, to risk management and safety, to network design, demand estimation and sustainability, emissions and health. Designed to develop skills in modelling and analysing systems (including passenger and freight) for various modes of transport, the program provides students with knowledge about the science and practice of transport engineering.

Disciplinary Knowledge Courses
Students choose at least 4 courses from:
- Engineering Contracts
- Deformation Monitoring Surveys
- Sustainability in Construction
- Rock and Slope Engineering
- Transport Systems – Part 1: Network Analysis

Advanced Disciplinary Knowledge Courses
Students take these 4 courses:
- Urban Transport Planning
- Transport Modelling
- Transport Systems – Part 2: Queuing Theory
- Traffic Management and Control

Electives
At least 1 course must be taken from the Engineering and Technical Management courses. We recommend:
- Engineering Economics and Financial Management
- Project Management Framework
- Environmental Management

Other electives may be chosen to complement a student’s interests, subject to eligibility. Some possibilities:
- Project Planning and Control
- Management of Risk
- Design of Construction Operations
- Water and Wastewater Analysis
- Environmental Engineering Science 1
- Environmental Management
- Sustainability Assessment
- Special Topics (two options)
- Principles of Geographic Information Systems and Science
- Fundamentals of Geopositioning
- Engineering Economics and Financial Management
- Project Management Framework
- Environmental Engineering Science 2
- Transport, Land Use and the Environment
- Principles of Programming
- Data Structures and Algorithms
- Econometric Analysis
- Choice Modelling
- GPS Positioning
- Precise GPS Positioning
- Optimisation
- Multivariate Analysis
- Transport Applications of GIS
- Aviation Safety and Accident Prevention
- Air Traffic Management
- Safety Risk Management
- Aviation and Tourism

Research
Students who have not completed a four-year degree that included a thesis must complete a Masters thesis research component that gives them the opportunity to broaden their understanding of a topic that they are passionate about. An appropriate academic will supervise the research.

With increases in population and urban sprawl, the need for safe, quick, reliable and efficient transport systems has never been more important. This discipline looks at the planning, functional design, operation and management of transport infrastructure, with a focus on its economic and environmental impact.
Water Engineering: Catchments to Coast

This discipline looks at the full cycle of water in natural and engineered systems. It's best suited to practising water engineers and recent graduates planning a career in large-scale water engineering.

Master of Engineering Science (Water Engineering: Catchments to Coast)

Taught by industry leaders, this program provides advanced study options in large-scale water engineering such as surface water hydrology, urban hydrology and stormwater management, catchment and water resources modelling, groundwater investigations, hydrodynamics of rivers and estuaries, and coastal engineering related to waves, beaches and coastal infrastructure.

Disciplinary Knowledge Courses
Students choose at least 4 courses from:
- Design Practice A
- Operations and Projects
- Engineering Contracts
- Sustainability in Construction
- Rock and Slope Engineering
- Advanced Topics in Geotechnical Engineering
- Ground Improvement and Monitoring Techniques
- Advanced Concrete Structures
- Structural Dynamics
- Deformation Monitoring Surveys
- Groundwater Investigations
- Advanced Water Engineering
- Fundamentals of Water Engineering *

Advanced Disciplinary Knowledge Courses
Students choose at least 4 courses from:
- Urban Hydrology
- Catchment and Water Resources Modelling
- Channels, Rivers and Estuaries
- Groundwater Engineering
- Waves and Beaches
- Urban Transport Planning Practice
- Transport Modelling
- Transport Systems - Part 2: Queuing Theory
- Traffic Management and Control
- Water and Wastewater Analysis
- Geotechnical Models and Site Investigation
- Geomechanics
- Advanced Foundation Engineering
- Numerical Methods in Geotechnical Engineering
- Slope Instability
- Rock Engineering
- Pavement Engineering
- Geotechnical Engineering of Dams
- Structural Stability
- Prestressed Concrete Design
- Reinforced Concrete Design
- Computational Structural Mechanics
- Steel and Composite Structures
- Advanced Materials Technology

* Must be chosen by students without an adequate background in water engineering

Advanced Electives
At least 1 course must be taken from the Engineering and Technical Management courses. We recommend:
- Engineering Economics and Financial Management
- Project Management Framework
- Environmental Management
- Sustainability Assessment and Risk Analysis in Water and Energy Systems Planning
- Geotechnical Engineering
- Geotechnical Models and Site Investigation
- Geomechanics
- Advanced Foundation Engineering
- Numerical Methods in Geotechnical Engineering
- Slope Instability
- Rock Engineering
- Pavement Engineering
- Geotechnical Engineering of Dams
- Structural Stability
- Prestressed Concrete Design
- Reinforced Concrete Design
- Computational Structural Mechanics
- Steel and Composite Structures
- Advanced Materials Technology
- Design of Construction Operations
- Project Management Framework
- Environmental Management
- Sustainability Assessment and Risk Analysis in Water and Energy Systems Planning

Water Research Laboratory

The School of Civil and Environmental Engineering's Water Research Laboratory (WRL) is a leading international consulting and research laboratory. With a commercial projects team working alongside academics, and unique large-scale physical facilities, WRL provides expert advice and strategic solutions to industry and government relating to hydraulics, groundwater, and coastal and estuarine engineering.

More information: wrl.unsw.edu.au

FOR A TYPICAL PROGRAM STRUCTURE AND INFORMATION ON RESEARCH AND ENTRY REQUIREMENTS, SEE PAGES 8-11.
Effective and sustainable water and wastewater treatment and environmentally responsible waste management are crucial for urban populations. For engineers and other professionals interested in expanding their knowledge and skills, our programs cover current and future technologies for water usage, wastewater treatment and waste disposal.

**Master of Engineering Science (Water, Wastewater and Waste Engineering)**

This specialisation provides technical professionals the opportunity to learn the fundamentals of current practice in this field and to engage with existing and future technologies. It is designed to develop skills in analysis and design of water, wastewater and waste treatment facilities and is ideally suited for both practising engineers and recent graduates planning a career in water, wastewater and waste engineering.

**Disciplinary Knowledge Courses**
Students choose at least 4 courses from:
- Design Practice A
- Groundwater Investigations
- Sustainable Infrastructure
- Advanced Water Quality Principles
- Deformation Monitoring Surveys
- Fundamentals of Water Engineering

**Advanced Disciplinary Knowledge Courses**
Students choose at least 4 courses from:
- Solid Waste Management
- Hazardous Waste Management
- Water Treatment
- Wastewater Treatment
- Water and Wastewater Analysis

**Electives**
Students choose at least 1 course from the Engineering and Technical Management courses. We recommend:
- Environmental Engineering Science
- Environmental Management
- Sustainability Assessment and Risk Analysis in Water and Energy Systems Planning
- Surface Water Hydrology
- Urban Hydrology
- Catchment and Water Resources Modeling
- Channels, Rivers and Estuaries
- Groundwater Engineering
- Waves and Beaches

**Research**
Students who have not completed a four-year degree that included a thesis must complete a Masters thesis research component that gives them the opportunity to broaden their understanding of a topic that they are passionate about. An appropriate academic will supervise the research.

For a typical program structure and information on research and entry requirements, see pages 8-11.
Postgraduate research

UNSW connects students with the country’s best engineering researchers in their chosen field. Here’s how to apply in five steps.

1. Find a research area
   Before applying for a postgraduate research program, match your area of interest with those offered by our schools. A list of research areas can be found at unsw.to/researchareas. Each research program has specific entry and eligibility requirements.

2. Find a supervisor
   Before submitting an application, you must independently contact a UNSW researcher and secure their agreement to supervise your work. Proof of correspondence needs to be included in your application. If you’re having difficulty finding a researcher, contact the School’s postgraduate research coordinator.

3. Develop a research proposal
   Your proposal needs to be sufficiently detailed to enable the University to determine if it’s possible to provide adequate supervision and resources to support your research.

4. Prepare supporting documentation
   Required documents may include your supervisor’s agreement, research proposal, resume, all transcripts (degree results) and English language test results. Documents must be in English or include a certified English translation.

5. Submit your application online
   Once you have secured a supervisor, developed a proposal and prepared supporting documents, you can lodge your application. International students need to apply for admission and scholarships at least six months before their planned starting semester.

Offers
Successful applicants will be sent a full or conditional offer, which should be read carefully before acceptance. They will then need to enrol for the correct semester and have the enrolment form approved by the School.

To accept an offer:
my.unsw.edu.au

Fees and costs
For the duration of the degree, international candidates are required to pay tuition fees. While domestic candidates are not required to pay tuition fees, some programs may include additional costs for laboratory kits and field trips.

More information:
unsw.to/research-fees

Scholarships
Many scholarships are available for postgraduate research programs, from UNSW, the Australian government, industry partners and organisations from other countries.

More information:
unsw.to/research-scholarships

English requirements
All applicants must meet the UNSW English Language admission requirement.

More information:
unsw.to/research-english-policy

FAQs
For further information about the Graduate Research School, go to unsw.to/research-FAQs

Research applications
Graduate Research School
T: +61 2 9385 5500
domestic.grs@unsw.edu.au
international.grs@unsw.edu.au

Apply here: apply.unsw.edu.au
## Program information

### Engineering Coursework Programs

<table>
<thead>
<tr>
<th>Program Name (Program Code)</th>
<th>Program Structure (UOC)</th>
<th>Minimum Academic Entry Requirement**</th>
<th>Minimum IELTS Requirements</th>
<th>Program Duration</th>
<th>Estimated Annual Fees</th>
<th>Domestic</th>
<th>International</th>
<th>S1</th>
<th>S2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Engineering Science (B338)</td>
<td>16 courses (96 UOC)</td>
<td>4-year BE with at least 65% average OR Grad Dip in Engineering with a 65% average</td>
<td>6.5 6.0 2 years</td>
<td>$28,560</td>
<td>$36,960</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (B623)</td>
<td>16 courses (96 UOC)</td>
<td>3- or 4-year engineering degrees that are equivalent to the first 3 years of an accredited engineering degree (minimum 65% average)</td>
<td>6.5 6.0 2 years</td>
<td>$28,560</td>
<td>$36,960</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Food Science (B037)</td>
<td>16 courses (96 UOC)</td>
<td>Food Science degree with at least 65% average OR Grad Dip in Food Science</td>
<td>6.5 6.0 2 years</td>
<td>$28,560</td>
<td>$36,960</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Information Technology (B543)</td>
<td>16 courses (96 UOC)</td>
<td>4-year degree in science or engineering with at least 65% average OR 3-year degree in computer science or engineering with 65% average OR Grad Dip in IT</td>
<td>6.5 6.0 2 years</td>
<td>$28,560</td>
<td>$36,960</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Biomedical Engineering (B666)</td>
<td>12 courses (72 UOC)</td>
<td>4-year BE with at least 65% average OR 4-year degree in biomedical, health-related discipline OR 3-year degree in Biomedical Engineering</td>
<td>6.5 6.0 1.5 years</td>
<td>$28,560</td>
<td>$36,960</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Mining Engineering (B333)</td>
<td>12 courses (72 UOC)</td>
<td>4-year degree in Mining Engineering (or related discipline) with at least 65% average OR Grad Dip in Mining Engineering</td>
<td>6.5 6.0 1.5 years</td>
<td>$34,080</td>
<td>$36,960</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Graduate Diploma Programs

<table>
<thead>
<tr>
<th>Program Name (Program Code)</th>
<th>Structure (UOC)</th>
<th>Minimum Academic Entry Requirement*</th>
<th>Minimum IELTS Requirements</th>
<th>Program Duration</th>
<th>Estimated Annual Fees</th>
<th>Domestic</th>
<th>International</th>
<th>S1</th>
<th>S2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Diploma of Engineering Science (B346)</td>
<td>8 courses (48 UOC)</td>
<td>4-year BE with at least 65% average OR Grad Cert in Engineering with a 65% average</td>
<td>6.5 6.0 1.5 years</td>
<td>$28,560</td>
<td>$36,960</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Diploma of Food Science (B037)</td>
<td>8 courses (48 UOC)</td>
<td>Food Science or related discipline with an average of at least 65%</td>
<td>6.5 6.0 1 year</td>
<td>$28,560</td>
<td>$36,960</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Diploma of Information Technology (B543)</td>
<td>12 courses (72 UOC)</td>
<td>3-year degree with mathematics up to at least year 2 level with a 65% average OR Grad Cert in Computing</td>
<td>6.5 6.0 1.5 years</td>
<td>$28,560</td>
<td>$36,960</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Diploma of Mining Engineering (B333)</td>
<td>8 courses (48 UOC)</td>
<td>3-year degree in Mining Engineering (or related discipline) OR Grad Cert in Mining Engineering with 65% average</td>
<td>6.5 6.0 1 year</td>
<td>$34,080</td>
<td>$36,960</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Graduate Certificate Programs

<table>
<thead>
<tr>
<th>Program Name (Program Code)</th>
<th>Structure (UOC)</th>
<th>Minimum Academic Entry Requirement</th>
<th>Minimum IELTS Requirements</th>
<th>Program Duration</th>
<th>Estimated Annual Fees</th>
<th>Domestic</th>
<th>International</th>
<th>S1</th>
<th>S2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Certificate of Computing (B743)</td>
<td>4 courses (24 UOC)</td>
<td>3-year degree in science or engineering OR at least 5 years’ work experience in area of engineering or science</td>
<td>6.5 6.0 6 months</td>
<td>$14,280</td>
<td>$18,480</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Certificate of Mining Engineering (B333)</td>
<td>4 courses (24 UOC)</td>
<td>Minimum 4 years’ relevant professional experience in mining industry OR degree in technical discipline OR 1 year of relevant industry experience</td>
<td>6.5 6.0 6 months</td>
<td>$17,040</td>
<td>$18,480</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** UOC = Unit of Credit. This is the value attached to each academic course in terms of its contribution to the completion of an award program. The majority of courses are 6 UOC, which is the equivalent of 150 hours full-time study per year. A full-time load is 24 UOC in the main teaching semesters. Coursework programs require the successful completion of a specified number of UOC, and fees are charged on the basis of UOC enrollment.

** Minimum 65% average as determined by the UNSW Postgraduate Entry Score Calculator in a relevant discipline. (Minimum 70% for students from a non-211 University in China.) Postgraduate Entry Score Calculator: unsw.to/pgentrycalculator

### How to apply

**Step 1: Choose your program**
Make sure it suits your interests, skills and career goals.

**Step 2: Check the program’s entry requirements**
The necessary information is in this guide. For the latest information, check the Online Handbook at handbook.unsw.edu.au.

**Step 3: Submit your application online**
Go to apply.unsw.edu.au. You will need to upload the following documents:
- Copies of academic transcripts and testamurs (if it’s not in English, a NATAI-approved translation must be provided).
- Copies of IELTS or TOEFL (or equivalent) test scores (if applicable).
- Details of work experience (if applicable).

Some programs may require additional documentation.

**Step 4: Track your application**
Once you submit your application online, you will receive an application receipt. This will contain your student ID number. You can use this to track your application at my.unsw.edu.au.

**Step 5: We will send you a letter of offer**
You will be advised of the outcome of your application via email. If you’re receiving assistance with your application, your nominated representative will also receive a copy.

**Step 6: Accept your offer**
Go to my.unsw.edu.au and follow the instructions in your offer letter. Once we receive your acceptance and deposit (if applicable), you will be sent your electronic confirmation of enrolment (eCOE).

**Step 7: Enrol online**
Once you have accepted your offer, you must enrol online at my.unsw.edu.au to secure your place in your program of choice.

Find out more: UNSW Australia Admissions Office +61-2-9385 3656, enquiry.unsw.edu.au

### Postgraduate coursework fees

Because each student’s study choices are different, it’s impossible to provide a definitive cost of studying at UNSW. But here are a few things to consider when calculating expected fees.

**Fees vary each year:** Fees for programs change yearly. The tuition fees listed are for 2015. Actual fees for 2016 will be released in late 2015. Please refer to my.unsw.edu.au/fees.

**FEE HELP** is a Federal Government loan to assist full fee-paying students to pay part or all of their tuition fees. FEE HELP is available to students who are Australian citizens or permanent Australian residents with a humanitarian visa. For more information, visit studyassist.gov.au. For eligibility advice, please contact the FEE HELP enquiry line on 1800 020 108.
Entry requirements

To gain entry to UNSW, students need to successfully meet the academic entry requirements for their chosen courses (see page 64). Most international students will require a student visa to study in Australia, and will also need to pass certain English language requirements.

Student visa information
Allow plenty of time to apply for your student visa. See these websites for more information:
- Department of Immigration and Border Protection (immigration.gov.au)
- UNSW International (international.unsw.edu.au)
- Austrade ( studyinaustralia.gov.au)

English language requirements
If English isn’t your first language, you must provide evidence that your ability meets our requirements. You must submit results from an acceptable English test taken in the two years prior to studying at UNSW. These are the basic requirements:

- International English Language Testing System (IELTS) – Academic: Overall minimum score of 6.5 with a minimum score of 6.0 in the subtests of reading, writing, speaking and listening.
- Test of English as a Foreign Language (TOEFL) Internet-based test: Overall minimum score of 90 with a minimum in writing of 24.
- TOEFL paper-based test: Overall minimum score of 577 with a minimum score of 5.0 in the Test of Written English.
- Pearson Test of English – Academic: Overall minimum score of 68.

Prior education in English
If you’ve completed at least one year of full-time academic study at an approved post-secondary/tertiary institution where English is the sole language, you may not be required to sit a language test.
If this is the case, you will need to produce a statement or certificate from the registrar/principal of the institution and you must have completed this study no more than two years prior to studying at UNSW. Contact the UNSW Admissions Office to check whether your previous study can be recognised.

UNSW Institute of Languages
If you don’t meet UNSW’s English language requirements but meet the academic entry requirements, you can be issued with a conditional offer of admission. To fulfil the conditions of this offer, you must successfully complete further studies in English.
The UNSW Institute of Languages offers a University English Entry Course. Once you have successfully completed this course, your Engineering degree and English language program can be packaged under one visa. As demand for language programs is high, we suggest that you apply at least three months before your intended starting date.

Find out more: +61 2 9385 5396 (fax +61 2 9662 2651) admissions@unswglobal.unsw.edu.au languages.unsw.edu.au
UNSW Global and UNSW Institute of Languages CRICOS Provider Code: 01020K

Be prepared
Living in Sydney can be a big change for many students. If you don’t have a confirmed place on campus, we recommend you arrive two to three weeks before classes begin to look for accommodation and attend orientation sessions.
If you need temporary accommodation when you arrive, try to organise it beforehand. Options include private hotels, motels, hostels, lodges or furnished apartments ranging from $45 to $300 per day*.

International Student Housing Assistance (ISHA)
If you need help looking for temporary or private accommodation, Student Development International (SDI) may be able to assist.
www.student.unsw.edu.au/housing-assistance

Student accommodation
With six residential colleges, seven self-catered apartment buildings and affiliated communities, we have a range of on- and off-campus accommodation. Living in university accommodation close to campus offers greater security, social opportunities, easy access to university facilities and the convenience of moving into fully furnished accommodation. UNSW will do its very best to accommodate international students on campus, but strict deadlines apply.

UNSW colleges: Residential colleges provide a choice of full board, partly catered and self-catered accommodation, as well as gender options. Dietary requirements like halal, kosher and vegetarian can be catered for. Costs range from $310 to $495 per week.

UNSW apartments: Independent run university apartments are furnished and include a kitchen and bathroom. Apartments are available to suit singles, couples or families with children, and vary in cost depending on the number of rooms, condition and location. Costs range from $210 to $550 per week.

Private accommodation options
Private housing gives students the chance to enjoy an independent lifestyle and control over expenses.

Home away from home

UNSW students have many accommodation options. These range from on- and off-campus university accommodation to private housing – rental properties and homestays.

Rental property: Rental properties are available in nearby suburbs and the cost depends on the number of bedrooms, condition and location. Expect to sign a six- or 12-month lease and pay rent in advance, plus a refundable deposit (“bond”). Most are unfurnished and electricity, gas and telephone charges are not included. Costs range from $150 to $250 per week in a shared house.

www.international.unsw.edu.au/living-sydney/accommodation/private-accommodation

Homestays: Options include full board and single room–only accommodation. Full board usually includes a furnished room, use of facilities in a private home (with a family or single person) plus breakfast and dinner. Some may include bed linen, laundry and room cleaning. Single room-only homestays include furnishings and gas and electricity costs. You will be responsible for your own food, cooking, cleaning and laundry. Costs range from $180 to $320 per week.

www.student.unsw.edu.au
Associate Dean (International): A/Prof Julian Cox, julian.cox@unsw.edu.au
Project Manager: Rachelle Carritt, Postgraduate Marketing Officer, UNSW Engineering
Content: Top to Tale Media
Design: Catherine Martin

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The UNSW Engineering Postgraduate Guide 2016 is printed on environmentally responsible paper stock using environmentally friendly inks and varnishes.

COMPLIANCE: The Education Services for Overseas Students (ESOS) Act 2000 sets out the legal framework governing delivery of education to overseas students studying in Australia on a student visa. UNSW, in providing education services to overseas students, complies with the ESOS Framework and the National Code of Practice for Registration Authorities and Providers of Education and Training to Overseas Students 2007 (The National Code). A description of the ESOS framework can be found at the following link: https://internationaleducation.gov.au/Regulatory-Information/Pages/Regulatoryinformation.aspx

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