Professional Engineering at UWA
Information for undergraduate and postgraduate students
The Faculty of Engineering and Mathematical Sciences

Who we are

Engineering in practice creates profound change and improvement in society. At UWA, our goal is to produce independent graduate engineers who are empowered to change the world and seek solutions to humanity’s greatest challenges. We aim to push the limits of engineering research and learning through cross-disciplinary collaboration.

Real-world research

We take on projects of global significance, from inventing a needle microscope to pinpoint cancer cells to creating safer designs for oil and gas pipelines. Our research directly informs strategy, policy, training and operations in the real world. During your studies you will benefit from close interaction with our leading researchers and their links to industry.

Highly skilled graduates

The engineering pathway at UWA is internationally recognised and reviewed by Engineers Australia for accreditation. The Master of Professional Engineering is designed to produce graduates who are versatile, technically adept and qualified at an advanced level to meet industry demand. Our graduates are sought after by employers and go on to become outstanding leaders in their chosen professions.

Forward-looking

It is an exciting time to join us as an engineering student. Not only have we accumulated more than 100 years of achievement and a ranking in the top one per cent of the world’s universities, but we’re also well underway with a multi million dollar investment program for the revolutionary new EZONE UWA – a knowledge space that will reinforce the Faculty’s reputation as an international engineering centre of excellence.

I invite you to explore our engineering program as well as our numerous extra-curricular opportunities, study abroad options and scholarships that will enable you to realise your career ambitions and make a lasting difference. Welcome to our Faculty.

Professor John Dell
Pro Vice-Chancellor and Executive Dean, Faculty of Engineering and Mathematical Sciences

Choose UWA Engineering

01 Global reputation

UWA is ranked in the top one per cent of the world’s universities by the Academic Ranking of World Universities, and has been at the forefront of education and research for more than a century.

02 Outstanding location near Perth’s CBD

Study in the heart of a city that combines the best of everything for engineers – close proximity to a well-established resources economy as well as a top lifestyle with beautiful beaches, surf culture and a Mediterranean climate.

Perth has rapidly expanded and is now ranked as number nine on the world’s best cities list (The Economist, 2016).

03 Employability

Our engineering and technology graduates are among the highest-paid graduates in Australia, earning an average starting salary of $69,000 according to The Good Universities Guide 2017. Our students have access to key organisations through the Faculty’s excellent industry connections.

04 Research strength

UWA is one of Australia’s elite Group of Eight research-intensive universities, and our Faculty’s research teams have global partnerships with leading industry players.

05 Industry connections

We have many industry partnerships, including BHP Billiton, Chevron, Clough, Lycepodium, Woodside Monadelphous and Rio Tinto, Woodside. These industry links provide a range of employment opportunities through vacation work, internships, volunteer work and graduate careers.

06 Combine your passions with your interests

Our courses allow you to explore different fields of engineering and take broadening units before selecting your specialisation. Our undergraduate degrees offer the flexibility to study second majors from other disciplines across the University.

07 Engineering clubs and societies

From building racing cars and helping overseas communities to organising site visits, our student run clubs cover just about every aspect of engineering and give you the chance to put your studies into practice in a social and fun environment.

08 Teamwork

Our courses give you the opportunity to work in multidisciplinary teams of students to solve major real-world engineering problems that impact societies in Australia and internationally.

Given the opportunities created by the rate of technological change and governments’ focus on innovation and science, creating tangible outcomes from greater exchange between universities and industry is vital for our economy and future workforce. Now is an exciting time to collaborate with the University. As part of a shared commitment to future generations, the Faculty is working closely with industry to build a new student hub known as EZONE UWA. EZONE is an important flagship project to enhance the student experience and push the limits in collaborative learning and research. The project will include state-of-the-art teaching facilities, laboratories and general study and industry collaboration areas. Construction work on this exciting project will commence in 2017, with completion scheduled for 2019.

Brian Haggerty
Associate Dean (Community and Engagement), Faculty of Engineering and Mathematical Sciences

On secondment from Woodside, Brian is responsible for encouraging greater engagement and collaboration with industry partners.

Engineering in practice creates profound change and improvement in society. At UWA, our goal is to produce independent graduate engineers who are empowered to change the world and seek solutions to humanity’s greatest challenges. We aim to push the limits of engineering research and learning through cross-disciplinary collaboration.
Don’t just study engineering; master it.

The engineering pathway at UWA has been developed in consultation with industry to equip students with the skills to succeed in their future careers.

Postgraduate qualifications are an expectation in the global workforce. At UWA, to become a professionally qualified engineer, students complete five years of study, consisting of a three-year bachelor’s degree with an Engineering Science major, followed by a two-year Master of Professional Engineering. This ensures you have the capability and knowledge to take on some of our world’s greatest challenges.

Engineering Pathway

The pathway to professional engineering at UWA is now easier and more accessible than ever before.

Student Experience

The environment to encourage hands-on engineering, interactive learning and industry engagement.

UWA’s outstanding engineering facilities include:

- Clough Student Centre open 24/7 for engineering students, featuring a large self-study communal area, boardroom, four meeting rooms for project work, and a kitchen.
- The Monadelphous Integrated Learning Centre with design studios, prototype and testing workshops, breakout offices, a boardroom, wi-fi and data projection facilities, and a tearoom.
- Student Club Workshop area for Faculty clubs to construct and develop designs for competitions.
- Flexilab offers a multi-functional, open-plan space with workbenches that can accommodate a variety of technical equipment, and which allows for group and active learning.
- $9 million CO2 Research Facility housing a state-of-the-art chemical engineering teaching lab with Chevron-funded suite of processing equipment covering refrigeration, distillation, multiple-variable control and absorption.
- 11 computer labs open 24/7 for engineering students, with high-performance machines for numerical modelling.
- Hydraulics Lab equipped with a range of advanced experimental facilities including an overhead tow tank with wave generators, tidal flow model, and dynamic pressure simulators for fluid dynamic experiments.
- Structures Lab for working with concrete structures, including compression/tension machines, wind tunnel and other unique testing apparatus.
- The busiest Geotechnical Centrifuge Facility in the world, supporting accurate model testing of offshore foundations, slopes, tunnels, mine wastes and ground-improvement techniques.
- The state of the art Indian Ocean Marine Research Centre, housing the organisations leading the scientific exploration of the Indian Ocean.

Full course details can be found at studyat.uwa.edu.au/courses/engineering-science

Our programs prepare students for the careers of the future, not just the jobs of tomorrow

- Graduate with an undergraduate and postgraduate qualification in five years
- Be industry-ready, with an accredited master’s degree

The pathway to professional engineering at UWA is now easier and more accessible than ever before.

Engineering Pathways

Minimum ATAR 92

<table>
<thead>
<tr>
<th>Undergraduate1</th>
<th>Majors2</th>
<th>Postgraduate</th>
<th>Duration</th>
<th>Qualification</th>
<th>TISC codes</th>
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</thead>
<tbody>
<tr>
<td>Bachelor of Engineering Science</td>
<td>Major in Arts, Commerce, or another Science discipline</td>
<td>Master of Professional Engineering</td>
<td>5 years</td>
<td>Bachelor of Professional Engineering (MPE)</td>
<td>UWME.A (Arts) UWMEC (Commerce) UWMES (Science) UWMED (Biomedical)</td>
</tr>
</tbody>
</table>

1. This pathway is also available through the Bachelor of Philosophy (Honours). Students taking this pathway will require an additional year to complete. Bachelor of Philosophy (Honours) students undertaking the Master of Professional Engineering pathway will take 5.5 years to complete. 2. All required majors are listed first. The second majors must be chosen from within the undergraduate degree of your choosing.

Students applying for 2018 undergraduate entry to UWA Engineering should take note that the ATAR for an Engineering direct pathway is 92. Non-direct pathways are also available for students with ATARs of 80 and above. These students will be required to achieve an average of 60 per cent in their degree studies to be eligible to enter the Master of Professional Engineering. Further information at study.uwa.edu.au/courses/engineering.
Become a volunteer

You never know where a good deed could take you. Volunteering is a great way to give back to the community and could be a way to develop your employability skills. UWA has an extensive community of volunteers who are involved in activities on and around campus. Our Faculty also has a busy calendar of events throughout the year – there are so many ways to help out:

- Facilitate industry-sponsored programs and opportunities, such as the popular Girls in Engineering program (sponsored by Rio Tinto)

Find out more about our student clubs at ems.uwa.edu.au/students/clubs-and-societies

We’ll also help you start planning for your future career, with guest lectures, industry forums, careers fairs and one-on-one mentoring programs run by UWA’s dedicated Careers Centre.

Everything counts

Every hour you spend volunteering will be formally acknowledged on your academic transcript at the end of each semester and may contribute towards professional development hours within the professional practicum. For further information, visit ems.uwa.edu.au/community

STUDENT–RUN CLUBS

15+

Engineering clubs
- University Engineers’ Club
- UWA Young Engineers’ Club
- Engineers Without Borders
- Robogals
- The Australian Institute of Mining and Metallurgy (AusIMM)
- The UWA Institute of Electrical and Electronic Engineers (IEEE)
- Chemical and Process Engineering Club (CPEC)
- Computer Science Students’ Club
- MakeUWA
- The Institution of Mechanical Engineers UWA Chapter (I Mech E)
- Environmental Engineers’ Club
- Society of Petroleum Engineers (SPE)
- UWA Motorsport Team
- The Civil Society
- The Endurance Vehicle Team
- Mathematics Union
- Codes for Causes
- Women in Oil and Gas
- University Physics Society
- UWA Biomedical Engineering Society

SPE UWA – winners of the Outstanding Student Chapter of 2013, chosen from more than 350 chapters worldwide.

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- Mentor current and prospective students – provide advice to undergraduates commencing study
- Participate in numerous events across the Faculty’s schools and centres
- Head to Broome for an amazing opportunity to share your experiences and knowledge with students. The Kimberley Cup is an annual school sporting carnival coordinated by Broome Senior High School.

Find out more about our student clubs at ems.uwa.edu.au/students/clubs-and-societies

Career Advantage

BY 2020, AUSTRALIA IS PROJECTED TO BECOME THE LARGEST EXPORTER OF LNG, IRON ORE AND COAL

The average UWA graduate salary for engineering and technology is AUD $69,000*

1st

WA PROJECTS: AUD $179 BILLION OF RESOURCE PROJECTS UNDER CONSTRUCTION OR COMMITTED AS OF MARCH 2015

MORE THAN 90 INTERNATIONAL MINING AND EXPLORATION COMPANIES HAVE OFFICES IN PERTH

THE AVERAGE UWA GRADUATE SALARY FOR ENGINEERING AND TECHNOLOGY IS AUD $69,000*

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BY 2020, AUSTRALIA IS PROJECTED TO BECOME THE LARGEST EXPORTER OF LNG, IRON ORE AND COAL

The full experience

Our engineering students and graduates are constantly involved in innovative, exciting and meaningful projects. Employers look for well-rounded individuals who embrace opportunities beyond their studies.

As well as University-wide student clubs, you will have the choice of joining many dynamic engineering, computing and mathematics and physics clubs.

We’ll also help you start planning for your future career, with guest lectures, industry forums, careers fairs and one-on-one mentoring programs run by UWA’s dedicated Careers Centre.

15+ STUDENT–RUN CLUBS

7% of Australia’s Top 100 Most Influential Engineers were UWA graduates*
Western Australia is globally recognised as a resources and energy hub, with strong national and international links to emerging and established economies such as China, Latin America, India, USA and more. Our graduates are perfectly positioned for exciting careers in Australia and internationally.

Your future

Join UWA’s engineering pathway and you will study alongside a passionate, ambitious cohort of fellow students who together will become future innovators in their field.

Networking and engaging with industry are important components of the UWA experience. With our close industry contacts to major firms such as BHP Billiton, Chevron, Clough, Lycopodium, Monadelphous and Rio Tinto you will have a career head-start after you graduate.

These relationships have also enabled the creation of purpose-specific facilities at UWA, such as the Monadelphous Integrated Learning Centre and the Clough Engineering Student Centre. Strong links with industry also enable the Faculty to offer a wide range of prizes and scholarships – more than 60 prizes are presented annually at our prestigious Prizes Breakfast.

Become a leader

UWA engineers are empowered to make it to the top of their chosen fields – many of our graduates go on to become CEOs and senior managers of major companies.

Engineers Australia named the following UWA graduates in their top 100 Australia’s most influential engineers list in 2015: Water Corporation CEO, Susan Murphy; McConnell Dowell Corporation CEO, David Robinson; Broadfield Multiplex Australasia CEO, John Flicker; Monadelphous Managing Director, Rob Veltieri; Alcoa Australia Managing Director, Alan Cramberg; President of University College Dublin, Professor Andrew Geeks; WA Minister for State Development, Finance, Innovation, Bill贺ion.

Employment

Both here in Australia and internationally, employment opportunities are available in the mining and resources industry, pharmaceutical, manufacturing, power and water utilities, management and consultancy firms, and electronics, finance and telecommunications industries.

With excellent analytical and problem-solving skills, engineering graduates also have a strong base to branch out into different industries, including senior management roles. Find out more about where engineering has taken some of our graduates at ems.uwa.edu.au/courses/graduates

Life after UWA

The Faculty’s network of more than 17,000 engineering, computing, mathematics and physics alumni spans the globe. We encourage our graduates to stay connected and make use of this influential network of alumni working here in Australia and internationally through regular reunions and industry events.

Prizes Breakfast

More than 60 industry-supported prizes and scholarships are presented at the Faculty’s annual Prizes Breakfast.

Graduate Employment Option

My time at UWA was really valuable and postgraduate study was the icing on the cake. I learnt heaps! Plus having a postgraduate qualification in engineering definitely helped me get a job after finished studying.

Balsam Sabiry
Graduate Subsea Engineer at INPEX

Clough Scholars

Our Faculty offers a range of scholarships to support students during their studies.

Choose your pathway

"The generalised bachelor’s degree allowed me to experience a small amount of all engineering disciplines, which enabled me to make a more informed decision when choosing my master’s specialisation. My advice to aspiring engineering students is to take advantage of the UWA course structure and broadening units in order to explore different engineering disciplines and establish a firm understanding of what you are passionate about. As well as this, I recommend getting to know your peers.”

Lis-Marie Hunt
Postgraduate student
Master of Professional Engineering (Civil)

Engineering Science

The Engineering Science major is your pathway to the Master of Professional Engineering and a global career as a qualified engineer.

Not everyone is certain of what type of engineering they want to study or where their career will take them, so we’ve designed an engineering pathway that gives you the flexibility to explore your options before specialising.

The Engineering Science major provides you with fundamental engineering knowledge and develops your scientific, communication and problem-solving skills through a combination of practical, hands-on courses, industry projects and theoretical foundations.

In the first year of your Engineering Science studies, you will gain a broad understanding of engineering and science, giving you the freedom to sample diverse units to discover areas that you enjoy most. Then in your second and third years you will focus on a particular area of engineering, preparing you for further study at postgraduate level and to professional accreditation.

The Engineering Science major can be studied as a degree-specific major within the Bachelor of Science or Bachelor of Philosophy (Honours), or as a second major with any of the University’s undergraduate degrees.

You will also have the opportunity to complete two broadening units to ensure that you’re equipped with the knowledge and skills that employers are seeking.

Duration: three years full-time (24 units).

Full course details can be found at studyat.uwa.edu.au/engineering

Flexibility to explore

For the first year, choose from a broad range of engineering, physics, computing and mathematics topics - the pathway is deliberately flexible so that you don’t need to choose your specialisation straight away.

Engineering Pathways

Minimum ATAR 92.00

Undergraduate Majors

1. Engineering Science

2. Major in Arts, Commerce, or another Science discipline
Engineering Science major

DEGREE-SPECIFIC MAJOR: BP004 BACHELOR OF SCIENCE / BH005 BACHELOR OF PHILOSOPHY (HONOURS)

Specialisations

- Chemical Engineering
- Civil Engineering
- Electrical and Electronic Engineering
- Environmental Engineering
- Mechanical Engineering
- Mining Engineering
- Software Engineering

Who can apply?

The MPE is for graduates who want to gain an internationally recognised qualification to practise as a professionally accredited engineer, for those who want to change careers and become an engineer, or for engineers who want to change engineering specialisation. If you don’t already have an undergraduate engineering degree, we can recommend a tailored program of conversion study.

Course structure

- 12-week practicum, with at least eight weeks in an engineering environment. The remaining weeks can be undertaken in a general work environment in a capacity unrelated to your MPE specialisation, such as voluntary work or professional development.

Accreditation

The Master of Professional Engineering has been assessed for accreditation by Engineers Australia, the national accrediting body. The Chemical, Civil, Electrical and Mechanical Engineering specialisations received full accreditation in 2016. Accreditation for the remaining specialisations remains provisional until the required number of students graduate. Our graduates are recognised internationally through the Washington Accord of the International Engineering Alliance. For more information, visit studyat.uwa.edu.au/mpe

The Master of Professional Engineering (Chemical Engineering) is fully accredited by the Institution of Chemical Engineers (IChemE). The Master of Professional Engineering (Software Engineering) has been provisionally accredited by the Australian Computer Society.

Engineering Pathways

Minimum ATAR 92.00

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<td>5 years</td>
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</tr>
</tbody>
</table>

Professional practicum

The Master’s program focuses on delivering hands-on industry-related learning. As part of your studies, you will complete a 12-week practicum, with at least eight weeks in an engineering environment. The remaining weeks can be undertaken in a general work environment in a capacity unrelated to your MPE specialisation, such as voluntary work or professional development.
Chemical Engineering

Chemical engineers invent and design the methods and equipment to transform raw materials into useful products such as fuels, plastics, pharmaceuticals, textiles, foods and cosmetics.

Through the Chemical Engineering specialisation at UWA you will gain an in-depth understanding of topics such as advanced oil-and-gas-processing technologies, combustion science and technologies, minerals processing technologies, advanced reaction engineering and catalysis, and flow phenomena relevant to chemical processes.

Course outline

1. Students specialising in Chemical Engineering will be required to complete two additional units (Process Synthesis and Design, and Unit Operations and Environmental Protection) in order to be eligible for professional accreditation with the Institution of Chemical Engineers (IChemE).

Chemical Engineering offers endless career opportunities and some of the highest-paid roles in the industry*. Find out more at study.uwa.edu.au/careers/chemical-engineer

Types of Engineering Degrees

http://www.chemical-engineer.org

Civil Engineering

Civil engineering deals with the design, construction and maintenance of the physical and naturally built environment, including roads, bridges, canals, harbours, airports, dams and buildings.

With the Civil Engineering specialisation at UWA you may choose to study sub-disciplines such as geotechnical engineering, earthquake engineering, structural engineering, surveying, construction engineering and transportation engineering.

Careers

Career opportunities exist in both the public and private sectors in construction, infrastructure, consulting, transport, project management, mining, environmental control, water, waste and energy. Civil engineering graduates are also valued in commercial and corporate sectors such as finance, banking and accountancy.

Option units

- Structural Dynamics
- Transportation Engineering
- Underground Construction
- Offshore Geomechanics
- Introduction to Design of Offshore Systems
- Hydrology
- Coastal and Offshore Engineering
- Environmental Geotechnics
- Transdisciplinary Service Learning and Design

Course outline
Electrical and Electronic Engineering

Electrical and electronic engineering ranges from the nanometres-thick scale of advanced electronic devices to the kilometres-long scale of power transmission, and everything in between.

Through the Electrical and Electronic Engineering specialisation at UWA you will learn to solve problems concerned with the generation and transmission of information and electric power, and the design and testing of electrical and electronic devices, circuits and systems.

You will also consider the context within which all of this falls, including economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints.

Careers

Career opportunities exist in innovative fields such as developing sustainable energy solutions, designing technologies to improve healthcare, creating systems that support industry or communities, or designing electronics that transform lives.

Option units

- Advanced Communications
- Analogue Electronics
- Digital Microelectronics
- Systems Design
- Power Electronics
- Power System Analysis
- Process Instrumentation and Control
- Modern Control Systems
- Robotics
- Computer Vision
- Artificial Intelligence and Adaptive Systems
- Mobile and Wireless Computing
- Numerical Methods and Modelling
- Renewable Energy
- Transdisciplinary Service Learning and Design
- Introduction to Biomedical Engineering
- Optical Engineering, Photonics and Biomedical Imaging Systems (N/A in 2021)
- Semiconductor Nanoelectronics
- Materials Characterisations for Bioengineering Applications
- Environmental Geotechnics
- Renewable Energy
- Geotechnology of Mine Waste
- Transdisciplinary Service Learning and Design
- Transdisciplinary Service Learning and Design

Environmental Engineering

Environmental engineers apply their understanding of natural systems and engineering skills to find creative solutions to pressures facing our environment and sustainable development.

With the Environmental Engineering specialisation at UWA you will gain an in-depth understanding of environmental management and design, ecological engineering and design, environmental modelling, contaminant fate and transport, hydrology, physical oceanography, environmental fluid mechanics, and advanced environmental systems and engineering.

Careers

As an environmental engineer you will be highly sought-after by employers in the public and private sectors including regulatory authorities, mining and construction companies, development organisations, consultancies and government agencies.

Course outline

Follow your passion

"My engineering study pathway is valuable in my position, because of the practical, measured way that you are trained to think as an engineer. Understanding how ocean currents transport debris and plastic has also been useful to me for public presentations and when I interact with ocean scientists."

Kate Le Souef
Environmental engineer, graduated in 2006 and currently works for the Vancouver Aquarium in Canada

If you are unsure what specialisation is right for you, my advice is to choose a field of study that excites you. I really believe that when you passionately pursue something that interests you, weird and wonderful career opportunities will follow."
Advancing space travel

UWA Mechanical Engineering graduate Enrico Palermo now works in California’s Mojave Desert, heading up operations for Virgin Galactic’s The Spaceship Company.

“During my time at UWA I pursued all opportunities with vigour in diverse fields and real-world projects. For example, I joined the inaugural UWA Motorsport (UWAM) Formula SAE team. I was fortunate to have support from great supervisors and mentors at UWA who were driven by technology application and practicality. At The Spaceship Company (TSC) and Virgin Galactic, we are building the world’s first ‘spaceplane’ – something no one has ever done before. Right now my focus is doing everything I can to support our goals of getting to space and starting commercial operations then, shortly after, completing TSC’s first spaceship. Beyond that I see plenty of new exciting opportunities in scientific research, small satellite launching, fast intercontinental travel and beyond.”

Enrico Palermo

Vice president, operations at The Spaceship Company

Mechanical Engineering

Mechanical engineering involves the production and use of heat and power for the design, invention, and operation of machines and devices of all types.

The Mechanical Engineering specialisation at UWA covers core theories, methods and practices used in sound and vibration, control, tribology, fluids and materials.

Course outline

<table>
<thead>
<tr>
<th>Option units</th>
<th>Project 1</th>
<th>Project 2</th>
<th>Project 3</th>
<th>Project 4</th>
<th>Project 5</th>
<th>Project 6</th>
<th>Option Unit</th>
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<tbody>
<tr>
<td>GEOTECH-ROCK MECHANICS</td>
<td>MINERAL RESOURCES</td>
<td>SURFACE MINING</td>
<td>UNDERGROUND MINING 1</td>
<td>ENGINEERING DESIGN PROJECT 1</td>
<td>ENGINEERING DESIGN PROJECT 2</td>
<td>ENGINEERING DESIGN PROJECT 3</td>
<td>OPTION UNIT</td>
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<td>ENVIRONMENTAL GEOTECHNICS</td>
<td>MINING MANAGEMENT</td>
<td>UNDERGROUND MINING 2</td>
<td>ENGINEERING RESEARCH PROJECT 1</td>
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<td>ENGINEERING RESEARCH PROJECT 3</td>
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<td>SURFACE MINING</td>
<td>MINING MANAGEMENT</td>
<td>UNDERGROUND MINING 2</td>
<td>ENGINEERING RESEARCH PROJECT 1</td>
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<td>Option Unit</td>
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<td>UNDERGROUND MINING 1</td>
<td>ENGINEERING DESIGN PROJECT 2</td>
<td>ENGINEERING RESEARCH PROJECT 3</td>
<td>RISK, RELIABILITY &amp; SAFETY</td>
<td>Option Unit</td>
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<tr>
<td>PROJECT MANAGEMENT &amp; ENGINEERING PRACTICE</td>
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Designing mines

UWA Mining Engineering graduate Shane Doherty now works at BHP Billiton.

“Studying Engineering at UWA was fantastic. At no point did I feel that anything I was studying would be irrelevant to my career. This feeling has been fully verified after five years in industry. Many of the lecturers within the course were veterans of the industry and consistently provided tangible case studies to work through. My job is extremely challenging in its scope and the diversity of the stakeholders involved. The most fascinating aspect is making strategic decisions for every stage of the mining cycle, from Government approvals and exploration drilling, to mine scheduling and closure planning.”

Shane Doherty

Superintendent New Kines Development, BHP Billiton

Mining Engineering

Mining engineering encompasses all the processes involved in extracting ores from the earth, including activities such as deposit evaluation, mine design, mine production, and waste disposal.

The Mining Engineering specialisation at UWA integrates exposure to geology, finance and management, as well as detailed knowledge of surface mining, underground mining, rock mechanics and mine design.

You will acquire the skills needed to analyse and design the most suitable mining method for a project, the best equipment to efficiently perform the task and the most appropriate blasting technique. You will also take on the challenge of minimising environmental impact.

Careers

As a mining engineer you may work as a technical specialist with a service company, as a consultant (in Australia or overseas), in mine management and production, in banking or finance, in research, or in the government sector.

Option units

- Introductory Financial Accounting
- Economics for Business: Applications and Policy
- Employment Relations
- Globalisation and Organisational Change
- International Employment Relations
- Extractive Metallurgy
- Numerical Methods and Modelling
- Introduction to Human Resource Management
- Management and Organisations
- Organisational Behaviour and Leadership
- Transdisciplinary Service Learning and Design

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Designing mines

UWA Mining Engineering graduate Shane Doherty now works at BHP Billiton.

“Studying Engineering at UWA was fantastic. At no point did I feel that anything I was studying would be irrelevant to my career. This feeling has been fully verified after five years in industry. Many of the lecturers within the course were veterans of the industry and consistently provided tangible case studies to work through. My job is extremely challenging in its scope and the diversity of the stakeholders involved. The most fascinating aspect is making strategic decisions for every stage of the mining cycle, from Government approvals and exploration drilling, to mine scheduling and closure planning.”

Shane Doherty

Superintendent New Kines Development, BHP Billiton
Software Engineering

Software engineering involves the design, development, testing, deployment, maintenance and evaluation of complex computer software systems.

Software engineers require a diverse set of skills including design, modeling, negotiation, team management, estimation and programming. The specific tasks they perform evolve quickly, reflecting new areas of specialisation and changes in technology.

The Software Engineering specialisation at UWA has a solid foundation in software requirements, design, implementation, testing and professional engineering standards. It also includes advanced topics in mobile computing, cloud computing and artificial intelligence. Upon graduation you will be a capable problem solver, designing and delivering software solutions.

Course outline

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<td>RISK, RELIABILITY &amp; SAFETY</td>
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Undergraduate: Engineering Science

Domestic applicants

Direct Pathway

Students achieving an ATAR score of 92 or higher are encouraged to apply for one of the Direct Pathways with the following TISC codes:

- Science & Engineering (UWMEC)
- Biomedical Sciences (UWWEB)
- Commerce & Engineering (UWMEM)
- Arts & Engineering (UWMEA)
- Bachelor of Philosophy (Honours) (UWMEP)

These provide direct entry to the MPE following completion of an undergraduate course with a major in Engineering Science.

Other pathways

It is also possible to apply for admission to one of UWA’s bachelor courses.

Applicants who expect to get an ATAR of 80 or above are advised to apply to study the Engineering Science major in one of UWA’s three-year Bachelor courses. Engineering Science may be taken as a degree-specific major in the Bachelor of Science (TISC code UWSCI) or as a second major in the other three-year bachelor courses offered.

Students not in the Direct Pathway will be required to achieve an average of 60 per cent in their degree studies to be eligible for admission to the MPE.

Bachelor of Philosophy (Honours)

For this Direct Pathway, you must achieve an entry score (ATAR or equivalent) of at least 98 and use TISC code UWMEP. Please note, places are limited and entry is highly competitive.

Prerequisites

Recommended:
- Mathematics: Specialist ATAR
- Mathematics methods ATAR, Chemistry ATAR and Physics ATAR

OR
- Mathematics Methods ATAR with additional specified units taken in the first year depending on the number of missing prerequisite subjects.

All applicants must demonstrate English Language Competence. For more information on English language requirements, visit studyat.uwa.edu.au/elc

International applicants

A minimum Australian Tertiary Admissions Rank (ATAR) of 92 or equivalent for the Direct Pathway

OR
- A minimum ATAR of 80 for entry into a UW three-year bachelor degree course

OR
- A minimum ATAR of 98 for the Bachelor of Philosophy (Honours), or equivalent.

Additionally, applicants must satisfy UWA’s English Language Competence requirement and meet the prerequisites for the Engineering Science major. Please refer to studyat.uwa.edu.au/courses/engineering-science for more details on prerequisites and minimum scores.

Postgraduate: Master of Professional Engineering (MPE)

Domestic applicants

(a) A bachelor's degree with a major in Engineering Science, or an equivalent qualification, as recognised by UWA

OR

(b) A bachelor's degree, completed with the equivalent of a UWA weighted average mark of at least 65 per cent, with prior studies in engineering, physics or mathematics

OR

(c) Completed units in the Master of Professional Engineering Preliminary course at UWA as prescribed by the Faculty

OR

(d) Completed a UWA Diploma in Science with a major in Engineering Science with an average of at least 60 per cent.

International applicants

In addition to the admission requirements listed above, you must meet the University’s required level of English Language Competency (visit studyat.uwa.edu.au/elc)

International students should also visit international.uwa.edu.au/students/esos for more information about the study environment, course fees and support services.

1 Students who commenced Engineering Science from 2015 and who are not in the Direct Pathway are required to achieve a UWA weighted average mark of at least 60 per cent in their bachelor’s degree.

Programming for Google

Cameron Fitzgerald, a UWA Software Engineering graduate, is now working for Google San Francisco.

“My time at UWA really shaped me as a person and substantially broadened my horizons. I gained a solid understanding of computer science principles, in addition to software-engineering skills such as project management, testing and development strategies. Software engineering is a competitive industry with a lot of awesome opportunities and you need to stand out from the crowd. I was actively involved with the University Engineers’ Club, UWA Young Engineers, sports clubs and was vice-president and welfare officer at the UWA Student Guild. I made a number of great friends in the software engineering cohort, several of whom are currently at Google in Sydney. My current job involves general software-engineering – design, feature development, testing and maintenance – I’m a part of a mid-size cross-functional team working on notifications.”

Cameron Fitzgerald
Software engineer, Google
Research

Real-world impact
From sustainable delivery of water and energy to natural gas processing, our focus is on the big challenges that face our world.

At UWA we enjoy unprecedented opportunities to capitalise on the success of Western Australia’s energy and resource sector and its global connections.

UWA is ranked in the top one per cent of the world’s universities and is the only Western Australian university to belong to the Group of Eight – a coalition of the best research universities in Australia.

Connect
Don’t miss regular updates on our social media channels

Industry support
Our Faculty has formed key partnerships with leading Australian and international organisations such as Apache, BHP Billiton, Chevron, Rio Tinto, Shell and Woodside. Many of these global organisations have made multi-million dollar investments into UWA’s engineering research.

The Faculty’s research teams also attract significant grants from the Australian Research Council (ARC) and other funding bodies.

Engineering for Remote Operations (ERO)
The Faculty has adopted a single, faculty-wide, strategic research initiative on the theme of Engineering for Remote Operations (ERO). The interdisciplinary, integrated approach and solutions within ERO are relevant internationally, nationally and in Western Australia itself.

Further information about Research is available via ems.uwa.edu/research or email: research-ems@uwa.edu.au

Overseas Study Opportunities

UWA has more than 160 partner institutions around the world, and you can tailor a UWA study abroad experience to suit both your studies and to satisfy your wanderlust.

The UWA Global Learning Office offers you an unparalleled international experience – the opportunity to study overseas at a renowned university for one or two semesters, with no additional tuition fees.

Whilst continuing to gain credit towards your UWA degree, you will not only benefit from an enriching learning experience that contributes to character development, but you will also create an international network, develop new friendships and gain a level of independence and confidence highly regarded by employers.

UWA’s dedicated Global Learning Office can provide all of the information you need to select the overseas university that is right for you. Some destinations you may consider include University of Texas, Austin (USA), McGill University (Canada), Durham University (UK), Shanghai Jiao Tong University (China), University of Grenoble (France) and National University of Singapore (Singapore).

international.uwa.edu.au/students/exchange

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international.uwa.edu.au/students/exchange
Scholarships

The Faculty offers a range of scholarships and prizes to help students reach their full potential. Scholarships are available for undergraduate students (both commencing and current), as well as honours, postgraduate coursework and postgraduate research students.

Scholarship opportunities are continually being updated so visit our website to see what’s on offer at ems.uwa.edu.au/students/scholarships.

You can also visit scholarships.uwa.edu.au for the University’s full list of other scholarships and awards that might be available to you.

Support

The Faculty has a dedicated engineering and mathematical sciences EMS Student Office hub with helpful staff available for assistance throughout your studies. Our EMS Student Office team keeps students up to date with all the latest news and opportunities and organises events and BBQs such as ‘Which Specialisation?’ to help you decide which area of engineering you’d like to pursue in the Master of Professional Engineering.