



Curtin University

POSTGRADUATE
COURSE GUIDE

Science and Engineering

Coursework and research degrees

Make tomorrow better.

curtin.edu.au

YOUR CURTIN GUIDE

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ACADEMIC CALENDAR

	SEMESTER 2, 2021	SEMESTER 1, 2022	SEMESTER 2, 2022
Applications close*	Two weeks before orientation*	Two weeks before orientation*	Two weeks before orientation*
Orientation Week	19–23 July	21–25 February	18–22 July
Semester starts	26 July	28 February	25 July
Semester ends	12 November	17 June	11 November

** Application closing dates and orientation dates are subject to change and may vary depending on the course. Dates shown are for Curtin Perth only. Contact other campuses directly for details.*

TYPES OF POSTGRADUATE QUALIFICATIONS

Postgraduate qualifications by coursework

Many of our courses are 'nested', providing qualifications at sequentially higher levels – and offering various study entry and exit points.

- Graduate certificate: 6 months full-time.
- Graduate diploma: 1 year full-time.
- Master degree: 1 to 2 years full-time.

If you choose to study part-time, the course duration will be longer.

Higher degrees by research

A research degree involves independent, original research and completion of a thesis. They vary in duration and may involve up to four years full-time study.

PLANNING YOUR NEXT CAREER MOVE

Changes in the marketplace mean your career could take unexpected turns. Curtin Associate Professor Julia Richardson suggests ways to develop your career strategy based around your motivation, your skills and competencies, and your personal and professional networks.

curtin.edu/3-things

Indigenous acknowledgement

Curtin University acknowledges the traditional owners of the land on which Curtin Perth is located, the Whadjuk people of the Nyungar Nation; and on Curtin Kalgoorlie, the Wongutha people of the North-Eastern Goldfields.

This publication is available in alternative formats on request.

Disclaimer and copyright.

This publication is correct as at December 2020 but is subject to change. In relation to courses, Curtin University may change the content, delivery, assessment methods and tuition fees; withdraw courses or limit enrolments; and vary other arrangements, including the academic area where courses are offered. For current information relevant to this publication, visit **study.curtin.edu.au**

Some information in this publication may not apply to international applicants. International students studying in Australia on a student visa must study full-time and meet other entry requirements, and are subject to international student fees. Domestic and international students studying outside Australia may have the choice of full-time, part-time and external study, depending on course availability and in-country requirements. Visit **international.curtin.edu.au** for more information.

This publication contains general information only. Readers should consider how it applies to their personal circumstances and seek specific advice. Subject to applicable law, Curtin University is not liable for anything done or not done in reliance on this publication.

Let's make tomorrow better, together

Curtin is a vibrant, future-focused university where ideas and cultures combine to create a place of enthusiasm, endeavour and achievement.

When you choose Curtin you are choosing an innovative, global university with extensive industry connections and campuses in Western Australia, Malaysia, Singapore, Dubai and Mauritius.

You'll learn in technology-rich environments and feel inspired by our high-impact research spanning many areas including astronomy and planetary science, emerging technologies, economics, health, minerals, energy and sustainability.

The Faculty of Science and Engineering

Curtin University's Faculty of Science and Engineering is a place where you can apply your studies to real-world industry challenges.

The faculty is involved in a variety of high impact research initiatives, including the Murchison Widefield Array and the Square Kilometre Array.

Partnerships with BHP, Cisco, CPB Contractors, CSIRO, Lockheed Martin, NASA, Rio Tinto and Woodside are examples of the faculty's integration with industry and government.

Studying at postgraduate level

A postgraduate degree at Curtin can change your life. It will give you additional knowledge to advance your career, specialise in a particular area or take your career in a promising new direction.

Gain industry experience

Experiential learning is highly valued by employers. You will benefit from Curtin's strong links to business and industry, working on real projects and research initiatives, undertaking internships and attending events and networking opportunities.

Convenient and flexible study

Course flexibility enables you to combine your current work commitments with study. Many courses allow domestic students to study full-time, part-time or online. There may also be different course start dates, so you can choose the most convenient time of year to begin your course.

Financial assistance

You could be eligible to apply for a Curtin scholarship or other support such as FEE-HELP, employer-funded study or income tax deductions.



Curtin is ranked in the top one per cent of universities worldwide

Academic Rankings of World Universities 2020



Number 2 in the world for Mineral and Mining Engineering

QS World University Rankings by Subject 2020



Top 100 in the world for Civil and Structural Engineering

QS World University Rankings by Subject 2020

Get the Curtin edge

Curtin ensures you gain the knowledge and skills required to get ahead in today's changing workplace.

Technology-rich learning environments recreate real workplaces to enhance your studies.

Career support

Curtin Careers, Employment and Leadership can help you find part-time work in Perth to support you while you're studying. We also offer career planning services to identify further study or career options, while our Global Careers service can connect you with employers around the world.

careers.curtin.edu.au

Centre for Crop and Disease Management

The AUD\$43 million Building 304 houses the Centre for Crop and Disease Management at Curtin, where researchers are working to reduce the impact of crop disease for Australian growers. It includes plantrooms and laboratories that meet physical containment two and three standards.





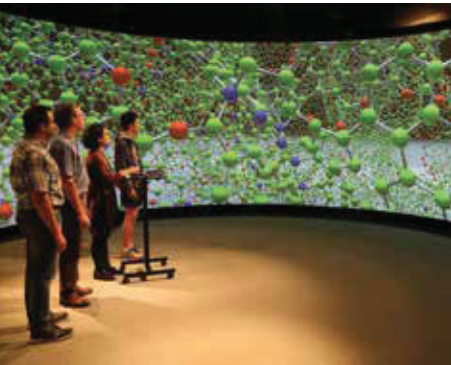
Curtin Engineering Pavilion Complex

The innovative 5 star green-rated design and inbuilt technologies in the spacious Curtin Engineering Pavilion Complex double up as hands-on learning tools for engineering students. Inside the pavilion is the Living Lab, a place where you can generate live data on temperature, vibration and ventilation, and use it for your assignments.

The environmentally friendly building features rooftop water tanks that harvest rainwater for use throughout the building. As well as this, temperature banding reduces power consumption on air conditioning systems by widening accessible temperature ranges within the complex.

Curtin Institute for Computation

The institute was established to meet the increasing demand for computational modelling, data analytics and visualisation in Western Australia. It fosters collaborative research that seeks to provide innovative solutions to complex problems across engineering and the sciences. The institute also strongly collaborates with Innovation Central Perth.



Curtin Resources and Chemistry Precinct

This AUD\$116 million precinct is designed to train the next generation of scientists and engineers. It features four floors of office spaces, open-plan laboratories and teaching rooms, with a modern interior design that invites collaboration, networking and interactive learning.





Drilling Laboratory and True Triaxial Stress Cell

The Drilling Laboratory incorporates custom equipment to investigate drilling bits, drilling fluids and coiled tube drilling. It is also equipped with a True Triaxial Stress Cell that is mainly used for petroleum geomechanics research, such as investigating hydraulic fracturing.

Executive education

Executive Education programs teach business skills that can be applied to any industry, helping you to engage with clients and improve productivity. Programs cover a range of areas including digital marketing, data analytics and human resource management. You can take an Executive Education course in addition to your degree and may be eligible to receive credit towards your degree course.

curtin.edu/exec-ed



Geomechanics Laboratory

The laboratory allows you to test soils and rocks to determine their properties under safe conditions. Rock specimens can be cut into cubes, or cylinders can be prepared from recovered diamond drilled rock cores. You can then test these under loading conditions found in mines.

Metallurgy laboratories

These laboratories contain equipment for teaching and research in areas of extractive metallurgy. The equipment includes bench-scale and pilot-scale Falcon and Nelson concentrators, pulse columns, flotation columns, heap leach columns and continuously stirred tank reactors.

Work-integrated learning

Depending on your course, you could visit industrial sites or plants, complete real projects in collaboration with industry or participate in laboratory work.

Exploration geophysics field equipment and laboratories

Curtin houses state-of-the-art geophysical equipment including two seismic vibrator trucks, a 5,000-channel seismic acquisition system, AGI SuperSting and Syscal Pro 72 resistivity sets, SMARTem and GDP-32 electromagnetic receivers, and in-house EM transmitters and RVR receivers.

You can also access a 900m-deep, fiberglass-cased borehole to test equipment, and work in laboratories including a geophysical instrument development lab, and a rock physics lab with micro computed tomography, nanoindenters and other specialty equipment.

Fuel Cell Research Facilities

Curtin has two main laboratories. The first contains equipment with advanced instruments to analyse fuel cell performance at cell, stack and system scales. The second is used to study nanostructured electrodes and electrolyte membranes for high-temperature solid oxide fuel cells.



Green Electric Energy Park

This innovative laboratory features power-system concepts based on environmentally friendly, renewable energy technology. It provides an experimental platform for you to research areas including the design and control of novel power converters for renewable energy applications.

Experience Perth


Located on the beautiful west coast of Australia, Perth is multicultural, prosperous and safe – an ideal destination for students and tourists alike.

Perth Weather

Perth has a Mediterranean climate.

	High / Low (°C)	
Summer <small>(December to February)</small>	30 °	17.5 °
Autumn <small>(March to May)</small>	26 °	13.7 °
Winter <small>(June to August)</small>	19 °	8 °
Spring <small>(September to November)</small>	23 °	11.7 °

source: australia.com



Perth Timezone



Perth
GMT+8



Shopping and culture

Perth is home to Elizabeth Quay, Forrest Place, Murray Street Mall and numerous galleries. The historic port city of Fremantle is only 15 kilometres from Perth, where the Swan River meets the Indian Ocean.



Getting around
The metropolitan area is serviced with an extensive road network and easy-to-use public transport.

Western Australia's best food
Try some of the city's best food at Yagan Square, and find gourmet food producers in the Swan Valley.



A natural beauty
There are many magnificent parks and gardens in and around Perth. Kings Park, which is larger than New York's Central Park, showcases more than 3,000 species of WA's unique flora. Caversham Wildlife Park has many Australian animals, including kangaroos you can handfeed.

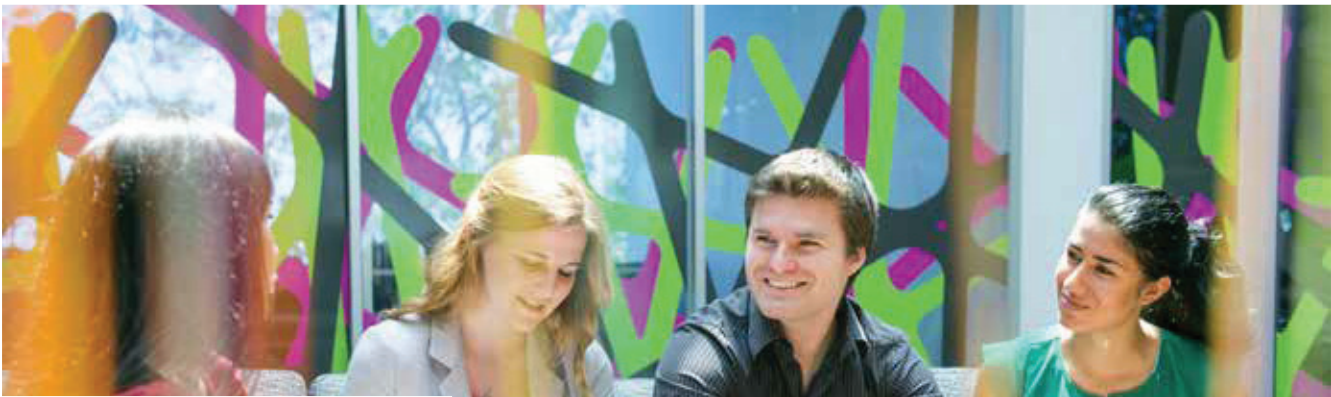


Be by the beach!
Perth's coast features breath-taking beaches and scenery. Don't forget to visit Rottnest Island – a famous holiday destination near Perth that is home to the friendly quokka.



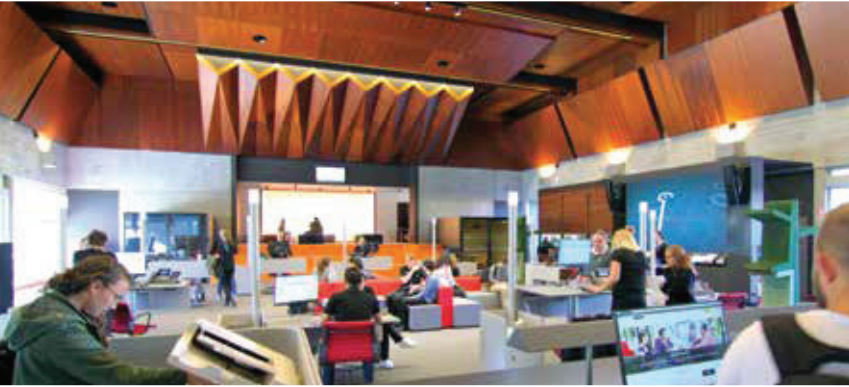
Close to campus
To the north, the suburb of Victoria Park is buzzing with a vibrant array of restaurants, pubs, beautiful parks and recreation areas.
To the south, the Canning River is home to dolphins, pelicans, swans and many other bird species. It's ideal for walking, picnicking and kayaking.

Welcome to your Curtin community



Perth campus

The Perth campus is located just six kilometres from the city centre. Through our 20-year master plan, we're transforming the campus into a contemporary cultural precinct that brings together higher education, business and technology, and the arts and recreation.



Subsidised schooling

If you're an international student and have school-aged children, your children may be eligible to access government schooling at the same subsidised fee levels that apply to local students.

curtin.edu/familyfriendly



Course advice

On campus, Curtin Connect staff provide advice on courses, applications, enrolment, getting your ID card and organising your course timetable.

Childcare

The Curtin University Early Childhood Centre is a popular on-campus childcare facility for children under the age of five. We strongly recommend you apply for a place for your child as early as possible.

curtin.edu/earlychildhoodcentre



Wellbeing services

There is a range of confidential wellbeing services if you ever need help or advice, or you're unsure where to find the support you need.

You can also consult a doctor, counsellor, physiotherapist and other health professionals at our campus-based medical centre and health and wellness clinics.

curtin.edu/personalsupport



Accommodation

Curtin has on-campus residences at its Perth and Kalgoorlie campuses. Living on campus is convenient, safe and the perfect way to meet like-minded students.

Early application is essential as on-campus accommodation is in high demand.

If you would prefer to live off-campus, we can help you find boarding and rental accommodation or shared housing.

curtin.edu/housing

Security and personal safety

Curtin provides a range of safety resources including swipe-card building access, 24/7 security patrols, well-lit pathways, after-hours security escort, a campus courtesy bus, emergency telephone stations and the SafeZone security app.

curtin.edu/safety




Science at Curtin

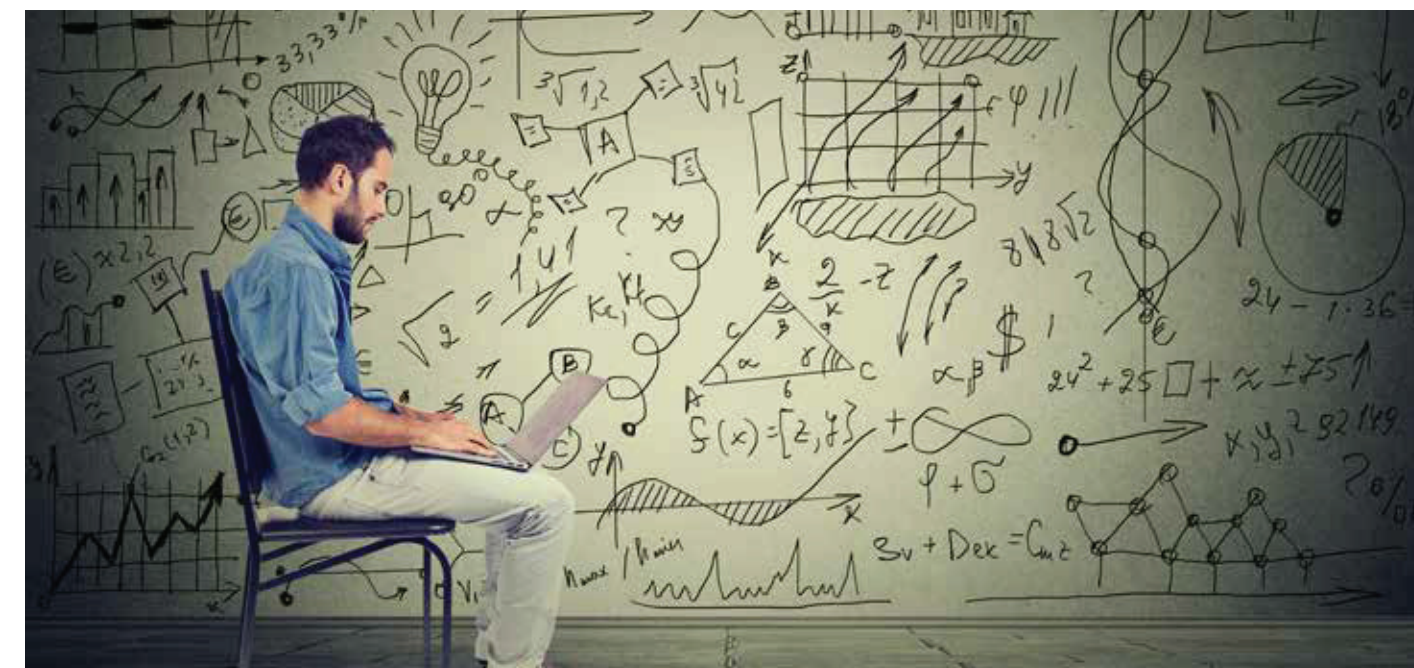
Curtin's postgraduate science courses can help you discover more about our world and beyond.

You will learn how to apply your studies to real industry challenges and situations, and have opportunities to work in environments where research and discovery abound.

With degree options in varied fields, such as computer science, food science and technology, mathematical sciences, predictive analytics and sustainability management, you can find a course that suits your specific passions and career goals.

Actuarial and Financial Science

 International students accepted. Refer to page 37 for details.



Actuaries and financial mathematicians apply mathematical models and numerical tools to practical applications, such as financial markets.

They gather statistical data on the financial decisions people make. This provides a critical insight for business and government, helping them to make more informed decisions – especially in uncertain economic climates.

Course essentials

DEGREE

Master of Science
(Actuarial and Financial Science)

INTAKE

Semester 1, Semester 2

STUDY MODE

Full-time, part-time

DURATION

1.5 years full-time

LOCATION

Perth

COURSE CODE

MC-ACTFNS

CRICOS CODE

054627G

Visit curtin.edu/msci-actfin

Course description

In this course, you will learn how to help organisations plan for the future and protect themselves from losses.

The core units cover the principles of finance, investment science, risk analysis and credibility theory. Optional units include financial modelling, applied statistics and numerical methods.

On completion of this course, your skills may be applied to insurance, pensions, healthcare, banking, business management and risk assessment. You may also play a role in determining company policy and explaining complex technical matters to company executives, government officials, shareholders, policyholders or the general public.

Admission criteria

- Recognised four-year bachelor or honours degree in mathematics, statistics, science, engineering or finance
- Mathematics and statistics competency must be at least equivalent to Curtin's advanced first year units
- Meet Curtin's English proficiency requirements.

Professional recognition

This course is accredited by the Actuaries Institute, making Curtin the only Western Australian university to have an accredited program. Graduates are also eligible for membership of the Australian Mathematical Society.

Career information


Globally, there is increasing demand for actuaries and financial mathematicians. As artificial intelligence is incorporated into the workplace, these experts may find the nature of their jobs changing from gathering data to helping companies interpret AI findings of that data*.

*Deloitte, *The Rise of the Exponential Actuary*, 2017

Industries

- Banking and finance
- Econometrics
- Education
- Financial services
- Government
- Health
- Insurance
- Public infrastructure
- Risk management

Artificial Intelligence

 International students accepted. Refer to page 37 for details.



Course essentials

DEGREE
Master of Artificial Intelligence
INTAKE
Semester 2
STUDY MODE
Full-time, part-time
DURATION
1 year
LOCATION
Perth
COURSE CODE
MC-AINTL
CRICOS CODE
N/A
Visit curtin.edu/mc-ai

Course description

This course provides a coverage of key aspects of artificial intelligence with latest advances in the field. It teaches students both the theoretical and practical aspects of artificial intelligence with an emphasis on the skills sought out by the industry. Fundamental knowledge that underpins the areas of artificial intelligence and hands-on experience solving real-world problems using latest AI technologies are reinforced throughout the course. Graduates from this course will have high-level knowledge of artificial intelligence as well as advanced analytical and problem-solving skills and will be able to demonstrate them by completing the project unit.


Admission criteria

- 3-year recognised Bachelor degree in Information Technology OR
- Computational Science or Engineering with a minimum of 2 years relevant work experience OR
- 4-year degree in Information Technology or Computational Science or Engineering.

Professional recognition

Recognition is currently being sought for this course by the Australian Computing Society (ACS).

Computer Science

 International students accepted. Refer to page 37 for details.



Computer science is fundamentally about applying computing theory to information processes.

Computer network professionals research, analyse and recommend strategies for network architecture and development. They implement, manage, maintain and configure network hardware and software; monitor and optimise performance; troubleshoot and provide user support.

They are responsible not only for finding ways to do things faster and with a better user experience, but also for ensuring information is protected for both privacy and security reasons.

Course essentials

DEGREE
Master of Science (Computer Science)
INTAKE
Semester 1, Semester 2
STUDY MODE
Full-time, part-time
DURATION
2 years full-time
LOCATION
Perth
COURSE CODE
MJRP-CMSCM
CRICOS CODE
061489J
Visit curtin.edu/msci-compsci

Course description

This course will extend your prior knowledge and experience of computing, and prepare you for research, teaching and further graduate studies.

In addition to learning about the fundamentals of computer architecture and organising, storing and retrieving data, you will learn how to identify software security problems in specialised client systems and to design countermeasures based on client requirements and priorities.

You will develop expertise in formal languages, the mathematical foundation of computability, and formal logic and systemic complexity. This may enhance your career prospects in a range of industry sectors, business and management.

Admission criteria

- Recognised bachelor degree in science, with competency in computer science or a related discipline to the level of second year tertiary study
- Meet Curtin's English proficiency requirements.

Career information

With the world becoming more reliant on computer systems, industries will be increasingly concerned with improving systems, data mining and protection, and technological innovation.


Tech jobs have bucked the COVID-19 downturn and experts have predicted a shortage of around 100,000 technology professionals over the next four years*.

*The Job Market for ICT Professionals post-COVID-19 – Griffith University 2020

Industries

- Architecture and construction
- Artificial intelligence
- Education
- Finance and banking
- Health
- Mining
- Research and development
- Robotics
- Software development

Cyber Security

 International students accepted. Refer to page 37 for details.

Cyber security is an increasingly important field in today's society, with unprecedented amounts of data stored on computers and other devices by citizens, businesses and government organisations.

As a society, we face a future that is critically dependent on IT and without which we may struggle to function. This growth of IT across all industries creates higher stakes and greater potential for cyber attacks.

Cyber security experts apply their theoretical knowledge and practical skills to detect network intrusions, design safe and secure systems for storing data, and provide advice and training on general data management.

Cyber security experts are also responsible for developing disaster recovery plans. Their working knowledge of IT systems makes them vital contributors to government discussions on cyber security policy and data management to protect citizens' rights.

Course essentials

DEGREE
Master of Cyber Security
INTAKE
Semester 2
STUDY MODE
Full-time, part-time
DURATION
1 year full-time
LOCATION
Perth
COURSE CODE
MC-CYBSE
CRICOS CODE
N/A
Visit curtin.edu/mc-cybersec



Course description

This course provides coverage of key aspects in cyber security with a focus on network defense. It teaches students both the theoretical and practical aspects of cyber security with an emphasis on the skills sought out by the industry. Fundamental knowledge that underpins cyber security is reinforced throughout the course. Graduates from this course will have a high-level knowledge of cyber security and will be able to demonstrate their skills by completing the project unit.

Admission criteria

- A 3-year recognised Bachelor degree in Information Technology OR
- Computational Science or Engineering with a minimum of 2 years relevant work experience OR
- 4-year degree in Information Technology or Computational Science or Engineering.

Professional recognition

Recognition is currently being sought for this course by the Australian Computing Society (ACS).

Career information


Demand is growing for cyber security professionals, with Australians spending approximately \$5.6 billion on cyber security in 2020 - a figure that is expected to increase to \$7.6 billion by 2024*.

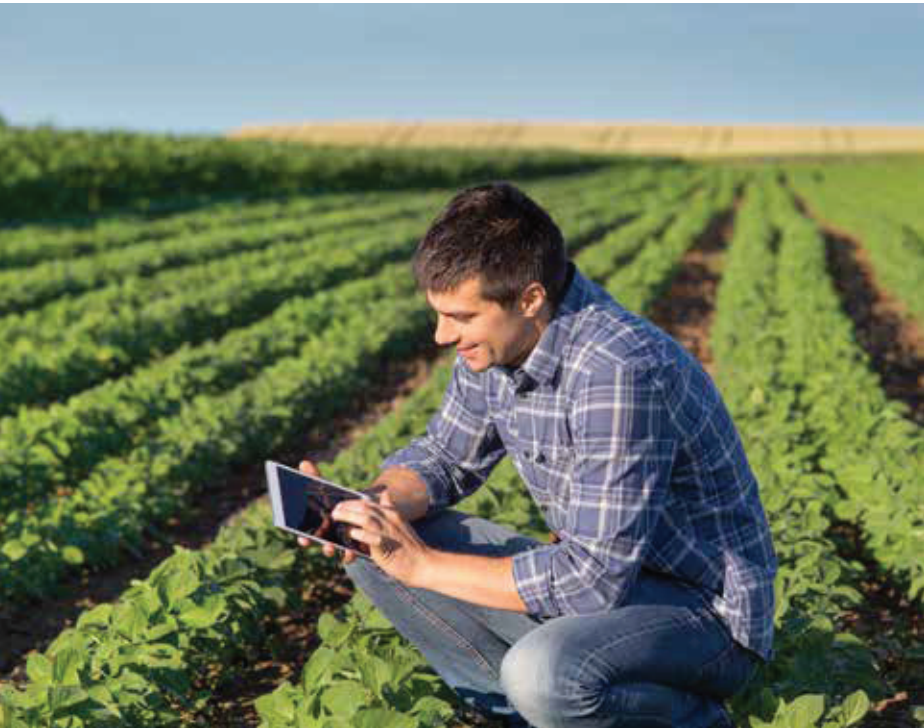
*Digital Census 2020 – AustCyber

Industries

- Analytics and social media
- Automotive
- Aviation
- Banking and finance
- Business and commerce
- Defence
- Government
- Health and medical systems
- Information retrieval
- Mobile and computer technologies

Dryland Agricultural Systems

 International students accepted. Refer to page 37 for details.



Global agriculture and food security is fundamental to the survival of the human race. Dryland (rain-fed) farming systems are incredibly important to maintaining sustainable and profitable food production throughout the world, particularly in southern Australia.

Experts and innovators in dryland agricultural systems are critical to ensuring food security in ecosystems challenged by water scarcity and biophysical constraints.

They may split their time in offices, laboratories, glasshouses or on farms. Their work includes collecting samples, running experiments and designing solutions to increase sustainability and productivity.

They may also find work as consultants and advisers to the livestock and cropping industries, and as research scientists or consultants for product and process development in the private or public sectors.

Course essentials

DEGREE
Master of Science (Dryland Agricultural Systems)
INTAKE
Semester 1, Semester 2
STUDY MODE
Full-time, part-time
DURATION
2 years full-time
LOCATION
Perth
COURSE CODE
MJRP-DRAGM
CRICOS CODE
061489J
Visit curtin.edu/msci-dryag

Course description

This course provides a comprehensive understanding of dryland agricultural systems.

Your examination of farming systems in southern and south-western Australia will equip you with knowledge applicable to similar environments around the world. You will also learn about emerging technologies for precise management of soils, crops and livestock, and the role of these technologies in ensuring sustainable and environmentally sound production systems into the future.

The program covers science and technology of crop, pasture and livestock production. This includes the roles of genetics and management in achieving optimum production against environmental constraints, and their integration into viable farming systems.

A research project in an area relevant to dryland systems is a significant component of the program.

Admission criteria

- Recognised bachelor degree in science and competency in agricultural systems or a related discipline to the level of second-year tertiary study OR
- Recognised bachelor degree with honours in a related field or graduate diploma in a related field. Applicants via this pathway may be eligible for credit for recognised learning AND
- Meet Curtin's English proficiency requirements.

Professional recognition

Graduates are eligible to apply for membership to the Australian Institute of Agricultural Science and Technology.


Career information

There will be a need for people with skills in improved farming practices to address the many challenges associated with a changing climate, particularly in rain-fed systems.

Industries

- Agrichemical and fertiliser
- Agriculture and horticulture
- Banking and finance
- Chemical manufacturing
- Cropping
- Government
- Livestock
- Mining
- Plant molecular biology
- Soil science

Food Science and Technology

 International students accepted. Refer to page 37 for details.



The food industry is one of the largest in the world. Its growth, particularly into the export market, requires a high level of technology as well as professionally trained individuals to apply that technology.

Our postgraduate courses in this discipline can offer diverse and challenging careers. The courses provide professional training to those employed in the food industry and those in science fields such as agriculture, nutrition, engineering, environmental health and consumer science.

Course essentials

DEGREE
Graduate Certificate in Food Science and Technology
INTAKE
Semester 1, Semester 2
STUDY MODE
Full-time, part-time
DURATION
6 months full-time
LOCATION
Perth
COURSE CODE
GC-FOODST
CRICOS CODE
014167F
Visit curtin.edu/gcert-foodsci

Course description

This course offers you the flexibility to choose from a range of specialist coursework units. Your course coordinator will help you choose the units to suit your current and future professional needs.

Course essentials

DEGREE
Graduate Diploma in Food Science and Technology
INTAKE
Semester 1, Semester 2
STUDY MODE
Full-time, part-time
DURATION
1 year full-time
LOCATION
Perth
COURSE CODE
GD-FOODST
CRICOS CODE
007289K
Visit curtin.edu/gdip-foodsci

Course description

You will take specialised coursework units, complemented by laboratory classes and industry site visits. You will study a variety of topics while gaining considerable knowledge and hands-on experience.

Course essentials

DEGREE
Master of Science (Food Science and Technology)
INTAKE
Semester 1, Semester 2
STUDY MODE
Full-time, part-time
DURATION
2 years full-time
LOCATION
Perth
COURSE CODE
MC-FOODST
CRICOS CODE
064466C
Visit curtin.edu/msci-food

Course description

This course extends the learning of the graduate diploma to incorporate an independent research project under the guidance of an experienced supervisor. To ensure you are ready to undertake this project you will be introduced to research methods and learn to measure, interpret and describe the data effectively.

It is ideal for those wishing to increase their professional status or to diversify their career opportunities.

Admission criteria (all courses)

- A bachelor degree or equivalent in science, engineering, nutrition, environmental health, home economics, agriculture or other appropriate disciplines. Applicants with other qualifications and experience are considered but may be required to complete additional bridging units
- Meet Curtin's English proficiency requirements.

Professional recognition (all courses)

Graduates are eligible to apply for membership to the Australian Institute of Food Science and Technology.


Career information

There is a growing demand for food science and technology experts. Potential employers include food suppliers, beverage manufacturers, supermarkets, hospitals, airlines, teaching institutions, federal and state research laboratories.

Industries

- Food quality assurance
- Microbiology
- Research and development
- Sales and marketing

Geology

 International students accepted. Refer to page 37 for details.

Geologists study how the Earth works, including processes that have a major impact on our current and future wellbeing, such as the formation of geological resources, natural hazards, climate change and the movement of contaminants and pollutants through soil and rock.

Geologists locate and advise on the extraction of minerals, petroleum and groundwater. They are also involved in detecting and monitoring natural disasters such as earthquakes, landslides and floods.

Course essentials

DEGREE
Graduate Certificate in Mineral Exploration Geoscience
INTAKE
Semester 1
STUDY MODE
Part-time
DURATION
1 year
LOCATION
Online. Includes a five day intensive practical training session at Curtin Kalgoorlie.
COURSE CODE
GC-MINX
CRICOS CODE
N/A
Visit curtin.edu/gcert-meg

Course description

This course provides an introduction to the concepts and techniques used by geologists and others in exploring for and evaluating mineral and energy deposits.

It assumes no prior geological knowledge, and is well suited for those who are already employed by or interact with the resources sector in finance, investment, administration or non-geological technical roles, and wish to gain a better understanding of the geoscience behind mineral and energy exploration projects.

Admission criteria

Applicants require a recognised bachelor degree in any discipline. Alternatively, applicants with more than three year's demonstrable experience working in a geoscience field may be considered for entry into the graduate certificate.

External study is only available to Australian resident students studying outside Australia.

- You must meet Curtin's English language proficiency requirements.

Course essentials

DEGREE
Graduate Diploma in Mineral Exploration Geoscience
INTAKE
Semester 1
STUDY MODE
Part-time
DURATION
2 years part-time
LOCATION
Online. Includes two x five day intensive practical training sessions at Curtin Kalgoorlie – one in each year of the course.
COURSE CODE
GD-MINX
CRICOS CODE
N/A
Visit curtin.edu/gdip-meg

Course description

This course provides an introduction to the role of geology in the resource industry. It requires no prior technical knowledge.

The course may interest you if your work is associated with mining and petroleum, and if you would benefit from an understanding of how mineral and energy deposits are found and evaluated.

You will become skilled in topics such as geological terminology, descriptions of ore bodies, exploration techniques including geophysics and geochemistry, as well as drilling and resource estimation techniques.

You will also complete a geoscience exploration project.

Admission criteria

- A recognised bachelor degree in any discipline AND
- you must meet Curtin's English language proficiency requirements.

You may be eligible for entry into the graduate certificate if you have more than three years' experience working in a geoscience field.

Course essentials

DEGREE
Master of Science (Geology)
INTAKE
Semester 1, Semester 2
STUDY MODE
Full-time, part-time
DURATION
1.5 years full-time
LOCATION

Perth
COURSE CODE
MC-GLGY
CRICOS CODE
084800F
Visit curtin.edu/msci-geol

Course description

From the field to the lab, the knowledge you will gain in this course will help you drive advancements in mineral exploration.

This course provides advanced technical training to help upgrade your qualifications or enter a new branch of geoscience. You will participate in seminars and group discussions, and prepare and submit a thesis-based research project.

Ore deposits – the result of natural processes that concentrate large volumes of minerals within a small area – are becoming more difficult to find and there is an increasing need for geologists to apply a new approach to mineral exploration.

This course offers detailed knowledge of mining geology and mineral systems. You will learn about the principal types of ore deposits, the fundamentals of mineral exploration, collecting and displaying geophysical data, geochemical processes and resource estimation, among other topics.

You will also gain technical and practical training that will help you evaluate mineral systems and pursue a career in the mineral exploration industry.

Please note: unit availability is often limited to specific semesters, which may affect the order in which you can take each unit.

Admission criteria

- Recognised bachelor degree in geology or a closely related discipline
- Meet Curtin's English proficiency requirements.


Intermediate award

It is possible to exit this course early with a Graduate Diploma in Applied Geology once you have completed sufficient units.

Career information

The demand for geologists is expected to increase, to account for a growing world population requiring more resources and societies becoming more concerned about their impact on the planet.

Geophysics

 International students accepted. Refer to page 37 for details.

Geophysics is a branch of Earth sciences that uses physical phenomena to remotely image and characterise the subsurface, with applications in mining, oil and gas, geothermal, groundwater, and carbon underground storage industries.

Geophysicists use seismic, magnetic, electromagnetic, radiometric and gravitational technologies and techniques to determine the structure and composition of natural, and sometimes artificial, materials below the Earth’s surface, without the need for drilling or excavation.

Course essentials

DEGREE
Master of Science (Geophysics)
INTAKE
Semester 1
STUDY MODE
Full-time, part-time
DURATION
2 years full-time
LOCATION
Perth
COURSE CODE
MJRP-GEOPM
CRICOS CODE
061489J
Visit curtin.edu/msci-geophys

Course description

This course is designed for students who have completed an undergraduate geophysics, science or engineering degree and wish to enhance their career prospects with an additional qualification in geophysics.

It offers a solid grounding and practical training in a range of geophysical exploration methods, including data acquisition, processing, and interpretation.

You will gain hands-on experience using industry-standard equipment and software. You will also become more familiar with recent geophysical developments through a range of coursework units and investigative projects.



Admission criteria

- Recognised bachelor degree in science with competency in geophysics or a related discipline to the level of second-year tertiary study. Special consideration will be given to geoscience graduates with associate degrees or diplomas and several years of industry experience
- Meet Curtin’s English proficiency requirements.

Please note: *this course is not suitable for students who have completed the Bachelor of Science (Geophysics) (Honours) at Curtin.*

Intermediate award

It is possible to exit this course early with a Graduate Diploma in Science (Geophysics) once you have completed sufficient units.

Professional recognition

A degree in geophysics satisfies the academic requirements for membership to the Australian Society of Exploration Geophysicists, the Australasian Institute of Mining and Metallurgy, the Society of Exploration Geophysicists (USA) and the European Association of Geoscientists and Engineers.


Career information

The importance of geophysics relative to other exploration techniques will increase steadily as oil and mineral deposits are sought at greater depths below the Earth’s surface.

Industries

- Archaeology
- Education
- Engineering
- Environment
- Government
- Mining
- Petroleum

Geospatial Intelligence

 International students accepted. Refer to page 37 for details.

Geospatial intelligence is the field of extracting actionable knowledge from location-based data.

Through the analysis, synthesis and evaluation of location-based data with geographic information systems (GIS) and remote sensing software, geospatial intelligence experts can solve a range of problems found in most industries. For example, it can help urban planners to make better informed site selection decisions, conservationists to predict impacts from climate change, agriculturalists to improve paddock management decisions, and geologists to construct models to narrow the exploration search space.

Students will graduate from these courses with skillsets combining remote sensing, GIS, data management, visualisation and other geospatial tools that enable them to describe, analyse, dissect and interpret large, diverse datasets.

Course essentials

DEGREE
Graduate Certificate in Geospatial Intelligence
INTAKE
Semester 1, Semester 2
STUDY MODE
Full-time, part-time
DURATION
6 months full-time
LOCATION
Perth, online
COURSE CODE
GC-GEOSPI
CRICOS CODE
0100582
Visit curtin.edu/gcert-geospi

Course description

You will learn the principles and applications of geographic information systems and remote sensing, focusing on their practical usage in disciplines including agriculture, mining, defence and urban planning.

This course assumes little to no prior knowledge in the field.

Course essentials

DEGREE
Graduate Diploma in Geospatial Intelligence
INTAKE
Semester 1, Semester 2
STUDY MODE
Full-time, part-time
DURATION
1 year full-time
LOCATION
Perth, online
COURSE CODE
GD-GEOSPI
CRICOS CODE
0100578
Visit curtin.edu/gdip-geospi

Course description

This course provides the tools for managing spatial data and remotely sensed imagery to extract further meaning.

Along with units on geographic information systems and remote sensing, you will learn map design, web mapping, data management, programming, photogrammetry and visualisation, ensuring you gain a well-rounded exposure to key areas.

Course essentials

DEGREE
Master of Geospatial Intelligence
INTAKE
Semester 1, Semester 2
STUDY MODE
Full-time, part-time
DURATION
2 years full-time
LOCATION
Perth, online
COURSE CODE
MC-GEOSPI
CRICOS CODE
0100574
Visit curtin.edu/mgeospi

Course description

This course will help you increase your knowledge of geospatial intelligence, and strengthen your skills in geospatial analytics, location-allocation, dataset integration and modelling of multiple datasets. You will also learn how to write scripts to automate complex tasks.

In your second year, you will be required to undertake a critical literature review and complete a significant research project on a chosen topic.

This course is suitable for those seeking a career change or to boost their career.

Admission criteria (all courses)

Recognised bachelor degree in any discipline.

Meet Curtin’s English proficiency requirements.

Professional recognition (all courses)

Graduates may become eligible for full membership of the Surveying and Spatial Sciences Institute (SSSI).


Career information

As location-based data grows rapidly, through ubiquitous sensors, satellites, lidar, radar and drones, so too will the need to leverage this data. Opportunities will exist in areas including GIS, big data, compliance reporting, global navigation, the internet of things, mobile data collection and earth observation.

Industries

- Agriculture
- Biodiversity and conservation
- Emergency response planning
- Health
- Military intelligence
- Mining
- Retail trade
- Transport and urban planning

Mathematical Sciences

 International students accepted. Refer to page 37 for details.



Mathematical scientists, or mathematicians, use the science of numbers to solve problems and conduct research in a number of different fields, including engineering, health and economics.

Using analytical or scientific software, mathematicians apply mathematical theory and develop computational methods to solve problems experienced by a range of industries.

They may design computer modelling or simulation programs, determine appropriate methods for data analysis, and identify trends and relationships in data.

Course essentials

DEGREE

Master of Science (Mathematical Sciences)

INTAKE

Intake commences 2022

STUDY MODE

Full-time, part-time

DURATION

2 years full-time

LOCATION

Perth

COURSE CODE

MJRP-MATHM

CRICOS CODE

061489J

Visit curtin.edu/msci-maths

Course description

This course will enable you to develop your knowledge and skills in operations research, statistics, numerical analysis, computing or mathematics.

In your first year, you will study core mathematics subjects to help improve your mathematics knowledge and skills. You will also learn to conduct and manage research before undertaking an investigation project. Most projects are based on technical problems or developmental ideas that originate within industry or scientific research.

In your second year, you will extend your knowledge and develop your ability to find efficient numerical and analytical solutions to problems.

Admission criteria

Recognised bachelor degree in science, with competency in mathematical science or a related discipline to the level of second-year tertiary study

Meet Curtin's English proficiency requirements.

Intermediate award

It is possible to exit this course early with a Graduate Diploma in Science (Mathematical Sciences) once you have completed sufficient units.


Career information

There will be an increasing demand for more sophisticated and innovative mathematical applications to improve and optimise processes and technology.

Industries

- Banking and finance
- Computer and mobile technologies
- GPS technologies
- Health
- Mining
- Oil and gas

Predictive Analytics

 International students accepted. Refer to page 37 for details.

Predictive analytics is the study of data to predict and subsequently optimise management decisions.

Predictive analytics uses techniques from data mining, statistics, modelling, machine learning and artificial intelligence to analyse data and make predictions about the future. It can be applied to fields such as resource operations engineering, asset management and productivity, finance, investment, actuarial science and health economics.

The importance of predictive analytics is considerable in areas where there are new disruptive technologies.

Course essentials

DEGREE

Graduate Certificate in Predictive Analytics

INTAKE

Semester 1

STUDY MODE

Full-time, part-time

DURATION

6 months full-time

LOCATION

Perth

COURSE CODE

GC-PREDAN

CRICOS CODE

092979A

Visit curtin.edu/gcert-predan

Course description

You will learn the basics of predictive data analytics, and the concepts of data analysis, computing and visualisation. You will also find out how these concepts can be used to predict future scenarios.

Course essentials

DEGREE

Graduate Diploma in Predictive Analytics

INTAKE

Semester 1

STUDY MODE

Full-time, part-time

DURATION

1 year full-time

LOCATION

Perth

COURSE CODE

GD-PREDAN

CRICOS CODE

092978B

Visit curtin.edu/gdip-predan

Course description

This course will provide you with an in-depth background to predictive analytics, data security, data mining, business applications and computing, including basic concepts of data analysis and visualisation.

Course essentials

DEGREE

Master of Predictive Analytics

INTAKE

Semester 1

STUDY MODE

Full-time, part-time

DURATION

2 years full-time

LOCATION

Perth

COURSE CODE

MC-PREDAN

CRICOS CODE

092977C

Visit curtin.edu/mpredan

Course description

This course addresses the growing demand for data analysts and scientists that have the right blend of technical and analytical skills to meet big data analytics challenges.

It emphasises the integration of technical and business skills. You will learn advanced skills in data management, data mining, decision methods, predictive analytics and visualisation, focusing on their applications to disciplines such as engineering, management, business and finance.

You will also have opportunities to work on projects for various industries and organisations, or on analytical problems through industry sponsored projects, Innovation Central Perth, the Curtin Institute for Computation and others.

You can specialise in one of two streams:

Resource Operations Engineering

This stream aims to develop petroleum and mining engineers who can analyse, interpret and utilise complex data analytics relating to resource assets and operations. This will help improve their operational business decision-making, resulting in maximised asset productivity and business growth.

This is the first course in Australia to apply data analytics and big data concepts to optimise operational engineering decisions.

Finance and Investment Analytics

This stream embeds economic and financial econometric analysis within the data and predictive analytic framework. You will gain working knowledge in economic, finance and business data, enabling you to apply your analytics skills in a business context.

Admission criteria (all courses)

- Recognised bachelor degree
- Meet Curtin's English proficiency requirements.

Career information

Experts in predictive analytics are well placed to handle the big data issues of the future. They understand how to overlay historical and prediction data with supply chain financial data, and can correlate probability assessments for better informed decisions.

Industries

- Analytics and social media
- Corporate business
- Resource operations

What our graduates say

"I have learned how to efficiently use programming languages to discover key information in any given data, and how to communicate my findings through writing a report and presenting it."

"I have also attained the ability to work well individually or as a member of a team, to be organised, well-structured, to work effectively under pressure and to adhere to deadlines."

Hazar Ayaz
Master of Predictive Analytics



"Curtin is one of the few institutions that provides an actuarial science program run through a mathematics department. This structure gives you the best mathematical support."

"With my background in technology project management in banking, I chose this course as I wanted to strengthen my advanced mathematical modelling and research skills to catch up with the ongoing big data, deep learning and fintech (financial technology) revolutions."

Wesley Leung
Master of Science (Actuarial and Financial Science)

"Geology at Curtin allowed me to advance my geological mapping, computing, exploration and management skills through hands-on practical learning and research. It gave me the advanced problem-solving techniques I need."

Kofi Osei
Master of Science (Geology)




Engineering at Curtin

Curtin's engineering coursework degrees offer you the opportunity to broaden your skills and knowledge in disciplines including corrosion, mining and subsea engineering.

Our courses aim to cater for the needs of business, government and industry. You will learn from industry professionals with knowledge and experience in your chosen field.

In some cases, you can also develop new professional skills in areas that do not relate to your undergraduate degree.

Engineering Management

 International students accepted. Refer to page 37 for details.



Engineering managers combine management expertise with engineering knowledge to lead teams of specialists who may work on highly technical tasks.

An engineering manager’s role may focus more on the processes and procedures of project realisation and on budgets, rather than technical input. They may also be involved at the beginning stages of a project to determine project feasibility.

Engineering managers commonly have postgraduate education and tend to work in offices, though they may conduct site visits.

Course essentials

DEGREE
Master of Engineering Management
INTAKE
January, May, August
STUDY MODE
Full-time, part-time
DURATION
1 year full-time
LOCATION
Perth
COURSE CODE
MC-ENGRMG
CRICOS CODE
058865E
Visit curtin.edu/meng-mgmt

Course description

This course provides a balance between engineering and business skills. It is jointly taught by staff from the Faculty of Science and Engineering and the Faculty of Business and Law.

The format of the course has kept up with industry needs and trends since its inception, and the coursework is relevant to all engineering disciplines. It integrates the functions and skills needed by engineers in management, and successful completion prepares you for high-level leadership in engineering and technology companies across Australia and around the world.

Evening classes allow you to tie in education and ongoing work commitments.

Admission criteria

- Recognised degree in engineering or an equivalent qualification in a recognised discipline of engineering with a high aggregate, preferably with at least one year of relevant work experience since graduation
- Meet Curtin’s English proficiency requirements.

Career information


The mining sector is expected to remain an important part of the Australian economy for many years. In November 2020, the Federal Government reported a 19% increase in major resource and energy projects over the previous 12 months*.

*Office of the Chief Economist, 2020

Industries

- Construction
- Defence
- Engineering
- IT and computing
- Manufacturing
- Mining
- Transport and infrastructure

Industrial Engineering

 International students accepted. Refer to page 37 for details.

Industrial engineering is an interdisciplinary field, requiring knowledge in mathematics, physics, engineering and even social sciences, such as psychology. Industrial engineers apply science, mathematics and engineering methods to complex system integration and operations to eliminate wastefulness.

Industrial engineers develop, design and refine systems and processes focused on improving quality and productivity. This includes systems and processes relating to people, money, information, equipment and energy.

Due to the nature of work, industrial engineers have expertise in engineering and mathematics principles and methods, and in business fundamentals such as logistics and operations management.

They are also regarded for their strong interpersonal skills and their ability to work well with people to achieve optimised work processes and systems.

Course essentials

DEGREE
Master of Science (Industrial Engineering)
INTAKE
Semester 1, Semester 2*
STUDY MODE
Full-time, part-time
DURATION
2 years full-time
LOCATION
Perth
COURSE CODE
MJRP-IENGM
CRICOS CODE
061489J
<small>*Due to unit availabilities, Semester 2 intake students may be required to study part-time for part of their degree.</small>
Visit curtin.edu/msci-indeng

Course description

This course provides you with a combination of technical depth and business fundamentals.

In this course, you will be involved in major industrial engineering research projects where you will be able to apply your acquired skills to help meet the challenges and opportunities that exist in the real world. In particular, you will have the skills to manage big data and apply business analytics to modern industry.



You will also study systems for total quality management and learn how to apply models to large-scale industrial problems.

Admission criteria

- Recognised bachelor degree in science or engineering and have achieved competency in mathematics or a related discipline to the level of second year tertiary study OR
- Recognised bachelor degree with honours in a related field or graduate diploma in a related field. Applicants via this pathway may be eligible for credit for recognised learning AND
- Meet Curtin’s English proficiency requirements.

Intermediate award

It is possible to exit this course early with a Graduate Diploma in Science (Industrial Engineering) once you have completed sufficient units.

Please note: completion of the Master of Science (Industrial Engineering) does not lead to accreditation with Engineers Australia.


Career information

Industrial engineers will continue to play crucial roles in business and industry, where the continual improvement of complex systems and processes is key to success.

Industries

- Agriculture
- Banking and finance
- Communications
- Defence
- Government
- Logistics
- Manufacturing
- Minerals and energy
- Robotics
- Supply chain optimisation
- Telecommunication
- Transport and logistics

Metallurgical Engineering

 International students accepted. Refer to page 37 for details.

Metallurgy is the science of the physical and chemical behaviours of metals and their purification.

Extractive metallurgists apply their expertise in chemistry, environmental science and mineralogy to find the best way to extract minerals and metals from natural ores and operate extraction plants at maximum capacity. Metallurgists also work on designing new extraction and processing methods for minerals and metals, often in liaison with other mining professionals.

All Curtin metallurgy courses are embedded with the principles of responsible mining, environmental stewardship, and occupational health and safety.

Course essentials

DEGREE

Graduate Diploma in Metallurgy

INTAKE

Semester 1, Semester 2

STUDY MODE

Full-time, part-time

DURATION

1 year full-time

LOCATION

Kalgoorlie, online*

COURSE CODE

GD-METALG

CRICOS CODE

054623M

*Online study is only available for domestic students. Students studying online may need to attend Curtin Kalgoorlie to satisfy the laboratory requirements for some units.

Visit curtin.edu/gdip-metallurgy



Course description

This course is for non-metallurgy scientists and engineers who wish to pursue a career as extractive metallurgists or further their career within the minerals industry.

It will provide you with a knowledge and understanding of the core areas of mineral processing and extractive metallurgy.

Admission criteria

- Recognised bachelor degree in an engineering or science discipline, excluding an Australian extractive metallurgy degree
- Meet Curtin’s English proficiency requirements.


Career information

The growth of big data will help metallurgical engineers optimise the conversion of raw metals and minerals into more useable formats.

Industries

- Equipment design and sales
- Mining and mineral processing
- Research and development

Minerals and Energy Economics

 International students accepted. Refer to page 37 for details.

Appreciating the business and economic framework in which the resources sector operates requires knowledge of economic, financial, managerial, legal, regulatory, political and social environments.

Our teaching programs are offered in a flexible way to cater for fly-in-fly-out workers and busy mid-career resource sector professionals wanting to balance work and study. They are designed to help these professionals move into senior management or decision-making roles.

Business-oriented students are immersed in the workings of the energy and mining sectors, while those with a technical background learn business tactics and terminology. Both groups graduate with a deeper understanding of the sector, and the tools to put new knowledge into action.

Course essentials

DEGREE

Graduate Certificate in Minerals and Energy Economics

INTAKE

Semester 1, Semester 2

STUDY MODE

Full-time, part-time

DURATION

6 months full-time

LOCATION

Perth city

COURSE CODE

GC-MNEREC

CRICOS CODE

018030B

Visit curtin.edu/gcert-minecon

Course description

This course will introduce you to economic, financial and management issues relevant to the mineral and energy sectors. You can tailor your studies to suit your professional needs and interests.

Admission criteria

- An approved bachelor degree
- At least two years’ work experience
- Meet Curtin’s English proficiency requirements.

You may be required to complete additional foundation units in accounting.

Course essentials

DEGREE

Master of Science (Minerals and Energy Economics)

INTAKE

Semester 1, Semester 2

STUDY MODE

Full-time, part-time

DURATION

1.5 years full-time

LOCATION

Perth city

COURSE CODE

MC-MERGE

CRICOS CODE

072466C

Visit curtin.edu/msci-minecon

Course description

This course will provide you with a thorough foundation in resource sector management and general business theories. You will complete coursework units on economic, financial and management issues.

Admission criteria

- An approved bachelor degree
- At least three years of relevant managerial experience
- Meet Curtin’s English proficiency requirements.

Course essentials

DEGREE

Master of Science (Minerals and Energy Economics), Master of Business Administration Double Degree

INTAKE

Semester 1, Semester 2

STUDY MODE

Full-time, part-time

DURATION

2.5 years full-time

LOCATION

Perth city

COURSE CODE

MM-MECBAD

CRICOS CODE

050596G

Visit curtin.edu/msci-mba

Course description

This double degree is becoming a popular choice for students with experience in the resources industry who want to consolidate their business and management skills. It combines the Master of Science with the internationally accredited business acumen of Curtin’s highly regarded MBA.

Admission criteria

- An approved bachelor degree
- At least three years of relevant managerial experience
- Meet Curtin’s English proficiency requirements.


Graduates from either the Curtin Graduate Certificate in Business or the Curtin Graduate Certificate in Mineral and Energy Economics will qualify for entry.

Please note: international students are subject to the competitive admission criteria, however must apply through the Curtin International Office.

Industries

- Energy
- Finance
- Mining
- Resources

Mining Engineering

 International students accepted. Refer to page 37 for details.



Mining engineering involves applying skills and knowledge in science and technology to safely and efficiently extract minerals from the earth.

Mining engineers plan underground or surface mining locations, development and exploitation, and coordinate functions and operations related to equipment, services personnel and processes. They design, implement and monitor the safe development of mines and use of equipment.

Due to the nature of mining, which disturbs the natural environment to extract minerals, mining engineers must be concerned with mitigating damage to the environment. They must also ensure a sustainable operation that benefits the local community throughout all phases of a mine’s life cycle.

Mining engineers may work in offices during planning, before moving on site to oversee the mine development and operation.

Course essentials

DEGREE

Graduate Diploma in Mining

INTAKE

Semester 1, Semester 2

STUDY MODE

Full-time, part-time

DURATION

1 year full-time

LOCATION

Kalgoorlie, online*

COURSE CODE

GD-MINING

CRICOS CODE

003967J

*Online study is only available for domestic students. Students studying online may need to attend Curtin Kalgoorlie to satisfy the laboratory requirements for some units.

Visit curtin.edu/gdip-min

Course description

This course imparts basic and core knowledge and skills required of a mining engineer working on surface or underground mine sites. This unique aspect makes the course relevant to applicants who would like to switch from another profession to mining engineering or who are working on mine sites and would like to acquire formal training as a mining professional.

Admission criteria

- Recognised bachelor degree in applied geology or civil, geological or geotechnical engineering, OR
- Recognised bachelor degree in surveying, or mechanical or metallurgical engineering plus relevant work experience. Candidates will be considered on a case-by-case basis AND
- Meet Curtin’s English proficiency requirements.

Career information

The mining sector is expected to remain an important part of the Australian economy for many years. In November 2020, the Federal Government reported a 19% increase in major resource and energy projects over the previous 12 months*.

*Office of the Chief Economist, 2020

Industries

- Mining
- Oil and gas
- Product and process development
- Tunnelling

Professional Engineering

Professional engineers apply their knowledge and skills to design innovative solutions to engineering problems, often using technology.

Course essentials

DEGREE

Graduate Diploma in Professional Engineering

INTAKE

Semester 1, Semester 2

STUDY MODE

Full-time, part-time

DURATION

1 year full-time

LOCATION

Perth, Kalgoorlie*

COURSE CODE

GD-PROENG

CRICOS CODE

098139D

*This applies to Mining and Metallurgy majors only.

Visit curtin.edu/gdip-profeng

Course description

This course is designed for those who wish to convert into a different engineering discipline, or from an undergraduate science or technology degree. It provides foundational knowledge, skills and professional competencies for an engineer in your chosen discipline.

You can choose one of the following streams:

- Chemical Engineering
- Civil Engineering
- Electrical and Electronic Engineering
- Mechanical Engineering
- Mining Engineering
- Petroleum Engineering
- Software Engineering.

On completion you will qualify to enter the Master of Professional Engineering where you will meet the Stage 1 academic requirements for chartered status as a professional engineer.

Your choice of stream in the graduate diploma will help determine which major you can study in the master degree:

Admission criteria

- Applicants require a bachelor degree or equivalent from a related science discipline or an undergraduate engineering qualification for entry into the course. Applicants holding a four-year undergraduate engineering qualification in a major related to their previous study should apply for the Master of Professional Engineering
- Meet Curtin’s English proficiency requirements.



Graduate Diploma streams	Master of Professional Engineering majors
Chemical Engineering	Chemical Engineering Metallurgical Engineering
Civil Engineering	Civil Engineering Structural Engineering
Electrical and Electronic Engineering	Embedded Systems Engineering Emerging Power Systems Engineering Telecommunication and Networking Engineering
Mechanical Engineering	Mechanical Engineering
Mining Engineering	Mining Engineering
Petroleum Engineering	Petroleum Engineering Subsea Engineering
Software Engineering	Software Engineering

Course essentials

DEGREE

Master of Professional Engineering

INTAKE

Semester 1, Semester 2

STUDY MODE

Full-time, part-time

DURATION

2 years full-time

LOCATION

Perth, Kalgoorlie**

COURSE CODE

MC-PROENG

CRICOS CODE

098138E

**This applies to Mining and Metallurgy majors only.

Visit curtin.edu/mprofeng

This course is designed for graduates of a four-year undergraduate engineering degree in a related discipline. Applicants seeking entry who do not hold such a qualification are required to first complete the one-year Graduate Diploma in Professional Engineering (GD-PROENG).

Course description

The Master of Professional Engineering equips you with the technical knowledge, skills and professional competencies that allow you to work as a professional engineer upon graduation.

Completion of this course demonstrates attainment of the Stage 1 competency standards for Professional Engineers required by Engineers Australia*. Direct entry to this course is available if you have a four-year engineering qualification in a discipline related to your intended major. Otherwise, you may need to complete the Graduate Diploma in Professional Engineering prior to enrolling in this course.

During the course, you must gain at least 12 weeks of exposure to engineering professional practice and keep a formal log book to record your experience. In your final year, you will complete a major research or design project that will draw upon and integrate knowledge and skills attained through the course.

You can choose one of the following majors.

Chemical Engineering

This major provides you with strong theoretical, laboratory, design and research experiences. You will also learn about technological advances in automation and control, and large data management in chemical process industries.

Civil Engineering

This major covers civil engineering materials, analysis and design principles, numerical methods, geotechnical principles and foundation, water resources engineering and management, and structural health monitoring.

The major also includes other components in engineering projects, such as risk analysis and management, construction cost and project management, and environmental engineering management.

Embedded Systems Engineering

Our world is characterised by the ever-increasing number of intelligent devices that have embedded computers. Embedded systems are computers with specialised input or output devices that may or may not be programmed by the end user.

In this major, you will study intermediate and advanced topics in embedded systems, such as embedded systems in field-programmable gate arrays and embedded software engineering.

During your one-year project, you will further investigate and apply emergent technologies in embedded systems.

Emerging Power Systems Engineering

Electricity is a key energy source in the development and progress of contemporary society. Since fossil fuels are a finite resource, developing alternative sources of electrical energy such as solar and wind is vital.

This major addresses challenges in the generation, transmission and distribution of electricity. Emergent technologies such as smart grid and distributed generation are covered in detail.

During your one-year project, you will further investigate and apply emergent technologies in power systems.

Mechanical Engineering

Mechanical engineering involves the movement of solid parts and fluid flows. It is founded on the need to understand, design and manufacture parts, machines, devices and integrated engineering systems, including micro-mechanical actuators, cars, machine tools, aircraft and power-generating turbines.

In this major, you will be introduced to intermediate and advanced topics that will enable your career in contemporary mechanical engineering and its future development.

During your final-year project, you will have the opportunity to apply advanced knowledge and technologies to research and design challenges in the field.

Metallurgical Engineering

This major equips future metallurgical and process engineers with concepts and process applications relevant to precious, critical and base metal extraction, separation and refining from primary and secondary resources.

You will learn about techniques and emerging technologies in mineral processing and extractive metallurgy. You'll also be exposed to a full scope of minerals and metals processing including mineralogy, process selection, plant design, resources recycling, and environmental management along with aspects of project assessment and mineral economics.

Mining Engineering

This major provides comprehensive knowledge in mining engineering including mineral exploration, mine planning, development and management. You will learn about both theoretical and practical principles of mining engineering including the concept of smart mining using advanced data analytics and robotics applications in the mining industry.

During the course, you will learn various aspects of mining engineering with the sophisticated curriculum including, but not limited to, mining methods, resources estimation, geomechanics, mine planning and feasibility study, ventilation, rock excavation, mine management, digital applications, future mining and sustainability.

Petroleum Engineering

This major provides you with technical knowledge and helps you gain an understanding of the exploration, drilling, production and operation of conventional and unconventional oil and gas resources.

Upon graduation, you will be able to work as a petroleum engineer in the resource industry, service companies and in relevant government organisations, including legal and regulatory authorities.

*The MPE is currently seeking provisional approval in the 2020 accreditation round.



Software Engineering

Software is ubiquitous, driving almost all the technology around us. Software engineering is the process of analysing user requirements and designing, constructing, and testing complex software projects through the application of engineering principles to software development.

This major prepares you to work as part of a team undertaking large-scale software projects, to put collaboration, rigour, creativity, and advanced technical skills to work on complex and diverse software challenges.

Subsea Engineering

This major provides you with the technical knowledge of subsea production systems.

You will conduct a broad-based study of design, development and operation of subsea infrastructure and subsea production systems for oil and gas resource development and production in the subsea environment.

Telecommunications and Networking Engineering

The electronics and communication fields represent two of the fastest growing technology areas in the world. With the rapid progress of information technology, the role of communications is becoming even more crucial for increasing industry efficiency and competition.

This major explores relevant topics in telecommunications and networking, like mobile radio communications, sensor networks and data network security.

During your one-year project, you will have the opportunity to further investigate and apply emergent technologies in telecommunications and networking systems.

Professional accreditation

Accreditation for this program will be sought from Engineers Australia. Accreditation will be available for graduates who complete both the Graduate Diploma in Professional Engineering and the Master of Professional Engineering.

Admission criteria

- Applicants require a four-year undergraduate engineering qualification in a discipline related to their chosen major. Applicants who do not fulfil this requirement should apply for the Graduate Diploma in Professional Engineering (GD-PROENG). Graduates from the GD-PROENG will meet entry requirements for this course
- Meet Curtin's English proficiency requirements.

Career information

Professional engineers will have the capabilities to address future challenges in an increasingly complex global environment.

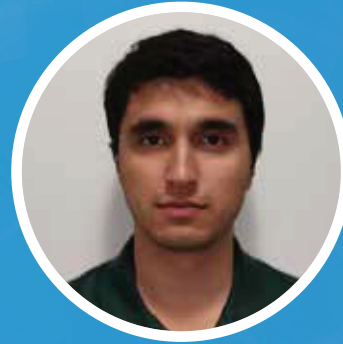
Industries

- Advanced manufacturing
- Computer and mobile technologies
- Construction
- Consumer power systems
- Energy production
- Infrastructure design and development
- Instrumentation and control
- Mineral processing
- Oil and gas
- Subsea oil and gas

What our graduates say

"I wanted to complement my skill set with embedded systems design knowledge, especially in robotic and automated systems. This course given me the tools to comprehensively design mechanical devices and automated systems and has taught me different aspects of telecommunications, data security and electrical design."

Martin Jaramillo
Master of Professional Engineering (Electrical Engineering – Embedded Systems)



"As a Colombian chemical process engineer, selecting the right international university was important to me. I chose to study a Master of Professional Engineering at Curtin because of the quality of its teaching program, strong industry links and its multicultural community. Thanks to the wonderfully supportive staff, I've been able to grow my confidence speaking English, learn from diverse viewpoints and gain valuable Australian work experience in my field."

Johanna Aguirre
Master of Professional Engineering (Chemical Engineering)

"The things I most appreciated about this degree were the networking opportunities I got with people from diverse professional and cultural backgrounds, the practical experience the lecturers brought into the classroom, and the curriculum of the course which filled the knowledge gap between the engineering and business practices."

"Doing my postgraduate degree and working full-time at the same time was very practical in the sense that I could 'immediately' implement what I learned in the classroom back at work the next day."

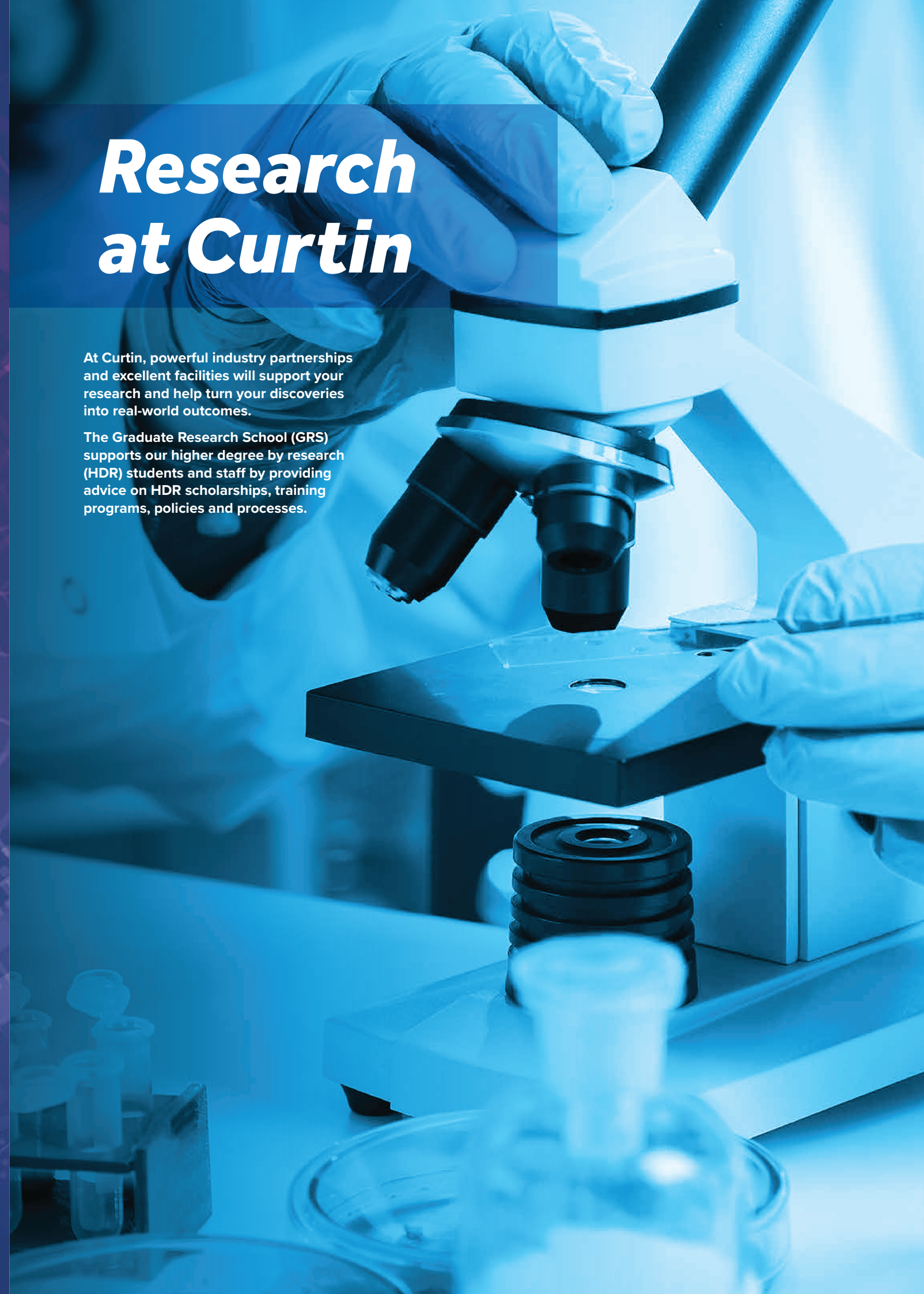
Michael Chan
Design Engineer, City of Melville
Master of Engineering Management




Research at Curtin

At Curtin, powerful industry partnerships and excellent facilities will support your research and help turn your discoveries into real-world outcomes.

The Graduate Research School (GRS) supports our higher degree by research (HDR) students and staff by providing advice on HDR scholarships, training programs, policies and processes.



Research degrees

 International students accepted. Refer to page 37 for details.



These degrees enable you to undertake independent, original research under the supervision of a senior academic. You'll be supported through the University's facilities and industry partnerships, helping you turn your discoveries into real-world outcomes.

The following overarching research degrees encompass many specialist subjects:

- Doctor of Business Administration
- Doctor of Education
- Doctor of Philosophy
- Doctor of Sustainable Development
- Master of Philosophy
- Master of Research.

Find a supervisor at research.curtin.edu.au

Alternatively, contact our Graduate Research School for more information:

Tel: +61 8 9266 3337
Email: GRS.FutureStudents@curtin.edu.au
Web: curtin.edu/postgrad-research

Areas of strength

Agriculture, environment and sustainability

- Crop disease and control
- Ecology and environmental sciences
- Plant, marine and restoration ecology
- Trace and environmental DNA
- Water quality and treatment

Computing and mathematical sciences

- Artificial intelligence and machine learning
- Applied mathematics
- Optimisation
- Data sciences
- Probability theory and statistical science

Earth and physical sciences

- Analytical and materials chemistry
- Crust-mantle evolution and geodynamics
- Earth and planetary science
- Exploration geophysics
- Future energy
- Radio astronomy
- Remote-sensing and satellite research
- Underwater acoustics and stereoscopic imaging

Engineering, mining and metallurgy

- Carbon dioxide sequestration
- Concrete technology
- Drilling engineering, reservoir characterisation, geomechanics, modelling and simulation
- Enhanced oil recovery
- Flow assurance, production modelling and optimisation
- Industrial automation
- Reservoir stimulation
- Structures monitoring and protection
- Subsea processing, integrity management and subsea system design
- Unconventional resource development
- Underground storage
- Vibration and noise

Visit curtin.edu/scieng-research

SCIENCE					
Course	CRICOS Code	Duration	Location	Study Mode	Intake
Master of Research					
Agriculture	0100022	1–2 years	Perth, online*	Full-time, part-time	At any time
Chemistry	0100024	1–2 years	Perth, online*	Full-time, part-time	At any time
Earth and Planetary Sciences	0100025	1–2 years	Perth, online*	Full-time, part-time	At any time
Environmental Science	0100027	1–2 years	Perth, online*	Full-time, part-time	At any time
Physics	0100030	1–2 years	Perth, online*	Full-time, part-time	At any time
Master of Philosophy					
Chemistry	061496K	1–2 years	Perth, online	Full-time, part-time	At any time
Computer Science	061498G	1–2 years	Perth, online	Full-time, part-time	At any time
Corporate Sustainability	061499G	1–2 years	Perth	Full-time, part-time	At any time
Environment and Agriculture	072468A	1–2 years	Perth, online*	Full-time, part-time	At any time
Geographic Information Science	074579M	1–2 years	Perth	Full-time, part-time	At any time
Geology	061503E	1–2 years	Perth, Malaysia, online*	Full-time, part-time	At any time
Geophysics	061504D	1–2 years	Perth	Full-time, part-time	At any time
Mathematics	061508M	1–2 years	Perth, online*	Full-time, part-time	At any time
Medical Radiation Science	098149B	1–2 years	Perth, online*	Full-time, part-time	At any time
Physics	061518J	1–2 years	Perth, online*	Full-time, part-time	At any time
Surveying and Mapping	061522B	1–2 years	Perth	Full-time, part-time	At any time
Doctor of Philosophy					
Applied Geology	043949B	2–4 years	Perth, online*	Full-time, part-time	At any time
Chemistry	043968K	2–4 years	Perth	Full-time, part-time	At any time
Computing	043987G	2–4 years	Perth, online*	Full-time, part-time	At any time
Environment and Agriculture	072469M	2–4 years	Perth, online*	Full-time, part-time	At any time
Geophysics	043954E	2–4 years	Perth, online*	Full-time, part-time	At any time
Mathematics and Statistics	043955D	2–4 years	Perth, online*	Full-time, part-time	At any time
Medical Radiation Science	043957B	2–4 years	Perth, online*	Full-time, part-time	At any time
Physics	043950J	2–4 years	Perth, online*	Full-time, part-time	At any time
Spatial Sciences	006092J	2–4 years	Perth, online*	Full-time, part-time	At any time

ENGINEERING					
Course	CRICOS Code	Duration	Location	Study Mode	Intake
Master of Philosophy					
Chemical Engineering	061495M	1–2 years	Perth, Malaysia, online*	Full-time, part-time	At any time
Civil Engineering	061497J	1–2 years	Perth, Malaysia, online*	Full-time, part-time	At any time
Electrical and Computer Engineering	061500G	1–2 years	Perth, Malaysia, online*	Full-time, part-time	At any time
Mechanical Engineering	061509K	1–2 years	Perth, Malaysia, online*	Full-time, part-time	At any time
Mining and Metallurgical Engineering	061514B	1–2 years	Perth, Kalgoorlie	Full-time, part-time	At any time
Petroleum Engineering	061517K	1–2 years	Perth, Malaysia, online*	Full-time, part-time	At any time
Doctor of Philosophy					
Chemical Engineering	043951G	2–4 years	Perth, online*	Full-time, part-time	At any time
Civil Engineering	043952G	2–4 years	Perth, online*	Full-time, part-time	At any time
Electrical and Computer Engineering	043990A	2–4 years	Perth, Malaysia, online*	Full-time, part-time	At any time
Engineering	050587J	2–4 years	Perth, online*	Full-time, part-time	At any time
Mechanical Engineering	043956C	2–4 years	Perth, online*	Full-time, part-time	At any time
Petroleum Engineering	006095F	2–4 years	Perth, online*	Full-time, part-time	At any time
Mining and Metallurgical Engineering	044005J	2–4 years	Perth, online*	Full-time, part-time	At any time

*Some research project topics are not suitable to be undertaken online.

Scholarships and fees



Scholarships

You may be eligible for a scholarship to support your study. Sign up to the scholarships email alert to make sure you don't miss an opportunity.
scholarships.curtin.edu.au

Fees

Tuition fees
Tuition fees are calculated on a semester basis. Fees are subject to annual increase and are calculated according to the credit points within a course. Indicative course fees for the 2022 commencement year are available from September 2021.
students.curtin.edu.au/essentials/fees

Student Services and Amenities Fee
The Student Services and Amenities Fee (SSAF) is used for supporting a comprehensive range of non-academic services and amenities. SSAF does not apply to international students.
curtin.edu/amenities-fee

Financial assistance

Postgraduate study is an investment in your future. If you are concerned that you cannot afford postgraduate study, there are several options for financial assistance you can explore.

Employer-paid study

Your employer may help you with the cost of postgraduate study. Many organisations have employee-education policies designed to share the costs of education that is mutually beneficial.

FEE-HELP

If you are an Australian citizen or a New Zealand Special Category Visa holder or a permanent humanitarian visa, you may be eligible for the Australian Government's FEE-HELP loan for all or part of your tuition fees.

curtin.edu/fee-help

Tax benefits

If there is a direct connection between your postgraduate course and your current employment, you may be entitled to an income tax deduction for tuition fees and expenses.

ato.gov.au

Applying to Curtin



Study options

If you are a domestic student, we offer flexible study options to help you manage work and family commitments. You can study full-time, part-time or online, subject to availability.

To study full-time you must enrol in three or four units per semester (75 or 100 credits), while part-time study involves as few as one or two units (25 or 50 credits) per semester.

If you study online, you will complete the same coursework and assessments as students who study on campus.

Please note: International students studying in Australia on a student visa must study full-time (100 credits) and on campus.

Applying as a domestic student

You are a domestic applicant if:

- you are an Australian citizen, Australian dual citizen or New Zealand citizen, or
- you are a permanent resident of Australia, or
- you hold an Australian permanent humanitarian visa.

curtin.edu/pg-apply

Applying as an international student

You are an international applicant if:

- you are not a citizen of Australia and New Zealand, or
- you are not a permanent resident of Australia, or
- you are required to hold a student visa to study in Australia.

curtin.edu/int-apply

Previous learning

You may have undertaken previous study or work experience that matches the knowledge required for some of your Curtin course units. If so, we encourage you to also apply for credit for recognised learning (CRL), which exempts you from having to study certain course units. Getting CRL means you could finish your degree in less time.

curtin.edu/pg-crl

English language proficiency

All Curtin postgraduate courses require English language proficiency. Some courses have specific and higher English requirements than others. For details on accepted English proficiency tests, see curtin.edu/english-proficiency.

Curtin English

Completing a program at our Curtin English language centre will help you meet the University's English language requirements.

If you receive an offer to study at Curtin but don't meet the English requirement, you may be eligible to receive AUD\$6,295 toward your English tuition.

english.curtin.edu.au

For more information

Curtin University

Kent St, Bentley
Western Australia 6102

Postal Address

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Perth Western Australia 6845

Domestic students

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Web: study.curtin.edu.au

International students

Tel: +61 8 9266 5888
FAQ: future.connect.curtin.edu.au
Email: study@curtin.edu.au
Web: international.curtin.edu.au

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