

ENGINEERING

GRADUATE AND GRADUATE RESEARCH COURSE GUIDE

2024



#1 IN AUSTRALIA
FOR ENGINEERING

**TIMES HIGHER EDUCATION WORLD
UNIVERSITY RANKINGS BY SUBJECT**
(2023)

MONASH ENGINEERING A GLOBAL LEADER

Gain the technical expertise, research knowledge and professional experience to ignite innovation and deliver sustainable engineering solutions at a time when they're needed more than ever.

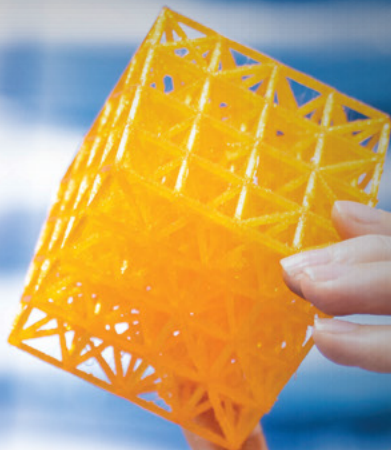
Deepen your knowledge and transform your career

Study hands-on in our world-class facilities as you learn from expert academics, researchers and industry professionals.

Join our diverse community of ambitious graduates and come together to solve society's global challenges – across climate, energy, transportation, water and health.

Gain job-ready skills through internships, industry placements and projects in professional engineering settings.

Wherever you want to go, we'll equip you with the capabilities, confidence and connections to get you there.



A WORLDWIDE UNIVERSITY

TOP 100

IN 15 ENGINEERING SUBJECTS GLOBALLY

-  **BIOMEDICAL**
-  **BIOTECHNOLOGY**
-  **CHEMICAL**
-  **CIVIL**
-  **COMPUTER SCIENCE AND INFORMATION SYSTEMS**
-  **ENERGY SCIENCE**
-  **ENVIRONMENTAL SCIENCE**
-  **MATERIALS SCIENCE**
-  **MECHANICAL**
-  **METALLURGICAL**
-  **MINING AND MINERAL**
-  **NANOSCIENCE AND NANOTECHNOLOGY**
-  **REMOTE SENSING**
-  **TRANSPORTATION SCIENCE AND TECHNOLOGY**
-  **WATER RESOURCES**

Academic Ranking of World Universities, 2022

#54

QS GLOBAL UNIVERSITY
EMPLOYABILITY RANKINGS

2022

#44

IN THE WORLD AND
#1 IN AUSTRALIA FOR ENGINEERING
AND TECHNOLOGY

Times Higher Education rankings by Subject 2023

34K+

ENGINEERING ALUMNI FROM
MORE THAN 75 COUNTRIES

2023

100+


PARTNER UNIVERSITIES ACROSS
THE GLOBE

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Course information fast facts

Look for these icons on each course page for key information.

	Location
	Duration
	Intakes

MONASH UNIVERSITY recognises that its Australian campuses are located on the unceded lands of the people of the Kulin nations, and pays its respect to their elders, past, present and emerging.

REAL INDUSTRY EXPERIENCE

EXTEND YOUR CAPABILITIES. SHARPEN YOUR COMPETITIVE EDGE. AND ENHANCE YOUR EMPLOYABILITY.

SHARPEN YOUR EDGE IN THE GLOBAL WORKFORCE

With a postgraduate degree, you'll graduate as a confident, capable and connected engineer. Plus, you'll be ready to excel in the professions of tomorrow – to add value from day one.

In fact, over 94% of our postgraduates secure full-time employment within four months.

You'll solve real-world challenges as you build a solid foundation for professional development, grow your industry contacts and strengthen your employability.

EXTEND YOUR EMPLOYABILITY AND PROFESSIONAL SKILLS

Career Ready Series

Extend your learning beyond the classroom, and stand out from the crowd. The Series provides a range of professional development events and activities that fine tune your employability skills. It includes opportunities to engage with industry and alumni, and to participate in tailored workshops to maximise your graduate employment prospects. monash.edu/engineering/career-ready-series

Summer Research Program

Undertake 12 weeks of paid research training, working closely with world-leading researchers and contributing to real research projects. The program also counts towards Continuous Professional Development requirements. monash.edu/engineering/summer-research-program

Career advice and mentoring

Meet successful industry alumni who've had a similar student journey as you, seek career advice and learn from their experiences. The Women in Engineering and Alumni Mentoring programs are available in your final years of study to help you build industry knowledge and networks. monash.edu/engineering/mentoring

BOLSTER YOUR INDUSTRY EXPERIENCE

At Monash, you'll go beyond the classroom to build your capabilities through real-world work experiences. Put theory to the test with initiatives like:

Work Integrated Learning program (WIL)

Complete a graduate internship – and gain credit towards your degree. You'll sharpen new skills, expand your industry knowledge, grow your network and gain a richer understanding of your field. monash.edu/engineering/graduate-internships

Monash Industry Team Initiative (MITI)

Join a multidisciplinary team alongside industry experts as you deliver a real-world project – pushing you to use your problem-solving, innovation and design skills. monash.edu/miti

Industry Innovation Program

Kickstart your engineering career and work full-time or part-time in a paid role. Use the program to explore different sectors, engage in teamwork and apply your theoretical knowledge in a practical context. monash.edu/smart-manufacturing-hub/industry-innovation-program

Industry Doctoral Program

Embedded in a business, you'll take a portfolio-based approach to PhD research and design solutions to real commercial challenges – all while growing your career.

GO TO PAGE 32 to learn more about an Industry Doctoral Program.

Graduate Research Industry Partnerships (GRIPs)

Collaborate with academics and industry partners to solve practical challenges. Across food and dairy, public transport, chemicals and plastics manufacturing, and water and sustainability in Asia. monash.edu/graduate-research/partnerships/grip

PhD research internships

Apply your research skills and boost your employability as you work on short-term industry projects. We partner with the Australian Postgraduate Research Intern program to provide hundreds of internship opportunities. monash.edu/graduate-research/partnerships/internships

94% POSTGRADUATES
SECURE EMPLOYMENT
WITHIN 4 MONTHS

QS World University Rankings by Subject 2021

55% BOOST TO YOUR
AVERAGE SALARY
WITH A MASTERS

“

For my PhD I am working with Australian company Great Wrap to convert food waste into compostable packaging - stretch wrap. The potential of this kind of research on the food industry is twofold. It's mainly about reducing food waste. But on top of that it's about producing products that are on your shelves with smart packaging design. The thing that excites me about my work is reducing the plastics pollution problem in the world and creating a tangible solution for consumers.”

EDWARD ATTENBOROUGH
PhD, Chemical and Biological Engineering

“

For Great Wrap in the bioplastics sphere, research is critical. We need to be optimising our material all the time, keeping an eye out for what could be coming down the line which may give us a better material or competitive edge. I hope from Eddie's PhD that we will have the next generation of Great Wrap material, compostable bioplastic materials for use in our applications and insight into where to look next.

We partnered with Monash University Food Innovation Lab to initially look at possible sources of bio plastics from food waste. Eddie has been quite a valuable resource in supporting our commercial needs, as well as being able to access facilities at Monash to check the properties, do testing, analyse materials to assist the commercial side as well as the innovation side.”

MARTIN MARKOTSIS
Materials and Innovation Manager, Great Wrap

GREAT WRAP



CONNECT COLLABORATE AND CREATE

Want to tackle global challenges and collaborate with the brightest minds?
Enrol in a graduate degree to network with top engineers, turn your ideas into innovations
– and fast-track your career.

Monash: A global community

Monash University is truly a global university. Our main base is in Australia, but our presence extends to locations in China, Malaysia, Indonesia, Italy and India. We also have 100+ partner institutions across the globe.

The Generator: Ignite your entrepreneurial spark

Want to accelerate your start-up or bring an idea to life?
Perhaps even take it global?

Our entrepreneurial program, The Generator, provides experiential education, mentorship and seed funding to support – and amplify – your journey. Make your dream a reality in our purpose-built collaborative design and build spaces.

🔗 monash.edu/entrepreneurship

Monash Graduate Association (MGA)

For over 50 years, the MGA has provided graduate research and coursework students with advocacy, advice and support services. They also organise social events, peer mentoring, workshops and seminars to provide graduate students with the opportunity to develop their skills, network with one another, discuss current issues and upcoming trends.

🔗 mga.monash.edu

STUDENT TEAM INITIATIVE: TEAM UP AND GET CONNECTED

Develop hands-on skills, pursue your passions and compete in international challenges. Our multidisciplinary student teams operate like a start-up, steer products through R&D, harness advanced testing facilities and sharpen your project management skills. You'll boost your employability as you collaborate with trailblazers and industry sponsors. Our students have secured dream careers with the likes of Tesla, Boeing and NASA from their team or club experience and connections.

Monash teams leading the way

- Monash Motorsport developed Australia's first Formula Student driverless car
- Monash Nova Rover placed second in the International University Rover Challenge
- Monash Solar Decathlon Team won international competitions with net-zero housing designs

With over 30 active groups, you'll find the perfect fit for your ambitions and aspirations. To learn more about Monash Student Teams Initiative visit

🔗 monash.edu/engineering/student-experience/teams-and-clubs

MEET MONASH CARBON CAPTURE AND CONVERSION (MC³)

The MC³ student team is researching, innovating and designing carbon capture and conversion solutions in the fight against climate change. The team won a US\$250K Student Award in Elon Musk's \$100M XPRIZE For Carbon Removal.



READ MC³ TEAM'S STORY

monash.edu/news/articles/monash-student-team-takes-out-climate-change-award-funded-by-elon-musk



RESEARCH: TURN INSIGHTS INTO INNOVATIONS

Our vibrant Technology Precinct is where fresh ideas become real-world solutions. As a graduate research student, you'll partner across disciplines and solve industry challenges to commercialise your research.

Our complete innovation ecosystem brings together:

- Australia's largest university
- World-class researchers – and far-reaching networks
- State-of-the-art research tools and facilities
- Talented students and professionals across fields
- Industry partners – from start-ups through to multinationals.

Join a community that's committed to enriching society to help build a better future for all.

SEIZE INTERNATIONAL RESEARCH OPPORTUNITIES

International collaboration grants

Pursue your research in esteemed universities around the world. Access travel grants and awards to fund global research collaborations and joint publications.

Joint PhD awards

Create impact locally and globally. Participate in joint PhD award programs at world-renowned institutions – and build a worldwide network of mentors and collaborators to further your research.

🔗 monash.edu/graduate-research/study/joint-research-awards





STATE-OF-THE-ART INFRASTRUCTURE

At Monash, you'll test processes, build prototypes and redefine what's possible. Harness robotics, apply machine learning or ignite your entrepreneurial spark to design next-gen innovations.

WORLD-CLASS RESEARCH FACILITIES

Want to delve deep and pursue your passions? At Monash, you'll explore ideas and examine what's possible across our innovation ecosystem:

- Woodside Building for Technology and Design
- New Horizons Research Centre
- Monash Centre for Electron Microscope – home to the TITAN
- X-ray Analytical Platform
- Drone Discovery Platform
- The Living Lab
- Food Innovation Centre and Labs
- Monash Centre for Additive Manufacturing (MCAM)
- Australian Synchrotron.

Monash Smart Manufacturing Hub

Industry 4.0 is here. With data-driven processes, digital technologies, advanced robotics, remote monitoring and machine learning.

The Smart Manufacturing Hub co-creation ecosystem connects you with world-leading researchers and industry partners – to solve manufacturing challenges and design sustainable solutions.

Monash Makerspace

Linked to the Generator – Monash's entrepreneurial program – you'll turn your ideas into innovations in our creative, collaborative makerspace.

Connect with staff, alumni and industry leaders to design, build and nurture your entrepreneurial endeavours.

Monash Robotics

Monash's robotics research facility is training the next generation of engineers and accelerating Australia's emerging AI economy.

The \$6.5 million investment provides experimental space and advanced equipment – placing you at the forefront of cutting-edge AI innovation.

MONASH TECHNOLOGY PRECINCT

World-leading research deserves world-class facilities. The Monash Technology Precinct connects top talent, government initiatives and industry partners – with powerful research infrastructure.

Research institutes and centres

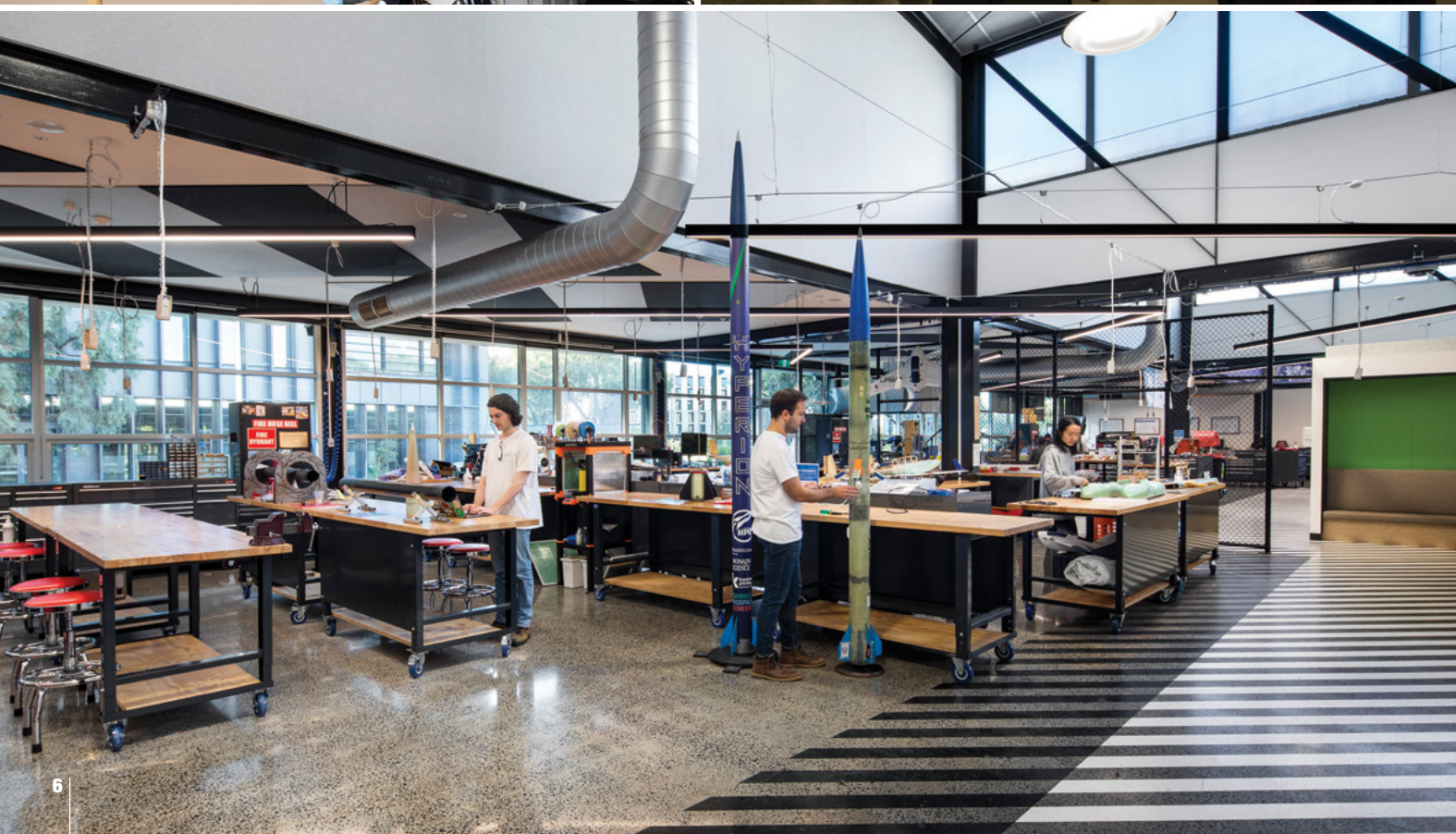
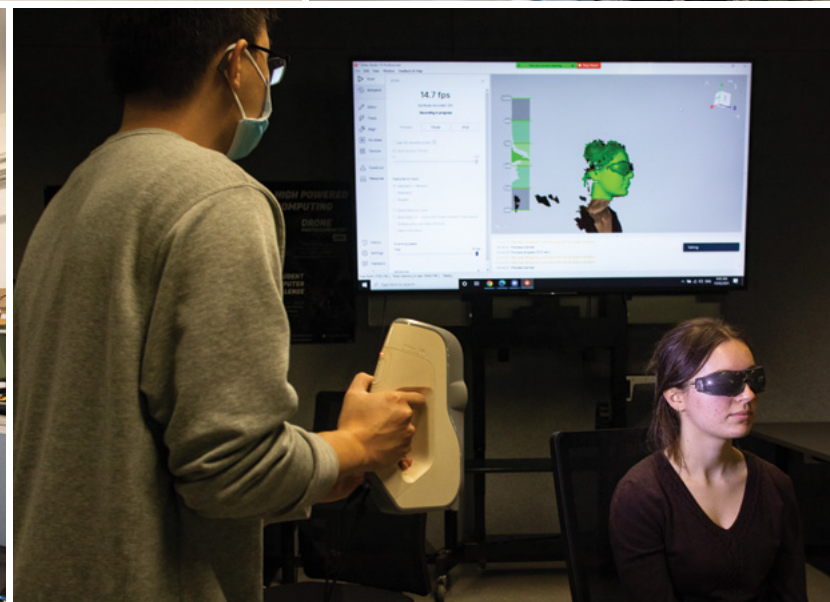
Monash University is home to some of the most advanced facilities in the world. You'll collaborate across disciplines in our advanced research institutes and centres, such as:

- Monash Institute of Medical Engineering (MIME)
- Monash Energy Institute (MEI)
- Institute of Railway Technology (IRT)
- Monash Institute of Transport Studies (ITS)
- Maintenance Technology Institute (MTI)
- Bioresource Processing Institute of Australia (BioPRIA)
- Monash Victorian Heart Institute (VHI)
- Monash Centre for Membrane Innovation (MCMi).

ARC Research Hubs and Centres of Excellence

Our researchers are solving the world's most complex challenges. Collaborate with Australian Research Council (ARC) centres, industrial transformation research hubs and cooperative research centres, including:

- Nanoscience-based Construction Material Manufacturing
- Energy-efficient Separation
- Processing Lignocellulosics into High Value Products (PALS)
- Smart Pavements Australia Research Collaboration (SPARC)
- Future Low-Energy Electronics Technologies (FLEET)
- Exciton Science.



GRADUATE COURSES AT A GLANCE

From extending your expertise to becoming an accredited engineer to leading pioneering research, we have the graduate course for you.

MASTER’S DEGREES (BY COURSEWORK)

Want to gain knowledge and build your engineering experience through an approach that’s both practical and theoretical? Learn the skills, thinking and strategies required to solve problems – while developing your leadership and entrepreneurial know-how.

Master of Engineering	Master of Professional Engineering
<p>Are you an accredited engineer wanting to advance your leadership and problem-solving skills? And set yourself up for a career that fulfils your aspirations and goals?</p> <p>In this one-year course, you’ll extend your technical knowledge in your chosen specialisation area. You’ll foster innovative thinking and entrepreneurship – so you can design sustainable engineering solutions.</p>	<p>Want to become an accredited engineer?</p> <p>In this two-to-three-year course you can:</p> <ul style="list-style-type: none">• Change engineering specialisation – or develop a new one• Gain an internationally recognised engineering qualification to build on your undergraduate STEM studies.
<p>GO TO PAGE 10 to learn more about the Master of Engineering.</p>	<p>GO TO PAGE 12 to learn more about the Master of Professional Engineering</p>

GRADUATE RESEARCH

Want to lead research and transform the future? In our two-to-four-year engineering research degrees you can solve real-world issues in a stimulating, supportive environment. Be involved in pioneering research and collaborate with leading researchers.

Master of Engineering Science (Research)	Doctor of Philosophy (PhD)	Industry Doctoral Program
<p>Develop specialised knowledge and skills while addressing national issues, tackling global challenges and improving the way of life in communities.</p>	<p>Pursue your passion in a world-class research environment:</p> <ul style="list-style-type: none">• Solving real-world issues, with world-leading researchers by your side• Gain diverse, transferable skills – including leadership, project management and data analysis• Impact the world. Pioneer new frontiers of research. And open doors not only in industry and academia, but in roles beyond your research area.	<p>Embedded in a business, you’ll take a portfolio-based approach to research:</p> <ul style="list-style-type: none">• Prioritising training over coursework• Emerging with the skills employers require.
<p>GO TO PAGE 28 to learn more about a Research Masters</p>	<p>GO TO PAGE 30 to learn more about a PhD at Monash Engineering</p>	<p>GO TO PAGE 32 to learn more about the Industry Doctoral Program</p>

Alex chose a master’s at Monash after completing his undergraduate degree in science at another university. Below, he discusses the highlights of his course so far – and his advice for prospective students.



The highlight of my course so far has been the staff. I’ve found the Monash teaching team so welcoming and helpful. Despite limited face-to-face teaching time (because of COVID-19), I’ve had more interactions with teachers in the last six months than in my entire bachelor’s degree.

The advice I’d give to prospective master’s students would be to interact with as many teachers as possible. Even if you think you’ve understood the content, there will always be something you’ve missed. Also, get involved with group projects. They can be challenging – but are an ideal way of getting to know great people in your stream.”

ALEX ELLINGWORTH
Master of Professional Civil Engineering



📍 Clayton (on campus)

🕒 1 year (full-time¹)

➡ February and July

International students:
A\$52,400 (2023 fees pa)
Domestic students:
A\$41,900 (2023 fees pa)

💰 Fees are per 48 credit points, which represents a standard full-time course load for a year.

WORK-INTEGRATED LEARNING
Professional development

DEGREE AWARDED
The degree you're awarded will reflect your chosen specialisation.

MONASH ENGLISH LANGUAGE LEVEL
Level A (see page 35)

- CAREER OPTIONS**
- Specialist engineer or consultant within your chosen professional field
 - Engineering management role in private or public sector
 - Entrepreneur or CEO of your company

COURSE CODE: E6014 **CRICOS:** 104589A

¹ Part-time study may be available to international students studying onshore in Australia who hold specific visa categories. Please check your visa for confirmation.

COURSE SPECIALISATIONS

Pursue your passions and expand your learning in your chosen specialisation.

- Biological
- Civil
- Electrical
- Engineering management
- Materials
- Mechanical

Refer to pages 14 to 24 to delve deeper into each area.

Discover more at
monash.edu/engineering/masters

Master of ENGINEERING

Advance your technical and leadership skills – and take your career to the next level. You'll develop innovative thinking and entrepreneurial skills to lead and solve complex challenges.

Who is this course for?

The Master of Engineering is for you if you:

- Have already completed a four-year accredited engineering degree in one of the related specialisations
- Want to achieve a master's qualification in one year
- Want to advance your technical, professional and leadership skills.

Course overview

Build on your engineering capabilities to apply yourself through real-world projects and deliver sustainable solutions in your chosen specialisation area.

Designed to foster innovation and professional development, this one-year program gives you the skills to take your career to the next level – and stand out in a competitive job market.

With a Master of Engineering, you'll take on advanced technical units in your specialisation area. You'll receive an introduction to research practices in engineering. And, through our Professional engineering in organisation and society unit, develop the strategic problem-solving skills so crucial to your future career.

Also available are enhancement units. These allow you to expand your knowledge into an adjacent or complementary field and gain the advanced technical capabilities employers want.

Become a strategic thinker, advance your leadership abilities, and engage with diverse stakeholders to enhance your future – and society's.

ENTRY REQUIREMENTS	Average requirements ²	Duration (years)
Four-year Bachelor of Engineering (or equivalent) in a discipline relating to the specialisation to be studied within the master's course as approved by the faculty. The Engineering Management specialisation is available to applicants with an Australian Bachelor of Engineering (or equivalent) in any discipline. ³	High Credit (65%)	1

² In equivalent Monash University grading scale terms, a 100% scale where 50% is a pass. Your prior qualifications must be accredited to the equivalent Australian level specified in the eligibility requirements table.

³ Engineering Management specialisation is not available for applicants with a Software Engineering discipline.

WITH THE MASTER OF ENGINEERING, YOU'LL BUILD A SOLID FOUNDATION FOR YOUR PROFESSIONAL DEVELOPMENT AND GAIN AN EDGE IN THE COMPETITIVE GRADUATE EMPLOYMENT MARKET.

WHAT YOU'LL GAIN



Sharpen your leadership and strategic skills

- Develop your professional skills to be an effective engineer and leader
- You'll learn how to become a strategic, critical, proactive thinker. So you're ready to step into industry and solve complex problems from day one.



Build a foundation for future career success

- Leverage our industry links to immerse yourself in industry-led projects. And seize the kinds of opportunities that lead to better career outcomes
- With industry experience bolstering your technical skillset, you'll have a competitive edge in the job market.



Apply yourself to design real-world solutions

- Apply advanced data analysis to examine commercial scenarios and produce recommendations that support business growth
- Engage in industry-based seminars and placements – all while you complete your qualification.

COURSE STRUCTURE

The Master of Engineering is structured in three parts:

PART	UNIT TYPE	POINTS	OVERVIEW
A	Common core units	18	Providing you the skills to practise as a professional engineer, undertake research practice and advanced data analysis.
B	Specialist core units	24	To advance your technical knowledge in your specialisation.
C	Enhancement unit	6	Choose from technical subjects in a complementary field, learn new skills to guide you on innovation and an entrepreneurial path, or undertake Work Integrated Learning internship placement.

FAST TRACK YOUR STUDIES WITH THE ACCELERATED MASTERS PATHWAY¹

Our accelerated masters pathway is designed for high-achieving Monash students – both current and future.

Through it, you can earn a Bachelor of Engineering (Honours) degree and a Master of Engineering. Building vital technical and leadership skills and gaining an expert master's degree – in just five years.

Save on fees and study time. And set yourself apart from those with similar degrees – to set yourself up in the job market.

monash.edu/engineering/masters-accelerated-pathway

¹ Please refer to monash.edu/study for Master's Accelerated Pathway entry requirements.



MIXING BEER WITH CHEMICAL ENGINEERING TO CREATE THE PERFECT BREW

This Monash start-up is using nano-brewing and chemical engineering to craft creative new brews. The story of The Zythologist begins with the Monash BrewLab student team.

Founded by Monash Engineering students Daniel Rojas Sanchez and Gina Pacheco Arredondo, the lab is Australia's first student-led nano-brewery. Together with teammate, Shivam Tandon, they created a science-based brewery and an analytical testing consultancy for craft breweries.



READ THE FULL STORY

monash.edu/engineering/change-makers/the-zythologist

📍 Clayton (on campus)

🕒 2 or 3 years (full-time¹)

➡ February and July

International students:
A\$50,200 (2023 fees pa)
Domestic students:
A\$41,400 (2023 fees pa)

💰 CSP funded places available
for eligible domestic
students

Fees are per 48 credit points, which
represents a standard full-time course
load for a year.

WORK-INTEGRATED LEARNING

Industry experience,
Professional development

DEGREE AWARDED

The degree you're awarded will
reflect your chosen specialisation.

**MONASH ENGLISH
LANGUAGE LEVEL**

Level A (see page 35)

CAREER OPTIONS

- Manager or contributor to complex projects for public, private or non-governmental organisations
- Consultant, entrepreneur or CEO of your own company
- Lead specialist in your field/s of expertise

COURSE CODE: E6011 **CRICOS:** 102717C

1 Part-time study may be available to international students studying onshore in Australia who hold specific visa categories. Please check your visa for confirmation.

Master of PROFESSIONAL ENGINEERING

Gain the technical and professional practice skills to become an accredited engineer. Direct your development by specialising in technical, research and professional units, while you blend theory with practice in design and research projects.

Who is this course for?

The Master of Professional Engineering is for you if you want to:

- Gain an internationally recognised qualification to build on your undergraduate engineering or STEM studies
- Change careers and become an engineer
- Move into a different field of engineering.

Change careers and become an engineer

Hold a relevant STEM degree and meet the course prerequisites? Through the graduate entry pathway, you'll gain the technical skills and knowledge to become an accredited professional engineer – in just three years.

You may be eligible if you hold a bachelor's degree in one of the following disciplines – as well as studies in mathematics (including linear algebra and calculus), and physics or chemistry:

- Science
- Maths
- Pharmacy
- Biomedical Science
- Computer Science or IT.

Course overview

This two or three year program – depending on your undergraduate degree – provides the technical knowledge and hands-on experience to practise as a professional engineer.

In it, you'll learn how to apply your engineering knowledge to managing projects in a business environment, while enjoying access to Monash's world-class engineering facilities.

In Professional Engineering in Organisation and Society, you'll learn the skills to step straight into practice. And, through an integrated design unit, you'll tackle a real-world engineering design problem in a professional team environment.

With our research methods unit, you'll pursue an independent, self-guided research review. You'll critically assess the current literature: blending hypotheses with experimental design and investigation.

As a Master of Professional Engineering student, you'll complete the equivalent of 12 weeks of Continuous Professional Development (CPD). Through a mix of industry work experience, volunteering, career sessions and field trips, you'll engage directly in business. To sharpen your practical toolkit, grow your professional networks – and boost your graduate outcomes.

WHAT YOU'LL GAIN



Professional accreditation¹

- This course is designed to meet the Stage 1 competencies for accreditation by Engineers Australia
- Practise as a professional engineer in Australia and other Washington Accord countries
- Chemical and Mechanical specialisations are fully accredited by Engineers Australia (EA). Civil, Electrical and Materials specialisations currently have provisional accreditation.¹



Take a practical approach to the technical

- Engage in research and design projects, and explore technical units through a practical lens
- Complete an industry internship through our Work Integrated Learning (WIL) program
- Plus, join teams to develop leadership skills and build your professional network.



Pursue your passion and design solutions

- Specialise in your chosen field and explore streams you're interested in
- You'll unpack real-world issues and put theory to the test
- So you can develop solutions that deliver value and make an impact.

COURSE STRUCTURE

The Master of Professional Engineering is structured in five parts:

PART	UNIT TYPE	POINTS	OVERVIEW
A	Engineering foundation knowledge and application	48	Develop the foundational skills and knowledge of your chosen engineering discipline.
B	Engineering specialist knowledge and application	48	Gain in-depth knowledge of the engineering specialisation. Develop skills to identify the contextual factors impacting engineering – and apply your understanding
C	Enhancement learning	24	Develop a multidisciplinary approach in your field of engineering. Expand your knowledge and career options through several units: including innovation, sustainability, and entrepreneurship.
D	Research and knowledge skills	18	Address the challenges and opportunities of using – and evaluating – research evidence in professional practice. And focus your studies on professional inquiry.
E	Professional practice	6	Get ready for the engineering workplace by developing skills in effective team membership and leadership. And learn about the legal responsibilities of an engineer.

Have you received prior engineering qualifications? You may be able to receive credit for Part A to complete your master's degree in just two years. (All students complete parts B, C, D and E.)

ENTRY REQUIREMENTS

	Average requirements ²	Duration (years) ³
Bachelor's degree (or equivalent) with prior studies in mathematics (including linear algebra and calculus), physics and/or chemistry as required by the specialisation chosen for admission.	High Credit (65%)	3
Bachelor's degree (or equivalent) in engineering ⁴	High Credit (65%)	2

1 The Master of Professional Engineering has been designed to meet the Stage 1 competencies for accreditation by Engineers Australia (EA). The Faculty has commenced the accreditation process for full recognition by EA and currently has provisional accreditation.

2 In equivalent Monash University grading scale terms, a 100% scale where 50% is a pass. Your prior qualification/s must be accredited to the equivalent Australian level specified in the eligibility requirements table.

3 Even if you're eligible for the short course duration, you may elect to complete the longer duration.

4 Either a three or four-year engineering degree in a discipline as approved by the faculty to be relating to the specialisation within the master's course. You may also be considered if you hold a three-year engineering technologist degree that is equivalent to the first three years of a related engineering degree accredited under the Washington Accord.

STUDYING A BACHELOR OF SCIENCE AT MONASH AND LOVE ENGINEERING?

Keep your options open with the Monash Science pathway and be on track to earn a Bachelor of Science AND a Master of Professional Engineering

Discover what's possible:
monash.edu/engineering/professional-masters/course-details/graduate-entry#science-pathway

WITH THE MASTER OF PROFESSIONAL ENGINEERING, BECOME AN ACCREDITED ENGINEER, PURSUE YOUR PASSION AND BUILD A BETTER TOMORROW.

COURSE SPECIALISATIONS

Pursue your passions and expand your learning in your learning in your chosen specialisation

- Chemical
- Civil
- Electrical
- Materials
- Mechanical

Refer to pages 14 to 24 to delve deeper into each area.

Discover more at
monash.edu/engineering/professional-masters

CHEMICAL AND BIOLOGICAL ENGINEERING

Develop new biodegradable polymers. Use nanomaterials to build next-gen semiconductors and LEDs. Refine lithium-sulphur batteries to make them more energy efficient. Or design sustainable packaging to reduce plastic and food waste.

Explore industrial-scale processes that convert raw materials into commercial products to solve the energy, environmental and healthcare challenges of our times.

SPECIALISATION OVERVIEW

Scale up biochemical breakthroughs for industrial production as you collaborate with physicists, chemists and biologists to solve complex problems. Equip yourself with advanced knowledge of thermodynamics, reaction engineering, fluid dynamics, separation processes, enzymes and advanced biotechnology.

With chemical engineering, you might purify contaminated water using state-of-the-art nanomembranes. Support the circular economy to build a zero-waste future. Or engineer full-flavour foods and beverages from plant-based ingredients.

Want to delve even deeper into bioprocesses with biological engineering? You might refine the next gen of mRNA vaccines, develop new biologic drugs to treat rare diseases or produce sustainable fibres from renewable sources.

You could join innovative biotech businesses or multinational pharmaceutical firms. Want to pursue a breakthrough of your own? Monash will provide you with the support and guidance to turn your spark into a start-up.

Careers in chemical and biological engineering

Chemical and biological engineers are highly sought after in areas like nanotechnology, renewable energy, food production and biotechnology. While local demand remains strong, Australia seeks to strengthen its sovereign capabilities to produce biochemicals. You might enter industry to:

- Develop cleaner biofuels to protect the environment
- Improve water purification using nanomembranes
- Advance hydrogen storage for vehicles
- Save lives through tissue engineering
- Make smart drug delivery even smarter
- Process wastes to harness energy, recover high-value metals, make fuels and chemicals
- Work with consulting firms to advise biochemical manufacturers
- Drive climate action and inform policy in the public sector
- Support the renewable energy transition through next-gen products
- Craft new beer flavours and develop plant-based food alternatives.

WHAT YOU'LL LEARN

Chemical Engineering

You'll gain advanced technical knowledge across a range of topics like advanced reaction engineering, advanced thermodynamics, advanced fluid dynamics, advanced separations processes, sustainability and innovation, process modelling and optimisation, and research practice.

Then sharpen your skills as you choose from one of two streams:

- **Engineering design**
Want to expand your knowledge of engineering processing in industries like mining, plastics and petrochemicals? Upskill in advanced techniques to convert raw materials into final products and investigate shifts in sustainability needs.
- **Bioprocessing and food engineering**
Get up to speed with the latest breakthroughs and trends in bioprocessing for pharmaceuticals, biotechnology and food production. Extend your knowledge as you engineer products to improve healthcare for all – and develop delicious food and beverages.

Biological Engineering

You'll explore the following units:

- **Advanced bioprocess technology:**
Learn about producing mRNA vaccines. Work with nanoparticles and explore the wider biotech industry – including manufacturing practices, genetically modified products and international regulations.
- **Biomass and biorefineries**
Explore what's possible with bioreactors, reaction classes, enzymatics, fermentation and separation processes, carbon cycle, water sustainability and how to minimise by-products.
- **Advanced biochemical engineering**
Get up to speed working with cells, nutrients and bioreactors. Boost production from suspended, genetically engineered and immobilised cultures. Then select the right processes to scale up production for industry commercialisation.
- **Advanced biopolymers**
Cover the latest in lignocellulose fibres, alternative fibre sources and biopolymers like chitosan. Explore biodegradable alternatives to petroleum-derived products, new packaging materials and producing fibres from renewable sources.

COMPARE COURSE STREAMS, UNITS AND ELECTIVES

	MASTER OF ENGINEERING	MASTER OF PROFESSIONAL ENGINEERING
Specialisation	Biological	Chemical
Available streams	–	1. Engineering design 2. Bioprocessing and food engineering
Specialist technical units	4 units	8 units
Professional practice	Y	Y
Enhancement elective units	Select 1 unit from 6 enhancement electives (6 points)	Select 3 units from 10 enhancement electives (24 points)
Integrated design project	–	Y
Research practice	Y	Y
Research project	–	Y

See the course map for an outline of the course structures, units and electives.
monash.edu/engineering/course-maps

RANKED
#1
IN AUSTRALIA

RANKED
#38
IN THE WORLD

QS World University
Rankings by Subject, 2023



“The masters course has helped me realise the potential for industry to produce sustainable, high-value bio-products and I’ve developed valuable connections with other students from across the industry.”

DEANNE HEIER
Masters graduate
Scientist, Norske Skog Australasia



WANT TO
KNOW MORE?
Check out the course
progression map on
unit enrolment for each
semester of study

CIVIL ENGINEERING

From smart cities to sustainable sanitation to modular components, the future of civil engineering extends far beyond steel and concrete.

You'll design integrated innovations to connect smart communities, streamline transport and prepare infrastructure to withstand the challenges of climate change.

SPECIALISATION OVERVIEW

Model high-capacity transportation systems. Deploy modular components. Lead large commercial projects. Develop cleaner water systems. Fast track construction with robotics.

Don't simply navigate the future. Create it, with civil engineering.

You'll explore the potential of prefabricated construction, expand your knowledge of geomechanics, model complex transport and water systems, and learn advanced computational methods.

Acquire the technical knowledge to design, construct, improve and lead major infrastructure projects.

Plus, be mentored by experienced civil engineers who know the industry inside out.

Careers in civil engineering

With your civil engineering expertise, you'll enter Australia's construction boom with enviable employability. You'll have the opportunity to make your mark across a range of industries, including:

- Government infrastructure programs
- Construction and mining projects
- Roads and traffic improvements
- Marine and resort developments
- Water management and flood mitigation
- Property and land development
- Consulting firms.

Backed by your deep knowledge and practical experience, what you do next is up to you. You might:

- Build sustainable prefabricated housing
- Design earthquake-resistant schools
- Create systems to protect against floods
- Design sanitation systems
- Construct high-speed railways
- Devise solutions for improved traffic flow
- Develop large-scale recycling schemes.

WHAT YOU'LL LEARN

Civil Engineering

What passion area would you like to pursue? Direct your development, grow your knowledge and expand your capabilities as you focus on one of the following streams:

- **Structure**

Cover topics like bridge design, structural analysis, infrastructure dynamics, rehabilitation and monitoring. And see what's next as you explore the latest trends in robotic construction, fibre-reinforced polymer composites and modular design.
- **Transport**

The future of transport is connected, smart and automated. You'll explore intelligent transport systems, advanced traffic management and transport planning – to design smarter, integrated cities.
- **Water**

Gain the knowledge to improve sanitation, monitor pandemics through wastewater and build sustainable water systems. From flood hydrology to stormwater design and surface water hydrology.
- To prepare you for life after university, you'll also build expertise in areas like:

 - **Geomechanics**
 - **Management and practice**
 - **Design and research**

COMPARE COURSE STREAMS, UNITS AND ELECTIVES

	MASTER OF ENGINEERING	MASTER OF PROFESSIONAL ENGINEERING
Available fields or streams ¹	1. Structural 2. Geotechnical 3. Transport 4. Water	1. Structure 2. Transport 3. Water
Specialist technical units	4 units	6 units
Professional practice	Y	Y
Enhancement elective units	1 unit (6 points) Select from 18 enhancement electives	4 enhancement units (24 points)
Integrated design project	–	Y
Research practice	Y	Y
Research project	–	Y

See the course map for an outline of the course structures, units and electives.
monash.edu/engineering/course-maps

¹ In the Master of Engineering you can select to focus on one of the four fields of civil engineering suited to your previous study or choose freely from the civil specialist core units available.

RANKED
#31
IN THE WORLD

QS World University
Rankings by Subject, 2023



“Practical experience is very important in engineering, and the Work Integrated Learning internship gave me the opportunity to do research in fields closely related to my specialisation, such as sanitation, groundwater and water purification.”

MISHADI HERATH
Master of Civil Engineering (water)
Graduate Civil Hydropower Engineering, Entura



READ MORE
ABOUT MISHADI'S
INTERNSHIP



WANT TO
KNOW MORE?
Check out the course
progression map on
unit enrolment for each
semester of study

ELECTRICAL ENGINEERING

Do you want to...

- Build affordable health tech to help save lives?
- Make electric motors more efficient to power our renewable future?
- Develop faster, more powerful optical neuromorphic processors to advance AI-powered products?
- Design tech to improve lives?

Discover what's next for electrical engineers and gain the skills to pursue a successful career.

SPECIALISATION OVERVIEW

As we enter a new era of smart, connected technologies, learn from experienced engineers as you apply theory in hands-on lab sessions and design projects.

You might develop non-invasive foetal heart monitoring techniques. Build neural prosthetics like bionic eyes to help people regain function. Integrate smart cities to ensure pedestrian and cyclist safety. Or design autonomous trains and delivery vehicles to safely transport people and goods – while cutting emissions.

You'll expand your understanding of signal processing, electronics design, electromagnetism, antennas, real-time system design, multimedia communications and smart grids.

As the adoption of automation and AI accelerates, organisations need a new generation of electrical engineers to analyse data, boost efficiencies and build better products. We'll show you how to take charge and lead the way.

Careers in electrical engineering

As more industries embrace a connected, smart future, the demand for electrical engineers exceeds supply – presenting you with countless career opportunities. You might:

- Develop smart power systems to keep the lights on at home
- Help farmers optimise water usage with automatic irrigation networks
- Design electronic systems for electric vehicles and self-driving cars
- Create advanced robotic systems to support surgeons
- Perfect bionic eyes and ears to restore function
- Design instruments for the healthcare sector
- Develop sensors to connect smart buildings and smart cities.

WHAT YOU'LL LEARN

Electrical Engineering

By specialising in electrical engineering, you'll be able to pursue your passions and direct your development in these areas:

- **Telecommunications, wireless and optical communications**
Explore the latest breakthroughs in next-gen networks, remote data transfer and optical neural networks. So you can integrate and amplify the potential of smart cities and smart devices.
- **Power and smart energy systems**
As the adoption of renewables picks up pace, learn about the latest in green energy production, storage and transmission – to accelerate our cleaner, more efficient future.
- **Digital and computer systems**
Design experiences that empower users, help legacy systems embrace the digital-first future, develop micro-combs that transmit data at blazingly fast speeds, or build medical devices to assist surgery and rehab.
- **Machine learning and intelligent robotics**
Design faster optical neuromorphic processors to power AI. Rethink how service robots could enhance people's safety, productivity and comfort. Develop robots to monitor complex tasks in challenging environments like construction and mining.
- **Electronics and hardware design**
Cover advanced uses of components like amplifiers, filters, oscillators, modulators and mixers. Plus, integrate sensors to capture data that is understood, analysed and reveals actionable insights.
- **Signal processing tools**
Filter unwanted noise – from audio, video, image and MRI signals – to isolate valuable information. Use stochastic models to process real-world signals, and upskill in linear estimation theory and optimal filtering to design advanced signal processing algorithms.

COMPARE COURSE STREAMS, UNITS AND ELECTIVES

	MASTER OF ENGINEERING	MASTER OF PROFESSIONAL ENGINEERING
Available streams	–	–
Specialist technical units	4 units	7 units
Professional practice	Y	Y
Enhancement elective units	Select 1 unit (6 points) from 17 enhancement electives	Select 4 units (24 points) from 11 enhancement electives
Integrated design project	–	Y
Research practice	Y	Y
Research project	–	Y

See the course map for an outline of the course structures, units and electives.
🔗 monash.edu/engineering/course-maps

RANKED
#77
IN THE WORLD

QS World University
Rankings by Subject, 2023



“I want to work in the healthcare industry and empower people with technology. To help bridge the gap between the needs of the people and technological advancement.

Monash University was attractive because of its proximity to other healthcare facilities, such as Monash Health. My research interest is biomedical-related, and having existing connections would make finding clinical partners easier. I was also excited about being part of the new Monash Robotics research facility.”

TINA WU
PhD, Electrical and Computer Systems Engineering



WANT TO KNOW MORE?
Check out the course progression map on unit enrolment for each semester of study

ENGINEERING MANAGEMENT

You've gained engineering expertise. Now learn how to empower teams, grow businesses and lead the way forward.

Complement your technical knowledge with practical and leadership skills – to solve complex engineering challenges and deliver large projects.

SPECIALISATION OVERVIEW

Engage stakeholders, inspire teams, develop project plans and future-proof your career.

How? You'll gain highly transferable skills like managing complex projects, capturing stakeholder requirements, delivering on deadlines and supporting teams to perform at their peak.

You'll investigate the challenges – and opportunities – that businesses need to navigate. From early-stage start-ups to established global enterprises.

With engineering management, you'll build your leadership confidence and management competence to take charge and deliver business excellence.

Careers in engineering management

From project managers to business leaders, your engineering management skills will set you up for future career success.

Lead with confidence, direct strategic decisions and help organisations make a positive impact. You might become a:

- Planning leader
- Site manager
- Technical procurement manager
- Project engineer
- Technical team leader
- Senior manager
- Company director.

WHAT YOU'LL LEARN

Engineering Management

Want to create a start-up and disrupt the industry? Enable and empower engineering teams? Or advance corporate social responsibility?

Engineering management will take you where you want to get to.

The Master of Engineering Management is developed with the internationally renowned Monash Business School (MBS). You'll undertake specialist core management units, across three streams:

- **Entrepreneurship**
Want to drive change and build a better future? Learn about founding a start-up, pitching to investors, securing finance, applying for patents, and connecting with industry partners to commercialise your product. Lead the way and transform your ideas into innovations.
- **Contemporary management**
Want to forge a more inclusive future and champion corporate social responsibility? Explore topics like sustainability, diversity, international markets and industry trends. Plus, upskill in areas like managing innovation and strategic leadership to help firms remain competitive and agile.
- **Project management**
What if you could enter businesses and make your mark from the get-go, streamlining processes, eliminating inefficiencies and boosting productivity? Sharpen your leadership skills, engage stakeholders and deliver complex projects – on time and on budget.

Whatever your direction, you'll grow your knowledge. Strengthen your competence. And, studying alongside business students from all walks of life, build professional networks to aid your future career.

COMPARE COURSE STREAMS, UNITS AND ELECTIVES

Engineering management specialisation is not available in the Master of Professional Engineering.

	MASTER OF ENGINEERING	MASTER OF PROFESSIONAL ENGINEERING
Available field or streams ¹	1. Entrepreneurship 2. Project management 3. Contemporary management	–
Specialist technical units	4 units	–
Professional practice	Y	–
Enhancement elective units	Select 1 unit (6 points) from 9 enhancement electives	–
Integrated design project	–	–
Research practice	Y	–
Research project	–	–

See the course map for an outline of the course structures, units and electives.

🔗 monash.edu/engineering/course-maps

1. In the Master of Engineering you can select from suggested units to focus on one of the three engineering management fields or choose freely from the specialist core units available.

RANKED
#39

FOR BUSINESS

#44

FOR ENGINEERING
IN THE WORLD

THE World University
Rankings by Subject 2023



I fell into entrepreneurship soon after completing my graduate research program. Professor Kiyonori Suzuki and I co-developed a new material called Aeroperm, which is a new magnetic materials technology. I created a spinout company at Monash University to explore the potential of scaling the innovation for worldwide applications.

Kite Magnetics is a deep-tech hardware start-up developing the technologies required for a new age of electric aviation, one that is safer, quieter, significantly cheaper and emissions-free.”

DR RICHARD PARSONS
Co-Founder and CEO, Kite Magnetics
PhD, Materials Science and Engineering



WANT TO
KNOW MORE?

Check out the course progression map on unit enrolment for each semester of study

MATERIALS ENGINEERING

Design windows that generate electricity and let light through. Produce replacement bones and custom equipment for athletes using 3D printing. Work alongside industry partners to develop corrosion-resistant steel pipes.

You'll redesign existing materials – or create entirely new ones – to make stronger, lighter, cheaper and more sustainable products.

SPECIALISATION OVERVIEW

Collaborate across disciplines, solve complex problems and enhance material properties to design fit-for-purpose products.

You'll delve into areas like polymeric materials, renewable energy production and storage, durability, biomaterials and biomechanics, additive manufacturing and sustainability.

See how cutting-edge materials are reshaping industries. From 3D-printed jet engines that fast track production and more efficient solar panels, to antimicrobial therapeutics that fight bacteria and biodegradable tissue scaffolds.

Materials engineers prepare and enhance the materials of today to meet the demands of tomorrow.

Careers in materials engineering

Material engineers are problem solvers at their core and closely collaborate with other specialists – like chemists, physicists and biologists – to design fit-for-purpose solutions.

Demand for materials engineers remains high and in this multidisciplinary field you might:

- Refine tissue engineering to repair damaged organs
- Design smart fabrics that act as a sensor to control vehicles
- Apply 3D bioprinting to generate living tissue for personalised treatments
- Develop lighter, stronger materials for flight and space travel
- Work with bioscientists to detect drugs and toxins
- Create nanoparticles that seek out and destroy cancer.

WHAT YOU'LL LEARN

Materials Engineering

As you examine the next generation of applications and technologies, you'll explore the following topics:

- **Biomaterials**
Design stronger, lighter knee replacements, swiftly detect disease markers, increase biocompatibility for cardiac devices, or combine biomaterials and genomics to repair damaged tissue. You'll improve lives – and save them.
- **Nanomaterials**
Develop stronger alloys for the demands of space, refine nanomedicine to improve patient wellbeing and use nanoparticle toxicology to aid diagnosis and treatment. With nanotechnology, think small to make a big impact.
- **Additive manufacturing**
With the rise (and rise) of additive solutions (particularly in China), you'll investigate how 3D printing and manufacturing are transforming the aerospace, automotive and biomedical industries.
- **Advanced materials modelling**
Sharpen your skills as you simulate and model material behaviour. You'll explore a range of techniques, like finite element modelling, atomic structure modelling, electronic structure and chemical bonding.
- **Advanced photovoltaics and energy storage**
Want to improve efficiencies in energy storage systems and allow more light to pass through solar windows? As the renewable revolution accelerates, you'll delve deep into the latest breakthroughs to explore pros, cons – and opportunities.

COMPARE COURSE STREAMS, UNITS AND ELECTIVES

	MASTER OF ENGINEERING	MASTER OF PROFESSIONAL ENGINEERING
Available streams	–	–
Specialist technical units	4 units	7 units
Enhancement elective units	Select 1 unit (6 points) from 9 enhancement electives	Select 4 units (24 points) from 12 enhancement electives
Professional practice	Y	Y
Integrated design project	–	Y
Research practice	Y	Y
Research project	–	Y

See the course map for an outline of the course structures, units and electives.

🔗 monash.edu/engineering/course-maps

RANKED
#1
IN AUSTRALIA

RANKED
#32
IN THE WORLD
QS Rankings by Subject 2023



“My research project is on additive manufacturing (or commonly known as 3D printing) of titanium orthopaedic implants integrated with complicated porous meshes.

The aim is to speed up the process of designing and manufacturing patient-specific implants so that the implant is ready within a few hours as soon as the patient is registered into a hospital.”

EZGI ONAL
PhD, Materials Science Engineering
Consultant, Boston Consulting Group (BCG)



WANT TO KNOW MORE?
Check out the course progression map on unit enrolment for each semester of study

MECHANICAL ENGINEERING

Develop artificial hearts that save lives. Analyse systems to withstand the extremes of space. Improve electric vehicles to accelerate the renewable revolution. Rethink lithium batteries to boost energy density and reduce costs.

Want to design high-efficiency, high-performance systems – and make your mark?

SPECIALISATION OVERVIEW

Get up to speed with the latest breakthroughs in robotics, biomedical imaging, additive manufacturing, systems performance analysis and sustainability.

You'll explore a systems approach to the design, monitoring and performance of complex mechanical engineering solutions. Then put the theory to the test as you drive innovation and seize leadership opportunities in our student teams.

Get involved in Monash Motorsport and add R&D experience to your CV as you build autonomous vehicles. Or join Monash Nova Rover to design Mars rovers for planetary exploration and forge industry connections with partners like NASA and Boeing.

In units taught by leading academics and industry experts, you'll gain a strong understanding of engineering processes to analyse, build and maintain the technology of tomorrow.

Careers in mechanical engineering

Want to build and refine the technologies of tomorrow? Wherever in the world you wish to work, Monash mechanical engineers make things happen. You might:

- Design high-performance structures to withstand the stressors of space
- Use ultrasound to boost sperm mobility and improve fertility
- Refine service robotics for railways, healthcare and industry supply chains
- Use 3D reconstruction and printing for Indigenous arts, and work with athletes to develop state-of-the-art sporting equipment
- Create prosthetic limbs and artificial hearts
- Assess infrastructure with mechanical vibration
- Reimagine sustainable energy solutions.

WHAT YOU'LL LEARN

Mechanical Engineering

Eager to investigate the potential of robots to automate and streamline manufacturing? Design the next generation of renewable energy systems? Or make critical technologies and processes wildly more efficient?

The choice is yours. Direct your development as you explore the following themes:

- **Mechanical design**
Examine systems design, performance analysis and integrated design to boost efficiencies, increase performance and reshape what's possible.
- **AI and Manufacturing**
Transform production processes as you learn about the potential – and future – of advanced robotics, lean manufacturing and additive manufacturing.
- **Renewable energy and sustainability**
The economy of the future is green, clean and circular. Investigate what's happening in renewable energy systems, energy efficiency and sustainability engineering.
- **Professional practice**
Learn about the roles and responsibilities of professional engineers in society.
- **Research**
Investigate real engineering problems, propose hypotheses, and create experimental designs – all underpinned by high-quality research.
- **Environmental durability and biomechanics**
Complement your mechanical engineering specialist skills with a range of topics across a diverse set of disciplines.

COMPARE COURSE STREAMS, UNITS AND ELECTIVES

	MASTER OF ENGINEERING	MASTER OF PROFESSIONAL ENGINEERING
Available streams	–	–
Specialist technical units	4 units	7 units
Enhancement elective units	Select 1 unit (6 points) from 13 enhancement electives	Select 4 units (24 points) from 10 enhancement electives
Professional practice	Y	Y
Integrated design project	–	Y
Research practice	Y	Y
Research project	–	Y

See the course map for an outline of the course structures, units and electives.

🔗 monash.edu/engineering/course-maps

RANKED
#59
IN THE WORLD

QS World University
Rankings by Subject, 2023



“I first came to Melbourne on an international exchange program from Malaysia, and really liked the vibrant campus lifestyle and immersive culture. As part of my master's course, I worked on a team final-year project where we researched and designed what we hope will become the new standard of riding helmets. With help from our industry sponsor, we developed a helmet with Ultra High Molecular Weight Polyethylene reinforcement which would increase the safety of the rider, whilst reducing the helmet weight.”

SALIL KULKARNI
Master of Mechanical Engineering
Graduate Engineer at OMC International



READ SALIL'S STORY

monash.edu/engineering/change-makers/salil-kulkarni



WANT TO KNOW MORE?

Check out the course progression map on unit enrolment for each semester of study

RESEARCH WITH IMPACT

Make a real difference and solve global challenges with a PhD or masters-by-research degree. You'll collaborate with prominent researchers, lead pioneering investigations and broaden your career horizons.

Join the next generation of research leaders

Pursue a graduate research degree to expand your expertise in a world-class research environment. You'll connect with world-leading academics and industry partners to make a positive impact on society.

Help address the UN Sustainable Development Goals and solve issues in a stimulating, supportive environment across STEM areas such as climate change, transport congestion, water supply security, sustainable energy, artificial intelligence and robotics.

Be mentored by expert supervisors

Accelerate your growth with mentoring from at least two active researchers who are leaders in their field. You'll further your research – and deepen your impact – through expert supervision and ongoing professional development.

Our supervisors don't settle for the status quo. And neither will you. Together, you'll strive for excellence, question assumptions and help solve the greatest challenges of our age.

Collaborate with industry – change the world

Collaboration is at the core of all our research. It's how we spark innovation through interdisciplinary insights and dynamic industry partnerships.

At Monash, you'll work with commercial businesses and connect with leading research institutes to investigate real-world challenges. Go hands-on in advanced facilities and network with our far-reaching community to leave a sustainable legacy for future generations.

Expand and strengthen your career options

With a graduate research degree, you'll open doors in industry, academia and beyond. You'll gain diverse, in-demand and transferable skills like leadership, project management, data analytics and digital processing.

We prepare you for a rewarding career, with a mindset geared towards calculated risk-taking, entrepreneurship and ethical practice.

Where you go from there is up to you. Our alumni have become research leaders at Ford Motor Company, Microsoft, Rio Tinto, Procter & Gamble, Harvard University and Sony Pictures.

Support your study with research scholarships

To nurture outstanding academic achievement, Monash University offers several scholarship programs to help cover tuition fees, stipends and relocation allowances.



I was attracted to the ground-breaking advancements that Monash was making in the world of bionic eyes.

My PhD research supervisor is one of the leading members in Monash Vision Group (MVG), working on improving the artificial vision brought about by cortical vision prosthetics.”

SABRINA MEIKLE
PhD, Biomedical Engineering – Neurobionics



READ SABRINA'S STORY

monash.edu/engineering/change-makers/sabrina



RESEARCH THEMES

Work alongside leading STEM researchers as you investigate insights, follow breakthroughs, pioneer research – and transform our future.

CHEMICAL AND BIOLOGICAL ENGINEERING

- Biotechnology
- Food
- Modelling
- Nanomaterials
- Fuels and Energy
- Membranes
- Waste processing.

CIVIL, ENVIRONMENTAL AND RESOURCES ENGINEERING

- Deep Earth Energy
- Engineering for Extremes
- Model-Data Fusion
- Sensing Technologies
- Smart Structures for construction
- Sustainable Infrastructure
- Water Sensitive Urban Design.

ELECTRICAL AND COMPUTER SYSTEMS ENGINEERING

- Wireless Telecommunications
- Optical Communications and Networking
- Internet of Things
- Smart Power Systems
- Robotics and Artificial Intelligence
- Biomedical engineering
- Electromagnetics and Electronics
- Optimization, Information Processing, Control and Decision Systems.

MATERIALS SCIENCE AND ENGINEERING

- Additive Manufacturing
- Biomaterials
- Functional and Energy Materials
- Metals and Alloys
- Polymers
- Materials Theory, Modelling and Characterisation.

MECHANICAL, AEROSPACE, ROBOTICS AND MECHATRONICS ENGINEERING

- Advanced Manufacturing
- Micro/Nano engineering
- Robotics and Control
- Solid Mechanics
- Thermofluids
- Biomedical engineering.

SCHOOL OF ENGINEERING, MONASH MALAYSIA

- Energy Sustainability
- Materials and Nanotechnology
- Medical engineering and biological sciences
- Smart Industry and Living
- Computational and Intelligent systems
- Critical Infrastructure
- Waste and Environment
- Intelligent Lighting.

190+
PROJECTS

Choose from over 190 diverse research projects across STEM fields

1000+
STUDENTS

Collaborate with over 1,000 passionate and talented PhD students

#44
WORLDWIDE

Get ahead at one of the world's top universities for engineering and technology*

*THE World University Subject Rankings 2023

ON CAMPUS
Clayton, Malaysia

OFF CAMPUS
Clayton

2 years full-time
(or part-time equivalent)

COURSE CODE: 3292

CRICOS: 041059G

AREAS OF RESEARCH
Pursue your research and expand your learning in your chosen discipline.

- Chemical and biological engineering
- Civil, environmental and resources engineering
- Electrical, computer systems and biomedical engineering
- Materials science and engineering
- Mechanical, aerospace, robotics and mechatronics engineering

Refer to page 27 for the wide-range of research themes you can get involved in from these areas.

Discover more at
monash.edu/engineering/phd

Application dates for Graduate Research scholarships:

- **International students:**
31 March and 31 August
- **Domestic students:**
31 May and 31 October

monash.edu/engineering/graduate-research-scholarships

Master of ENGINEERING SCIENCE (RESEARCH)

Delve deeply into engineering challenges and develop solutions for the future with a Master of Engineering Science (Research).

Who is this course for?

The Master of Engineering Science (Research) is for you if you:

- Have already completed a 4 year bachelor degree in a relevant field
- Want to undertake independent research to investigate problem
- Want to achieve a research masters degree in two years.

Course overview

During your candidature of up to two years, you'll develop specialised knowledge and skills in your chosen research area. You'll have the opportunity to address national issues, tackle global challenges and improve the way of life in communities.

You'll lead an independent investigation of a research problem under the supervision of leading researchers in the field. It is expected the research you undertake will make a contribution to your chosen discipline and yield a thesis for examination.

What you'll gain

Expand your career options.

You'll obtain transferable skills such as leadership, project management and data analytics that are highly desired by employers.

Become an expert in your research field.

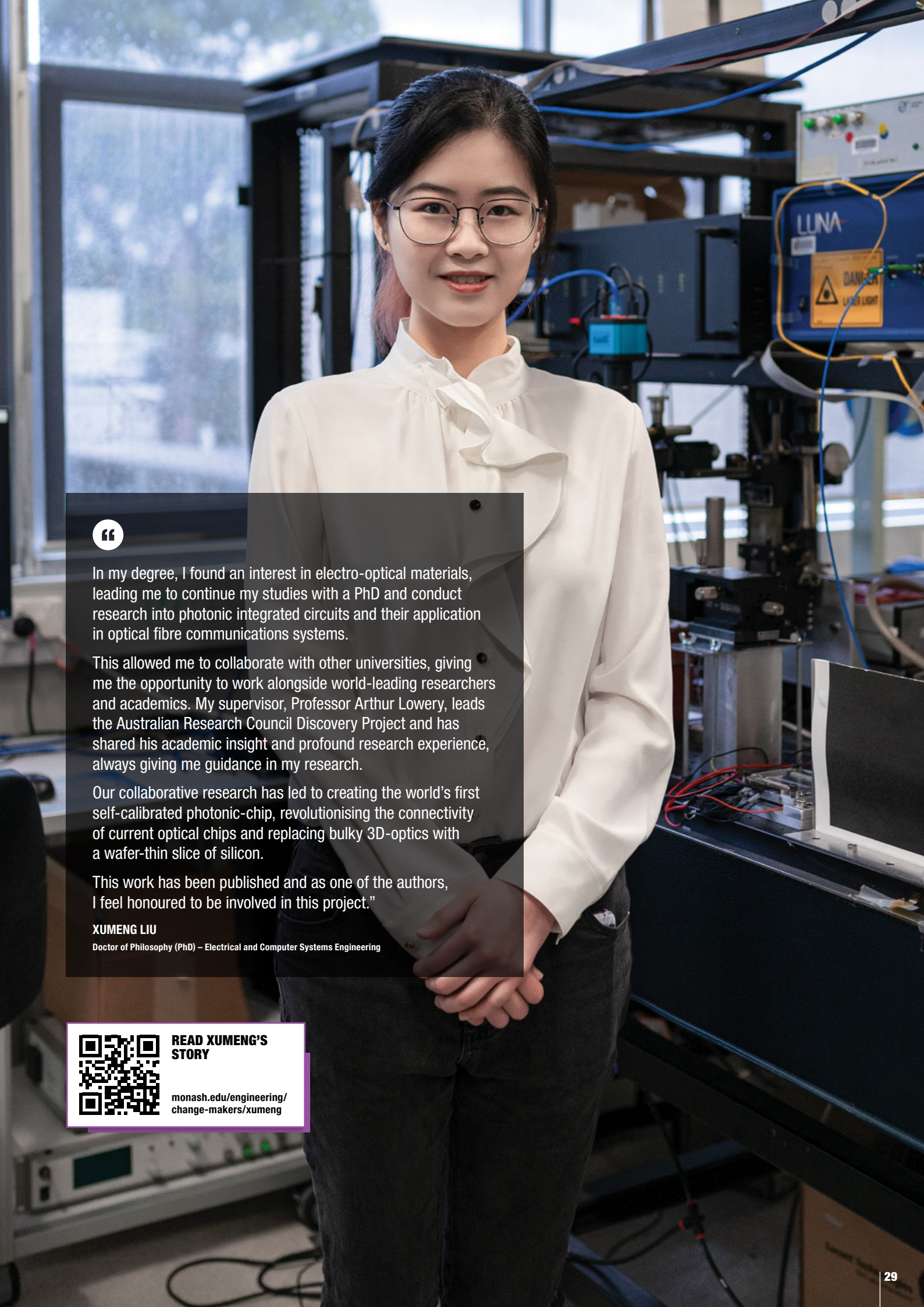
As an engineering researcher you'll develop specialised knowledge in your chosen field, enabling you to develop solutions for society's global challenges.

COURSE STRUCTURE

UNIT TYPE	OVERVIEW
RESEARCH	Carry out a program of research on an agreed topic approved by the faculty in your chosen discipline for a specified period, including attending and/or presenting at seminars and other related activities as indicated by the faculty.
THESIS	Submit for assessment a thesis of not more than 50,000 words on the program of research which meets the requirements of the examiners. Submission of a thesis including published works may be permitted.

ENTRY REQUIREMENTS	Average requirements ¹	Duration (years)
A four year bachelor's degree in a relevant field, which includes a research component or Honours year, or equivalent.	Upper H2B (65% or above)	2

¹ In equivalent Monash University grading scale terms, a 100% scale where 50% is a pass. Your prior qualifications must be accredited to the equivalent Australian level specified in the eligibility requirements table.



In my degree, I found an interest in electro-optical materials, leading me to continue my studies with a PhD and conduct research into photonic integrated circuits and their application in optical fibre communications systems.

This allowed me to collaborate with other universities, giving me the opportunity to work alongside world-leading researchers and academics. My supervisor, Professor Arthur Lowery, leads the Australian Research Council Discovery Project and has shared his academic insight and profound research experience, always giving me guidance in my research.

Our collaborative research has led to creating the world's first self-calibrated photonic-chip, revolutionising the connectivity of current optical chips and replacing bulky 3D-optics with a wafer-thin slice of silicon.

This work has been published and as one of the authors, I feel honoured to be involved in this project."

XUMENG LIU

Doctor of Philosophy (PhD) – Electrical and Computer Systems Engineering

READ XUMENG'S STORY
monash.edu/engineering/change-makers/xumeng

ON CAMPUS
Clayton, Malaysia

OFF CAMPUS
Clayton

3–4 years full-time
(or part-time equivalent)

COURSE CODE: 3291
CRICOS: 041044D

AREAS OF RESEARCH

Pursue your research and expand your learning in your chosen discipline.

- Chemical and biological engineering
- Civil, environmental and resources engineering
- Electrical, computer systems and biomedical engineering
- Materials science and engineering
- Mechanical, aerospace, robotics and mechatronics engineering

Refer to page 27 for the wide-range of research themes you can get involved in from these areas.

Discover more at
monash.edu/engineering/phd

Application dates for Graduate Research scholarships:

- **International students:**
31 March and 31 August
- **Domestic students:**
31 May and 31 October

monash.edu/engineering/graduate-research-scholarships

Doctor of PHILOSOPHY (PhD)

Make a real difference and solve global challenges with a PhD. Join the next generation of research leaders and broaden your career horizons.

Who is this course for?

- A Doctor of Philosophy (PhD) at Monash Engineering is for you, if you:
- Have already completed a 4 year bachelor degree or masters in a relevant field
 - Have a strong interest in STEM research and driven to pursue a passion in a world-class research environment
 - Desire to greatly expand career options throughout academia and industry.

Course overview

The Monash Doctoral Program offers you a stimulating, supportive and professional environment in which to explore engineering challenges and develop solutions for the future.

At the core of this program is the completion of a substantial research thesis based on a research project carried out under the supervision of a team of world-leading researchers. You'll

undertake extensive, independent research of a topic that makes an original and substantial contribution to your discipline.

In your research journey, you will also acquire the necessary skills and professional attributes to make an enduring impact on academia, industry, government, or community.

What you'll gain

Advance your career.
You'll gain diverse, in-demand and transferable skills — including research, analytical, and project management, leadership and interpersonal communication skills and the ability to solve intricate business problems. Our PhD graduates have become research and engineering leaders across the world in both industry and academia.

Become an expert in your research field.
The national and international career possibilities are not only exciting but also diverse.

COURSE STRUCTURE

UNIT TYPE	OVERVIEW
RESEARCH	Carry out a program of research on an agreed topic approved by the faculty in your chosen discipline for a specified period, including attending and/or presenting at seminars and other related activities as indicated by the faculty.
THESIS	Submit for assessment a thesis of not more than 80,000 words on the program of research which meets the requirements of the examiners. Submission of a thesis including published works may be permitted.
COURSEWORK OR TRAINING	Enhance your research project with advanced training to make an impact. Complete one of the following Monash Doctoral Programs: <ul style="list-style-type: none">• Coursework• Graduate Research Industry Partnership Program (GRIP)

ENTRY REQUIREMENTS	Average requirements ¹	Duration (years)
A four year bachelor's degree in a relevant field, which includes a research component or Honours year, or equivalent.	H1 ² or minimum of H2A or equivalent (70% or above)	3–4
A master's degree in a relevant field that includes a significant research component (at least 25% of one full time equivalent year of work), including a thesis.	Minimum of H2A or equivalent	3–4

¹ In equivalent Monash University grading scale terms, a 100% scale where 50% is a pass. Your prior qualifications must be accredited to the equivalent Australian level specified in the eligibility requirements table.
² H1 is for scholarships and is not the minimum entry requirement. Scholarships are awarded based on academic merit with priority given to students with a qualification equivalent to a Monash H1 or higher.



READ JEFFERSON'S STORY


monash.edu/engineering/change-makers/jefferson

“


I hope that my research, inspired by plants and their structures, will guide the next generation of solar panels, so they are more efficient, affordable, lightweight and durable. By probing into the surface structure of plant leaves and discovering how they handle light so efficiently while also being weather resistant, we can begin to replicate similar structures onto solar panels. I dream that one day I'll look out my window and see solar panels on rooftops, cars, and building facades, all thanks to my research efforts.”

JEFFERSON LAM
PhD, Materials Science
Ezio Rizzardo Polymer Scholarship,
Australian Academy of Technology and Engineering






ON CAMPUS
Clayton



OFF CAMPUS
Clayton



3–4 years full-time
(or part-time equivalent)

DEGREE AWARDED

Doctor of Philosophy (Industry)

COURSE CODE: E8011

CRICOS: 108333D

AREAS OF RESEARCH

Pursue your research and expand your learning in your chosen discipline.

- Chemical and biological engineering
- Civil and infrastructure
- MedTech, Electrical and computer systems engineering
- Materials science
- Mechanical, aerospace, and smart manufacturing engineering
- Natural resources, environment and sustainability

Refer to page 27 for the wide-range of research themes you can get involved in from these areas.



Discover more at
monash.edu/industry-doctoral-program

INDUSTRY DOCTORAL PROGRAM

Elevate your expertise in a real-world setting.

Want to deliver world-class research that benefits the economy and broader society – while you earn a PhD? With our industry doctoral program, you can. You'll be immersed in industry: embedded in a business and designing solutions to real commercial challenges – all while growing your career.

Who is this program for?

The Industry Doctoral Program is for you if you:

- Have already completed a 4 year bachelor degree in a relevant field

As an Industry Doctoral Program candidate, you'll be either:

- A new or existing doctoral candidate looking for a more hands-on PhD experience.
- An employed engineer, seeking a way to upskill with a PhD while advancing your career and supporting the needs of your employer.

Program overview

This innovative program strikes a balance between academic rigour and industry priorities, with research projects industry-scoped and led. While still having access to the world-leading researchers and facilities at Monash, you'll spend a substantial part of your Industry Doctoral

Program embedded with the industry partner to deliver world-class, impactful research that benefits industry, the economy and broader society.

Prioritising professional training rather than coursework, you'll take a portfolio-based approach to research while building towards an innovation report (exegesis).

What you'll gain

Advance your career

Whether with one of our industry partners or your existing employer, you'll emerge with the practical skills and technical knowledge businesses require.

Directly impact industry

You'll work not alongside industry, but within it. Apply your skills to understand and solve real-word commercial problems – in real-world business timeframes.

COURSE STRUCTURE

UNIT TYPE	OVERVIEW
RESEARCH	Carry out a program of research on an agreed topic approved by the faculty in your chosen discipline for a specified period, including attending and/or presenting at seminars and other related activities as indicated by the faculty.
PORTFOLIO AND INNOVATION REPORT (EXEGESIS)	Submit for assessment a portfolio and an innovation report (exegesis) of between 30,000 and 50,000 words on the program of research which meets the requirements of the examiners.
PROFESSIONAL DEVELOPMENT	Undertake 120 professional development training hours. Training can be tailored to suit your needs and career path.

ENTRY REQUIREMENTS	Average requirements ¹	Duration (years)
A four year bachelor's degree in a relevant field, which includes a research component or Honours year, or equivalent.	H1 ² or minimum of H2A equivalent (70% or above)	3–4
A master's degree in a relevant field that includes a significant research component (at least 25% of one full time equivalent year of work), including a thesis.	Minimum of H2A or equivalent	3–4

¹ In equivalent Monash University grading scale terms, a 100% scale where 50% is a pass. Your prior qualifications must be accredited to the equivalent Australian level specified in the eligibility requirements table.
² H1 is for scholarships and is not the minimum entry requirement. Scholarships are awarded based on academic merit with priority given to students with a qualification equivalent to a Monash H1 or higher.

“

My Industry PhD project with the Woodside Monash Energy Partnership aims to develop research that will aid in the upscaling of direct air capture. The global desire to successfully capture atmospheric carbon dioxide to mitigate climate change, has seen various concepts emerging. However, while certain concepts show great promise they have not been sufficiently perfected to progress towards commercialisation. The large scale direct capture technologies already out in the world are very inspirational. I've been learning from these and trying to come up with new technology that could be used.

My research focuses on overarching aims like looking at the longevity of the direct capture process, how scalable it can be, what the limitations really are, and how much I can really push these boundaries.”

ROMALYA RANASINGHE

PhD with Woodside Monash Energy Partnership
Deputy CEO, Monash Pilot Processes

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LIVING IN MELBOURNE

Melbourne is a vibrant, multicultural city. You'll explore cultural festivities, attend international sporting events, dine at trendy cafés and restaurants, relax at parks and beaches, and experience an eclectic mix of music and arts.

As one of the world's most liveable cities, you benefit from excellence in public transport and healthcare, as well as opportunities for casual work while studying.

Student accommodation

Living on-campus is a great way to experience university life and make connections while you study. On-campus accommodation is available at the Clayton campus – our Residential Services support team will help you through the application and transition process.

If you prefer a little more independence, you can stay at a range of off-campus accommodation options too. For more information, visit monash.edu/accommodation

Cost of living

Living in Melbourne is affordable if you plan ahead and know what your needs will be. Your tuition and study fees do not include personal costs such as accommodation, food and miscellaneous items.

These personal costs can add up to about A\$22,900+ per year. For information on budgeting for your lifestyle, visit monash.edu/cost-of-living

STUDENT LIFE AT MONASH

Clayton campus

You'll find Monash's Clayton campus twenty kilometres from the centre of Melbourne. It's home to a vibrant research, technology and manufacturing precinct. Plus, you'll have access to first-rate sporting facilities, shops, a student centre, libraries, a post office, banks, medical services and religious centres.

Support services

We help you settle into university life by providing an extensive range of support programs and services including:

- Academic support
- Campus security
- Careers counselling
- Disability support services
- e-Research services
- Family support
- Monash Connect
- Skills Essentials seminars
- Wellbeing.



Australian native wildlife (Penguins)



Flinders Street Station



MCG

HOW TO APPLY

Ready to start your graduate study journey?

For the latest information on courses, visit monash.edu/study to check:

- Entry requirements for domestic and international students
- Course requirements
- Course fees and scholarships
- Application closing dates
- Course start dates.



Scan the code for more information

monash.edu/study/interest-areas/engineering

MASTER'S DEGREES (BY COURSEWORK)

Domestic students

You're considered a domestic student if you're an Australian or New Zealand citizen, or Australian permanent resident (including a holder of an Australian permanent humanitarian visa).

Commonwealth Supported Places (CSP) may be available for masters coursework degrees. Refer to individual course information pages for CSP availability and eligibility to apply.

International students

Before you apply, please make sure you meet all the Monash minimum entry requirements – including academic, English language and selection criteria. Your application must include original or certified academic documentation, including academic transcripts, graduation certificates and grading scales (indicating the pass mark and graduation requirements if applicable). International students can apply online or through a Monash agent.

Scholarships

At Monash, we believe in unlocking your potential. We offer a range of scholarships and study grants to help you reach your full potential and achieve your career goals and aspirations. For more information and to apply: monash.edu/scholarships

GRADUATE RESEARCH DEGREES

To apply for a graduate research degree, follow these five simple steps:

- 1 Check your eligibility** and make sure you meet both the academic and english language requirements
- 2 Find a supervisor** or a research project in an area that interests you
- 3 Submit an expression of interest**
- 4 Obtain an invitation to apply**
- 5 Apply**

For more details on how to apply, submit an expression of interest and more information about research scholarships: monash.edu/engineering/graduate-research/how-to-apply

READY TO STUDY A MASTER'S DEGREE?

To apply for a graduate coursework degree or learn more: monash.edu/study/how-to-apply

Application dates for Graduate Research scholarships:

- **International students:** 31 March and 31 August
- **Domestic students:** 31 May and 31 October



ENGLISH LANGUAGE REQUIREMENTS

To apply for an engineering graduate course, you must meet the English language requirements.

monash.edu/admissions/entry-requirements/english-language

	Overall band score	Listening	Reading	Speaking	Writing	Total score	Listening	Reading	Speaking	Writing	Overall score	Listening	Reading	Speaking	Writing
Level	Academic IELTS					Internet Based TOEFL					Pearson Test of English (Academic)				
A	6.5	6.0	6.0	6.0	6.0	79	12	13	18	21	58	50	50	50	50

MONASH ENGINEERING

monash.edu/engineering

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YOUTUBE

youtube.com/monashengineering

LINKEDIN

linkedin.com/school/monash-engineering

FUTURE STUDENTS

monash.edu/engineering/future-students



MONASH UNIVERSITY

monash.edu

FIND A COURSE

monash.edu/study

FUTURE STUDENT ENQUIRIES

**Australian citizens, permanent residents
and New Zealand citizens**

monash.edu/study/contact

International students

T Australia freecall: 1800 MONASH (666 274)

T +61 3 9903 4788 (outside Australia)

E study@monash.edu



MIX
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responsible sources
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