



THE UNIVERSITY OF
MELBOURNE

2023 Graduate Guide

ENGINEERING AND INFORMATION TECHNOLOGY

For more information, visit:

unimelb.edu.au/study/engineering

unimelb.edu.au/study/information-technology

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THE MELBOURNE ADVANTAGE



Study at Australia's
No. 1 university¹



No. 8 in the world
for graduate
employability²

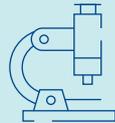


No. 33
in the world³



Be internationally recognised

Maximise your career opportunities around the world with accreditation from Engineers Australia, Washington Accord (USA) and EUR-ACE® (Europe), learning from academics who are globally recognised in their field.



Be inspired by leading researchers

Learn from world-leading researchers who are working on groundbreaking innovations such as epileptic seizure prediction, chemical blankets to protect our coral reefs, and robots with a human touch.



Connect with industry

Take part in internships, complete industry projects or undertake an innovation challenge with an industry mentor.



Study in the heart of Melbourne, one of the world's most liveable cities.⁴

Access Australia's leading entrepreneurship and start-up program, the Melbourne Accelerator Program (MAP).

Access a generous scholarships program that supports diversity and acknowledges academic achievement.

Be part of the world-leading innovation precinct Melbourne Connect. Discover a new seven-hectare campus for collaboration just five kilometres from the city, opening in 2026.



¹ Times Higher Education World University Rankings 2021
² QS Graduate Employability Rankings 2022

³ Times Higher Education World University Rankings 2022
⁴ Economist Intelligence Unit

⁵ QS World University Rankings By Subject 2022

QUICK REFERENCE GUIDE: GRADUATE PROGRAMS

The Faculty of Engineering and Information Technology offers a range of coursework and research study options designed to prepare you to become a professionally qualified engineer, advance or change your career, or undertake research. Full-time or part-time study, with Semester 1 (February) and Semester 2 (July) entry is available for most courses.

Professional entry programs

Professional entry programs, for those seeking a professional qualification in engineering or IT.

Specialised programs

Specialised programs suitable for qualified engineers and IT specialists, seeking professional development or a change of career.

Research degrees

Research degrees or research pathway degrees.

Courses	Minimum Entry Requirements ¹	Duration ²	Course Type
BIOMEDICAL ENGINEERING			Page 12
Master of Biomedical Engineering Optional specialisation: » Business	Undergraduate degree with: » 65% weighted average » Equivalent of 2 first-year mathematics subjects, specifically Linear Algebra and Calculus 2 » Equivalent of 2 first-year science subjects (either 2 biology or 2 chemistry) OR 1 second-year engineering mathematics subject (equivalent to MAST20029 Engineering Mathematics) Advanced standing/credit Up to one year of credit will be awarded to students with a Biomedical Engineering Systems major in their undergraduate degree	2-3 years full-time	Professional entry Accreditation: » EUR-ACE » Engineers Australia
CHEMICAL ENGINEERING			Page 16
Master of Chemical Engineering Optional specialisation: » Business » Materials and Minerals » Sustainability and Environment	Undergraduate degree with: » 65% weighted average » Equivalent of 2 first-year mathematics subjects, specifically Linear Algebra and Calculus 2 » Equivalent of 2 first-year chemistry subjects Advanced standing/credit Up to one year of credit will be awarded to students with a Chemical Engineering Systems major in their undergraduate degree	2-3 years full-time	Professional entry Accreditation: » EUR-ACE ^{®4} » Engineers Australia » IChemE ⁵
CIVIL AND STRUCTURAL ENGINEERING			Page 20
Master of Civil Engineering Optional specialisation: » Business » Energy » Structural » Transport » Geotechnical » Water Resources » Project Management	Undergraduate degree with: » 65% weighted average » Equivalent of 2 first-year mathematics subjects, specifically Linear Algebra or Calculus 2 » Equivalent of 2 first-year science subjects (2 Physics, 2 Biology, 2 Chemistry or 2 Computer Science) Advanced standing/credit Up to one year of credit will be awarded to students with a Civil Engineering Systems major in their undergraduate degree	2-3 years full-time	Professional entry Accreditation: » EUR-ACE ^{®4} » Engineers Australia

Courses	Minimum Entry Requirements ¹	Duration ²	Course Type
CIVIL AND STRUCTURAL ENGINEERING			Page 20
Master of Engineering Structures	65% weighted average in a four-year civil or structural engineering undergraduate degree Civil engineering graduates must: » Have one year of relevant work experience, or » Have dedicated 30% of course to structural engineering subjects	1 year full-time	Specialised masters
Master of Architectural Engineering	Engineering undergraduate degree: » 65% weighted average » Design folio » Equivalent of one architectural history subject » Personal statement of 500 words outlining relevant prior study, work experience and motivation to undertake the program OR Architecture undergraduate degree: » 65% weighted average » Design folio » Equivalent of 2 first-year mathematics subjects, specifically Linear Algebra and Calculus 2 and two science subjects (2 Physics, 2 Biology, 2 Chemistry or 2 Computer Science) » Personal statement of 500 words outlining relevant prior study, work experience and motivation to undertake the program	3.5 years full-time (must be taken full-time)	Professional entry*
DIGITAL INFRASTRUCTURE ENGINEERING			Page 26
Master of Digital Infrastructure Engineering Optional specialisations: » Artificial Intelligence » Business » Communication Infrastructure » Energy » Industry » Information Systems » Information Technology » Land » Mobility » Water	Undergraduate degree with: » 65% weighted average » Equivalent of 2 first-year mathematics subjects (any) » Equivalent of 2 first-year science subjects (Physics, Geography, Chemistry, Biology or Computer Science)	2-3 years full-time	Professional entry Accreditation ⁶ : » EUR-ACE® » Engineers Australia » Surveyors Registration Board, Victoria

1 Minimum entry requirements do not guarantee entry and are listed as a guide only. Grades are calculated as equivalent to the University of Melbourne grades. Visit handbook.unimelb.edu.au for more information.

2 Course duration for the Master of Engineering suite, Master of Information Technology and Master of Information Systems is dependent on prior study and work experience.

3 Students who complete the Computing and Software Systems major in the Bachelor of Design are eligible to enter the 237.5 point Master of Software Engineering. Students who complete the User Experience Design / Digital Technologies** major in the Bachelor of Design are eligible to enter the 262.5 point Master of Software Engineering.

4 This course is currently not accredited. The Faculty of Engineering and Information Technology will be seeking accreditation through EUR-ACE in 2022.

5 This course is currently not accredited, although the 2021 and earlier Master of Engineering (Chemical) was accredited by IChemE. The Faculty of Engineering and Information Technology will be seeking accreditation through IChemE in 2022.

6 This course is currently not accredited. The Faculty of Engineering and Information Technology will be seeking accreditation through EUR-ACE, Engineers Australia, and Surveyors Registration Board of Victoria in 2023.

* CSPs not available for this professional entry program.

** The Major course name 'User Experience Design' / 'Digital Technologies' is awaiting academic board approval.

Courses	Minimum Entry Requirements ¹	Duration ²	Course Type
ELECTRICAL AND ELECTRONIC ENGINEERING			Page 28
Master of Electrical Engineering Optional specialisation: » Autonomous Systems » Business » Communications and Networks » Electronics and Photonics » Low-Carbon Power Systems	Undergraduate degree with: » 65% weighted average » Equivalent of 2 first-year mathematics subjects, specifically Linear Algebra and Calculus 2 » Equivalent of 2 first-year physics subjects Advanced standing/credit Up to one year of credit will be awarded to students with an Electrical Engineering Systems major in their undergraduate degree	2-3 years full-time	Professional entry Accreditation: » EUR-ACE® ⁴ » Engineers Australia
ENERGY			Page 32
Master of Energy Systems	Undergraduate degree in a relevant discipline, such as commerce, science or engineering, and: » 70% weighted average » Equivalent of one subject in mathematics, statistics or other quantitative subject » Two years of continuous, documented work experience in a relevant field if you have a weighted average of at least 65%	1.5 years full-time Semester 1 (February) entry only	Specialised masters
ENGINEERING MANAGEMENT			Page 38
Master of Engineering Management	» Four-year undergraduate degree in engineering or relevant discipline » 65% weighted average OR » A three-year undergraduate degree in a relevant discipline with 65% weighted average » At least two years of full-time documented, relevant work experience since graduation	1 year full-time	Specialised masters
ENVIRONMENTAL ENGINEERING			
Master of Environmental Engineering Optional specialisation: » Earth Observation » Energy Systems » Water Systems	Undergraduate degree with: » 65% weighted average » Equivalent of 2 first-year mathematics subjects, specifically Linear Algebra or Calculus 2 » Equivalent of 2 first-year science subjects (2 Biology, 2 Chemistry, 2 Physics, 2 Geosciences or 2 Geography) Advanced standing/credit Up to one year of credit will be awarded to students with an Environmental Engineering Systems major in their undergraduate degree	2-3 years full-time	Professional entry Accreditation: » EUR-ACE® ⁴ » Engineers Australia
Master of Environmental Systems Engineering	» Four-year undergraduate engineering degree » 65% weighted average OR » Three-year undergraduate degree in an appropriate discipline » 65% weighted average » At least two years of full-time, documented and relevant work experience	1 year full-time	Specialised masters

Courses	Minimum Entry Requirements ¹	Duration ²	Course Type
INDUSTRIAL ENGINEERING			Page 40
Master of Industrial Engineering	<p>Undergraduate degree with:</p> <ul style="list-style-type: none"> » Three-year undergraduate degree from the University of Melbourne in any engineering system major » 65% weighted average <p>OR</p> <ul style="list-style-type: none"> » Four-year Bachelor of Engineering degree » 65% weighted average 	2 years full-time	Professional entry Accreditation: » EUR-ACE® ⁴
INFORMATION TECHNOLOGY AND SOFTWARE ENGINEERING			Page 42
<p>Master of Software Engineering</p> <p>Optional specialisation:</p> <ul style="list-style-type: none"> » Artificial Intelligence » Business » Cyber Security » Distributed Computing » Human-Computer Interaction 	<p>Undergraduate degree with:</p> <ul style="list-style-type: none"> » 65% weighted average » Equivalent of 2 first-year mathematics subjects (any) » Equivalent of 2 first-year computing, programming or computer science subjects <p>Advanced standing/credit</p> <p>Up to one year of credit will be awarded to students with a Computing and Software Systems major in their undergraduate degree⁵</p>	2-3 years full-time	Professional entry Accreditation: » Euro-Inf® » Australian Computer Society » Engineers Australia
<p>Master of Information Systems</p> <p>Optional specialisation:</p> <ul style="list-style-type: none"> » Professional » Research 	<p>Depending on your work experience and undergraduate study, you may be eligible for advanced standing:</p> <p>200 point (2 years full-time) program</p> <ul style="list-style-type: none"> » Undergraduate degree in any discipline » 65% weighted average <p>150 point (1.5 years full-time) program</p> <ul style="list-style-type: none"> » Undergraduate degree in any discipline » 65% weighted average » One year of documented, relevant work experience <p>100 point (1 year full-time) program</p> <ul style="list-style-type: none"> » Undergraduate degree in information systems » 65% weighted average » Two years of documented, relevant work experience 	1-2 years full-time	Professional entry Accreditation: » Australian Computer Society

Courses	Minimum Entry Requirements ¹	Duration ²	Course Type
INFORMATION TECHNOLOGY AND SOFTWARE ENGINEERING			Page 42
Master of Information Technology Optional specialisation: » Artificial Intelligence » Computing » Cybersecurity » Distributed Computing » Human-Computer Interaction	Depending on your work experience and undergraduate study, you may be eligible for advanced standing: 200 point (2 years full-time) program » Undergraduate degree in any discipline » 65% weighted average » One technical computer programming subject 150 point (1.5 years full-time) program » Three-year undergraduate degree with a major in computer science, information technology, software engineering or related discipline, for example: – Computing and Software Systems major in the Bachelor of Science – Computing and Software Systems or User Experience Design major in the Bachelor of Design » 65% weighted average 100 point (1 year full-time) program » Four-year undergraduate degree with a major in computer science, information technology, software engineering or related discipline » 65% weighted average and either: – Studies in the area of specialisation at an advanced undergraduate level or higher, or: – Two years of relevant, documented work experience in the area of specialisation	1-2 years full-time	Professional entry Accreditation: » Australian Computer Society
Master of Data Science	Undergraduate degree in computer science, data science or statistics » 65% weighted average » Equivalent to one subject from computer science or related discipline, focusing on computer programming » Equivalent of two subjects of first-year mathematics (including Calculus 2)	2 years full-time	Specialised masters
Graduate Diploma of Data Science	Undergraduate degree in any discipline, and the following subjects (or their equivalents): » MAST10006 Calculus 2 » MAST10007 Linear Algebra	1 year full-time	Professional entry
Master of Science (Bioinformatics)	» Undergraduate degree with a major in computer science » 65% weighted average in the major	2 years full-time	Research pathway
Master of Computer Science	Undergraduate degree with a major in computer science, for example: » Computing and Software Systems major in the Bachelor of Science or the Bachelor of Design » 75% weighted average » At least 25 points of university level mathematics or statistics subjects	2 years full-time	Research pathway

Courses	Minimum Entry Requirements ¹	Duration ²	Course Type
INFORMATION TECHNOLOGY AND SOFTWARE ENGINEERING			Page 42
Graduate Diploma of Computer Science	Undergraduate degree with: <ul style="list-style-type: none"> » At least 25 points of Level 1 or above computer science subjects, or equivalent » At least 25 points of level 1 or above mathematics or statistics subjects, or equivalent » 65% weighted average 	1 year full-time	Professional entry
Graduate Certificate of Computer Science	Undergraduate degree with: <ul style="list-style-type: none"> » At least 25 points of Level 1 or above computer science subjects, or equivalent » At least 25 points of level 1 or above mathematics or statistics subjects, or equivalent » 65% weighted average 	6 months full-time	Professional entry
MECHANICAL AND MECHATRONICS ENGINEERING			Page 58
Master of Mechanical Engineering Optional specialisation: » Aerospace » Business » Manufacturing » Materials	Undergraduate degree with: <ul style="list-style-type: none"> » 65% weighted average » Equivalent of 2 first-year mathematics subjects, specifically Linear Algebra or Calculus 2 » Equivalent of 2 first-year physics subjects Advanced standing/credit Up to one year of credit will be awarded to students with a Mechanical Engineering Systems major in their undergraduate degree	2-3 years full-time	Professional entry Accreditation: » EUR-ACE® ⁴ » Engineers Australia
Master of Mechatronics Engineering Optional specialisation: » Manufacturing	Undergraduate degree with: <ul style="list-style-type: none"> » 65% weighted average » Equivalent of 2 first-year mathematics subjects, specifically Linear Algebra or Calculus 2 » Equivalent of 2 first-year physics subjects Advanced standing/credit Up to one year of credit will be awarded to students with a Mechatronics Engineering Systems major in their undergraduate degree	2-3 years full-time	Professional entry Accreditation: » EUR-ACE® ⁴ » Engineers Australia
GRADUATE RESEARCH			Page 67
Master of Philosophy (MPhil)	<ul style="list-style-type: none"> » Four-year undergraduate degree in a relevant discipline » Must include a substantial research component (equivalent of 25% of one year of full-time study) » 75% weighted average in the equivalent of final year subjects OR <ul style="list-style-type: none"> » A masters degree in a relevant discipline » Must include a substantial research component (equivalent of 25% of one year of full-time study) » 75% weighted average OR <ul style="list-style-type: none"> » Qualification or professional experience considered to be equivalent 	1.5 -2 years full-time	Research degree
Doctor of Philosophy (PhD)	» See Master of Philosophy (above)	3-4 years full-time	Research degree

BUILD A CAREER OF THE FUTURE AT MELBOURNE

Join the next generation of innovators, working towards a more productive and sustainable tomorrow. During your degree, you'll have access to internships and industry opportunities to help forge your career while you study. When you graduate, you'll benefit from international accreditation and be on your way to a global career in engineering and IT.

Gain real-world experience: industry collaboration

Our industry-connected curriculum means you'll have the opportunity to gain real-world experience during your degree. You could complete an industry project, take part in internships, undertake an innovation challenge with an industry mentor or connect with a STEM mentor.

Internships

The internship subject is available to domestic and international students in a Master of Engineering program, Master of Information Technology and Master of Information Systems:

- » Undertake professional-level work experience for 10-16 weeks (approximately 320-350 hours¹)
- » Gain credit towards your degree
- » Take part in workshops run by careers counsellors to improve your resume, develop your interview skills and enhance your employability for the future
- » Explore international and domestic internship opportunities related to your discipline and career goals

Industry connected curriculum

Undertake a design or research project with industry and apply your knowledge to help solve a real-world problem.

- » Undertake your project over the course of a semester, full-year or summer break
- » Develop a collaborative relationship with industry practitioners
- » Available in the Master of Engineering suite, Master of Information Technology and Master of Information Systems
- » Creating Innovative Engineering: undertake an innovation challenge with an industry mentor in this first-year Master of Engineering subject

STEM Mentoring

Build professional networks, explore your career options and gain insight into the professional world of STEM with alumni mentors and industry professionals.

Endeavour Exhibition

The Endeavour Exhibition showcases our final-year engineering and IT masters students' projects. Students work in collaboration with government and industry partners to solve real-world challenges and this exhibition is a unique opportunity to demonstrate their engineering and IT capabilities.

Skill building and workshops

Give your career a headstart with skill-building workshops tailored for engineering and IT students. Our employability team offers tips on perfecting your resume and cover letter, preparing for interviews and developing your personal brand and online presence.

With access to screened job listings, industry events and university-sourced internship opportunities, you'll be well positioned to enhance your employability and start forging your career while you study.

Clubs and societies

Our student clubs bring together people who are passionate about engineering and IT and want to make an impact. With over 200 clubs to choose from, you'll connect with people from a range of disciplines, cultural backgrounds and interests.

- » Aerospace and Rocket Engineering Society (ARES)
- » Computing and Information Systems Students Association (CISSA)
- » Engineering Music Society
- » Engineers Without Borders
- » Melbourne University Engineering Student Club (MUESC)
- » MUR Motorsports
- » Robogals
- » Women in Science and Engineering (WISE)
- » Women in Technology

Build your portfolio while you study: student opportunities

As a Melbourne engineering or IT student, you'll have access to a broad range of opportunities to build your experience and employability while you study.

Global Mobility Program: Exchange and Study Abroad

Choose from short-term or semester-long programs, and focus on research projects that match your interests. You'll benefit from scholarships, bursaries and other funding opportunities.

Popular exchange destinations for engineering and IT students¹

North America:

- » University of California, Berkeley (USA)
- » University of Illinois at Urbana-Champaign (USA)
- » McGill University (Canada)
- » University of British Columbia (Canada)
- » University of Texas at Austin (USA)
- » New York University (USA)
- » Carnegie Mellon University (USA)

Europe:

- » Delft University of Technology (Netherlands)
- » Lund University (Sweden)
- » Technical University of Munich (Germany)
- » Imperial College London (UK)
- » Swiss Federal Institute of Technology (ETH) Zurich (Switzerland)
- » Royal Institute of Technology (KTH) (Sweden)
- » University College London (UK)
- » King's College London (UK)

Asia:

- » Peking University (China)
- » Tokyo Institute of Technology (Japan)
- » Nanyang Technological University (Singapore)
- » National University of Singapore (Singapore)
- » KAIST (Korea Advanced Institute of Science and Technology) (South Korea)
- » University of Tokyo (Japan)
- » Tsinghua University (China)

180 EXCHANGE
PARTNER INSTITUTIONS
ACROSS **39** COUNTRIES



A global career

Around the world, employers are looking to fill valuable STEM roles with people who have the right combination of technical and professional skills, including business and communication skills.

As a Melbourne graduate, you'll be equipped to meet today's challenges with strong business, technical and interpersonal skills. You'll enter the global workforce with the ability to lead projects and teams, and the creativity to analyse problems and develop innovative solutions.

Our alumni

41,000+ ALUMNI
IN MORE THAN
100 COUNTRIES



Resources:

- » Australian Government Job Outlook: joboutlook.gov.au
- » Careers and employability: careers.unimelb.edu.au
- » Engineers Australia: engineersaustralia.org.au
- » Graduate Careers: graduatecareers.com.au

For more detailed information about where our graduates work and what roles they are employed in, see the relevant course page.

Telstra Creator Space

You'll have access to an accessible fabrication lab located in the innovation precinct, Melbourne Connect. It's a space where technology and creativity combine to form innovative solutions and it's open to all staff and students.

¹ For a full list of institutions, visit mobility.unimelb.edu.au

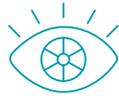
BIOMEDICAL ENGINEERING

Meet the health challenges of the future with a degree in biomedical engineering. As life expectancies increase, engineers, doctors and clinicians are working together to ensure our bodies can take us further than ever before.

What is biomedical engineering?

Biomedical engineers blend biomedical science with engineering techniques to create innovative healthcare solutions.

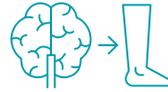
Our world-leading biomedical engineering research:



Bionic eye



Low-cost prostheses



Brain-computer interfaces



Bioprinting and tissue engineering

Get connected

Be exposed to world-class research through the Graeme Clark Institute for Biomedical Engineering, a community of engineers, scientists and clinicians in the healthcare system.

Receive one-on-one job and career mentorship from our industry partners, where you will be matched with an industry representative to gain career advice and job interview tips¹.



“In one of my subjects, I worked in a team to design a medical product. It was a great way to understand the full process of a biomedical engineer from ideation through to testing and commercialisation.

Currently I’m working as a consultant at Boston Consulting Group. The work I’m doing isn’t always engineering related but requires me to think like an engineer all the time - I can apply my skills and the problem solving methodology to a lot of different problems.”

Georgina Clarnette
Master of Engineering
(Biomedical with Business)
Consultant, Boston Consulting Group

¹ Please note that internships and mentor opportunities are subject to company approval and availability.



Master of Biomedical Engineering

At a glance:

 Duration: 2-3 years	 Intake: February (Sem 1), July (Sem 2)	 Designed for: Becoming an accredited biomedical engineer	 Accredited by: Engineers Australia. Seeking accreditation through EUR-ACE ⁴	 Cost: CSPs available/full fee place guarantee
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- » Focus on human systems and the design and operation of devices and processes
- » Apply engineering skills to new medical treatments, instruments and machines
- » Specialise in Business during your studies to achieve your career goals

Sample course plan

If you have not completed a major in biomedical engineering in your undergraduate degree, study the 3 year

Master of Biomedical Engineering:

Year 0	Sem 1	Foundation Selective	Applied Computation in Bioengineering	Mechanics for Bioengineering	Circuits and Systems
	Sem 2	Foundation Selective	Anatomy and Physiology for Bioengineering	Introduction to Biomaterials	Biosystems Design

If you have completed a major in biomedical engineering in your undergraduate degree, study the 2 year

Master of Biomedical Engineering:

Year 1	Sem 1	Biomechanics	Bioengineering Data Analytics	Bioinstrumentation	Biomedical Engineering Management & Regulations
	Sem 2	Biofluid Mechanics	Biosignal Processing	Engineering Practice Selective Subject	Bioengineering Elective
Year 2	Sem 1	Biomedical Engineering Capstone Project*	Bioengineering Elective	Bioengineering Elective	Approved Elective
	Sem 2		Bioengineering Elective	Bioengineering Elective	Approved Elective

● Core subject ● Elective

Optional specialisation

Business

Subjects required for specialisation:

- » Engineering Contracts and Procurement
- » Economic Analysis for Engineers
- » Strategy Execution for Engineers
- » Marketing Management for Engineers

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-biomeng

*BioDesign Innovation may be taken in place of Biomedical Engineering Capstone Project and two Bioengineering Electives

⁴ The Master of Biomedical Engineering is provisionally accredited by Engineers Australia and EUR-ACE. Full accreditation will be sought in 2022.

BIOMEDICAL ENGINEERING

Our student opportunities

Internships



- » Hospitals
- » Biomedical industry

Student projects



Design your own biomedical engineering instrumentation, from prosthetics to pacemakers, and use our state-of-the-art facilities to fabricate components.

Work on projects such as monitoring the vital signs of patients, a diagnostic tool for stent selection, speech recognition software and more.

Graduate employment opportunities



- » Hospitals (e.g. Royal Melbourne Hospital, Royal Children's Hospital, Epworth Healthcare)
- » Biomedical Institutes (e.g. Bionics Institute, Walter and Eliza Hall Institute, St Vincent's Institute)
- » Government agencies (e.g. CSIRO, Defence Science and Technology Group)
- » Medical device companies (e.g. Cochlear, OMX Solutions, Seer Medical)

Where our graduates work

Industries



- » Biotechnology
- » Finance
- » Health services
- » Hospitals
- » Medical devices
- » Government
- » Information technology
- » Pharmaceuticals
- » R&D
- » Start-ups
- » Consultancy

Companies



- » Accenture
- » Agilent Technologies
- » Bionics Institute
- » Cerner Corporation
- » Eastern Health
- » GE
- » IBM
- » OMX Solutions
- » Royal Children's Hospital
- » Toshiba Medical Systems

Job roles



- » Analyst
- » Clinical Engineer
- » Design Engineer
- » Field Service Technician
- » Hardware Engineer
- » Research Associate
- » Service Engineer
- » Startup Founder



Commercialise your medical device

Develop a concept for a medical device and design a business plan through the BioDesign Innovation subject. Working with students from the Master of Business Administration (MBA) course and clinicians from Melbourne hospitals, you'll find an unmet clinical need, develop an engineering prototype and create a business plan to bring your medical device to market.

Our BioDesign Innovation success stories include NAVi Medical Technologies, Ventora Medical and Stelect, winners of Australia's largest medtech startup competition, Medtech's Got Talent.

Visit <http://go.unimelb.edu.au/d9fi> to read about Ventora Medical, a classroom concept turned successful startup who have raised \$1.25 million to help babies breathe.

CHEMICAL ENGINEERING



**No. 49 in the world
for Chemical
Engineering¹**

With a degree in chemical engineering, you'll help meet the world's growing need for food, energy and water, preserve the natural environment and develop solutions to provide large scale healthcare options for improved life on earth.

What is chemical engineering?

Chemical engineering focuses on the design and development of chemical processes, and equipment, involved in waste management, manufacturing, health and food industries. Chemical engineers optimise and control processes for environmentally sustainable and economic industrial operations.

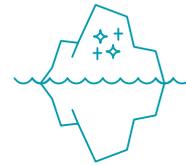
Examples of our world-leading chemical engineering research:



Generating
renewable
energy from
algae and
biowaste



Improving
food
sustainability



Keeping
Antarctica
clean



Batteries
that last
longer

Learn from experts in nanotechnology, pharmaceuticals, minerals, materials, natural gas processing and solvent extraction.

Master of Chemical Engineering

At a glance:



Duration:
2-3 years



Intake:
February (Sem 1),
July (Sem 2)



Designed for:
Becoming a
chemical engineer



Provisionally accredited by:
Engineers Australia,
EUR-ACE and IChemE⁴

» Focus on industrial-scale processes for converting raw waste materials into useful products, and learn how to simulate chemical processes

» Apply your knowledge to areas such as fuel, plastics, food additives, fertilisers, paper and pharmaceuticals

» Specialise in Business, Materials and Minerals or Sustainability and Environment during your studies to achieve your career goals

Sample course plan

If you have not completed a major in chemical engineering in your undergraduate degree, study the 3 year

Master of Chemical Engineering:

(This is a sample course plan showing a specialisation in Sustainability and Environment)

Year 1	Sem 1	Fluid Mechanics	Fundamentals of Chemical Engineering	Material and Energy Balances	CCE or CIE or CIP*
	Sem 2	Engineering Mathematics	Momentum, Mass and Heat Transfer	Digitisation in the Process Industries	Safety and Sustainability Case Studies

If you have completed a major in chemical engineering in your undergraduate degree, study the 2 year

Master of Chemical Engineering (Sustainability and Environment):

Year 2	Sem 1	Chemical Engineering Thermodynamics	Thermal and Separation Design	Reactors and Catalysis	Sustainable Processing
	Sem 2	Design and Construction of Equipment	Chemical Engineering Management	Wastewater and Environmental Remediation	Energy, emissions and Pollution Control
Year 3	Sem 1	Process Engineering	Process Simulation and Control	Chemical Engineering Research Project or Chemical Engineering Internship	
	Sem 2	Chemical engineering Design Project		Sustainable Minerals and Recycling	Pharmaceuticals and Biochemical Production

● Core subject ● Elective ● Specialisation core subject

Optional specialisations

Sustainability and Environment	Business	Materials and Minerals
Subjects required for specialisation:	Subjects required for specialisation:	Subjects required for specialisation:
<ul style="list-style-type: none"> » Sustainable Processing » Wastewater and Environmental Remediation » Energy, Emissions and Pollution Control 	<ul style="list-style-type: none"> » Engineering Contracts and Procurement » Strategy Execution for Engineers » Marketing Management for Engineers 	<ul style="list-style-type: none"> » High Performance Materials » Sustainable Minerals and Recycling » Particle Technology

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-chemeng

This course is currently not accredited, although the 2021 and earlier Master of Engineering (Chemical) was accredited by IChemE. The Faculty of Engineering and Information Technology will be seeking accreditation through IChemE in 2022..



“One of the greatest aspects of the degree is that the university offers students the opportunity to do a chemical engineering internship.

I worked with Lion Dairy and Drinks and focused on the water treatment process. This experience has given me the ability to see how my knowledge is applied first-hand. I feel more comfortable, more equipped and more ready to be part of the industry.”

Enda Larasati

Master of Engineering
(Chemical with Business)
Bachelor of Science

Graduate Technical Assistant,
Jasol Australia

Where our graduates work

Industries



- » Bioremediation
- » Chemical manufacturing
- » Consultancy
- » Cosmetics
- » Food and beverage production
- » Minerals and energy
- » Oil and gas
- » Petrochemicals
- » Petroleum
- » Pharmaceuticals
- » R&D
- » Waste and water treatment

Companies

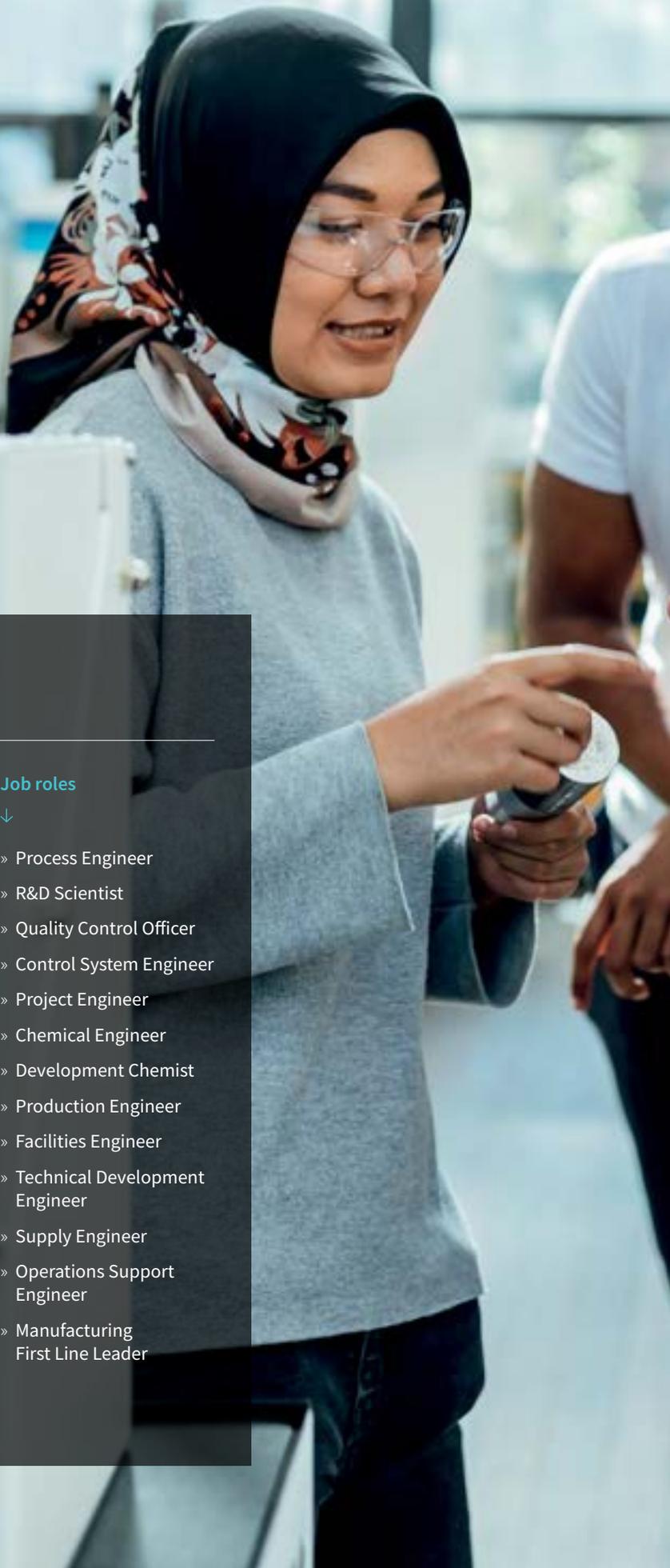


- » Arup
- » BHP Billiton
- » BP
- » Bulla Dairy Foods
- » Carlton & United Breweries
- » CSL
- » ExxonMobil
- » Fonterra Australia
- » GHD
- » Macquarie Group
- » Mars Chocolate Australia
- » Melbourne Water
- » Rio Tinto
- » Woodside
- » WorleyParsons

Job roles



- » Process Engineer
- » R&D Scientist
- » Quality Control Officer
- » Control System Engineer
- » Project Engineer
- » Chemical Engineer
- » Development Chemist
- » Production Engineer
- » Facilities Engineer
- » Technical Development Engineer
- » Supply Engineer
- » Operations Support Engineer
- » Manufacturing First Line Leader





Our student opportunities

Internships



- » Energy industry
- » Minerals industry
- » Food and beverage production
- » Pharmaceuticals

Industry project



Use your newly developed technical skills to solve a specific industrial problem within one of our partner companies, in sectors including:

- » Pharmaceuticals
- » Pulp and paper
- » Specialty chemicals
- » Minerals processing
- » Food and beverage
- » Oil and gas
- » Water and wastewater treatment

Graduate employment opportunities



- » Minerals (e.g. BHP Billiton, Rio Tinto)
- » Pharmaceutical (e.g. CSL)
- » Energy (e.g. Woodside)
- » Food and beverages (e.g. Bulla Dairy Foods)

CIVIL AND STRUCTURAL ENGINEERING



No. 25 in the world for Civil and Structural Engineering¹

Reimagine our growing cities with a degree in civil or structural engineering. Prepare regions, cities and towns to handle increasing populations, finite resources and extreme events.

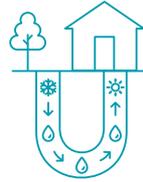
What is civil and structural engineering?

Civil engineering can cover a broad range of areas, such as transport, environmental and geotechnical engineering. Structural engineering is a specialised type of civil engineering that focuses on the design and maintenance of load-bearing structures.

Our world-leading civil and structural research:



Prefabricated housing



Going underground for green energy



How nanoclay stops cladding fires from spreading



Optimising urban transport systems

Learn from researchers in the ARC Training Centre for Advanced Manufacturing and Prefabricated Housing, the Australia-China Joint Research Centre on River Basin Management, Centre for Disaster Management and Public Safety and more.



“I’m learning from high quality researchers recognised internationally for their expertise in high-rise structures and wind, wave, earthquake and impact resistant technologies. We are provided a series of design seminars, field work and workshops, with opportunities to work with industry professionals throughout the course.”

Shuangmin (Victor) Shi

Master of Engineering (Structural)
PhD Candidate, University of Melbourne



¹ QS World Rankings by Subject 2022

Master of Civil Engineering

At a glance:



Duration:
2-3 years



Intake:
February (Sem 1),
July (Sem 2)



Designed for:
Becoming an accredited
civil engineer



Accredited by:
Engineers Australia.
Seeking accreditation
through EUR-ACE⁴

» Strengthen your understanding of sustainable urban developments, environmental protection, resilient infrastructure design and the conservation of energy and water resources

» Develop skills in structural, geotechnical, hydraulic and transportation engineering, as well as key knowledge in ports and harbour, energy, sustainability and project management

» Specialise in Business, Energy or Structural during your studies to help achieve your career goals

Sample course plan

If you have not completed a major in civil engineering in your undergraduate degree, study the 3 year **Master of Civil Engineering**:

Year 0	Sem 1	Engineering Risk Analysis	Engineering Mechanics	Engineering Mathematics	Fluid Mechanics
	Sem 2	Earth Processes for Engineering	Engineering Materials	Geotechnical Modelling and Design	Structural Theory and Design

If you have completed a major in civil engineering in your undergraduate degree, study the 2 year **Master of Civil Engineering**:

Year 1	Sem 1	Structural Theory and Design 2	Sustainable Infrastructure Engineering	Engineering Site Characterisation	Geotechnical Engineering
	Sem 2	Engineering Project Implementation	Civil Hydraulics	Transport Systems	Critical Communication for Engineers/ Creating Innovative Engineering/ Creating Innovative Professionals
Year 2	Sem 1	Engineering Capstone Project Part 1	Integrated Design (Infrastructure) / Integrated Design (Civil)	Civil Engineering elective	Civil Engineering elective
	Sem 2	Engineering Capstone Project Part 2	Construction Engineering	Civil Engineering elective	Civil Engineering elective

● Core subject ● Elective

Optional specialisations

Business	Energy	Structure
<p>Subjects required for specialisation:</p> <ul style="list-style-type: none"> » Engineering Contracts and Procurement » Economic Analysis for Engineers » Strategy Execution for Engineers » Marketing Management for Engineers » World of Engineering Management 	<p>Subjects required for specialisation:</p> <ul style="list-style-type: none"> » Energy for Sustainable Development » Solar Energy » Energy Efficient Technology » Sustainable Buildings 	<p>Subjects required for specialisation:</p> <ul style="list-style-type: none"> » Steel and Composite Structures Design <p>Plus: 3 x Structural Electives chosen from:</p> <ul style="list-style-type: none"> » Concrete Design and Technology » Earthquake Resistant Design of Buildings » Structural Dynamics and Modelling » High Rise Structures » Extreme Loading of Structures

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-civeng

⁴The Faculty of Engineering and Information Technology will seek accreditation for this course through EUR-ACE in 2022.



Where our graduates work

Industries



- » Aerospace
- » Civil engineering
- » Construction
- » Geotechnical engineering
- » Manufacturing
- » Mining
- » Oil and gas
- » Transport
- » Utilities
- » Water resources engineering
- » Renewable energy
- » Transport infrastructure
- » Waste management

Companies



- » AECOM
- » Arup
- » Aurecon
- » BHP Billiton
- » Boston Consulting Group
- » City West Water
- » GeoAust Geotechnical Engineers
- » GHD
- » Golder Associates
- » Jacobs
- » John Holland
- » Melbourne Metro Rail Authority
- » Multiplex
- » Shell

Job roles



- » Project Engineer
- » Site Engineer
- » Geotechnical Engineer
- » Structural Engineer
- » Civil Engineer
- » Consultant
- » Design Engineer
- » Tunnel Engineer
- » Field Engineer
- » Build Reports Consultant
- » Construction Engineer
- » Rail Engineer
- » Drainage Engineer

Our student opportunities

Internships



- » Urban development
- » Transport and infrastructure
- » Water resources
- » Mining
- » Geotechnical engineering
- » Renewal energy
- » Waste recovery

Case competition



Connect with engineering students from other disciplines to solve a real-world problem

Graduate employment opportunities



- » Urban development (e.g. Aurecon)
- » Transport and infrastructure (e.g. Melbourne Metro Rail Authority)
- » Water resources (e.g. City West Water)
- » Mining (e.g. BHP Billiton)



Master of Engineering Structures

At a glance:



Duration:
1 year program



Intake:
February (Sem 1),
July (Sem 2)



Designed for: Graduates and experienced civil and structural engineers who are seeking advanced skills and knowledge in engineering structures.

Learning outcomes

- » Explore key themes such as structural systems, conceptual design, sustainable design, extreme loading and advanced analysis techniques
- » Gain the skills to design ecologically sustainable and resilient structures
- » Learn the special requirements to successfully design high rise structures

- » Understand the procedures and processes for structural steel, coldformed steel, composites, timber or masonry structures

Student experience

- » Undertake an infrastructure engineering research subject and choose from a wide range of electives
- » Complete a simulated structural design exercise and collaborate with an experienced senior practising engineer

Our career outcomes

The Master of Engineering Structures is a specialised masters course, designed to help qualified engineers advance their career. This qualification prepares graduates for senior roles in structural engineering and related industries.



Sample course plan

Year 1	Sem 1	High Rise Structures	Infrastructure Engineering elective	Structural Engineering elective	Structural Engineering elective
	Sem 2	Steel and Composite Structures Design	Structural Engineering elective	Structural Engineering elective	Structural Engineering elective

● Core subject ● Elective

Structural Engineering electives (choose at least 3 subjects, 5 recommended)	Infrastructure Engineering electives (choose up to 3)	
<ul style="list-style-type: none"> » Earthquake Resistant Design of Buildings » Extreme Loading of Structures » Design of Sustainable Structures » Structural Dynamics and Modelling » Building Information Modelling 	<ul style="list-style-type: none"> » Sustainable Infrastructure Engineering » Quantitative Environmental Modelling » Solar Energy » Energy for Sustainable Development » Project Management Practices » Engineering Project Implementation » Geotechnical Applications » Energy Efficiency Technology 	<ul style="list-style-type: none"> » Sustainable Buildings » Engineering Contracts and Procurement » IE Research Project 3 » Transport System Modelling » Port Structural Design » Port Access and Navigation » Port and Harbour Engineering

DIGITAL INFRASTRUCTURE ENGINEERING

Capture, integrate and use data representing our environments, resources, and infrastructure. You'll work with the Internet of Things (IoT), design and use digital twins, and create digital solutions for asset management, smart and sustainable cities, and disaster management.

What is digital infrastructure engineering?

Digital infrastructure engineers work on digital systems representing our environments, resources and infrastructure to drive sustainable outcomes for businesses, projects and ecosystems.

Our world-leading Digital Infrastructure Engineering research:



Surveying and mapping for disaster management



How ridesharing is going social



Taking a city's pulse: touch-ons, transactions and tweets



Indoor wayfinding and building evacuation



Master of Digital Infrastructure Engineering

At a glance:



Duration:
2-3 years



Intake:
February (Sem 1),
July (Sem 2)



Designed for:
Becoming an accredited
digital infrastructure
engineer



Accreditation will be sought from:
Engineers Australia, EUR-ACE and
the Surveyors Board of Victoria.

» Focus on the science and technology of measurement, mapping, data analytics, and visualisation

» Develop skills in geographic information systems (GIS), 3D computer visualisations, surveying, satellite positioning and image processing

» Join the growing infrastructure sector with digital tools like Building Information Modelling (BIM) or find new ways to integrate digital systems into any industry.

Sample course plan

If you have not completed a major in digital infrastructure engineering in your undergraduate degree, study the 3 year

Master of Digital Infrastructure Engineering :

Year 0	Sem 1	Sustainable Infrastructure Engineering	Engineering Risk Analysis	Applying Digital Infrastructure	Imagining the Environment
	Sem 2	Digital Systems for Infrastructure	Integrating Digital Infrastructure	Sensing and Measurement	Numerical Methods in Engineering

If you have completed a major in digital infrastructure engineering in your undergraduate degree, study the 2 year

Master of Digital Infrastructure Engineering:

Year 1	Sem 1	Spatial Data Management	The Ethics of Artificial Intelligence	Spatial Data Analytics	Advanced Imaging
	Sem 2	Positioning Principles and Technologies	Building Information Modelling	Information Visualisation	Remote Sensing
Year 2	Sem 1	Specialisation subject	Specialisation subject	Creating Innovative Engineering	EMI Capstone
	Sem 2	Specialisation subject	Specialisation subject	Engineering Project Implementation	

● Core subject ● Elective/Selective ● Specialisation

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-dinfeng

*The Faculty of Engineering and Information Technology will seek provisional accreditation for this course through EUR-ACE in 2022.

Optional specialisations

List of specialisations	Example: Artificial Intelligence	Example: Business	Example: Land
<ul style="list-style-type: none"> » Artificial Intelligence » Business » Communication Infrastructure » Energy » Industry » Information Systems » Information Technology » Land » Mobility » Water 	<p>Subjects for specialisation:</p> <ul style="list-style-type: none"> » Algorithms and Complexity » Introduction to Machine Learning » Statistical Machine Learning <p>Plus one of:</p> <ul style="list-style-type: none"> » Computer Vision » AI Planning for Autonomy 	<p>Subjects for specialisation:</p> <ul style="list-style-type: none"> » Economic Analysis for Engineers » Marketing Management for Engineers » Strategy Execution for Engineers » Management and Leadership for Engineers 	<p>Subjects for specialisation:</p> <ul style="list-style-type: none"> » Property law » Cadastral surveying » Land development <p>Plus one of:</p> <ul style="list-style-type: none"> » Indigenous Land Management » Planning Law & Statutory Planning

ELECTRICAL AND ELECTRONIC ENGINEERING



No. 40 in the world for Electrical and Electronic Engineering¹

What is electrical and electronic engineering?

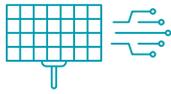
Electrical and electronic engineers work on problems across a wide range of spatial and temporal scales. From developing new electronic materials that unlock high efficiency solar cells and new integrated circuits; to designing electrical and electronic devices and their algorithms to make smarter and higher performing systems, and improving the operation

of communication systems that connect and coordinate our daily operations. These systems underpin much of modern society with key applications including renewable energy power grids, autonomous systems, wireless communication and wearable electronics.

Our world-leading electrical engineering research:



Autonomous systems



Next-generation solar cells



Machine learning in wireless spectrum allocation



Renewable energy integration into power grids



Internet of Things (IoT) and beyond-5G communications

Learn from leading experts in power systems, energy-efficient telecommunications systems and sensor networks that monitor the environment.



"I focused on Electrical Engineering as I saw it to be a challenge that would help me progress toward the renewable energy industry, provide me computing experience and open myself to new opportunities. The project-based learning has been fantastic as it enables us to apply the theory we have learnt."

Inushka Dassanayake
Master of Engineering (Electrical)

Electrical Engineer -intern at BayWa r.e.

Grid Connection Engineer, Total Eren



Master of Electrical Engineering

Develop core skills in a broad area of electrical and electronic engineering with the flexibility to advance in an area of interest.

At a glance:



Duration:
2-3 years



Intake:
February (Sem 1),
July (Sem 2)



Designed for: Becoming
an accredited electrical
or electronic engineer



Accredited by:
Engineers Australia.
Seeking accreditation
through EUR-ACE⁴

» Acquire core skills in electronics, control, signal processing, communications and power systems

» Learn from leading experts in power systems, energy-efficient telecommunications systems and sensor networks that monitor and control the environment

» Optional specialisations in Autonomous Systems, Business, Communications and Networks, Electronics and Photonics or Low-Carbon Power Systems.

Sample course plan

If you have not completed a major in electrical engineering in your undergraduate degree, study the 3 year

Master of Electrical Engineering:

Year 0	Sem 1	Foundations of Electrical Networks	Engineering Mathematics	Engineering Computation	Digital Systems
	Sem 2	Electrical Device Modelling	Electrical Network Analysis and Design	Signals and Systems	Electronic System Implementation

If you have completed a major in electrical engineering in your undergraduate degree, study the 2 year

Master of Electrical Engineering:

Year 1	Sem 1	Probability and Random Models	Control Systems	Electronic Circuit Design	Introduction to Power Engineering
	Sem 2	Communication Systems	Signal Processing	Embedded System Design	Creating Innovative Engineering
Year 2	Sem 1	Electrical Engineering Capstone Project Part 1	Electrical Engineering elective	Electrical Engineering Elective	Approved elective
	Sem 2	Electrical Engineering Capstone Project Part 2	Electrical Engineering elective	Electrical Engineering elective	Approved elective

● Core subject ● Elective/Selective

Optional specialisations*

Master of Electrical Engineering (Autonomous Systems)	Master of Electrical Engineering (Low-carbon Power Systems)	Master of Electrical Engineering (Electronics and Photonics)	Master of Electrical Engineering (Communications and Networks)	Master of Electrical Engineering (Business)
Develop core expertise in fundamental principles of electrical engineering with specific focus on the areas of control systems, signal processing and optimisation that underpin modern autonomous systems in applications from robotics to UAVs.	Develop key expertise in the operation, planning and design of low-carbon power systems and energy markets with deep penetration of renewables, distributed energy resources, and smart grid technologies.	Acquire core skills and knowledge of the fundamental principles in electronic engineering with an emphasis on designing and building electronic and opto-electronic systems in applications in modern communications, computing, instrumentation, and sensing.	Develop core expertise in the fundamental principles underpinning modern-day communications engineering, discover the technologies behind modern communication networks such as 5G and IoT, and learn how to design the communication systems of the future.	Study tailored business subjects developed in partnership with the Melbourne Business School, covering economics, marketing and finance and how they relate to engineering.

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-eleceng

⁴The Faculty of Engineering and Information Technology will seek accreditation for this course through EUR-ACE in 2022.

*Core subjects differ within each specialisation.

ELECTRICAL AND ELECTRONIC ENGINEERING



Our student opportunities

Internships



- » Biotechnology
- » Aerostructures
- » Automation
- » Control
- » Technical consulting
- » Power solutions
- » Computing devices
- » Telecommunications

Student projects



Work on design projects such as an accelerometer to measure football kicks, electric vehicles, autonomous robots, smart meters, drones in disaster management and more.

Graduate employment opportunities



- » Telecommunications (e.g. Telstra)
- » Defence (e.g. Thales)
- » Energy (e.g. ExxonMobil)
- » Automation (e.g. Tesla)



“Doing an internship helped me feel more confident and career-ready, because I learned how I would be using my technical skills in the work force.”

Olivia Panjkov

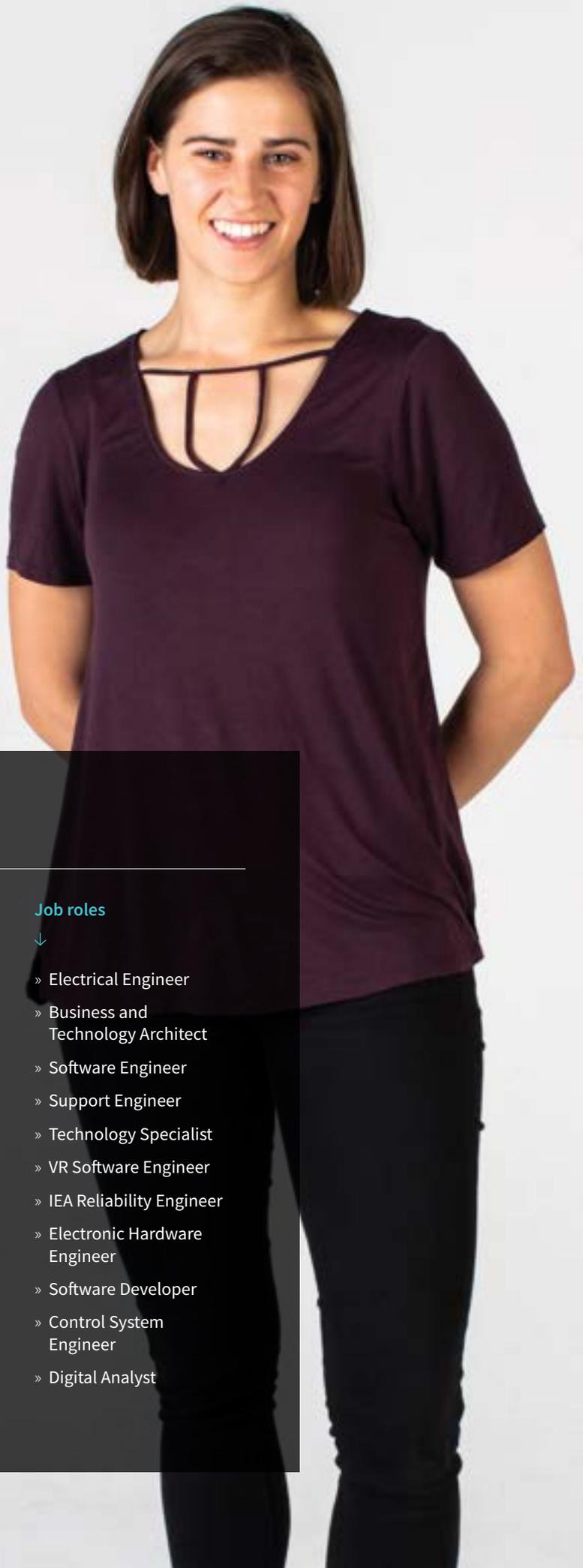
Bachelor of Science
Master of Engineering (Electrical)

Electrical Engineering Vacation
Student, Snowy Hydro Limited

Instrument and Electrical
Engineering Intern, Wood

Data Quality Control Unit Intern,
Bureau of Meteorology

Graduate Electrical Engineer,
Snowy Hydro Limited



Where our graduates work

Industries



- » Automation
- » Aviation
- » Broadcast/sound engineering
- » Electrical equipment
- » Electronics
- » Measurement and control
- » Power generation and transmission
- » Systems engineering
- » Telecommunications

Companies



- » Accenture
- » AECOM
- » BHP
- » Coles
- » Daly International
- » Deloitte
- » ExxonMobil
- » Google
- » KPMG
- » NBN Co. Limited
- » Nokia
- » Siemens
- » Tesla
- » Telstra
- » Thales

Job roles



- » Electrical Engineer
- » Business and Technology Architect
- » Software Engineer
- » Support Engineer
- » Technology Specialist
- » VR Software Engineer
- » IEA Reliability Engineer
- » Electronic Hardware Engineer
- » Software Developer
- » Control System Engineer
- » Digital Analyst

ENERGY AND ENVIRONMENTAL ENGINEERING

Improve the liveability of our cities and sustainability of our resources with a degree in environmental engineering. Tackle the challenges we face in water shortage, climate change and waste management.

Become a leader in the energy sector. The Master of Energy Systems will provide you with the skills and knowledge required to implement the transition to a sustainable future.

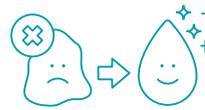
What is environmental engineering?

Environmental engineers design and build sustainable solutions to tackle problems such as climate change, water scarcity, renewable energy and bushfire management.

Our world-leading environmental engineering research:



Exploring the birthplace of monster waves



Taking the sludge out of wastewater



Turning any water into drinking water



Digital vineyards



“I enjoyed the broad range of disciplines the course offered including water resource management, waste management and renewable energy. I was inspired and encouraged to apply my knowledge to real-life projects and to seek connections between theory and practice. I gained industry experience during my degree, working collaboratively with South East Water and Water Technology to solve real engineering problems.”

Charles Lee

Master of Engineering (Environmental)

Engineer, Water Technology Pty Ltd

Our student opportunities

Internships



- » Companies and government organisations specialising in water resources management
- » Environmental consulting and design
- » Construction
- » Weather forecasting

Student projects



Design and implement an environmental monitoring program, take part in a five-day field camp and engage with consultants who work on projects around the world.

Graduate employment opportunities



- » Catchment management (e.g. Melbourne Water)
- » Conservation and natural resource management (e.g. Alluvium Consulting)
- » Resource planning and management (e.g. Acciona)
- » Waster and water resource management (e.g. Department of Environment, Land, Water and Planning)

Master of Environmental Engineering

At a glance:



Duration:
2-3 years



Intake:
February (Sem 1),
July (Sem 2)



Designed for:
Becoming an accredited
environmental engineer



Accredited by:
Engineers Australia.
Seeking accreditation
through EUR-ACE⁴

» Design and build sustainable solutions to environmental problems

» Focus on climate change, water scarcity and bushfire management

» Specialise in Earth Observation, Energy Systems or Water Systems during your studies to achieve your career goals

Sample course plan

If you have not completed a major in environmental engineering in your undergraduate degree, study the 3 year

Master of Environmental Engineering:

Year 0	Sem 1	Sustainable Infrastructure Engineering	Intro to Sustainable Water Systems	Fluid Mechanics	Analysis of Biological Data
	Sem 2	Environmental Engineering Systems Capstone	Earth Processes for Engineering	Engineering Mathematics	Environmental System Modelling and Design

If you have completed a major in environmental engineering, study the 2 year **Master of Environmental Engineering:**

Year 1	Sem 1	Quantitative Environmental Modelling	Civil Hydraulics	Spatial Data Analytics	International River Basin Management
	Sem 2	Monitoring Environmental Impacts	Environmental Analysis Tools	Engineering Hydrology	Critical Communication for Engineers
Year 2	Sem 1	Engineering Capstone Project Part 1	Environmental Engineering Elective	Environmental Engineering Elective	Environmental Engineering Elective
	Sem 2	Engineering Capstone Project Part 2	Engineering Project Implementation	Environmental Engineering Elective	Environmental Engineering Elective

● Core subject ● Elective ● Selective

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-enveng

⁴The Faculty of Engineering and Information Technology will seek accreditation for this course through EUR-ACE in 2022.

Optional specialisations

Earth Observation	Energy Systems	Water Systems
Students must choose 4 of the following <ul style="list-style-type: none"> » Application to Precision Agriculture » Remote Sensing » Information Visualisation » Spatial Data Management » Advanced Imaging 	Students must choose 4 of the following <ul style="list-style-type: none"> » Solid Wastes to Sustainable Resources » Energy Efficiency Technology » Sustainable Buildings » Energy for Sustainable Development » Solar Energy 	<ul style="list-style-type: none"> » Water and Wastewater Management » Water Sensitive Urban Design » Advanced Hydrological solutions » Water Planning and an Uncertain Future » Computational Fluid Dynamics » Hydrogeology & Environmental Geochemistry

Master of Environmental Systems Engineering

At a glance:



Duration: 1 year program (part-time available)



Intake: February (Sem 1), July (Sem 2)



Designed for: Accredited engineers

Gain advanced knowledge in sustainable development and environmental management.

Learning outcomes

- » Gain expertise in air pollution, cleaner production, environmental management systems, noise, vibration and more
- » Understand the complexities of decision-making from a political, legal and economic perspective

Our career outcomes

The Master of Environmental Systems Engineering is a specialised masters course, designed to help qualified engineers change their field of work or advance their career. This qualification prepares graduates for careers in environmental engineering and related industries.

Sample course plan

Year	Semester	Core Subject	Elective	Core subject	Elective
Year 1	Sem 1	Quantitative Environmental Modelling	International River Basin Management	Selective	Selective
	Sem 2	Monitoring Environmental Impacts	Environmental Analysis Tools	Selective	Approved elective

● Core subject ● Selective / Elective

Choose three to four electives from one of the following themes:

Waste management	Energy	Water resources
<ul style="list-style-type: none"> » Environmental Management IOS14000 » Engineering Hydrology » Infrastructure Engineering Research Project » Solid Wastes to Sustainable Resources » Water and Waste Water Management 	<ul style="list-style-type: none"> » Energy Efficiency Technology » Energy for Sustainable Development » Infrastructure Engineering Research Project » Solar Energy » Sustainable Buildings 	<ul style="list-style-type: none"> » Infrastructure Engineering Research Project » Water and Planning an Uncertain Future » Water and Waste Water Management » Engineering Hydrology » Computational Fluid Dynamics
<p>Or, choose one approved elective, such as:</p> <ul style="list-style-type: none"> » Remote Sensing » Foundations of Spatial Information » Information Visualization » Advanced Imaging » Applications in Precision Agriculture » Project Management Practices » Engineering Contracts and Procurement » Metocean Engineering » Port Access and Navigation » Dredging Engineering » Leadership for Innovation » Internship » Water Planning and an Uncertain Future » Advanced Hydrological Solutions » Hydrogeology & Environmental Geochemistry 		

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-ensysen



Master of Energy Systems

At a glance:



Duration:
1.5 years



Intake: February
(Semester 1) only



Designed for: Graduates and professionals with a commerce, science or engineering undergraduate degree

Tackle emerging energy issues and guide critical decision-making in the energy sector.

Learning outcomes

- » Analyse energy systems from technical, commercial and policy standpoints
- » Explore energy finance, economics, energy markets and the operation of renewable and non-renewable energy systems

- » Learn from specialists in electricity generation, the transport sector, energy network design, sustainability and efficiency

Sample course plan

Year 1	Sem 1	Introduction to Energy Systems	Analysing Energy Systems	Electrical Power Systems	Financial Management
	Sem 2	Non-Renewable Energy	Renewable Energy	Managerial Economics	Elective
Year 2	Sem 1	Energy Supply and Value Chains	Elective	Elective	Elective

● Core subject ● Elective

In the Master of Energy Systems, you'll complete eight compulsory core subjects and four electives taken over 1.5 years (or part-time equivalent). Choose from a broad range of electives, including the Energy Systems Project and subjects from:

Energy and sustainability	Energy, finance and policy	The business of energy	Energy and law
<ul style="list-style-type: none"> » Adapting to Climate Change » Climate Change Mitigation » Climate Modelling and Climate Change » Environmental Modelling » Sustainable Buildings » Solar Energy » Sustainable Infrastructure Engineering 	<ul style="list-style-type: none"> » Climate Change Politics and Policy » Engineering for Public Policy » Environmental Policy Instruments » Project Finance » Sustainability Accounting 	<ul style="list-style-type: none"> » Business Analysis and Decision Making » Engineering Contracts and Procurement » Optimisation for Industry » Supply Chain Management » Transport Systems 	<ul style="list-style-type: none"> » Construction Law » Energy Regulation and the Law

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-engsys

Where our graduates work

Industries



- » Automotive
- » Demand response
- » Network optimisation
- » Renewable energy
- » Solar energy
- » Thermal energy
- » Transport
- » Virtual power plant design

Companies



- » AEMO
- » AGL
- » Energy Australia
- » FlowPower
- » GreenSync
- » Jacobs
- » Pacific Hydro
- » Powershop/Meridian Energy
- » Siemens
- » Tesla
- » West Wind

Job Roles



- » Project Manager
- » Associate Systems Engineer
- » Development Manager
- » Consultant
- » Executive Engineer
- » Senior Engineer
- » Project Mechanical Engineer
- » Business Evaluation Manager
- » Principal Engineer
- » Analyst
- » Co-founder

Our student opportunities

Energy Systems Project



Outstanding students (average mark >75%) will be eligible for the Energy Systems Project program, a 1-semester placement onsite at a leading energy organisation, solving real energy industry problems, forging industry connections and undertaking cross-disciplinary analysis.

Graduate employment opportunities



- » Renewable energy industries (e.g. AGL)
- » Energy markets (e.g. AEMO)
- » Automotive (e.g. Tesla)



“During my energy systems project with the Australian Energy Market Operator (AEMO), I studied the impact of gas network interconnectivity on market prices. This is ‘front and centre’ news and extremely relevant to the market.”

Farhad Billimoria
Master of Energy Systems

Senior Markets Analyst, AEMO

Visiting Research Fellow,
Oxford Institute for Energy Studies

ENGINEERING MANAGEMENT

Master of Engineering Management

At a glance:



Duration:
1 year program



Intake: February (Sem 1),
July (Sem 2)



Designed for:
Accredited engineers

Fast-track your career in management, gain expertise in navigating organisational change and leading projects to achieve tangible results.

- » Developed in collaboration with Melbourne Business School

Learning outcomes

- » Take the next step in your career
- » Enhance your technological problemsolving skills
- » Gain business skills to manage people, projects and resources in complex organisation settings

Undertake the **Change Management stream** to understand the legal, commercial, marketing and personnel issues that managers encounter in a technical environment.

Undertake the **Project Management stream** to advance your understanding of project procurement, team leadership, risk management, communication, financial management and human resources.

Sample course plan

In the Master of Engineering Management, you'll complete eight subjects over one year (or part-time equivalent).

Year 1	Sem 1	Project / Change Management Subject	Project / Change Management Subject	Elective from the Master of Management	Elective from the Master of Management
	Sem 2	Strategic Management	Engineering Management Capstone	Project / Change Management Subject	Elective from the Master of Management

● Core subject ● Project/Change Management subject ● Elective

All students complete the core subjects Engineering Management Capstone and Strategic Management. Of the remaining subjects, you'll choose:

- » Three subjects from the Change and/or Project Management stream (you can either focus on one stream, or take a combination of subjects from both streams)

- » Four subjects from the Master of Management, taught by Melbourne Business School

Project Management Subjects	Change Management Subjects	Electives
<ul style="list-style-type: none"> » Sustainable Infrastructure Engineering » Project Management Practices » Engineering Project Implementation » Engineering Contracts and Procurement » Transport System Modelling » Engineering Risk Management 	<ul style="list-style-type: none"> » Management and Leadership for Engineers » Building Information Modelling » Managing Change for IS Professionals » Engineering Entrepreneurship » Probability, Reliability and Quality 	<ul style="list-style-type: none"> » Supply Chain Management » Management Competencies » Accounting for Decision Making » Business Analysis and Decision Making » Financial Management » Managerial Economics » Operations and Process Management » Human Resource Fundamentals

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/761em



“We had a guest lecturer from industry most weeks, so we were exposed to a lot of industry perspectives. It meant we didn’t just learn the theory, but we also met the people who work in the field and heard about how they do it in real life.

My favourite subject was Change Management because it’s very broad; I learned how to manage everything from end to end. It really helped prepare me for my future career.”

Elisabeth Priscilla
Master of Engineering
Management

Where our graduates work

Industries



- » Product development
- » Manufacturing
- » Construction
- » Design engineering
- » Industrial engineering
- » Software engineering
- » Telecommunications

Companies



- » Accenture
- » Barclays Corporate Banking
- » Cisco
- » Inventec
- » Jetstar Airways
- » Komatsu
- » KPMG
- » Melbourne Metro Rail Authority
- » Rio Tinto
- » Shell
- » Telstra
- » Thales
- » Unilever

Job roles



- » Operations Coordinator
- » Reliability Engineer
- » National Proposals Coordinator
- » Automotive Program Manager
- » Configuration Management Coordinator
- » Consultant
- » Business Analyst
- » Programmatic and Data Intelligence Manager

Our student opportunities

Student Experience



- » Learn from world-leaders from Melbourne Business School and collaborate with students from their masters programs
- » Engage with industry through guest lectures and site visits
- » Analyse business cases relevant to decision making and practice in engineering management

INDUSTRIAL ENGINEERING

With a degree in industrial engineering, you'll gain skills to improve processes, services and systems.

Develop a comprehensive skillset in product and process technologies, systems and simulation, advanced manufacturing and operations techniques, along with business management.

What is industrial engineering?

Industrial engineering is the branch of engineering that involves figuring out how to make or do things better. Industrial engineers look at how to improve processes or design things that are more efficient and waste less money, time, raw materials, person-power and energy while achieving customer requirements and meeting regulatory obligations. They use knowledge and skills in the mathematical, physical, and social sciences together with the principles and methods of engineering analysis and design for almost every industry sector from manufacturing to financial services and healthcare.

Our world-leading industrial engineering research:



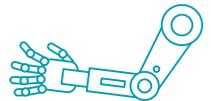
Sustainable manufacturing and life cycle engineering



Digital transformation in industry



Supply chain integrity and reliability

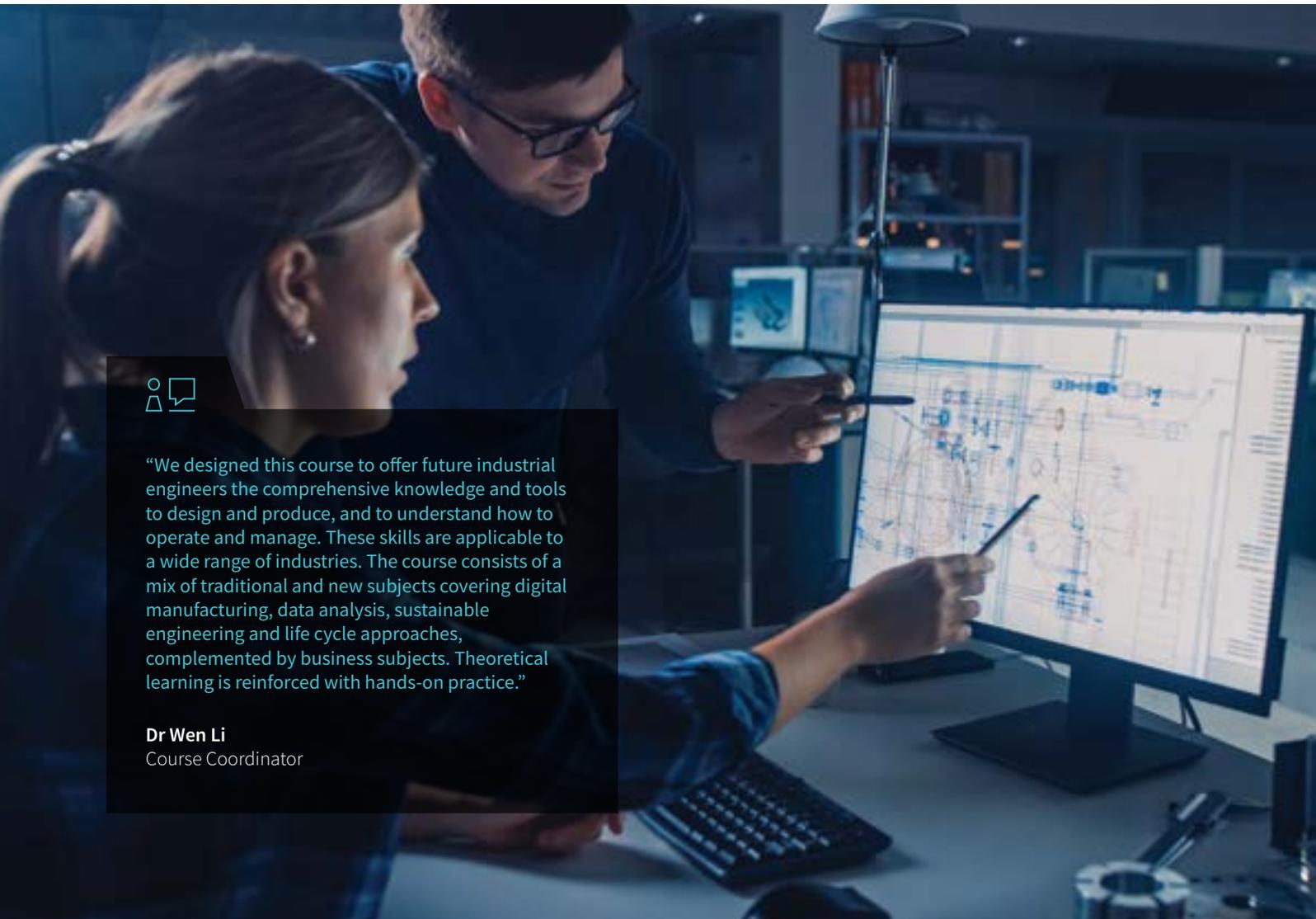


Innovative and integrated design for manufacturing



“We designed this course to offer future industrial engineers the comprehensive knowledge and tools to design and produce, and to understand how to operate and manage. These skills are applicable to a wide range of industries. The course consists of a mix of traditional and new subjects covering digital manufacturing, data analysis, sustainable engineering and life cycle approaches, complemented by business subjects. Theoretical learning is reinforced with hands-on practice.”

Dr Wen Li
Course Coordinator



Master of Industrial Engineering

At a glance:

 **Duration:**
2 years

 **Intake:** February (Semester 1),
July (Semester 2)

 **Designed for:** Becoming an accredited
Industrial Engineer[^]

- » Gain experience through real-world projects and an industry-connected curriculum to consolidate your theoretical knowledge
- » Undertake an industry, design or research project and gain the skills and knowledge to practice as a professional engineer
- » Be prepared for a career in a wide range of industries from manufacturing and processing to healthcare systems, banking and consulting

Sample course plan

Year 1	Sem 1	Creating Innovative Engineering	Economic Analysis for Engineers	Manufacturing Processes and Technology	Industrial Engineering
	Sem 2	Industrial Systems and Simulation	Operations and Process Management	Probability, Reliability and Quality	Manufacturing Automation and IT
Year 2	Sem 1	Engineering Capstone Project Part 1	Optimisation for Industry	Supply Chain Management	Design and Manufacturing Practice
	Sem 2	Engineering Capstone Project Part 2	Sustainable and Life Cycle Engineering	Industry Digital Transformation	Engineering Contracts and Procurement / Strategy Execution for Engineers/ The World of Engineering Management

● Core subject ● Selective

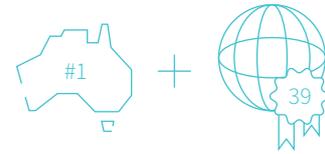
Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-indeng

[^]Full accreditation sought in 2023 or 2024 after the course has had sufficient graduates and will be backdated to cover all students who entered the program from 2021.



INFORMATION TECHNOLOGY AND SOFTWARE ENGINEERING

Transform the future of business, health, communication and entertainment with a degree in IT or software engineering.



No.1 in Australia and No.39 in the world for Computer Science and Information Systems¹

Gain expertise in areas including:

- » Information systems
- » Human-computer interaction
- » Software engineering
- » Cybersecurity
- » Artificial intelligence
- » Data science
- » Machine learning
- » Distributed computing

Our world-leading computing and information systems research:



Ageing in a virtual world



Insertable technology



Digital connectivity, crime and privacy



Greener cloud computing

Which IT degree is right for me?

Program name	What it's all about?	Your career goal
Master of Software Engineering <ul style="list-style-type: none"> » Artificial Intelligence » Business » Cyber Security » Distributed Computing » Human Computer Interaction 	Produce and manage complex or non-trivial large and small-scale software systems	Become an accredited software engineer
Master of Information Technology <ul style="list-style-type: none"> » Artificial Intelligence » Computing » Cyber Security » Distributed Computing » Human-Computer Interaction 	Gain advanced technical skills and knowledge in IT	Pursue a technical IT career or advance your current IT skills
Master of Information Systems	Support, manage and change business processes through ICT	Pursue or advance your career in digital business
Master of Data Science	Build advanced skills in statistical tools, techniques and methods	Pursue a career as a data scientist, software engineer or business intelligence analyst
Master of Computer Science	Research training program	Pursue a graduate research degree, or a career as a computational research specialist

¹ QS World Rankings by Subject 2021



“I chose Information Systems at the University of Melbourne because of the course structure and the high ranking of the course. The core subjects have been organised perfectly in a way that the students get a clear idea of what it’s like to be an Information Systems professional.”

Linda Joy Thomas

Master of Information Systems

Business Systems Intern, BlueRock

Summer Vacationer, Platform Engineering, Deloitte Consulting



Master of Software Engineering

At a glance:



Duration:
2-3 years



Intake:
February (Sem 1),
July (Sem 2)



Designed for:
Becoming an accredited
software engineer



Accredited by: Engineers Australia, Euro-Inf, Australian Computer Society. Seeking accreditation through EUR-ACE⁴

- » Learn how to produce and manage complex or non-trivial large and small-scale software systems, leveraging your scientific and technical knowledge
- » Be guided by leading software experts to study algorithms, internet technologies and database systems so you have the skills to implement software engineering solutions
- » Specialise in Artificial Intelligence, Business, Cyber Security, Distributed Computing or Human Computer Interaction during your studies to help achieve your career goals

Sample course plan

If you have not completed a major in computing or software engineering in your undergraduate degree, study the 3 year **Master of Software Engineering:**

Year 0	Sem 1	Object Oriented Software Development	Database Systems	Design of Algorithms	CIS elective
	Sem 2	Software Processes and Management	Software Modelling and Design	Models of Computation	CIS elective

If you have completed a major in computing or software engineering in your undergraduate degree, study the 2 year **Master of Software Engineering:**

Year 1	Sem 1	Software Requirements Analysis	Computer Systems	Critical Communication for Engineers / Creating Innovative Engineering	CIS Advanced elective
	Sem 2	Masters Software Engineering Project	Security and Software Testing	CIS Advanced elective	CIS Advanced elective
Year 2	Sem 1	Masters Advanced Software Project	High Integrity Systems Engineering	Modelling Complex Software Systems	CIS Advanced elective
	Sem 2		Software Design and Architecture	CIS Advanced elective	CIS Advanced elective

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-softeng

⁴The Faculty of Engineering and Information Technology will seek full accreditation for this course through EUR-ACE in 2022.

● Core subject ● Elective

Optional specialisations

Business	Artificial Intelligence	Cyber Security
<p>Subjects required for specialisation:</p> <ul style="list-style-type: none"> » Engineering Contracts & Procurement » Economic Analysis for Engineers » Strategy Execution for Engineers » Marketing Management for Engineers » World of Engineering Management 	<p>Subjects required for specialisation:</p> <p>Students must complete:</p> <ul style="list-style-type: none"> » Introduction to Machine Learning » AI Planning for Autonomy <p>Plus choose 3 of the following:</p> <ul style="list-style-type: none"> » Computational Modelling and Simulation » Natural Language Processing » Security Analytics » Constraint Programming » Statistical Machine Learning » Advanced Database Systems » The Ethics of Artificial Intelligence 	<p>Subjects required for specialisation:</p> <p>Students must complete:</p> <ul style="list-style-type: none"> » Distributed Systems » Cryptography and Security » Introduction to Machine Learning <p>Plus choose 2 of the following:</p> <ul style="list-style-type: none"> » AI Planning for Autonomy » Security Analytics » Web Security » Information Security Consulting

Distributed Computing	Human Computer Interaction
<p>Subjects required for specialisation:</p> <p>Students must complete:</p> <ul style="list-style-type: none"> » Distributed Systems <p>Plus choose 4 of the following:</p> <ul style="list-style-type: none"> » Sensor Networks and Applications » Mobile Computing Systems Programming » Distributed Algorithms » Cluster and Cloud Computing » Parallel and Multicore Computing » Cryptography and Security » Stream Computing and Applications » Advanced Theoretical Computer Science » Applied High Performance Computing 	<p>Subjects required for specialisation:</p> <p>Students must complete:</p> <ul style="list-style-type: none"> » Designing Novel Interactions » Evaluating the User Experience <p>Plus choose 3 of the following:</p> <ul style="list-style-type: none"> » Distributed Systems » Mobile Computing Systems Programming » Introduction to Machine Learning » Information Visualisation » Information Architecture » Fieldwork for Design » Social Computing





“The soft skills I’ve learnt such as teamwork, leadership and communication have been awesome. On the more technical side, the University has given me a very strong grasp of computer science and engineering fundamentals that I can use as a basis for the rest of my career.”

Sam Webster

Bachelor of Science
Master of Engineering (Software)

Full-Stack Software Engineer
Intern, HackHunter

Junior Full-Stack Software
Engineer, HackHunter

Our student opportunities

Internships



- » Banking and finance
- » Human-computer interaction
- » Consulting
- » Health

Student projects



Work in large teams to develop non-trivial software systems for real-world clients using agile software engineering methods.

Graduate employment opportunities



- » Banking and finance (e.g. ANZ)
- » Technology consulting (e.g. Accenture)
- » Management consulting (e.g. Deloitte)
- » Software development (e.g. Microsoft)

Where our graduates work

Internships



- » Aerospace
- » Games and entertainment
- » Cybersecurity
- » Disaster management
- » Energy and commodities
- » Financial services
- » Healthcare
- » Telecommunications
- » Traffic and transport
- » Education

Companies



- » Accenture
- » Adelphi Digital Consulting Group
- » Airservices Australia
- » ANZ
- » Deloitte
- » IBM
- » Google
- » Leidos
- » Microsoft
- » Palantir
- » Planet Innovation
- » Rome2rio
- » Telstra
- » Thales

Job roles



- » Software Engineer
- » IT Manager
- » Web Application Developer
- » IT Consultant
- » Mobile Developer
- » Developer
- » Front-end/Back-end Developer
- » Software Architect

Master of Information Technology

At a glance:



Duration: 1-2 years
(depending on prior
study and work
experience)



Intake:
February (Sem 1),
July (Sem 2)



Designed for: Students with some
programming background who want
to qualify as an IT professional. Caters
equally to students with a limited IT
background and those with strong
experience in the domain.



Accredited by: The
Australian Computer
Society (ACS)

Gain advanced technical skills and explore fast-changing areas of IT such as artificial intelligence, cybersecurity, machine learning, deep learning, data mining, cloud computing and human-computer interaction.

- » Gain the knowledge and experience to lead IT innovation that can be applied to business, government, health, entertainment and more
- » Develop fundamental technical skills that will remain valuable as new technologies emerge
- » Grow your skills in IT project and change management, risk management, quality assurance and testing

Sample course plan

Year 1	Sem 1	Programming and Software Development	Algorithms and Complexity	Internet Technologies	Database Systems and Information Modelling
	Sem 2	Specialisation Subject	Specialisation Subject	Specialisation Subject	Specialisation Subject
Year 2	Sem 1	Advanced Specialisation Subject	Advanced Specialisation Subject	Advanced Specialisation Subject	Advanced Specialisation Subject
	Sem 2	Advanced Specialisation Subject	Advanced Specialisation Subject	Capstone Project	

● Core subject ● Specialisation subject ● Advanced specialisation subject

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-it



Choose one of the following specialisations, tailoring your program to suit your interests and career goals:

Specialisation	Overview	Focus on	Career opportunities
Artificial intelligence	Develop expertise in the design, implementation and analysis of systems that learn, plan and reason.	<ul style="list-style-type: none"> » Knowledge representation and planning » Machine learning » Data mining » Digital ethics » Security analytics 	<ul style="list-style-type: none"> » Artificial Intelligence, machine learning and data science » Deep learning » Data mining » Business and data analytics
Computing	Design, implement and evaluate IT projects and future needs.	<ul style="list-style-type: none"> » Theoretical and applied computing » Software development » Algorithmics » Databases and networking » IT project and change management 	<ul style="list-style-type: none"> » Data science » Data mining » Business and data analytics » Database, web or app development
Cybersecurity	Discover how to create new technologies to improve existing security and minimise vulnerability in design systems.	<ul style="list-style-type: none"> » Software vulnerability discovery » Cryptography » Secure systems design and verification » Security analytics 	<ul style="list-style-type: none"> » Security analytics, software and auditing » Cryptography » Forensics » Incident response » Network security
Distributed computing	Learn to manage large quantities of data through networked computers.	<ul style="list-style-type: none"> » Mobile computer systems programming » Cloud computing » High performance computing » Distributed algorithms » Parallel computing 	<ul style="list-style-type: none"> » eBusiness and cloud computing » Mobile systems programming » Sensor networks
Human-computer interaction	Evaluate interactive technologies and learn how to create the next generation of interfaces.	<ul style="list-style-type: none"> » User experience » Interaction design » Social computing » Information architecture » Ubiquitous computing 	<ul style="list-style-type: none"> » UI development and engineering » VR, AR web and other IT product design

You'll also choose elective subjects to complement your area of specialisation, which includes the opportunity to undertake an internship or industry placement, or complete industry-based project.



“I worked with talented people and learned a lot from them. In each group project, I had the chance to lead the team and developed my leadership skills, which is essential in my current role.”

PoSung Chen
Master of Information Technology
Software Engineer, Amazon Web Services (AWS)



Our student opportunities

Internships



- » Finance and banking
- » Telecommunications
- » Construction
- » Biotechnology
- » Startups

Student experience



Choose from electives in bioinformatics, database systems, enterprise computing, machine learning and artificial intelligence, programming languages, statistics, security and more.

Graduate employment opportunities



- » Management consulting (e.g. PwC)
- » Finance (e.g. NAB)
- » Technology consulting (e.g. Alcatel-Lucent)

Where our graduates work

Internships



- » Business
- » Financial services
- » Games and entertainment
- » Health
- » Media and social media
- » Technology R&D
- » Telecommunications
- » Education
- » Government

Companies



- » Accenture
- » Alcatel-Lucent
- » ANZ
- » Apollo Medical Imaging Technology
- » Bitcoin Group
- » Blockchain Global Ltd
- » Centre for Eye Research Australia (CERA)
- » Cyberinc
- » Data Solutions Group
- » National Australia Bank
- » PwC
- » Sina Com Technology
- » Suncorp Group
- » Telstra

Job roles



- » Data Infrastructure Engineer
- » Project Manager
- » Software Engineer/ Developer
- » Mobile Developer
- » Quantitative Analyst
- » Data Scientist
- » Algorithm Engineer
- » Web Developer
- » Virtual Reality Developer
- » Big Data Engineer
- » Programmer
- » IT Consultant
- » Business Intelligence Consultant

Master of Information Systems

At a glance:



Duration: 1-2 years
(depending on prior study
and work experience)



Intake:
February (Sem 1),
July (Sem 2)



Designed for: Students
from any undergraduate
background



Accredited by: The
Australian Computer
Society (ACS)

Develop advanced capability in supporting, managing and changing business processes through information and communication technology (ICT).

- » Develop expertise in project and change management, emerging technologies, IT strategy and governance, security and service provision
- » Learn transferable skills in problem solving, collaboration and project management
- » Choose from one of two specialisations: professional or research
- » Build working relationships with clients in the subject Professional IS Consulting

Choose your specialisation

The Professional specialisation prepares you for a career in IT management and digital business, covering topics such as database systems, app development and emerging technologies. Alternatively, you can pursue a career in research, undertaking an original investigation into a pressing IT issue with the Research specialisation (available after your first year in the Professional specialisation)

Electives

Choose up to four electives, focusing on areas such as:

- » Industry experience, including an internship, industry placement or industry project
- » Information technology change management
- » IT service provision
- » Business analytics
- » IT innovation and interaction design
- » Management
- » Accounting and finance
- » Human resources, operations and marketing
- » Spatial information
- » Health





“I chose the Master of Information Systems because it puts you at the front of managing emerging technology and making businesses work with it.”

Information Systems excites me because I have gained a perspective on technology and businesses through the lens of managing both parts concurrently and what it takes to successfully combine the two.”

Ngei Ning Lau

Master of Information Systems

Winter Intern, Protiviti

Technical Solutions Specialist, Cisco



Our student opportunities

Internships



- » Startups
- » Non-profit sectors
- » Major Australian firms
- » Multinationals

Student experience



Gain professional practice knowledge of real-world IT management through industry links and guest lectures.

Graduate employment opportunities



- » Financial services (e.g. American Express)
- » Technology (e.g. Amazon)
- » Project management (e.g. EY)
- » Telecommunications (e.g. Telstra)

Where our graduates work

Internships



- » Business
- » Financial services
- » Games and entertainment
- » Health agencies and healthcare services
- » Media and social media
- » Technology R&D
- » Telecommunications

Companies



- » AGL Energy
- » Amazon
- » American Express
- » ANZ
- » Deloitte
- » Didi Chuxing
- » EY
- » Korea Computer & Systems Inc
- » KPMG
- » National Australia Bank
- » Nielsen
- » Outware Mobile
- » PayPal
- » Protiviti
- » PwC
- » Qantas
- » Suncorp Group
- » Sydney Opera House
- » Telstra

Job roles



- » Financial Services Manager
- » Business Systems Analyst
- » IT Solution Lead
- » Front-end Developer
- » Agile Delivery Manager
- » Analyst
- » Data Engineer
- » Consultant
- » Technology Specialist
- » Data and Analytics Manager
- » Solution Architect
- » Application Developer
- » Project Manager

Master of Data Science

At a glance:



Duration:
2 years



Intake:
February (Sem 1) only



Designed for: Students with a background in data science, computer science or statistics

Keen to try a career in data analytics? Combine data science, computer science and statistics in a single coordinated program.

- » Develop the technological abilities and analytical skills to manage and gain insights from large and complex collections of data
- » Acquire skills in using statistical tools, techniques and methods

- » Use in-depth analysis and evaluation to solve real-problems with data
- » Graduate Diploma in Data Science is also available as a pathway to the masters and you could be eligible for course credit.

Our student opportunities

Career connections



- » STEM Industry Mentoring Program
- » Job Ready short course

Student projects



- » Tackle a practical data science question and present your results in a client-ready format in the Capstone project

Graduate employment opportunities



- » Management consulting (e.g. KPMG)
- » Financial services (e.g. Citibank)
- » Telecommunications (e.g. Telstra)
- » Government (e.g. CSIRO)

Sample course plan

Year 1	Sem 1	Methods of Mathematical Statistics	Cluster and Cloud Computing	Advanced Database Systems	A first Course in Statistical Learning
	Sem 2	Multivariate Statistics for Data Science	Computational Statistics and Data Science	Statistical Machine Learning	Statistical Modelling for Data Science
Year 2	Sem 1	Data Science Project part 1	Distributed Algorithms	Advanced Statistical Modelling	Science Communication
	Sem 2	Data Science Project part 2	Spatial Analysis	Information Visualisation	Science and Technology Internship

Sample plans are an indicative guide only and subjects may change.
See handbook.unimelb.edu.au/courses/mc-datasc

● Pre-requisite ● Core subject ● Elective

Master of Science (Bioinformatics)

At a glance:



Duration:
2 years



Intake: February (Sem 1),
July (Sem 2)



Designed for: Students with an interest in bioinformatics

Seeking a pathway to PhD study or a technical role in industry? Combine biology and IT, blending genetics, molecular biology, biochemistry and physiology with computer science, statistics and applied mathematics.

- » Learn from and work with high-profile researchers and practitioners in the heart of the Parkville Biomedical Precinct
- » Undertake a significant research project

- » Choose from three streams: Biology / Biomedicine, Mathematics and Statistics or Computer Science
- » Learn how to speak and write about your research professionally and impactfully



“The University of Melbourne has excellent networks with industry meaning that there are many opportunities to develop my future career path and receive advice from top companies in the industry.

I have enjoyed the creativity and innovation of the Master of Information Technology. The design of each subject has empowered me to think outside of the box, and develop a problem-solving mindset, professional standards, critical thinking and teamwork skills.”

Ziping (Pamela) Gao

Bachelor of Commerce
Master of Information Technology

Business Consultant (internship),
Study Melbourne

Technology Graduate,
carsales.com.au



Sample course plan

Year 1	Sem 1	Introduction to Programming	Elements of Bioinformatics	Elements of Probability	Elective (chosen in consultation with the Course Coordinator)
	Sem 2	Elements of Statistics	Algorithms and Complexity	Elective (chosen in consultation with the Course Coordinator)	Bioinformatics Research Projects part 1
Year 2	Sem 1	Statistics for Bioinformatics	Communication for Research Scientists	Genomics and Bioinformatics	Bioinformatics Research Projects part 2
	Sem 2	Bioinformatics Case Study	Algorithms for Bioinformatics	Bioinformatics Research Projects part 3	

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-scibif

● Selective ● Core subject ● Elective

Biomedical Precinct



» Form close connections with world-class hospitals and research institutes

Student projects



» Work on a real-world bioinformatics problem through the research project, mentored by an expert from the Melbourne Biomedical Precinct

Graduate employment opportunities



- » Medical research institutes (.e.g the Florey Institute of Neuroscience and Mental Health)
- » Research hospitals (e.g. the Murdoch Children’s Research Institute)
- » Public research institutes (e.g. CSIRO)
- » Research-focused companies (e.g. CSL)

Master of Computer Science

At a glance:

 **Duration:**
2 years

 **Intake:** February (Sem 1),
July (Sem 2)

 **Designed as:**
Research pathway

Keep up with the rapid advances in the field of computer science while completing a major research project on your pathway to PhD study or a research-oriented industry position.

- » Specialise in at least one of: artificial intelligence, cybersecurity, distributed systems, human-computer interaction or spatial information science
- » One year of coursework plus a year-long research project

- » Spend your second year working on an independent research project in your chosen area, supported by an academic expert

First year

First year			Second year
Core subject	Foundation selectives	Electives	Core subject
Research Methods	Choose at least two of: <ul style="list-style-type: none"> » Introduction to Machine Learning » Declarative Programming » Distributed Systems » AI Planning for Autonomy » Evaluating the User Experience » Foundations of Spatial Information 	Choose up to five electives, focusing on areas such as: <ul style="list-style-type: none"> » Advanced Computer Science » Artificial Intelligence » Cybersecurity » Human-Computer Interaction » Programming Languages and Distributed Computing » Spatial Information 	Computer Science Research Project

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-cs

Our student opportunities

Research



- » Complete a year-long independent research project, guided by an academic expert

Learn from the world's best



- » Network with and learn from world-leading computer science researchers

Graduate employment opportunities



- » Technology (e.g. Google)
- » Management consulting (e.g. Deloitte)
- » Finance (e.g. ANZ)
- » Research institutions (e.g. the University of Melbourne)

Graduate Diploma in Computer Science

At a glance:

 **Duration:**
1 year

 **Intake:** February (Sem 1),
July (Sem 2)

 **Designed for:** Pathway to the Master of Computer Science or for those looking for a computing qualification.

The Graduate Diploma in Computer Science provides students with any undergraduate degree and some programming/maths experience with the equivalent of a major in Computer Science.

- » Augment your existing knowledge with technical expertise in computer science
- » Study a variety of programming paradigms and the software development cycle

- » Complete between four and six core subjects, with electives making a total of eight subjects

Core subject	Electives		
Complete the below three subjects: <ul style="list-style-type: none"> » Internet Technologies » Algorithms and Complexity » Programming and Software Development And choose at least one of: <ul style="list-style-type: none"> » Database Systems » Elements of Data Processing 	Choose up to four electives, focusing on areas such as: <table border="0"> <tr> <td> <ul style="list-style-type: none"> » Artificial intelligence » Machine learning » Graphics and interaction » Software modelling and design » IT project </td> <td> <ul style="list-style-type: none"> » Declarative programming » Models of computation » Distributed systems » Web information technologies </td> </tr> </table>	<ul style="list-style-type: none"> » Artificial intelligence » Machine learning » Graphics and interaction » Software modelling and design » IT project 	<ul style="list-style-type: none"> » Declarative programming » Models of computation » Distributed systems » Web information technologies
<ul style="list-style-type: none"> » Artificial intelligence » Machine learning » Graphics and interaction » Software modelling and design » IT project 	<ul style="list-style-type: none"> » Declarative programming » Models of computation » Distributed systems » Web information technologies 		

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/gd-cs



“The 12-month research project was one of the key reasons I chose this course. I’m looking into the mathematical theory that underlies deep learning and artificial intelligence.

I’m really loving research - it’s a different kind of challenge to coursework. You’re with your supervisor at the coalface, trying to discover new answers that no-one’s come up with before. I’m excited about becoming a researcher.”

Matthew Farrugia-Roberts
Master of Computer Science

Graduate Certificate in Computer Science

At a glance:



Duration:
6 months



Intake: February (Sem 1),
July (Sem 2)



Designed for: Pathway to
the Master of Computer Science

The Graduate Certificate in Computer Science provides students with any undergraduate degree and significant programming/maths experience with the equivalent of a major in Computer Science. It is effectively equivalent to the second half of the Graduate Diploma in Computer Science.

» Complete between one and three core subjects, with electives making a total of four subjects

MECHANICAL AND MECHATRONICS ENGINEERING

From aerospace to swarm robotics, use your skills in mechanical engineering and mechatronics to design machines to improve efficiencies in the world around us, and the world beyond.

What is mechanical and mechatronics engineering?

Mechanical engineering focuses on turning energy into power and motion, spanning industries such as aeronautics, robotics and manufacturing.

Mechatronics drives the development of 'smart' computer-controlled products, such as robots, drones, automotive equipment and medical imaging systems.

Our world-leading mechanical engineering and mechatronics research:



Physical human-robot collaboration



Advanced and accessible prosthetics



Improving the efficiency of aircraft



3D-printing to manufacture new body parts

Learn from world-leaders in fluid mechanics, biomechanics, robotics, thermodynamics and materials science.



"Working on the ALEX exoskeleton for paraplegia was a highlight of my studies. I helped create trajectories and translate them into code so we could control the exoskeleton and tell it how to move.

I did an internship at PwC because I was curious about consulting. I found I really enjoyed it and that led me to my current role as a consultant in the building services industry."

Jocelyn Choy

Master of Engineering
(Mechanical)



Master of Mechanical Engineering

At a glance:



Duration:
2-3 years



Intake:
February (Sem 1),
July (Sem 2)



Designed for:
Becoming an accredited
mechanical engineer



Accredited by:
Engineers Australia.
Seeking accreditation
through EUR-ACE⁴

- » Participate in cross-disciplinary projects, including medicine, biology and earth sciences
- » Discover how to turn energy into power and motion and examine the construction and operation of devices and systems
- » Specialise in Aerospace, Business, Manufacturing or Materials during your studies to help achieve your career goals

Sample course plan

If you have not completed a major in mechanical engineering in your undergraduate degree, study the 3 year

Master of Mechanical Engineering:

Year 0	Sem 1	Numerical Methods in Engineering	Engineering Mathematics	Foundations of Electrical Networks	Engineering Mechanics
	Sem 2	Mechanical Systems Design	Systems Modelling and Analysis	Thermodynamics and Fluid Mechanics	Mechanics and Materials

If you have completed a major in mechanical engineering in your undergraduate degree, study the 2 year

Master of Mechanical Engineering:

Year 1	Sem 1	Thermodynamics	Dynamics	Materials	Design and Manufacturing Practice
	Sem 2	Fluid Dynamics	Solid Mechanics	Control Systems	Critical Communication for Engineers / Creating Innovative Engineering
Year 2	Sem 1	Advanced elective*	Advanced elective*	Advanced elective*	Capstone Project
	Sem 2	Advanced elective*	Advanced elective*	Advanced elective*	

● Core subject ● Elective

Optional specialisations

Business	Aerospace	Manufacturing	Materials
Subjects required for specialisation:	Subjects required or specialisation:	Subjects required for specialisation:	Subjects required for specialisation:
Students must choose 4 of the following:	» Advanced Fluid Dynamics	» Manufacturing Processes and Technology	Students must choose 4 of the following:
» Engineering Contracts and Procurement	» Aerospace Dynamics and Control	» Manufacturing Automation and IT	» Additive Manufacturing for Metals
» Economic Analysis for Engineers	» Vibrations and Aeroelasticity	» Industrial Engineering	» Advanced Materials
» Marketing Management for Engineers	» Aerospace Propulsion	» Probability, Quality and Reliability	» Manufacturing Processes and Technology
» Strategy Execution for Engineers			» Materials Modelling and Characterisation
» World of Engineering Management			» High Performance Materials
» Engineering Entrepreneurship			

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-mecheng

*Mechanical Engineering electives include subjects such as Advanced Motion Control, Advanced Fluid Dynamics, Economic Analysis for Engineers, Advanced Control Systems, Advanced Materials, Sensor Systems, and others.

⁴The Faculty of Engineering and Information Technology will seek full accreditation for this course through EUR-ACE in 2022.



Connect with the Melbourne Space Program

Starting with a group of students with a vision to build a nanosatellite, the Melbourne Space Program (MSP) quickly evolved into a team of 100 volunteers who are dedicated to strengthening the Australian aerospace sector. Their mission: to put Australian students at the forefront of the space industry and bridge the gap between curriculum and career.

Our student opportunities

Internships



- » Infrastructure & construction
- » Aerostructures
- » Biotechnology
- » Manufacturing
- » Mining and resources
- » Water resources
- » Health

Student projects



- » Work with students from other engineering disciplines and an industry partner to solve a real-world problem, with the Creating Innovative Engineering subject
- » Be part of an industry project or pursue your own research with the Mechanical Engineering Capstone project

Graduate employment opportunities



- » Construction (e.g. ARUP)
- » Aerostructures (e.g. Boeing)
- » Automotive (e.g. Ford)
- » Manufacturing (e.g. Carbon Revolution)

Where our graduates work

Industries



- » Aeronautics
- » Automotive
- » Biomechanics
- » Manufacturing
- » Minerals and energy
- » Power generation
- » Robotics
- » Transport

Companies



- » ANZ
- » Arup
- » BAE
- » Boeing
- » Bosch
- » Boston Consulting Group
- » Carbon Revolution
- » CSIRO
- » Deloitte
- » DST Group
- » ExxonMobil
- » Ford
- » Honeywell
- » Leica Microsystems
- » PwC
- » Siemens
- » Yarra Trams

Job roles



- » Consultant
- » Mechanical Engineer
- » Subsurface Engineer
- » Process Engineer
- » Acoustic Engineer
- » New Energy Vehicle Engineer
- » Hydraulic Engineer
- » Commissioning Engineer
- » Industrial Engineer
- » Quality Engineer
- » Project Business Analyst

Master of Mechatronics Engineering

At a glance:



Duration:
2-3 years



Intake:
February (Sem 1),
July (Sem 2)



Designed for:
Becoming an accredited
mechatronics engineer



Accredited by: Engineers
Australia. Seeking accreditation
through EUR-ACE⁴

- » Blend mechanical, electrical and software engineering to develop automation and advanced manufacturing technologies
- » Understand and exploit emerging technological developments, such as robotics, machine learning, autonomous systems and flexible manufacturing
- » Specialise in Manufacturing during your studies to help achieve your career goals

Sample course plan

If you have not completed a major in mechatronics engineering in your undergraduate degree, study the 3 year

Master of Mechatronics Engineering:

Year 0	Sem 1	Engineering Mathematics	Engineering Mechanics	Foundations of Electrical Networks	Analog and Digital Electronics Concepts
	Sem 2	Engineering Computation	Systems, Modelling and Analysis	Numerical Algorithms in Engineering	Mechanical Systems Design

If you have completed a major in mechatronics engineering in your undergraduate degree, study the 2 year

Master of Mechatronics Engineering:

Year 1	Sem 1	Control Systems	Dynamics	Sensor Systems	Mechatronics Systems Design
	Sem 2	Embedded System Design	Programming and Software Development	Introduction to Machine Learning	Critical Communication for Engineers
Year 2	Sem 1	Advanced Elective*	Advanced Elective*	Advanced Elective*	Capstone Project
	Sem 2	Advanced Elective*	Advanced Elective*	Advanced Elective*	

Sample plans are an indicative guide only and subjects may change. handbook.unimelb.edu.au/courses/mc-mtrneng

⁴The Faculty of Engineering and Information Technology will seek full accreditation for this course through EUR-ACE in 2022.

● Core subject ● Elective

Optional specialisation

Manufacturing

Subjects required for specialisation:

- » Manufacturing Processes and Technology
- » Manufacturing Automation and IT
- » Industrial Engineering
- » Probability, Quality and Reliability





“During the first year of my Masters and the duration of my Bachelors, I have really appreciated the quality of teaching I received. My highlights would include the more practical projects I have been involved in, such as the prosthetic hand project and developing a game.

Through the Summer Internship Subject, I was encouraged to find an internship that I found incredibly valuable to my development and learning.”

John Laidlaw

Bachelor of Science
Master of Engineering (Mechatronics)

Mechatronics Engineering Intern,
DefendTex

Graduate Capability Engineer,
Australian Department of Defence

Our student opportunities

Internships



- » Electronics
- » Automotive
- » Biotechnology
- » Manufacturing

Student experience



- » Read, write and debug programs in high-level programming languages such as C
- » Access world-class facilities including wind tunnels, alternative fuel engines, rehabilitation robots, UAV platforms and large-scale water management systems

Graduate employment opportunities



- » Electronics (e.g. Honeywell)
- » Automotive (e.g. Ford)
- » Manufacturing (e.g. Procter & Gamble)

Where our graduates work

Industries



- » Aerospace
- » Advanced manufacturing
- » Product development
- » Computing and electronics
- » Software systems
- » Mining
- » Renewable energy
- » Biomedical engineering
- » Robotics

Companies



- » Alerte Digital Health
- » Ford
- » IBM
- » KPMG
- » McKinsey & Company
- » Melbourne Metro Rail Authority
- » Thales
- » Telstra
- » Bukalapak
- » Viva Energy

Job roles



- » Mechatronics Engineer
- » Software Engineer
- » Software Consultant
- » Design Engineer
- » Verification Engineer
- » Senior Associate
- » Project Engineer
- » CTO
- » Control Systems Engineer



“I recently completed an internship at Aurecon. The internship definitely has made me career ready. Having a new insight into the latest technologies used, I am able to tailor my learning so that I have the appropriate foundations to keep up to date with industry requirements.”

**Lavannyemesha
Sivagurunathan**

Bachelor of Science
Master of Engineering (Spatial)

Where our graduates work

Industries



- » Aeronautics
- » Agriculture
- » Architecture
- » Emergency management
- » Health
- » Land and resources
- » Mining
- » Property
- » Transport
- » Urban planning

Companies



- » Arup
- » BR Smith & Associates Surveyors
- » Department of Economics
Development, Jobs, Transport and
Resources
- » Geoscience Australia
- » Jacobs
- » JRL Land Surveyors
- » Office of Surveyor- General
- » Reeds Consulting
- » Synchronoss Technologies
- » ThinkSpatial
- » Versor

Job Roles



- » Consultant
- » Surveyor
- » Geospatial Analyst
- » Technical Consultant
- » Web Developer
- » Analyst
- » Project Surveyor



Our student opportunities

Internships



- » Transport
- » Infrastructure
- » Surveying

Student Project



- » Take part in practical outdoor assignments to produce a detailed contour plan of an area
- » Visit the regional Dookie campus in a four-day field work program

Graduate employment opportunities



- » Engineering consulting (e.g. Jacobs)
- » Infrastructure (e.g. Department of Jobs, Precincts and Regions)
- » Surveying (e.g. Reeds Consulting)

ENGINEERING AND IT RESEARCH DEGREES

Join an environment of cross-disciplinary research excellence and work alongside researchers who are creating technological solutions to global challenges.

As a Melbourne graduate research student, you'll carry out an independent and sustained engineering or IT research project under supervision from one of our world-class researchers.

Your research options

Master of Philosophy (MPhil)

Duration: Typically 1.5 years full-time

Doctor of Philosophy (PhD)

Duration: Typically at least 3 years full-time

How to apply

Applications can be submitted at any time. You must secure an academic supervisor prior to making an application and supply documented evidence.

Finding a project/supervisor

To search for available PhD projects visit study.unimelb.edu.au/find/courses/graduate/doctor-of-philosophy-engineering-and-it/

To search for a supervisor visit findanexpert.unimelb.edu.au

Application checklist

You need:

- » A qualification from a University with a well-recognised research profile
- » Documented support of a University of Melbourne academic to supervise your project
- » Evidence of completing a research project that accounts for at least 25% of one year's work at fourth year Bachelor or Masters level
- » A weighted average equivalent to the University of Melbourne's 80%

Scholarships

You will be automatically considered for a scholarship at the time of application. Scholarship benefits range from full fee remission to general allowances, including relocation grants, Conference Travel Scholarships, Overseas Student Health Cover (OSHC) and sick leave.

Scholarships include:

Graduate Research Scholarships:

100% fee remission and stipend available to high-achieving domestic and international students

Ingenium Scholarships: available to high achieving domestic students

What is a competitive score?

80% WAM:

- » Competitive for entry, but does not guarantee admission.
- » A competitive score for local applicants from Go8 institutions for the Research Training Program (RTP)

85% WAM:

- » A competitive score for local applicants from non Go8 institutions for the Research Training Program (RTP)
- » A competitive score for international applicants for a Melbourne International Research Scholarship and Fee Remission Scholarship

Our institutes and partnerships



- » Centre for Disaster Management and Public Safety
- » Centre for Neural Engineering
- » Dairy Innovation Australia Ltd
- » Ford
- » Graeme Clark Institute for Biomedical Engineering
- » IBM Research
- » Melbourne Networked Society Institute
- » Microsoft
- » Peter Cook Centre for Carbon Capture and Storage
- » Rio Tinto
- » Telstra

Treating real-world injuries with virtual reality



Although the Computer Assisted Rehabilitation Environment (CAREN) resembles an immersive video game, this unique technology is changing how we approach injury prevention and treatment.

Housed in the Faculty of Engineering and IT's MedTech Linkway, CAREN allows researchers to understand how patients are responding to rehabilitation in real time.

Using this curved virtual reality screen and ground-level mobile platform, researchers see how joints and muscles move. The screen projects a 3D musculoskeletal model of patients' bodies, and as they move,

the muscles they are using light up. Researchers can also collect information about muscle and brain activity through electromyography (EMG) and electroencephalography (EEG), assisting the rehabilitation of stroke patients.

With such diverse capabilities, CAREN supports cross-disciplinary research and helps researchers in engineering, medicine and science collaborate to solve major issues surrounding ageing, rehabilitation, human performance, mental health, computer science and even animation.

Research disciplines

Our research is interdisciplinary and collaborative, connecting diverse study areas and working closely with industry. As a Melbourne graduate research student, you'll have the opportunity to make valuable contributions to areas such as water resource management, clean energy, disaster management, climate change, cancer treatment, epilepsy suppression, food processing, artificial intelligence, personalised medicine and smart grids.

Discipline	Research themes	Our graduate research students work on
Biomedical engineering 	<ul style="list-style-type: none"> » Biomaterials and tissue engineering » Biomechanics and mechanobiology » Bionics » Biomedical imaging and neuroimaging » Systems and synthetic biology 	<ul style="list-style-type: none"> » Human vision during migraine, ageing and disease » Mapping the human schizophrenia connectome » How cardiac cells grow » Neural plasticity for brain-machine interfaces
Chemical engineering 	<ul style="list-style-type: none"> » Materials development » Separations technology » Surface chemistry and rheology » Bioprocessing 	<ul style="list-style-type: none"> » Australian dairy manufacturing » Biodegradable and drug-eluting coronary artery stents » Self-healing polymers » Tissue engineering of soft tissues » Keeping Antarctica clean
Computing and information systems 	<ul style="list-style-type: none"> » Data and knowledge » Platforms and systems » People and organisations 	<ul style="list-style-type: none"> » Adversarial machine learning » Apps for addiction recovery » Efficient cloud computing » Dynamics and control of infectious diseases » Electronic voting in elections » eSports » Information security management
Electrical and electronics engineering 	<ul style="list-style-type: none"> » Communication and networks » Control and signal processing » Photonic and electronic systems » Power and energy systems 	<ul style="list-style-type: none"> » Cybersecurity » Deep brain stimulation for Parkinson's disease therapy » Epileptic seizure warning methods » Computer-aided diagnosis of melanoma » Sustaining internet growth » Wireless sensor networks
Infrastructure engineering 	<ul style="list-style-type: none"> » Civil engineering » Geomatics » Environmental hydrology and water resources 	<ul style="list-style-type: none"> » Bio-inspired lightweight composite system for blast and impact protection » Recycled glass in lightweight concrete » Self-healing maps » Indoor air quality » Prefabricated building systems » Reassessing earthquake design
Mechanical engineering 	<ul style="list-style-type: none"> » Autonomous systems » Biomechanics » Fluid dynamics » Thermodynamics 	<ul style="list-style-type: none"> » Heart cell biomechanics » Air-sea interaction » Assistive and rehabilitation robotics » Breast cancer risk assessment » Low emission transport » Robot-assisted minimally invasive surgery » Dextrous robotic hand neuroprosthesis

To explore more research projects, view the department website for your discipline of interest.

FEES AND SCHOLARSHIPS

Commonwealth Supported Places (CSPs)

Limited CSPs are available to domestic students. Students pay part of the tuition fee (the student contribution) and the Australian Government pays the remaining contribution. Fees are based on the subjects in which you enrol, rather than the overall course. Eligible students can apply for a HECS-HELP loan to defer upfront payment of their student contribution. studyassist.gov.au

Guaranteed CSPs for Melbourne graduates

If you have completed a Bachelors degree at the University of Melbourne with a weighted average mark of 65%, you are guaranteed a CSP in professional entry programs (provided you meet the program entry requirements), see pages 4-9.

Australian Fee Places & FEE-HELP

If you are a domestic student who is not enrolled in a CSP, you may be eligible to defer payment of all or part of your tuition fees via the FEE-HELP loan scheme. studyassist.gov.au

Transferring from an Australian fee place to a CSP

After completing 100 points of study (equivalent to 1 year full-time), high achieving students may be eligible to transfer to a CSP. Please note there are limited numbers of transfers available per semester.

Graduate Access Melbourne

Domestic students may be eligible to apply for Graduate Access Melbourne if you're a member of a specified group that is underrepresented in higher education (such as women in engineering and IT) or if personal circumstances have had a sustained, adverse effect on your academic achievement.

gradaccess.unimelb.edu.au

Financial Aid

The University's Student Financial Aid service can provide enrolled students with assistance and advice about student loans and bursaries, student income support and cost of living guidance.

services.unimelb.edu.au/finaid

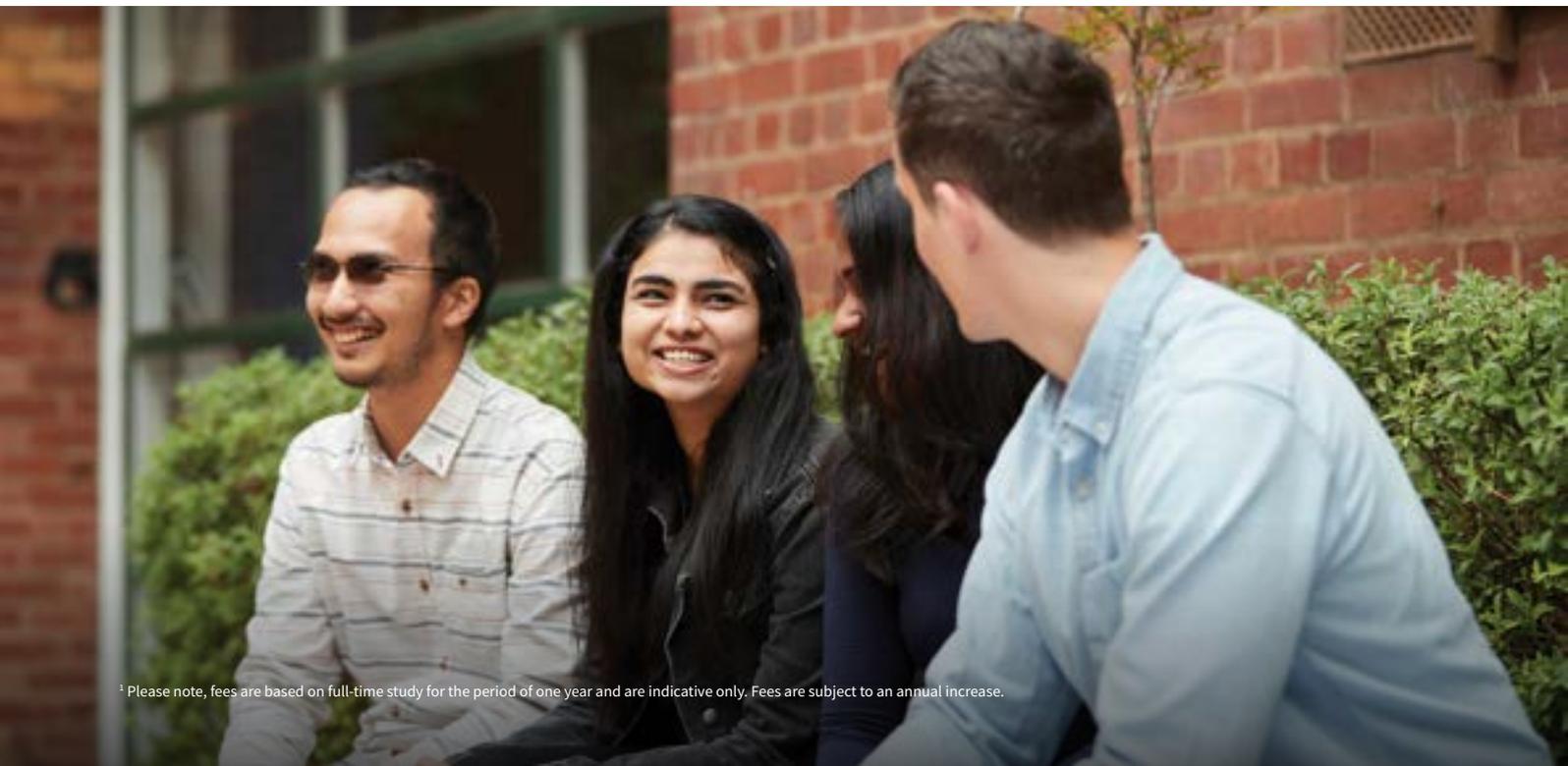
Indicative 2023 annual coursework fees¹



- » Domestic full fee: \$38,688 per annum. CSPs available in all professional entry programs. See page 4-9
- » International: \$50,272 (AUD) per annum

For more information about fees, scholarships and more, visit: study.unimelb.edu.au/how-to-apply/fees

¹ Please note, fees are based on full-time study for the period of one year and are indicative only. Fees are subject to an annual increase.



Engineering and IT Graduate Coursework Scholarships

Scholarship	Eligible Courses	Amount awarded	Who is it for?
Faculty of Engineering and IT Foundation Scholarships	<ul style="list-style-type: none"> » Master of Engineering » Master of Information Technology » Master of Information Systems » Master of Energy Systems 	\$5,000 – \$10,000 per annum, 12-15 awarded per year	Domestic and International students
Faculty of Engineering and IT Scholarships	All engineering and IT graduate coursework programs	\$5,000 – \$20,000 per annum, up to 100 awarded per year	Domestic and International students
Melbourne Graduate Scholarship	All engineering and IT graduate coursework programs	50% fee remission, 2 awarded per year	International students only
JH Mirams Memorial Scholarships	Specialised masters programs: <ul style="list-style-type: none"> » Master of Energy Systems » Master of Engineering Management » Master of Engineering Structures » Master of Environmental Systems Engineering 	\$5,000 – \$10,000 per annum	Domestic and International students

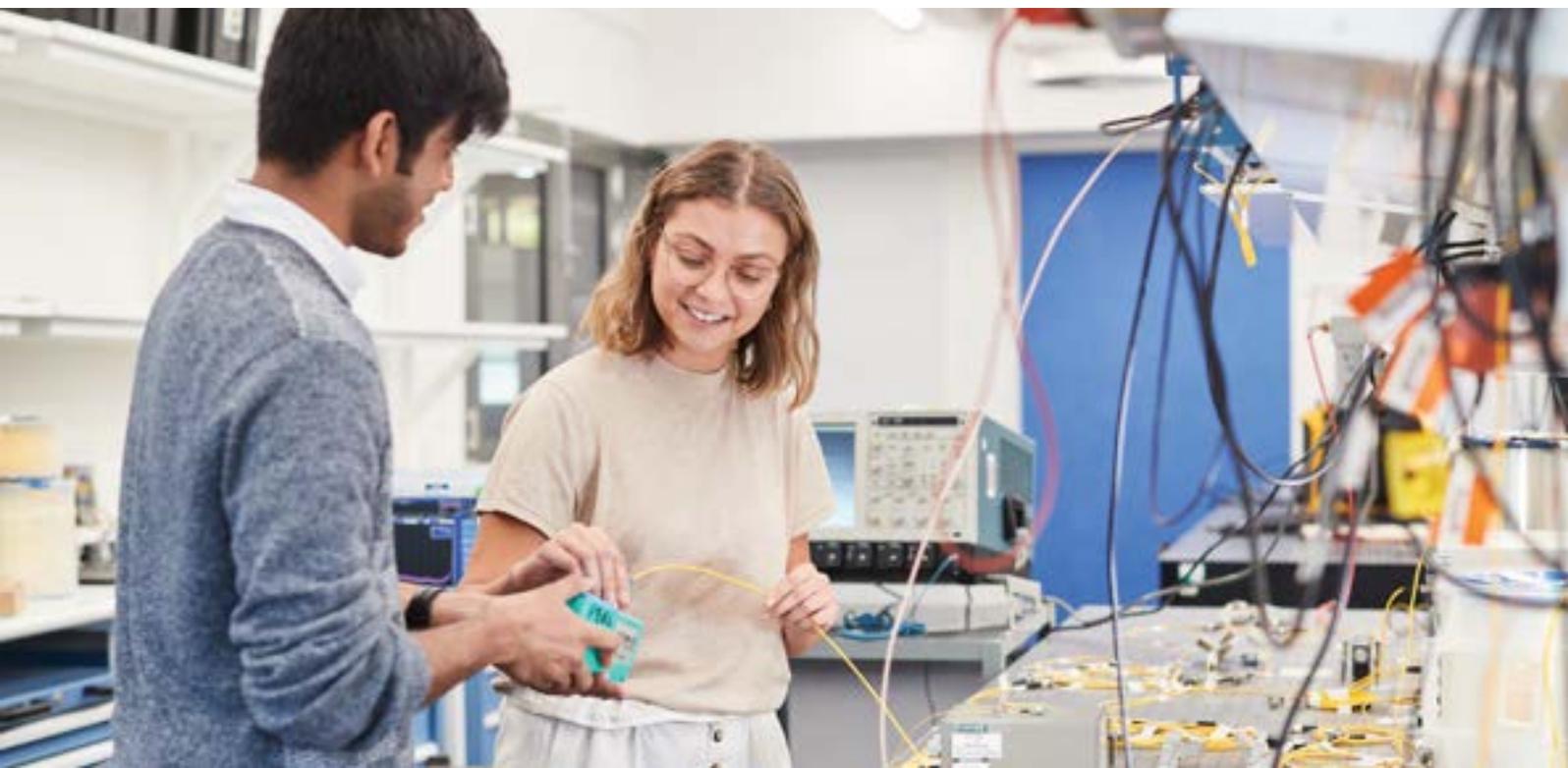
Scholarships for engineering and IT students

Faculty of Engineering and IT scholarships are awarded competitively based on academic merit. You will be considered for relevant scholarships at the time of course offer and you do not need to make a separate application.

University of Melbourne Scholarships

The University of Melbourne offers one of the most generous and comprehensive scholarship programs in Australia, which recognises the outstanding academic achievement of students from Australia and around the world. The University also acknowledges a special responsibility to provide access to higher education to those students who might otherwise be excluded by socioeconomic, cultural, geographic or other disadvantages.

If you want to take part in conferences, programs or other extracurricular activities to broaden your experience, you could apply for funding via a Student Enrichment Grant.



HOW TO APPLY

Application checklist

01.

Check the entry requirements and make sure you're eligible. See Quick Reference Guide on pages 4-9 for a complete list of entry requirements or go to: study.unimelb.edu.au

02.

Ensure you meet the University's English language requirements (see page 71)

03.

Gather the supporting documentation listed below

04.

Complete the online application form: study.unimelb.edu.au

If you haven't previously completed a degree at the University of Melbourne, you'll need to provide:

1. Certified copy of academic results with a grading scale
2. Certified copy of certificate of completion
3. Syllabus subject descriptions for maths, science and other technical subjects (Master of Engineering and Master of Information Technology applicants only)*

Additional documentation

Evidence of any relevant work experience if required, such as: a current curriculum vitae (CV) and reference letters from your employer(s) on company letterhead.

Application closing dates

Semester 1: (February)	Semester 2: (July)
All Professional Masters applicants: 30 November Includes Master of Engineering, Master of Information Systems, Master of Computer Science and Master of Information Technology	All Professional Masters applicants: 30 April Includes Master of Engineering, Master of Information Systems, Master of Computer Science and Master of Information Technology
International Specialised Masters applicants: 30 December ²	International Specialised Masters applicants: 30 April ¹
Domestic Specialised Masters applicants: 30 January ²	Domestic Specialised Masters applicants: 30 May ¹

Applicants who supply all supporting documentation can expect to receive a response to their application within 6-8 weeks.

¹ Please note, the Master of Energy Systems is only offered for entry in Semester 1.

² Specialised masters courses include the Master of Engineering Structures, Master of Environmental Systems Engineering, Master of Engineering Management and Master of Energy Systems.

*Applicants who have completed a Washington Accord accredited engineering degree and are applying for the same engineering discipline (excluding Chemical, Biomedical and Materials) are not required to submit a syllabus/subject description.



English language requirements

All students studying at the University of Melbourne must satisfy the University of Melbourne English language entry requirements. You can do this in a number of ways, depending on your circumstances. Applicants with a non-English speaking background can complete one of the English tests listed below:

Required scores must be achieved in one sitting within 24 months before your application.

For applicants from an English-speaking background, refer to the website for more details on the specific requirements:

<https://study.unimelb.edu.au/how-to-apply/english-language-requirements>

Application closing dates	IELTS (academic English only)	TOEFL (internet-based test)*	Pearson Test of English (Academic)	Cambridge English Advanced / Certificate of Advanced English (CAE)
English language requirements:	6.5 (no band less than 6.0)	79+ Writing 21; Speaking 18; Reading 13; Listening 13	58+ No communicative skill below 50	176+ No communicative skill below 169
Alternative English language requirements	6.0 (no band less than 5.5)	60 + Writing 18; Speaking 16; Reading 8; Listening 7	50 No communicative skill below 42	

If you meet the alternative English language requirements, you can complete the University of Melbourne English Language Bridging Program (UMELBP) and be eligible for entry: hawthornenglish.edu.au/english-language-courses/umelbp



THE UNIVERSITY OF
MELBOURNE

eng.unimelb.edu.au

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