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THE MELBOURNE ADVANTAGE

Study at Australia’s No. 1 university
No.1 in Australia and No.27 in the world for engineering and technology1.

Be internationally recognised
Maximise your career opportunities around the world with accreditation from Engineers Australia and EUR-ACE®, learning from academics who are globally recognised in their field.

Flexible and focused
Focus on your chosen field of engineering or IT, while building skills outside your discipline to give your career a competitive edge. Gain greater technical breadth and depth to prepare you for an entire career, not just your first job.

Connected with industry
The University of Melbourne is ranked No.1 in Australia for employer reputation. No.7 in the world for graduate employability2. Take part in internships, complete industry projects or undertake an innovation challenge with an industry mentor.

» Study in the heart of Melbourne, the world’s most liveable city3
» Access Australia’s leading entrepreneurship and start-up program, the Melbourne Accelerator Program (MAP)
» Generous scholarships program that supports diversity and acknowledges academic achievement
» A new campus for collaboration and discovery will open in early 2020s, which includes a seven-hectare campus just five kilometres from the city

Qualified engineers are in high demand. As an engineering graduate, you can access a vast range of interesting and well-paid employment opportunities around the world.

Revolutionise business, entertainment and health with IT. By studying IT, you’ll develop the technical and professional skills that will keep you agile in a constantly evolving industry.

1 QS World University Rankings by Broad Subject Area 2018
2 QS Graduate Employability Rankings 2018
3 The Economist Intelligence Unit 2017
A GLOBALLY CONNECTED ENGINEERING AND IT NETWORK

OUR ALUMNI: Join a global network of over 30,000 alumni working all over the world.

**Europe**
- Austria
- Belarus
- Belgium
- Cyprus
- Denmark
- Estonia
- France
- Germany
- Greece
- Hungary
- Iceland
- Ireland
- Italy
- Lebanon
- Luxembourg
- Macedonia
- Malta
- Netherlands
- Norway
- Scotland
- Serbia
- Sweden
- Turkey
- Ukraine
- United Kingdom

**Asia**
- Afghanistan
- Azerbaijan
- Bahrain
- Bangladesh
- Bhutan
- Brunei
- Cambodia
- India
- Indonesia
- Iran
- Japan
- Korea
- Kuwait
- Laos
- Macau
- Malaysia
- Maldives
- Myanmar
- Mongolia
- Nepal
- Oman
- Pakistan
- Philippines
- China
- Qatar
- Singapore
- Sri Lanka
- Thailand
- United Arab Emirates
- Vietnam

**Australasia**
- Australia
- Fiji
- New Caledonia
- Papua New Guinea
- Samoa

**Africa**
- Botswana
- Egypt
- Ethiopia
- Ghana
- Kenya
- Lesotho
- Libya
- Mauritius
- Mozambique
- Namibia
- Nigeria
- Seychelles
- South Africa
- Swaziland
- Tanzania
- Uganda
- Zambia
- Zimbabwe
OUR EXCHANGE PARTNER INSTITUTIONS: 180 exchange partner institutions across 39 countries.

Popular exchange destinations for engineering and IT students

NORTH AMERICA:
1. University of Illinois at Urbana-Champaign (USA)
2. McGill University (Canada)
3. University of British Colombia (Canada)
4. University of Texas at Austin (USA)
5. New York University (USA)
6. Carnegie Mellon University (USA)

EUROPE:
7. Delft University of Technology (Netherlands)
8. Lund University (Sweden)
9. Technical University of Munich (Germany)
10. Imperial College London (UK)
11. Swiss Federal Institute of Technology (ETH) Zurich (Switzerland)
12. Royal Institute of Technology (KTH) (Sweden)
13. University College London (UK)
14. King’s College London (UK)

ASIA:
15. Peking University (China)
16. Tokyo Institute of Technology (Japan)
17. Nanyang Technological University (Singapore)
18. KAIST (Korea Advanced Institute of Science and Technology) (South Korea)
19. University of Tokyo (Japan)
20. Tsinghua University (China)

North America
- Canada
- Bahamas
- Costa Rica
- Guatemala
- Jamaica
- Mexico
- United States
- West Indies

South America
- Argentina
- Bolivia
- Brazil
- Chile
- Colombia
- Ecuador
- Paraguay
- Peru

1 For a full list of institutions, visit programs.mobility.unimelb.edu.au/index.cfm
HOW TO STUDY ENGINEERING AT MELBOURNE

To study engineering at Melbourne, you start with a three-year undergraduate degree, majoring in your chosen field of engineering. Then you progress to the two-year Master of Engineering to become an accredited engineer, enabling you to practice in Australia and around the world.

If you meet the maths and science entry requirements for the Master of Engineering, but haven’t completed the required engineering subjects in your undergraduate degree, you will be eligible for the three-year Master of Engineering program.

You’ll graduate with a world-class masters qualification and a unique set of technical, analytical, business and interpersonal skills to give your career a competitive edge.

**SCHOOL LEAVERS**

**MELBOURNE DEGREES (3 YEARS)**

**Bachelor of Biomedicine**
- Complement your engineering skills with medical knowledge
- Contribute to issues that create, sustain and threaten life.
  
  Major:
  - Bioengineering Systems

**Bachelor of Design**
- Explore how we interact with the world
- Rethink the way we approach our cities, public spaces, transport, technology, websites and the environment.

  Majors:
  - Civil Systems
  - Computing
  - Mechanical Systems
  - Spatial Systems

**Bachelor of Science**
- Understand how science underpins engineering
- Complement your engineering systems major with studies in genetics, ecology, food science, neuroscience and more.

  Majors:
  - Bioengineering Systems
  - Chemical Systems
  - Civil Systems
  - Computing and Software Systems
  - Electrical Systems
  - Environmental Engineering Systems
  - Spatial Systems
  - Mechanical Systems
  - Mechatronics Systems

**SCHOOL LEAVERS**

**Any Bachelor Degree from a recognised tertiary institution**

Must include Linear Algebra and Calculus 2 or equivalents, along with 2 science subjects relevant to intended specialisation.

Duration of Master of Engineering will vary from 2-3 years depending on amount of credit obtained from prior study.

**MASTER OF ENGINEERING (2 YEARS)**

Technical specialisations: Biomedical, Biochemical, Chemical, Civil, Electrical, Environmental, Materials, Mechanical, Mechanical with Aerospace, Mechatronics, Software, Spatial, Structural.

‘With Business’ specialisations: Biomedical, Chemical, Civil, Electrical, Mechanical, Software.

**Exit to employment**

**Graduate Research Degrees**
- Master of Philosophy (MPhil)
- Doctor of Philosophy (PhD)

**Exit to employment with professional accreditation**
## HOW TO STUDY IT AT MELBOURNE

You can study an IT major or subjects focusing on IT in your undergraduate degree. Then you can advance your career with a masters degree. Some of our specialisations, such as mechatronics, software and spatial, are a blend of engineering and IT.

As an IT student, you’ll experience a curriculum designed in consultation with leading IT industry decision-makers and taught by world-leading experts, with opportunities for industry placements.

You will be equipped to work in diverse settings, from your own start-up to multinational corporations, government and not-for-profit sector.

### MELBOURNE DEGREES

<table>
<thead>
<tr>
<th>Bachelor of Science</th>
<th>Bachelor of Design</th>
<th>IT as breadth</th>
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</thead>
<tbody>
<tr>
<td>Majors:</td>
<td>Majors:</td>
<td>in any Melbourne degree</td>
</tr>
<tr>
<td>» Computing and Software Systems</td>
<td>» Computing</td>
<td></td>
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<tr>
<td>» Data Science</td>
<td>» Digital Technologies</td>
<td></td>
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<tr>
<td>» Mechatronics Systems</td>
<td>» Spatial Systems</td>
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<tr>
<td>» Spatial Systems</td>
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</tbody>
</table>

**Bachelor of Design**

Majors:

» Computing
» Digital Technologies
» Spatial Systems

**Diploma in Informatics**

An extra semester to complement your degree

You can study an IT major or subjects focusing on IT in your undergraduate degree. Then you can advance your career with a masters degree. Some of our specialisations, such as mechatronics, software and spatial, are a blend of engineering and IT.

As an IT student, you’ll experience a curriculum designed in consultation with leading IT industry decision-makers and taught by world-leading experts, with opportunities for industry placements.

You will be equipped to work in diverse settings, from your own start-up to multinational corporations, government and not-for-profit sector.

### GRADUATE COURSEWORK

<table>
<thead>
<tr>
<th>Master of Engineering</th>
<th>Master of Information Systems</th>
<th>Master of Information Technology</th>
<th>Master of Science</th>
<th>Master of Data Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>» Mechatronics</td>
<td>» Health</td>
<td>» Computing</td>
<td>» Computer Science</td>
<td>» Computer Science</td>
</tr>
<tr>
<td>» Software</td>
<td>» Professional</td>
<td>» Cybersecurity</td>
<td>» Science</td>
<td></td>
</tr>
<tr>
<td>» Software with Business</td>
<td>» Research¹</td>
<td>» Distributed Computing</td>
<td>» Bioinformatics</td>
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<tr>
<td>» Spatial</td>
<td></td>
<td>» Human-Computer Interaction</td>
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<td></td>
<td>» Spatial</td>
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</table>

**Graduate Research Degrees**

Master of Philosophy (MPhil)
Doctor of Philosophy (PhD)

¹ Research options are available for eligible students.
² For full accreditation details, see pages 6-11.
**QUICK REFERENCE GUIDE: GRADUATE PROGRAMS**

Melbourne School of Engineering 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 available for most courses.

<table>
<thead>
<tr>
<th>COURSES</th>
<th>MINIMUM ENTRY REQUIREMENTS¹</th>
<th>DURATION²</th>
<th>COURSE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BIOMEDICAL ENGINEERING</strong></td>
<td></td>
<td></td>
<td>Professional entry</td>
</tr>
<tr>
<td>Master of Engineering</td>
<td></td>
<td>2-3 years full-time</td>
<td>Accreditation: EUR-ACE® Engineers Australia</td>
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<tr>
<td>» Biomedical</td>
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<tr>
<td>» Biomedical with Business³</td>
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</tr>
<tr>
<td></td>
<td>300 point (3 years full-time) program</td>
<td></td>
<td>Professional entry</td>
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<tr>
<td>Undergraduate degree with:</td>
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<td>Accreditation: EUR-ACE® Engineers Australia</td>
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<tr>
<td>» 65% weighted average</td>
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<tr>
<td>» Equivalent of 2 first-year maths subjects (i.e. Linear Algebra and Calculus 2)</td>
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<tr>
<td>» Equivalent of 2 first-year biology, chemistry or physics subjects</td>
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<td></td>
<td>200 point (2 years full-time) program</td>
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<td>Professional entry</td>
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<tr>
<td>» 65% weighted average</td>
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<td></td>
<td>Accreditation: EUR-ACE® Engineers Australia</td>
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<tr>
<td>» Bioengineering Systems major (available in the Bachelor of Biomedicine or Science)</td>
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<tr>
<td><strong>CHEMICAL AND BIOCHEMICAL ENGINEERING</strong></td>
<td></td>
<td>2-3 years full-time</td>
<td>Professional entry</td>
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<tr>
<td>Master of Engineering</td>
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<td>Accreditation: EUR-ACE® Engineers Australia</td>
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<tr>
<td>» Biochemical</td>
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<tr>
<td>» Chemical</td>
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<td></td>
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<tr>
<td>» Chemical with Business³</td>
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<td></td>
<td>300 point (3 years full-time) program</td>
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<td>Professional entry</td>
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<td>Undergraduate degree with:</td>
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<td>Accreditation: EUR-ACE® Engineers Australia</td>
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<td>» 65% weighted average</td>
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<td>» Equivalent of 2 first-year mathematics subjects (i.e. Linear Algebra and Calculus 2)</td>
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<td>» Equivalent of 2 first-year chemistry subjects</td>
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<td>200 point (2 years full-time) program</td>
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<td>Professional entry</td>
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<td>» 65% weighted average</td>
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<td>Accreditation: EUR-ACE® Engineers Australia</td>
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<tr>
<td>» Chemical Systems major (available in the Bachelor of Science)</td>
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<tr>
<td><strong>CIVIL AND STRUCTURAL ENGINEERING</strong></td>
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<td>2-3 years full-time</td>
<td>Professional entry</td>
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<tr>
<td>Master of Engineering</td>
<td></td>
<td></td>
<td>Accreditation: EUR-ACE® Engineers Australia</td>
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<tr>
<td>» Civil</td>
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<tr>
<td>» Civil with Business</td>
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<tr>
<td>» Structural</td>
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<td></td>
<td>300 point (3 years full-time) program</td>
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<td>Professional entry</td>
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<td>Undergraduate degree with:</td>
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<td>Accreditation: EUR-ACE® Engineers Australia</td>
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<td>» 65% weighted average</td>
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<tr>
<td>» Equivalent of 2 first-year mathematics subjects (i.e. Linear Algebra and Calculus 2)</td>
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<tr>
<td>» Equivalent of 2 first-year science subjects</td>
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<td></td>
<td>200 point (2 years full-time) program</td>
<td></td>
<td>Professional entry</td>
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<tr>
<td>» 65% weighted average</td>
<td></td>
<td></td>
<td>Accreditation: EUR-ACE® Engineers Australia</td>
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<tr>
<td>» Civil Systems major (available in the Bachelor of Design or Science)</td>
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<tr>
<td><strong>Master of Engineering Structures</strong></td>
<td></td>
<td>1 year full-time</td>
<td>Specialised masters</td>
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<tr>
<td></td>
<td>65% weighted average in a four-year civil or structural engineering undergraduate degree</td>
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<td>Civil engineering graduates must:</td>
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<tr>
<td>» Have one year of relevant work experience, or</td>
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<tr>
<td>» Have dedicated 30% of course to structural engineering subjects</td>
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<tr>
<td>COURSES</td>
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<tr>
<td><strong>CIVIL AND STRUCTURAL ENGINEERING</strong></td>
<td><strong>MINIMUM ENTRY REQUIREMENTS</strong>¹</td>
<td><strong>DURATION</strong>²</td>
<td><strong>COURSE TYPE</strong></td>
</tr>
</tbody>
</table>
| Graduate Certificate in Port Engineering | » Undergraduate degree in a relevant discipline  
» 65% weighted average  
OR  
» Undergraduate degree in any discipline  
» 65% weighted average  
» Two years of documented, relevant professional experience | 1 year full-time | Specialised masters  
Delivered in partnership with Ports Australia |
| Master of Architectural Engineering | Engineering undergraduate degree:  
» 65% weighted average  
» Design folio  
» Equivalent to 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 two maths (i.e. Linear Algebra and Calculus 2) and two science subjects  
» Personal statement of 500 words outlining relevant prior study, work experience and motivation to under the program | 3.5 years full-time (must be taken full-time) | Professional entry |

| **ELECTRICAL AND ELECTRONIC ENGINEERING** | **PAGE NO.30** |
| Master of Engineering  
» Electrical  
» Electrical with Business³ | 300 point (3 years full-time) program  
Undergraduate degree with:  
» 65% weighted average  
» Equivalent of 2 first-year mathematics subjects (i.e. Linear Algebra and Calculus 2)  
» Equivalent of 2 first-year physics subjects | 2-3 years full-time | Professional entry  
Accreditation:  
» EUR-ACE®  
» Engineers Australia |

| **ENERGY** | **PAGE NO.34** |
| 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  
» 2 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 NO.36** |
| 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 |
<table>
<thead>
<tr>
<th>COURSES</th>
<th>MINIMUM ENTRY REQUIREMENTS¹</th>
<th>DURATION²</th>
<th>COURSE TYPE</th>
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</thead>
<tbody>
<tr>
<td><strong>ENGINEERING MANAGEMENT AND BUSINESS</strong></td>
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<tr>
<td>Master of Engineering</td>
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<tr>
<td>› Biomedical with Business³</td>
<td>300 point (3 years full-time) program</td>
<td>2-3 years</td>
<td>Professional entry</td>
</tr>
<tr>
<td>› Chemical with Business</td>
<td>Undergraduate degree with:</td>
<td>full-time</td>
<td>Accreditation:</td>
</tr>
<tr>
<td>› Civil with Business</td>
<td>› 65% weighted average</td>
<td></td>
<td>› EUR-ACE®</td>
</tr>
<tr>
<td>› Electrical with Business²</td>
<td>› Equivalent of 2 first-year maths subjects (i.e. Linear Algebra</td>
<td></td>
<td>› Engineers Australia</td>
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<tr>
<td>› Mechanical with Business</td>
<td>and Calculus 2)</td>
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<tr>
<td>› Software with Business³</td>
<td>› Equivalent of 2 science first-year subjects (see discipline of</td>
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<td>for interest for details)</td>
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<td></td>
<td>200 point (2 years full-time) program</td>
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<td>› 65% weighted average</td>
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<td>› Corresponding Engineering Systems major (in the Bachelor of</td>
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<td></td>
<td>Biomedicine, Design or Science)</td>
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<tr>
<td><strong>ENVIRONMENTAL ENGINEERING</strong></td>
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<tr>
<td>Master of Engineering</td>
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<tr>
<td>› Environmental</td>
<td>300 point (3 years full-time) program</td>
<td>2-3 years</td>
<td>Professional entry</td>
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<td></td>
<td>Undergraduate degree with:</td>
<td>full-time</td>
<td>Accreditation:</td>
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<td>› 65% weighted average</td>
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<td>› EUR-ACE®</td>
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<td>› Equivalent of 2 first-year mathematics subjects (i.e. Linear</td>
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<td>› Engineers Australia</td>
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<td>Algebra and Calculus 2)</td>
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<td>› Equivalent of 2 first-year science subjects</td>
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<td>› 65% weighted average</td>
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<td></td>
<td>› Environmental Engineering Systems major (available in the Bachelor of Science)</td>
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<tr>
<td><strong>INFORMATION TECHNOLOGY</strong></td>
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<tr>
<td>Master of Engineering</td>
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<tr>
<td>› Software</td>
<td>300 point (3 years full-time) program</td>
<td>2-3 years</td>
<td>Professional entry</td>
</tr>
<tr>
<td>› Software with Business³</td>
<td>Undergraduate degree with:</td>
<td>full-time</td>
<td>Accreditation:</td>
</tr>
<tr>
<td></td>
<td>› 65% weighted average</td>
<td></td>
<td>› Euro-Inf®</td>
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<tr>
<td></td>
<td>› Equivalent of any first-year mathematics subjects</td>
<td></td>
<td>› Australian Computer Society</td>
</tr>
<tr>
<td></td>
<td>› Equivalent of 2 first-year computing, programming or computer</td>
<td></td>
<td>› Engineers Australia</td>
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<tr>
<td></td>
<td>science subjects</td>
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<td></td>
<td>200 point (2 years full-time) program</td>
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<tr>
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<td>› 65% weighted average</td>
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<tr>
<td></td>
<td>› Computing and Software Systems major (available in the Bachelor of Science)³</td>
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### INFORMATION TECHNOLOGY

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<thead>
<tr>
<th>COURSE</th>
<th>MINIMUM ENTRY REQUIREMENTS</th>
<th>DURATION</th>
<th>COURSE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Master of Information Systems</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Health</td>
<td>Depending on your work experience and undergraduate study, you may be eligible for advanced standing:</td>
<td>1-2 years</td>
<td>Professional entry</td>
</tr>
<tr>
<td>» Professional</td>
<td></td>
<td>full-time</td>
<td>Accreditation:</td>
</tr>
<tr>
<td>» Research</td>
<td></td>
<td></td>
<td>» Australian</td>
</tr>
<tr>
<td></td>
<td>200 point (2 years full-time) program</td>
<td></td>
<td>Computer Society</td>
</tr>
<tr>
<td></td>
<td>» Undergraduate degree in any discipline</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» 65% weighted average</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>150 point (1.5 years full-time) program*</td>
<td></td>
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<tr>
<td></td>
<td>» Undergraduate degree in any discipline</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>» 65% weighted average</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» One year of documented, relevant work experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 point (1 year full-time) program*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» Undergraduate degree in information systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» 65% weighted average</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>» Two years of documented, relevant work experience</td>
<td>(Inf)</td>
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<td></td>
<td>*See study.unimelb.edu.au for other 150 point and 100 point entry requirements</td>
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</tr>
<tr>
<td><strong>Master of Information Systems (Executive)</strong></td>
<td>» Undergraduate degree in an IT-related discipline</td>
<td>1 year</td>
<td>Specialised masters</td>
</tr>
<tr>
<td></td>
<td>» 70% weighted average in the final year (or equivalent)</td>
<td>full-time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>» 10 (or at least 5) years of documented, relevant work experience</td>
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<tr>
<td></td>
<td>» Personal statement of goals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» Employer referee reports</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Master of Information Technology</strong></td>
<td>Depending on your work experience and undergraduate study, you may be eligible for advanced standing:</td>
<td>1-2 years</td>
<td>Professional entry</td>
</tr>
<tr>
<td>» Computing</td>
<td></td>
<td>full-time</td>
<td>Accreditation:</td>
</tr>
<tr>
<td>» Cybersecurity</td>
<td></td>
<td></td>
<td>» Australian</td>
</tr>
<tr>
<td>» Distributed</td>
<td></td>
<td></td>
<td>Computer Society</td>
</tr>
<tr>
<td>Computing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Human-Computer Interaction</td>
<td></td>
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</tr>
<tr>
<td>» Spatial</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>200 point (2 years full-time) program</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» Undergraduate degree in any discipline</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» 65% weighted average</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» One technical computer programming subject</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>150 point (1.5 years full-time) program*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» Three-year undergraduate degree with a major in computer science, information technology, software engineering or related discipline, for example:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>– Computing and Software Systems major in the Bachelor of Science</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>– Computing or Digital Technologies major in the Bachelor of Design</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>» 65% weighted average</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 point (1 year full-time) program*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» Four-year undergraduate degree with a major in computer science, information technology, software engineering or related discipline</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>» 65% weighted average and either:</td>
<td></td>
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<tr>
<td></td>
<td>– Studies in the area of specialisation at an advanced undergraduate level or higher, or:</td>
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<td></td>
<td>– Two years of relevant, documented work experience in the area of specialisation</td>
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</tr>
<tr>
<td><strong>Master of Data Science</strong></td>
<td>» Undergraduate degree in computer science, data science or statistics</td>
<td>1 year</td>
<td>Specialised masters</td>
</tr>
<tr>
<td></td>
<td>» 65% weighted average</td>
<td>full-time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>» Equivalent to one subject from computer science or related discipline, focusing on computer programming</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>» Equivalent of two subjects of first-year mathematics (including Calculus 2)</td>
<td></td>
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</tr>
<tr>
<td>COURSES</td>
<td>MINIMUM ENTRY REQUIREMENTS¹</td>
<td>DURATION²</td>
<td>COURSE TYPE</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-----------------------------</td>
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<td>-----------------</td>
</tr>
<tr>
<td>INFORMATION TECHNOLOGY</td>
<td></td>
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</tr>
</tbody>
</table>
| Master of Science » Bioinformatics           | » Undergraduate degree with a major in biology and biomedicine, mathematics and statistics, or computer science  
» 65% weighted average in the major         | 2 years full-time           | Research pathway |
| Master of Science » Computer Science         | » Undergraduate degree with a major in computer science, for example:  
– Computing and Software Systems major in the Bachelor of Science  
– Computing major in the Bachelor of Design  
» 65% weighted average in the major         | 2 years full-time           | Research pathway |
| MATERIALS ENGINEERING                       |                             |           |                 |
| Master of Engineering » Materials³          | 300 point (3 years full-time) program  
Undergraduate degree with:  
» 65% weighted average  
» Equivalent of 2 first-year mathematics subjects (i.e. Linear Algebra and Calculus 2)  
» Equivalent of 2 first-year physics subjects, or one chemistry and one physics subject  
200 point (2 years full-time) program  
» 65% weighted average  
» Chemical Systems major or Mechanical Systems major (available in the Bachelor of Science), plus 2 core subjects | 2-3 years full-time          | Professional entry |
| MECHANICAL ENGINEERING AND MECHATRONICS      |                             |           |                 |
| Master of Engineering » Mechanical          | 300 point (3 years full-time) program  
Undergraduate degree with:  
» 65% weighted average  
» Equivalent of 2 first-year mathematics subjects (i.e. Linear Algebra and Calculus 2)  
» Equivalent of 2 first-year physics subjects  
200 point (2 years full-time) program  
» 65% weighted average  
» Mechanical Systems major (available in the Bachelor of Design or Science) | 2-3 years full-time          | Professional entry  
Accreditation:  
» EUR-ACE®  
» Engineers Australia |
| Master of Engineering » Mechanical with Business¹  
» Mechanical with Aerospace⁷ | 300 point (3 years full-time) program  
Undergraduate degree with:  
» 65% weighted average  
» Equivalent of 2 first-year mathematics subjects (i.e. Linear Algebra and Calculus 2)  
» Equivalent of 2 first-year physics subjects  
200 point (2 years full-time) program  
» 65% weighted average  
» Mechanical Systems major (available in the Bachelor of Design or Science) | 2-3 years full-time          | Professional entry  
Accreditation:  
» EUR-ACE®  
» Engineers Australia |
| Master of Engineering » Mechatronics         | 300 point (3 years full-time) program  
Undergraduate degree with:  
» 65% weighted average  
» Equivalent of 2 first-year mathematics subjects (i.e. Linear Algebra and Calculus 2)  
» Equivalent of 2 first-year physics subjects  
200 point (2 years full-time) program  
» 65% weighted average  
» Mechatronics Systems major (available in the Bachelor of Science) | 2-3 years full-time          | Professional entry  
Accreditation:  
» EUR-ACE®  
» Engineers Australia |
<table>
<thead>
<tr>
<th>COURSES</th>
<th>MINIMUM ENTRY REQUIREMENTS(^1)</th>
<th>DURATION(^2)</th>
<th>COURSE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPATIAL INFORMATION</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Master of Engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Spatial(^3)</td>
<td>300 point (3 years full-time) program</td>
<td>2-3 years</td>
<td>Professional entry</td>
</tr>
<tr>
<td></td>
<td>Undergraduate degree with:</td>
<td>full-time</td>
<td>Accreditation:</td>
</tr>
<tr>
<td></td>
<td>» 65% weighted average</td>
<td></td>
<td>» EUR-ACE(^®)</td>
</tr>
<tr>
<td></td>
<td>» Any 2 first year mathematics subjects</td>
<td></td>
<td>» Engineers Australia</td>
</tr>
<tr>
<td></td>
<td>» Equivalent of 2 first year computing, programming or computer science subjects</td>
<td></td>
<td>» Royal Institution of</td>
</tr>
<tr>
<td></td>
<td>200 point (2 years full-time) program</td>
<td></td>
<td>Chartered Surveyors</td>
</tr>
<tr>
<td></td>
<td>» 65% weighted average</td>
<td></td>
<td>» Surveyors Registration Board,</td>
</tr>
<tr>
<td></td>
<td>» Spatial Systems major (available in the Bachelor of Design or Science)</td>
<td></td>
<td>Victoria (conditional)</td>
</tr>
<tr>
<td>Master of Information Technology</td>
<td>See above: Information Technology: Master of Information Technology</td>
<td>1-2 years</td>
<td>Professional entry</td>
</tr>
<tr>
<td>» Spatial</td>
<td></td>
<td>full-time</td>
<td>Accreditation:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>» Australian Computer Society</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>» Royal Institution of Chartered Surveyors</td>
</tr>
<tr>
<td><strong>GRADUATE RESEARCH</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Philosophy (MPhil)</td>
<td>» Four-year undergraduate degree in a relevant discipline</td>
<td>1.5 - 2 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>» Must include a substantial research component (equivalent of 25% of one year of full-time study)</td>
<td>full-time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>» 75% weighted average in the equivalent of final year subjects OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» A masters degree in a relevant discipline</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» Must include a substantial research component (equivalent of 25% of one year of full-time study)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» 75% weighted average OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>» Qualification or professional experience considered to be equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctor of Philosophy (PhD)</td>
<td>» See Master of Philosophy (above)</td>
<td>3-4 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>full-time</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) 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, Master of Information Technology and Master of Information Systems is dependent on prior study and work experience.

\(^3\) The Master of Engineering (Spatial), (Biomedical with Business), (Electrical with Business) and (Software with Business) is provisionally accredited by Engineers Australia until sufficient students have graduated from the program. Changes to accreditation status will be backdated, enabling graduates to receive full accreditation when it is granted.

\(^4\) The Master of Engineering (Biochemical) and (Chemical) is accredited with IChemE.

\(^5\) Students who complete the Computing major in the Bachelor of Design are eligible to enter the 237.5 point Master of Engineering (Software) or (Software with Business). Students who complete the Digital Technologies major in the Bachelor of Design are eligible to enter the 262.5 point Master of Engineering (Software) or (Software with Business).

\(^6\) The Master of Engineering (Materials) is a new course launched in 2018. The Melbourne School of Engineering is seeking provisional accreditation for this course through Engineers Australia. The Melbourne School of Engineering has not yet sought accreditation with EUR-ACE\(^®\).

\(^7\) The Master of Engineering (Mechanical with Aerospace) is a new course to be launched in 2019. The Melbourne School of Engineering will seek provisional accreditation for this course through Engineers Australia. The Melbourne School of Engineering has not yet sought accreditation with EUR-ACE\(^®\).
BUILD A CAREER OF THE FUTURE AT MELBOURNE

Join the next generation of innovators at the University of Melbourne, working towards a more productive, sustainable and liveable tomorrow. During your degree, you’ll have access to internship 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.

Gain real-world experience: industry collaboration

At Melbourne, you’ll have the opportunity to connect with industry and 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 the Master of Engineering, Master of Information Technology and Master of Information Systems:

» Undertake professional-level work experience for 10-15 weeks, and approximately 350 hours
» Gain credit towards your degree
» Take part in workshops run by qualified careers counsellors to improve your resume, develop your interview skills and build your employability for the future
» Explore international and domestic internship opportunities related to your discipline and career goals

Industry projects

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

» Undertake your project over the course of a semester, full-year or summer break
» Develop a collaborative relationship with those working in industry
» Available in the Master of Engineering, Master of Information Technology and Master of Information Systems

Industry-connected curriculum

» Creating Innovative Engineering: take an innovation challenge with an industry mentor in this first-year Master of Engineering subject.
» Professional IS Consulting: a practice-oriented subject in the Master of Information Systems, which helps you build working relationships with clients.
» Steel Week: work with an industry practitioner on a structural engineering project and gain insight into engineering consulting in the Master of Engineering (Structural).
» BioDesign Innovation: collaborate with Master of Business Administration students to design a marketable medical device as part of the Master of Engineering (Biomedical).

Visit your course page of interest for more information.

STEM Mentoring

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

Other opportunities

» Industry panels
» Guest industry lecturers
» Networking events

Steve interned at Imbue Capital, a hedge fund startup that uses machine learning and artificial intelligence in commodity training. After graduating from the Master of Information Technology, Steve went on to work with the startup full-time.

“My internship involved writing software, gathering big data sets and crafting trading algorithms. In simpler terms, I built profitable trading robots.

“Undertaking an internship was really helpful in securing my current role. In my industry, you need a comprehensive skillset of statistics, machine learning, software writing and communication. While my course taught me the technical skills, such as the newest technologies in machine learning and artificial intelligence, I worked with teams to plan solutions in my internship and saw the importance of strong communication skills.”

**STEVE DANG**

Master of Information Technology
Quantitative Analyst, Imbue Capital
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
Want to combine study and travel? Build your global networks, learn a language and travel the world with student exchange and study abroad opportunities. Have the flexibility to choose from short-term or semester-long programs, and focus on research projects that match your interests. As an engineering or IT student, you’ll benefit from scholarships, bursaries and other funding options.

Melbourne Space Program
Want to help launch a student-built satellite? Volunteer for the Melbourne Space Program, a student-led organisation that aims to put Australian students at the forefront of the space industry and bridge the gap between curriculum and career.

Case Competition
Keen to get a taste of life as an engineer? Put your engineering skills to the test in our Case Competition, an annual competition bringing together multidisciplinary engineering teams to solve a real-world problem. Build your teamwork, problem-solving and presentation skills, and go in the running to win an industry mentoring opportunity.

Melbourne Accelerator Program
Get your startup off the ground! Apply for the Melbourne Accelerator Program (MAP), a unique startup incubator that gives students the opportunity to forge their careers as entrepreneurs with the support of fellowship grants, office space and access to a network of mentors and investors. MAP is Australia’s leading entrepreneurship program, and has been ranked 8th best entrepreneurial program in the world.²

MUR Motorsports
Design and build a racecar with the MUR Motorsports team. Race your creation in the annual Formula SAE competition, competing against engineering students from universities around the world.

Endeavour
Tackle design problems, create solutions for industry and apply innovative thinking in your final year project. At the end of the year, you’ll have the opportunity to present your project at Endeavour, one of the largest showcases of engineering and IT graduate student projects in Victoria. If you have a flair for social media and want to advance your pitching skills, you could also apply for the Road to Endeavour contest, and share your project with the community.

¹ The Internship subject is taken as an elective in the Master of Engineering. Students undertaking the Master of Engineering (with Business), (Materials) or (Mechanical with Aerospace) specialisations are unable to fit the internship subject in their study plan. Students in these courses are encouraged to source internships independently, which can be completed over the summer or winter break, or during semester. Credit will not be received for these internships.
² UBI Index
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 Robotics Society
» Computing and Information Systems Students Society (CISSA)
» Engineering Music Society
» Engineers Without Borders (University of Melbourne chapter)
» Melbourne University Engineering Student Club (MUESC)
» MUR Motorsports
» Pre-ENG club
» Robogals
» Women in Science and Engineering (WISE)
» Women in Technology

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 develop your employability and start forging your career while you study.

Women in Science and Engineering (WISE)
Want to connect with a community of female science and engineering students? As a member of WISE, you’ll benefit from regular networking events, access career advice tailored to female students, attend industry panels and workshops and take part in site visits.

Engineers Without Borders (EWB)
Make a difference globally with humanitarian engineering. Through our partnership with Engineers Without Borders, you’ll have the opportunity to:
» Help the world’s most disadvantaged communities
» Design solutions to real-world problems or collaborate on sustainable projects
» Inspire high school students about sustainable engineering and community development
» Connect with industry partners, attend industry events or find a project mentor
» Access work and internship opportunities

Computing and Information Systems Society (CISSA)
Connect with industry and potential employers, meet like-minded students and learn about career opportunities in IT. With CISSA, you could take part in workshops and programming competitions like CodeBrew, a 48 hour hackathon where students from a broad variety of degrees work in teams to design and implement a technical solution to a given problem.
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.

In demand: engineering and IT graduate salaries

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Average yearly salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical and materials engineers</td>
<td>$95,725.00</td>
</tr>
<tr>
<td>Civil engineering professionals</td>
<td>$99,632.00</td>
</tr>
<tr>
<td>Computer network professionals</td>
<td>$93,652.00</td>
</tr>
<tr>
<td>Database and systems administrators and ICT security</td>
<td>$88,036.00</td>
</tr>
<tr>
<td>Electrical engineers</td>
<td>$113,100.00</td>
</tr>
<tr>
<td>Engineer managers</td>
<td>$122,460.00</td>
</tr>
<tr>
<td>ICT business and systems analysts</td>
<td>$94,588.00</td>
</tr>
<tr>
<td>ICT managers</td>
<td>$109,460.00</td>
</tr>
<tr>
<td>ICT support and test engineers</td>
<td>$89,752.00</td>
</tr>
<tr>
<td>Industrial, mechanical and production engineers</td>
<td>$101,972.00</td>
</tr>
<tr>
<td>Mining engineers</td>
<td>$105,924.00</td>
</tr>
<tr>
<td>Other engineering professionals</td>
<td>$101,556.00</td>
</tr>
<tr>
<td>Software and applications programmers</td>
<td>$93,652.00</td>
</tr>
<tr>
<td>Surveyors and spatial scientists</td>
<td>$81,224.00</td>
</tr>
<tr>
<td>Telecommunications engineering professionals</td>
<td>$80,496.00</td>
</tr>
</tbody>
</table>

ALISON MANTEGAZZA
Master of Engineering (Civil)
Bachelor of Science (Civil Systems major)
Graduate Civil Engineer (Water), Jacobs

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

1 Figures are based on average weekly pay before tax in Australian dollars and is estimated from weekly gross median salary figures taken from the Australian Government’s Job Outlook website: joboutlook.gov.au, except where indicated. This information is intended to be an indicative guide only and salaries will vary on a case by case basis.

2 Figure based on median salary for employees aged 25-29, from the Institute of Chemical Engineers (IChemE) Salary Survey 2017: thechemicalengineer.com/features/do-your-earnings-stack-up
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 healthcare solutions.

Our world-leading biomedical engineering research:
- Bionic eye
- Low-cost prosthetics
- Brain-computer interfaces
- Bioprinting and tissue engineering

Master of Engineering (Biomedical) or (Biomedical with Business)
- Focus on human systems and the design and operation of devices and processes
- Apply engineering skills to new medical treatments, instruments and machines
- Learn from world leaders in medical bionics, human movement, prosthetics, tissue engineering and more
- Become an accredited biomedical engineer

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, who have received more than $200,000 in funding, and Stelect, winners of Australia’s largest medtech startup competition, Medtech’s Got Talent.

Where our graduates work

INDUSTRIES
- Biotechnology
- Health Services
- Hospitals
- Medical Devices
- Petrochemicals
- 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
- Research Associate
- Design Engineer
- Field Service Technician
- Service Engineer
- Startup Founder
- Hardware Engineer
Student experience

» Access internship opportunities at hospitals, biomedical research institutes and more
» Take part in the BioDesign Innovation subject, and collaborate with Melbourne Business School students to develop a marketable medical device
» Visit local research institutes and industry
» Work on projects such as monitoring the vital signs of patients, a diagnostic tool for stent selection, speech recognition software and more

» Design your own biomedical engineering instrumentation, from prosthetics to pacemakers, and use our state-of-the-art 3D-printing facilities to fabricate components
» Use MATLAB as a tool to solve biomedical engineering problems
» Connect with world-class research through the Graeme Clark Institute for Biomedical Engineering, a community of engineers, scientists and clinicians in the healthcare system

» Join the Melbourne University Biomedical Engineering Society (MUBES), the Melbourne Biotechnology Club or the Melbourne University Engineering Students’ Society (MUESC)
» 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 tips

“I learnt how to scope an unmet need for a product market fit, brainstorm solutions, create prototypes and develop a business strategy to navigate the healthcare landscape. Now, our project has evolved into a startup called NAVi Medical Technologies, and we aim to complete a fully-functional prototype in the next 12 months.”

SHING YUE SHEUNG
Master of Engineering (Biomedical) Chief Operating Officer, NAVi Medical Technologies

1 Please note that internships and mentor opportunities are subject to company approval and availability.
How to study biomedical engineering

START WITH A BACHELOR DEGREE

**OPTION 1:** Study the Bioengineering Systems major through the Bachelor of Biomedicine:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem 1</th>
<th>Chemistry for Biomedicine</th>
<th>Calculus 2</th>
<th>Biomolecules and Cells</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Engineering Systems Design 2</td>
<td>Linear Algebra</td>
<td>Genes and Environment</td>
<td>Breadth</td>
</tr>
<tr>
<td>Year</td>
<td>Sem 1</td>
<td>Engineering Mathematics</td>
<td>Molecular and Cell Biomedicine</td>
<td></td>
<td>Breadth</td>
</tr>
<tr>
<td>Year</td>
<td>Sem 2</td>
<td>Biomechanical Physics and Computation</td>
<td>Human Structure and Function</td>
<td></td>
<td>Breadth</td>
</tr>
<tr>
<td>Year</td>
<td>Sem 1</td>
<td>Introduction to Biomechanics</td>
<td>Circuits and Systems</td>
<td>Biomedicine: Molecule to Malady</td>
<td>Breadth</td>
</tr>
<tr>
<td>Year</td>
<td>Sem 2</td>
<td>Biotransport Processes</td>
<td>Biosystems Design</td>
<td>Frontiers in Biomedicine</td>
<td>Breadth</td>
</tr>
</tbody>
</table>

**OPTION 2:** Study the Bioengineering Systems major through the Bachelor of Science

Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/me-eng
FOLLOWED BY THE MASTER OF ENGINEERING

OPTION 1: Master of Engineering (Biomedical)
If you haven’t completed the Bioengineering Systems major in your undergraduate degree, start the Master of Engineering course here:

<table>
<thead>
<tr>
<th>Year 0</th>
<th>Sem 1</th>
<th>Biology of Cells and Organisms</th>
<th>Biomechanical Physics and Computation</th>
<th>Circuits and Systems</th>
<th>Engineering Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Chemistry 1</td>
<td>Biotransport Processes</td>
<td>Biosystems Design</td>
<td>Bioengineering elective</td>
</tr>
</tbody>
</table>

If you have completed the Bioengineering Systems major (see above), start the Master of Engineering course here:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Clinical Trials and Regulation</th>
<th>Bioinstrumentation</th>
<th>Introduction to Biomechanics</th>
<th>Bioengineering elective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Biomaterials</td>
<td>Anatomy and Physiology for Engineers</td>
<td>Anatomy and Physiology for Engineers</td>
<td>Bioengineering elective</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Sem 1</th>
<th>Biomedical Engineering Project Capstone</th>
<th>Engineering Practice and Communication / Creating Innovative Engineering</th>
<th>Bioengineering elective</th>
<th>Approved elective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Biomedical Engineering Design Project</td>
<td>Approved elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OPTION 2: Master of Engineering (Biomedical with Business)
Your course plan will be the same as the Master of Engineering (Biomedical), except you’ll replace five elective subjects with business subjects: World of Engineering Management; Engineering Contracts and Procurement; Marketing Management for Engineers; Economic Analysis for Engineers; and Strategy Execution for Engineers. See page 37 for more information.

“I work in a gait laboratory at the Royal Children’s Hospital, where we use 3D motion capture to better understand how our patients are moving to help them before and after surgery. One of the greatest things about my role is helping the children we see, and we are constantly looking for ways to provide better care for them. I get to work with a great team of physiotherapists and other engineers as we try to achieve this.”

WILL ABBOTT
Master of Engineering (Biomedical with Business)
Bachelor of Biomedicine (Bioengineering Systems major)
Biomedical Engineer, Royal Children’s Hospital
CHEMICAL AND BIOCHEMICAL ENGINEERING

With a degree in chemical or biochemical engineering, you’ll help meet the world’s growing need for food, energy and water, preserve the natural environment and develop solutions to heal our bodies.

What is chemical and biochemical engineering?
Chemical and biochemical engineers focus on the chemical composition of the world to create solutions in environmental remediation, energy, food and water.

Our world-leading chemical and biochemical engineering research:
- How objects could soon heal themselves
- Enzyme mimics: from laundry to weapon disposal
- What’s in our shampoo and conditioner?
- Keeping Antarctica clean

“"The highlight of my course was being exposed to intriguing subjects taught by experts in relevant fields. The Master of Engineering allowed me to develop critical thinking skills and strong process engineering skills, which I use in my job every day.""

SARAH CHAMBERS
Master of Engineering (Chemical)
Bachelor of Science (Chemical Systems major)
Supply Graduate, Carlton United Breweries

COURSES
- Master of Engineering (Biochemical)
- Master of Engineering (Chemical)
- Master of Engineering (Chemical with Business)

Undergraduate pathways
- Bachelor of Science (Chemical Systems major)
Master of Engineering (Biochemical)

» Discover how to design new bioproducts and bioprocesses
» Apply your knowledge to areas such as food and beverage engineering, pharmaceuticals and cosmetics, and environmental remediation
» Become an accredited biochemical engineer

Biochemical vs. chemical engineering: what’s the difference?
Biochemical engineering is a type of chemical engineering that focuses on matter related to organisms, such as cheese, cosmetics and biofuels. Chemical engineering is a broader type of engineering that has a greater focus on manufacturing, such as pharmaceuticals, oil and plastics.

Master of Engineering (Chemical) or (Chemical with Business)

» Focus on the invention, design and implementation of industrial-scale processes for converting raw waste materials into useful products
» Apply your knowledge to areas such as fuel, plastics, food additives, fertilisers, paper and pharmaceuticals
» Gain expertise in the computing and simulation of chemical processes
» Become an accredited chemical engineer

Student experience

» Access internship opportunities with organisations operating in the pharmaceuticals, pulp and paper, specialty chemicals, minerals processing, food and beverage, water and wastewater treatment, and oil and gas sectors
» Visit local companies operating in industries such as food and beverage, utilities, waste management and recycling, oil and gas manufacturing
» Undertake projects in minerals processing, food and beverage, water and wastewater treatment, and oil and gas sectors
» Join the Melbourne University Chemical Engineering Student Society (MUCESS) or Melbourne University Engineering Students’ Club (MUESC)
» Learn from experts in nanotechnology, carbon capture and storage, minerals, materials, natural gas processing and solvent extraction
» 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 tips.

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

MASTER OF ENGINEERING:
- Biochemical
- Chemical
- Chemical with Business

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

1 Please note that internships and mentor opportunities are subject to company approval and availability, and are only an indication of available opportunities.
How to study chemical and biochemical engineering

START WITH A BACHELOR DEGREE
Study the Chemical Systems major through the Bachelor of Science

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Sem 2</th>
<th>Year 2</th>
<th>Sem 1</th>
<th>Sem 2</th>
<th>Year 3</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Design 2</td>
<td>Linear Algebra</td>
<td></td>
<td>Chemistry: Reactions and Synthesis</td>
<td>Transport Processes</td>
<td></td>
<td>Heat and Mass Transport Processes</td>
<td>Safety and Sustainability Case Studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chemistry 1</td>
<td></td>
<td>Science elective</td>
<td>Engineering Mathematics</td>
<td></td>
<td>Science elective</td>
<td>Science elective</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Breadth or Science elective</td>
<td></td>
<td>Breadth</td>
<td>Breadth</td>
<td></td>
<td>Breadth</td>
<td>Breadth</td>
</tr>
</tbody>
</table>

Core subject | Breadth subject | Elective
FOLLOWED BY THE MASTER OF ENGINEERING

OPTION 1: Master of Engineering (Chemical)
If you haven’t completed the Chemical Systems major in your undergraduate degree, start the Master of Engineering course here:

<table>
<thead>
<tr>
<th>Year 0</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reactor Engineering</td>
<td>Safety and Sustainability Case Studies</td>
</tr>
<tr>
<td></td>
<td>Material and Energy Balances</td>
<td>Chemical Process Analysis</td>
</tr>
<tr>
<td></td>
<td>Engineering Mathematics</td>
<td>Fluid Mechanics</td>
</tr>
<tr>
<td></td>
<td>Transport Processes</td>
<td>Heat and Mass Transport Processes</td>
</tr>
</tbody>
</table>

If you have completed the Chemical Systems major (see above), start the Master of Engineering course here:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Engineering Practice and Communication / Creating Innovative Engineering¹</td>
<td>Process Equipment Design</td>
</tr>
<tr>
<td></td>
<td>Chemical Engineering Thermodynamics</td>
<td>Process Dynamics and Control</td>
</tr>
<tr>
<td></td>
<td>Bioprocess Engineering</td>
<td>Chemical Engineering Research Project/Industry Project</td>
</tr>
<tr>
<td></td>
<td>Chemical Engineering Management</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Particle Mechanics and Processing</td>
<td>Chemical Engineering Design Project</td>
</tr>
<tr>
<td></td>
<td>Advanced Heat and Mass Transport Processes</td>
<td>Chemical Engineering elective</td>
</tr>
<tr>
<td></td>
<td>Process Engineering</td>
<td>Chemical Engineering elective</td>
</tr>
<tr>
<td></td>
<td>Chemical Engineering elective</td>
<td>Chemical Engineering elective</td>
</tr>
</tbody>
</table>

OPTION 2: Master of Engineering (Biochemical)

OPTION 3: Master of Engineering (Chemical with Business)
Your course plan will be the same as the Master of Engineering (Chemical), except you’ll replace five elective subjects with business subjects: World of Engineering Management; Engineering Contracts and Procurement; Marketing Management for Engineers; Economic Analysis for Engineers; and Strategy Execution for Engineers. See page 37 for more information.

¹ Please note students undertaking a 3-year (300 point) Master of Engineering will study one of these subjects in the first year of their course.
CIVIL AND STRUCTURAL ENGINEERING

Reimagine our cities in a growing world 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 and structural engineers plan, design and construct the built environment, providing essential services and infrastructure.

Our world-leading civil and structural engineering research:
- Prefabricated housing
- Going underground for green energy
- How nanoclay stops cladding fires from spreading

COURSES
- Master of Engineering (Civil)
- Master of Engineering (Civil with Business)
- Master of Engineering ( Structural)
- Master of Engineering Structures
- Graduate Certificate in Port Engineering
- Master of Architectural Engineering

Undergraduate pathways
- Bachelor of Design (Civil Systems major)
- Bachelor of Science (Civil Systems major)

“One of my highlights was the subject, Structural Theory and Design 3. A guest lecturer assigned us a project during ’Steel Week’, which gave us practical insight into what being a structural engineer and working in a firm was really like.”

ELIZABETH STAVRAKIS
Master of Engineering (Structural)
Graduate Engineer, Mott MacDonald

1 For more information on the Master of Architectural Engineering, visit study.unimelb.edu.au
**Master of Engineering (Civil) or (Civil with Business)**

- Strengthen your understanding of sustainable urban developments, environmental protection 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
- Special focus on sustainability design and environmental processes
- Become an accredited civil engineer

**Master of Engineering (Structural)**

- Learn to design, develop and evaluate materials and systems used in constructing load-bearing infrastructure, such as roads, bridges, buildings, railways or dams
- Learn from experts in high-rise structures and earthquake- and blast-resistant technologies
- Undertake highly specialised subjects, including the design of resilient structures to counter extreme conditions
- Become an accredited structural engineer

**Student experience**

- Access internship opportunities in infrastructure, property, transport, electricity distribution, built environment, oil and gas, engineering consulting, project management and construction
- Engage with industry professionals through guest lectures, field and project work
- Work on projects such as estimating life loss from flood, the role of virtual reality in search and rescue or detecting bridge cracks with drones
- Join the Civil and Structural Society or the Melbourne University Engineering Students’ Club (MUESC)
- 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

**Civil vs. structural engineering: what’s the difference?**

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.

---

**Where our graduates work**

- **INDUSTRIES**
  - Aerospace
  - Civil Engineering
  - Construction
  - Geotechnical Engineering
  - Manufacturing
  - Mining
  - Oil and Gas
  - Transport
  - Utilities
  - Water Resources Engineering

- **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
  - 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

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**Bachelor of Science**

- Master of Engineering:  
  - Civil
  - Civil with Business
  - Structural

**Bachelor of Design**

- Master of Engineering:  
  - Aerospace
  - Civil Engineering
  - Construction
  - Geotechnical Engineering
  - Manufacturing
  - Mining
  - Oil and Gas
  - Transport
  - Utilities
  - Water Resources Engineering
How to study civil and structural engineering

START WITH A BACHELOR DEGREE

**OPTION 1:** Study the Civil Systems major through the Bachelor of Design:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem 1</th>
<th>Sem 2</th>
<th>Design elective</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Calculus 2</td>
<td>Physics 1 or</td>
<td>Design elective</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Physics 1: Fundamentals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td></td>
<td></td>
<td>Design elective</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td>Linear Algebra</td>
<td>Statics</td>
<td>Design elective</td>
<td>Breadth</td>
</tr>
<tr>
<td>Year 2</td>
<td>Engineering Mechanics</td>
<td>Engineering Mathematics</td>
<td>Design elective</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td>Engineering Materials</td>
<td>Earth Processes for Engineering</td>
<td>Design elective</td>
<td>Breadth</td>
</tr>
<tr>
<td>Year 3</td>
<td>Fluid Mechanics</td>
<td>Engineering Risk Analysis</td>
<td>Design elective</td>
<td>Breadth / Elective</td>
</tr>
<tr>
<td></td>
<td>Systems Modelling and Design</td>
<td>Structural Theory and Design</td>
<td>Design elective</td>
<td>Breadth / Elective</td>
</tr>
</tbody>
</table>

**OPTION 2:** Study the Civil Systems major through the Bachelor of Science

**OR**

**OPTION 3:** Study the Civil Systems major through the Bachelor of Science
FOLLOWED BY THE MASTER OF ENGINEERING

**OPTION 1: Master of Engineering (Civil)**

If you haven’t completed the Civil Systems major in your undergraduate degree, start the **Master of Engineering** course here:

<table>
<thead>
<tr>
<th>Year 0</th>
<th>Sem 1</th>
<th>Engineering Risk Analysis</th>
<th>Engineering Mechanics</th>
<th>Engineering Mathematics</th>
<th>Fluid Mechanics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Earth Processes for Engineering</td>
<td>Engineering Materials</td>
<td>Systems Modelling and Design</td>
<td>Structural Theory and Design</td>
</tr>
</tbody>
</table>

If you have completed the Civil Systems major (see above), start the **Master of Engineering** course here:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Structural Theory and Design 2</th>
<th>Sustainable Infrastructure Engineering</th>
<th>Engineering Site Characterisation</th>
<th>Geotechnical Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Engineering Project Implementation</td>
<td>Civil Hydraulics</td>
<td>Transport Systems</td>
<td>Engineering Practice and Communication or Creating Innovative Engineering</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Sem 1</th>
<th>IE Research Project 1</th>
<th>Risk Analysis</th>
<th>Integrated Design (Civil)</th>
<th>Structural Engineering elective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Construction Engineering</td>
<td>Civil Engineering elective</td>
<td>Civil Engineering elective</td>
<td>Structural Engineering elective</td>
</tr>
</tbody>
</table>

**OPTION 2: Master of Engineering (Civil with Business)**

Your course plan will be the same as the Master of Engineering (Civil), except you’ll replace five elective subjects with business subjects: World of Engineering Management; Engineering Contracts and Procurement; Marketing Management for Engineers; Economic Analysis for Engineers; and Strategy Execution for Engineers. See page 37 for more information.

**OPTION 3: Master of Engineering (Structural)**

If you haven’t completed the Civil Systems major in your undergraduate degree, start the **Master of Engineering** course here:

<table>
<thead>
<tr>
<th>Year 0</th>
<th>Sem 1</th>
<th>Engineering Mathematics</th>
<th>Engineering Mechanics</th>
<th>Fluid Mechanics</th>
<th>Engineering Risk Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Earth Processes for Engineering</td>
<td>Engineering Materials</td>
<td>Structural Theory and Design</td>
<td>Systems Modelling and Design</td>
</tr>
</tbody>
</table>

If you have completed the Civil Systems major (see above), start the **Master of Engineering** course here:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Structural Theory and Design 2</th>
<th>Sustainable Infrastructure Engineering</th>
<th>Engineering Site Characterisation</th>
<th>Engineering Practice and Communication / Creating Innovative Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Engineering Project Implementation</td>
<td>Structural Theory and Design 3</td>
<td>Systems Modelling and Design</td>
<td>Structural Engineering elective</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Sem 1</th>
<th>IE Research Project 1</th>
<th>Geotechnical Engineering</th>
<th>Structural Engineering elective</th>
<th>Structural Engineering elective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Construction Engineering</td>
<td>Integrated Design (Infrastructure)</td>
<td>Structural Engineering elective</td>
<td>Structural Engineering elective</td>
</tr>
</tbody>
</table>

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1 Please note students undertaking a 3-year (300 point) Master of Engineering will study one of these subjects in the first year of their course.
Master of Engineering Structures

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

**Fast facts**
- 1 year full-time (part-time available)
- Explore key themes such as structural systems, conceptual design, sustainable design, extreme loading and advanced analysis techniques
- Unlock enhanced career opportunities in structural engineering

**Learning outcomes**
- 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, cold-formed steel, composites, timber or masonry structures

**Student experience**
- Attend guest and local seminar presentations on leading research topics
- Join the Civil and Structural Society or the Melbourne University Engineering Students’ Club (MUESC)
- Undertake an infrastructure engineering research subject
- Choose from a wide range of electives, including project management and architecture
- Complete a simulated structural design exercise and collaborate with an experienced senior practising engineer

**Sample course plan**

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>High Rise Structures</th>
<th>Structural Theory and Design 3</th>
<th>Structural Engineering elective</th>
<th>Structural Engineering elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sem 2</td>
<td>Structural Engineering elective</td>
<td>Infrastructure Engineering elective</td>
<td>Infrastructure Engineering elective</td>
<td>Infrastructure Engineering elective</td>
<td></td>
</tr>
</tbody>
</table>

**Structural Engineering electives (choose at least 3)**
- Structural Resistant Design of Buildings
- Extreme Loading of Structures
- Concrete Design and Technology
- Structural Dynamics and Modelling

**Infrastructure Engineering electives (choose up to 3)**
- Sustainable Infrastructure Engineering
- Quantitative Environmental Modelling
- Solar Energy
- Energy for Sustainable Development
- Project Management Practices
- Engineering Project Implementation
- Geotechnical Applications
- Building Information Modelling
- Energy Efficiency Technology
- Sustainable Buildings
- Engineering Contracts and Procurement
- IE Research Project 3
- Transport System Modelling
- Port Structural Design
- Port Access and Navigation
- Port and Harbour Engineering
Graduate Certificate in Port Engineering

**Designed for:** Professionals practicing in the port and coastal engineering industry.

**Fast facts**
- 6 months full-time (1 semester) or 1 year part-time
- Features a combination of intensive periods of on-campus teaching and online assessments
- Delivered in partnership with Ports Australia, with support from the Pilbara Ports Authority and the Bureau of Meteorology
- Developed in consultation with eminent practitioners in maritime, coastal and port engineering

**Learning outcomes**
- Improve your capacity for port and harbour design and management
- Strengthen your understanding of ship traffic in ports and harbours
- Engage with a multidisciplinary overview of dredging issues
- Apply technologies, concepts, methods and hydrodynamic theories in harbour facility planning, design and construction

**Student experience**
- Undertake specialised coursework electives
- Learn from world-leading scientists in the field of maritime engineering
- Engage with industry through site visits

**Our career outcomes**
This course prepares professionals for senior or specialised roles in the port and coastal engineering industry. Graduates will benefit from advanced knowledge and skills, enabling them to design and manage prominent ports and harbours.

**Core subjects:**
- Dredging Engineering
- Port Access and Navigation (online)
- Port and Harbour Engineering

**Choose one elective from the following:**
- Freight Systems
- Building Information Modeling
- Metocean Engineering
- Port Structural Design
- Environmental Management ISO 14000
- Satellite Positioning Systems
**What is electrical and electronic engineering?**

Electrical engineers design and manage the electrical systems used in automation, surveillance, energy conversion, power distribution, telecommunications and information processing. Electronic engineers focus on small-scale electronic systems, such as computers and integrated circuits.

**Our world-leading electrical engineering research:**

- Bionic implants
- Predicting epileptic seizures, just like the weather
- Using lasers to help the blind see
- Community microgrids to efficiently share renewable energy

**COURSES**

- Master of Engineering (Electrical)
- Master of Engineering (Electrical with Business)

**Undergraduate pathways**

- Bachelor of Science (Electrical Systems major)

**Master of Engineering (Electrical) or (Electrical with Business)**

- 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 the environment
- Become an accredited electrical or electronic engineer

**Student experience**

- Access internship opportunities with organisations in biotechnology, aerostructures, oil and gas, automation, technical consulting, power solutions, computing devices and more
- Build electronic devices such as handheld game consoles, temperature controllers and more
- Join the Electrical Engineering Club or the Melbourne University Engineering Students’ Club (MUESC)
- Work on projects such as an accelerometer to measure football kicks, electric vehicles, smart metres, drones in disaster management and more
“In my course I really enjoyed applying theoretical skills to practical engineering projects, such as developing a Live Emergency Personnel Tracking project. My team and I worked with the Metropolitan Fire Brigade to develop a system that tracked deployed personnel in real-time during emergency situations.”

DHANUKA NANAYAKKARA
Master of Engineering (Electrical)
Consultant, Solution 49x at KPMG
How to study electrical and electronic engineering

START WITH A BACHELOR DEGREE

Study the Electrical Systems major through the Bachelor of Science:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem 1</th>
<th>Sem 2</th>
<th>Sem 1</th>
<th>Sem 2</th>
<th>Year 3</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physics 1</td>
<td>Physics 2: Physical Science and Technology</td>
<td>Science elective</td>
<td>Science elective</td>
<td>Science elective</td>
<td>Recommended Science elective (Electronic System Implementation)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Breadth</td>
<td>Breadth</td>
<td>Breadth</td>
<td>Breadth</td>
<td>Breadth</td>
<td>Breadth</td>
<td></td>
</tr>
</tbody>
</table>

Bachelor of Science (3 YEARS)

OPTION 1

MASTER OF ENGINEERING (ELECTRICAL) (2 YEARS)

OPTION 2

MASTER OF ENGINEERING (ELECTRICAL WITH BUSINESS) (2 YEARS)
**FOLLOWED BY THE MASTER OF ENGINEERING**

**OPTION 1: Master of Engineering (Electrical)**

If you haven’t completed the Electrical Systems major in your undergraduate degree, start the **Master of Engineering** course here:

<table>
<thead>
<tr>
<th>Year 0</th>
<th>Sem 1</th>
<th>Foundations of Electrical Networks</th>
<th>Engineering Mathematics</th>
<th>Engineering Computation</th>
<th>Approved elective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Electrical Device Modelling</td>
<td>Electrical Network Analysis and Design</td>
<td>Signals and Systems</td>
<td>Engineering Practice and Communication / Creating Innovative Engineering</td>
</tr>
</tbody>
</table>

If you have completed the Electrical Systems major (see above), start the **Master of Engineering** course here:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Probability and Random Models</th>
<th>Digital Systems Design²</th>
<th>Electronic Circuit Design</th>
<th>Introduction to Power Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Communication Systems</td>
<td>Signal Processing</td>
<td>Embedded System Design</td>
<td>Control Systems</td>
</tr>
<tr>
<td>Year 2</td>
<td>Sem 1</td>
<td>Electrical Engineering Capstone Project</td>
<td>Electrical Engineering elective</td>
<td>Electrical Engineering elective</td>
<td>Approved elective</td>
</tr>
<tr>
<td></td>
<td>Sem 2</td>
<td>Electrical Engineering elective</td>
<td>Electrical Engineering elective</td>
<td>Approved elective</td>
<td></td>
</tr>
</tbody>
</table>

**OPTION 2: Master of Engineering (Electrical with Business)**

Your course plan will be the same as the Master of Engineering (Electrical), except you’ll replace five elective subjects with business subjects: World of Engineering Management; Engineering Contracts and Procurement; Marketing Management for Engineers; Economic Analysis for Engineers; and Strategy Execution for Engineers. See page 37 for more information.

1 Students undertaking a 3-year (300 point) Master of Engineering will take one of these subjects in the first year of their course.

2 Students must complete Foundations of Electrical Networks or equivalent in their undergraduate degree before taking Digital Systems Design. Note that Foundations of Electrical Networks is a prerequisite for Digital Systems Design. Students who are undertaking the 2-year (200 point) program will need to replace Digital Systems Design with Engineering Practice and Communication /Creating Innovative Engineering.
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
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:

<table>
<thead>
<tr>
<th>Energy and sustainability</th>
<th>Energy, finance and policy</th>
<th>The business of energy</th>
<th>Energy and law</th>
</tr>
</thead>
<tbody>
<tr>
<td>» Adapting to Climate Change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Climate Change Mitigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Climate Modelling and Climate Change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Environmental Modelling</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>» Sustainable Buildings</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>» Solar Energy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Sustainable Infrastructure Engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Climate Change Politics and Policy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Engineering for Public Policy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Environmental Policy Instruments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Project Finance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Sustainability Accounting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Business Analysis and Decision Making</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Engineering Contracts and Procurement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Optimisation for Industry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Supply Chain Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Transport Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| » Construction Law  |
| » Energy Regulation and the Law  |

---

**Energy Systems Project**

Work onsite at an organisation over three months, solving a real energy problem, forging industry connections and undertaking cross-disciplinary analysis.¹

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¹ Students must achieve an average of 75% to take part of the Energy Systems Project.
Master of Engineering Management

Designed for: Engineering professionals looking to advance their career, and for those striving to lead engineering projects and personnel.

**Fast facts**
- 1 year full-time (part-time available)
- Subjects tailored for students with less than two years’ experience, and for those with more than two years’ experience
- Developed in collaboration with Melbourne Business School

**Learning outcomes**
- Take the next step in your career
- Enhance your technological problem-solving 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.

**Student experience**
- Learn from world-leaders from the Faculty of Business and Economics and collaborate with students from their masters programs
- Engage with industry through guest lectures and site visits
- Take subjects from the Master of Management
- Analyse business cases relevant to decision making and practice in engineering management

---

“I wanted to develop a deep understanding of technological enterprises, how they operate and what’s required to become a successful leader and manager in world-class businesses.”

**MANOPRIYA PRAKASH**
Master of Engineering Management
Business Process Analyst, NBN
Sample course plan

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

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Project / Change Management Subject</th>
<th>Project / Change Management Subject</th>
<th>Elective from the Master of Management(^1)</th>
<th>Elective from the Master of Management(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sem 2</td>
<td></td>
<td>Strategic Management(^2)</td>
<td>Engineering Management Capstone</td>
<td>Project / Change Management Subject</td>
<td>Elective from the Master of Management(^1)</td>
</tr>
</tbody>
</table>

All students complete the 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

<table>
<thead>
<tr>
<th>Project Management Subjects</th>
<th>Change Management Subjects</th>
<th>Electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable Infrastructure Engineering</td>
<td>Management and Leadership for Engineers</td>
<td>Supply Chain Management</td>
</tr>
<tr>
<td>Project Management Practices</td>
<td>Building Information Modelling</td>
<td>Management Competencies</td>
</tr>
<tr>
<td>Engineering Project Implementation</td>
<td>Managing Change for IS Professionals</td>
<td>Accounting for Decision Making</td>
</tr>
<tr>
<td>Engineering Contracts and Procurement</td>
<td>Engineering Entrepreneurship</td>
<td>Business Analysis and Decision Making</td>
</tr>
<tr>
<td>Transport System Modelling</td>
<td></td>
<td>Financial Management</td>
</tr>
</tbody>
</table>

Master of Engineering (with Business)

Designed for: Students seeking to become a professionally accredited engineer. The Master of Engineering (with Business) is available in six specialisations: Biomedical, Chemical, Civil, Electrical, Mechanical and Software. To take a 'with Business' specialisation in the Master of Engineering, you’ll replace five technical subjects with management subjects.

Where our graduates work

ACCREDITED ENGINEER

MASTER OF ENGINEERING MANAGEMENT

INDUSTRIES

- Product Development
- Manufacturing
- Construction

COMPANIES

- Accenture
- 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

- Automotive Program Manager
- Configuration Management Coordinator
- Consultant

- Business Analyst
- Programmatic and Data Intelligence Manager

\(^1\) Domestic students with more than two years' experience may choose to take subjects from the Master of Business Administration, taught by the Melbourne Business School

\(^2\) Domestic students with more than two years' experience may choose from Strategic Management or the Integrative Business Capstone
ENVIROMENTAL 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.

What is environmental engineering?

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

Master of Engineering (Environmental)

» Design and build sustainable solutions to environmental problems
» Focus on climate change, water scarcity and bushfire management
» Become an accredited environmental engineer

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

» Learn from leaders in hydrology, hydraulics, water resources and waste management
» Develop a specialisation in energy, waste management or water resources
» Engage with consultants who work on projects around the world, including China, Vietnam, Thailand, Nepal, Sri Lanka and India
» Design and implement an environmental monitoring program
» Join the Environmental Engineers’ Society or the Melbourne University Engineering Students’ Club (MUESC)
» Attend guest lectures and seminars from industry professionals and site visits
» Take part in a five-day field camp

Where our graduates work

BACHELOR OF SCIENCE

MASTER OF ENGINEERING
» Environmental

INDUSTRIES
» Catchment Management
» Civil Engineering
» Conservation and Natural Resources
» Renewable Energy
» Infrastructure Engineering
» Energy
» Mining

COMPANIES
» Acciona Australia
» Alluvium Consulting
» Bureau of Meteorology
» China Ministry of Environmental
» Department of Environment, Land, Water and Planning
» Engineers Without Borders
» Golder Associates

» Jacobs
» Melbourne Water
» North Sumatra Hydro Energy
» Water Tech
» Woodside Energy

JOB ROLES
» Application Engineer
» Environmental Engineer
» Consultant
» Project Environmental Engineer

Master of Environmental Engineering
» Focus on climate change, water scarcity and bushfire management
» Become an accredited environmental engineer

Student experience
» Undertake an internship with companies and government organisations specialising in water resources management, environmental consulting and design, construction, weather forecasting and more

» Learn from leaders in hydrology, hydraulics, water resources and waste management
» Develop a specialisation in energy, waste management or water resources
» Engage with consultants who work on projects around the world, including China, Vietnam, Thailand, Nepal, Sri Lanka and India
» Design and implement an environmental monitoring program
» Join the Environmental Engineers’ Society or the Melbourne University Engineering Students’ Club (MUESC)
» Attend guest lectures and seminars from industry professionals and site visits
» Take part in a five-day field camp
“My subjects reflected real-life complexities of current environmental problems and it was eye-opening to learn the importance of an interdisciplinary approach when facing these challenges.”

HANNAH YAP
Master of Engineering (Environmental)
Current student
### How to study environmental engineering

#### START WITH A BACHELOR DEGREE

Study the Environmental Engineering Systems major through the Bachelor of Science:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem 1</th>
<th>Course</th>
<th>Sem 2</th>
<th>Course</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Engineering Systems Design 1</td>
<td></td>
<td>Calculus 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Biology of Cells and Organisms</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engineering Systems Design 2</td>
<td></td>
<td>Linear Algebra</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Genetics and the Evolution of Life</td>
<td>Breadth</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Engineering Mechanics</td>
<td></td>
<td>Engineering Mathematics</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Engineering Computation</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Earth Processes for Engineering</td>
<td></td>
<td>Analysis of Biological Data</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Thinking Scientifically</td>
<td>Breadth</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Fluid Mechanics</td>
<td></td>
<td>Imaging the Environment</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental Engineering Systems Capstone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>Biotransport Processes</td>
<td></td>
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</tr>
</tbody>
</table>

#### FOLLOWED BY THE MASTER OF ENGINEERING

If you haven’t completed the Environmental Engineering Systems major in your undergraduate degree, start the Master of Engineering course here:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem 1</th>
<th>Course</th>
<th>Sem 2</th>
<th>Course</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>Engineering Mechanics</td>
<td></td>
<td>Engineering Mathematics</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fluid Mechanics</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Analysis of Biological Data</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Environmental Engineering Systems Capstone</td>
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</tr>
</tbody>
</table>

If you have completed the Environmental Engineering Systems (see above), start the Master of Engineering course here:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem 1</th>
<th>Course</th>
<th>Sem 2</th>
<th>Course</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Quantitative Environmental Modelling</td>
<td></td>
<td>Sustainable Infrastructure Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Engineering Site Characterisation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Engineering Practice and Communication / Creating Innovative Engineering¹</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engineering Project Implementation</td>
<td></td>
<td>Civil Hydraulics</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Environmental Analysis Tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Monitoring Environmental Impacts</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>IE Research Project 1</td>
<td></td>
<td>Environmental Engineering elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Environmental Engineering elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Integrated Design – (Infrastructure) OR Integrated Design (Civil)</td>
<td>Environmental Engineering elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Please note students undertaking a 3-year (300 point) Master of Engineering will study one of these subjects in the first year of their course.
Master of Environmental Engineering

**Designed for:** Accredited engineers seeking advanced knowledge in sustainable development and environmental management.

### Fast facts
- 1 year full-time (part-time available)
- Choose from a focus on waste management, energy or water resources
- Strong industry focus, with half of all subjects led by industry practitioners

### 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

### Student experience
- Undertake a research project in industry
- Learn from leaders in hydrology, hydraulics, water resources and waste management
- Engage with consultants who work on projects around the world, including China, Vietnam, Thailand, Nepal, Sri Lanka and India
- Join the Environmental Engineers’ Society or the Melbourne University Engineering Students’ Club (MUESC)
- Take part in a five-day field camp
- Design and implement an environmental monitoring program
- Attend guest lectures and seminars from industry professionals and site visits

### Our career outcomes
The Master of Environmental 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 senior roles in environmental engineering and related industries.

### How to study environmental engineering

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Quantitative Environmental Modelling</th>
<th>Sustainable Infrastructure Engineering</th>
<th>Selective</th>
<th>Selective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Monitoring Environmental Impacts</td>
<td>Environmental Analysis Tools</td>
<td>Selective</td>
<td>Approved Elective</td>
</tr>
</tbody>
</table>

Choose 3-4 electives from one of the following themes (note that some subjects are available in more than one theme, including the Infrastructure Engineering Research Project.

<table>
<thead>
<tr>
<th>Waste management</th>
<th>Energy</th>
<th>Water resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>» Solid Wastes to Sustainable Resources</td>
<td>» Energy for Sustainable Development</td>
<td>» Environmental Applied Hydrology</td>
</tr>
<tr>
<td>» Environmental Management ISO 14000</td>
<td>» Energy Efficiency Technology</td>
<td>» Sustainable Water Resources Systems</td>
</tr>
<tr>
<td>» Groundwater Hydrology</td>
<td>» Sustainable Buildings</td>
<td>» International River Basement Management</td>
</tr>
</tbody>
</table>

Or, choose one approved elective, such as:
- Engineering Contracts and Procurement
- Foundations of Spatial Information
- Geotechnical Applications
INFORMATION TECHNOLOGY AND SOFTWARE ENGINEERING

Transform the future of business, health, communication and entertainment with an IT degree from Melbourne.

Gain expertise in areas including:

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

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?

<table>
<thead>
<tr>
<th>Program name</th>
<th>What it’s all about?</th>
<th>Your career goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Engineering</td>
<td>Produce and manage large and small-scale software systems</td>
<td>Become an accredited software engineer¹</td>
</tr>
<tr>
<td>» Software</td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Software with Business</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Information Technology</td>
<td>Gain advanced technical skills and knowledge in IT</td>
<td>To pursue a technical IT career or advance your current IT skills</td>
</tr>
<tr>
<td>Master of Information Systems</td>
<td>Support, manage and change business processes through ICT</td>
<td>To pursue or advance your career in digital business</td>
</tr>
<tr>
<td>Master of Information Systems (Executive)</td>
<td>Gain strategic expertise to influence decision-making at the most senior level</td>
<td>For senior IT executives seeking to take the next step in their career</td>
</tr>
<tr>
<td>Master of Data Science</td>
<td>Build advanced skills in statistical tools, techniques and methods</td>
<td>Data scientist, software engineer, business intelligence analyst</td>
</tr>
<tr>
<td>» Bioinformatics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Computer Science</td>
<td>Research training program</td>
<td>Data scientist, application programmer, information architect, computational research expert</td>
</tr>
</tbody>
</table>

¹ The Master of Engineering (Software with Business) is provisionally accredited with Engineers Australia.
Master of Engineering (Software) or (Software with Business)

- Accredited by Euro-Inf® and the Australian Computer Society (ACS)\footnote{1}
- Learn how to produce and manage large and small-scale software systems, leveraging your mathematical, scientific and technical knowledge
- Specialise in algorithms, internet technologies and database systems
- Gain expertise in artificial intelligence, machine learning, cloud computing, cryptography, parallel computing and more
- Become an accredited software engineer

**Student experience**

- Access internship opportunities with organisations operating in banking and finance, human-computer interaction, consulting, health and more.
- Learn from industry practitioners through our guest lectures
- Use state-of-the-art software technologies and frameworks to develop software solutions for real-world applications
- Work in teams to develop and deliver a software solution for industry clients in a year-long industry project experience

- Join the Computing and Information Systems Students Association (CISSA), and University of Melbourne Competitive Programming Club (UMCPC) or Engineering Students’ Club (MUESC)

**Where our graduates work**

- INDUSTRIES
  - Aerospace
  - Games and Entertainment
  - Cybersecurity
  - Disaster Management
  - Energy and Commodities
  - Financial Services
  - Healthcare
  - Telecommunications
  - Traffic and Transport

- 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
  - UX Designer
  - Web Application Developer
  - Consultant
  - Android/iOS Developer
  - Developer
  - Front-end Developer
  - Payment Systems Developer

“Being involved in client work has been a highlight of my course. We have worked in teams with a real client and built fully-functional software programs. We learnt how to coordinate and run a project, while building our mobile development skills.”

**GRACE JOHNSON**
Master of Engineering (Software)
How to study software engineering

**START WITH A BACHELOR DEGREE**

**OPTION 1:** Study the Computing major through the Bachelor of Design

**OPTION 2:** Study the Computing and Software Systems major through the Bachelor of Science:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem</th>
<th>Subject</th>
<th>Subject</th>
<th>Subject</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>Foundations of Computing</td>
<td>Calculus 2</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Foundations of Algorithms</td>
<td>Linear Algebra</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Design of Algorithms</td>
<td>Science elective</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Object Oriented Software</td>
<td>Database Systems</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Software Modelling and Design</td>
<td>Computer Systems</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>IT Project</td>
<td>Models of Computation</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
</tbody>
</table>

1 The Computing major in the Bachelor of Design leads to the 2.5 year Master of Engineering (Software) or (Software) with Business.
**FOLLOWED BY THE MASTER OF ENGINEERING**

**OPTION 1: Master of Engineering (Software)**

If you haven’t completed the Computing and Software Systems major in your undergraduate degree, start the Master of Engineering course here:

<table>
<thead>
<tr>
<th>Year 0</th>
<th>Sem 1</th>
<th>Design of Algorithms</th>
<th>Software Modelling and Design</th>
<th>Computer Systems</th>
<th>CIS elective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Object Orientated Software Development</td>
<td>Database Systems</td>
<td>Models of Computation</td>
<td>CIS elective</td>
</tr>
</tbody>
</table>

If you have completed the Computing and Software Systems major (see above), start the Master of Engineering course here:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Software Requirements Analysis</th>
<th>IT Project and Change Management</th>
<th>Engineering Practice and Communication / Creating Innovative Engineering</th>
<th>CIS Advanced elective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Masters Software Engineering Project</td>
<td>Software Testing and Reliability</td>
<td>CIS elective</td>
<td>CIS Advanced elective</td>
</tr>
<tr>
<td>Year 2</td>
<td>Sem 1</td>
<td>Masters Advanced Software Project</td>
<td>High Integrity Systems Engineering</td>
<td>Modelling Complex Software Systems</td>
<td>CIS Advanced elective</td>
</tr>
<tr>
<td></td>
<td>Sem 2</td>
<td>Software Design and Architecture</td>
<td>CIS Advanced elective</td>
<td>Approved elective</td>
<td></td>
</tr>
</tbody>
</table>

**OPTION 2: Master of Engineering (Software with Business)**

Your course plan will be the same as the Master of Engineering (Software), except you’ll replace five elective subjects with business subjects: World of Engineering Management; Engineering Contracts and Procurement; Marketing Management for Engineers; Economic Analysis for Engineers; and Strategy Execution for Engineers. See page 37 for more information.

1 Please note students undertaking a 3-year (300 point) Master of Engineering will study one of these subjects in the first year of their course.
Master of Information Technology

**Designed for:** Students seeking to gain advanced technical skills in computing, cybersecurity, distributed computing, spatial information or human-computer interaction.

» Accredited by the Australian Computer Society (ACS)¹
» Gain advanced technical skills and knowledge to lead IT innovation that can be applied to business, government, health, entertainment and more
» Specialise in computing, cybersecurity, distributed computing, human-computer interaction or spatial information
» Grow your skills in project and change management, risk management, quality assurance and testing
» Develop fundamental technical skills that will remain valuable as new technologies emerge

» Explore fast-changing areas of IT such as artificial intelligence, cybersecurity, machine learning and deep learning, data mining, urban systems and smart cities
» Join the Computing and Information Systems Students Association (CISSA) and University of Melbourne Competitive Programming Club (UMCPC)

**Course duration**
» 1-2 years full-time (part-time available), depending on prior study and work experience

**Student experience**
» Undertake an internship or industry project with organisations operating in finance and banking, telecommunications, construction, biotechnology, startups and more.
» Choose from electives in bioinformatics, database systems, enterprise computing, machine learning and artificial intelligence, programming languages, security and more

---

**Artificial intelligence, machine learning and data science: what’s the difference?**

**Artificial intelligence** is a broad term that involves planning problems and logistics. If you want to create a program that can find the fastest way out of a maze or plan the movement of a robotic arm, that’s AI!

**Machine learning** is a type of artificial intelligence that predicts something from data that already exists. It’s used in robotics, cybersecurity and everyday applications such as Google Translate and autocorrect.

**Data science** gathers, collates and analyses big data. This data can be used by machine learning experts to predict outcomes, such as the path of a self-driving car.

---

**Where our graduates work**

**INDUSTRIES**
» Business
» Financial Services
» Games and Entertainment

**COMPANIES**
» Accenture
» ANZ
» Apollo Medical Imaging Technology
» BitCoin Group
» Blockchain Global Ltd
» Centre for Eye Research Australia (CERA)
» Cyberinc
» Data Solutions Group
» National Australia Bank

**JOB ROLES**
» Python Developer
» Data Infrastructure Engineer
» Project Manager
» Software Engineer/Developer
» Android/iOS Developer
» Quantitative Analyst
» Data Scientist
» Front-end Developer
» Algorithm Engineer
» Web Developer

**ONLY BACHELOR DEGREE with 1 x technical programming subject**

**设计专业：** 学生寻求获得计算、网络安全、分布式计算、空间信息或人机交互方面的高级技术技能。

» 获得澳大利亚计算机学会（ACS）的认证
» 获得高级技术技能和知识，以指导IT创新，这些创新可以应用于商业、政府、健康、娱乐等领域
» 专门从事计算、网络安全、分布式计算、人机交互或空间信息
» 提高项目和变更管理、风险管理、质量保证和测试技能
» 开发将随着时间推移而保持价值的基本技术技能

» 探索IT的快速变化领域，如人工智能、网络安全、机器学习和深度学习、数据挖掘、智慧城市等
» 加入计算机和信息系学生协会（CISSA）和墨尔本大学竞争性编程俱乐部（UMCPC）

**课程学制**
» 1-2年全日制（兼职可选），取决于之前的学业和工作经验

**学生经验**
» 完成实习或行业项目，与金融和银行业、电信、建筑、生物技术、初创公司等领域的组织合作
» 选择生物信息学、数据库系统、企业计算、机器学习和人工智能、编程语言、安全等方面的选修课程

---

**人工智能、机器学习和数据科学：有什么不同？**

**人工智能**是一个广泛的术语，涉及规划问题和物流。如果你想创建一个可以找到走出迷宫的最快方式或规划机器人手臂运动的程序，那就是AI！

**机器学习**是人工智能的一种，可以从已存在的数据中预测某些事情。它被用于机器人学、网络安全和日常应用，如Google翻译和自动更正。

**数据科学**收集、汇总和分析大数据。这些数据可以被机器学习专家用于预测结果，如自动驾驶汽车的路径。

---

**我们的毕业生在哪里工作**

**行业**
» 业务
» 金融服务
» 游戏和娱乐

**公司**
» Accenture
» ANZ
» Apollo Medical Imaging Technology
» BitCoin Group
» Blockchain Global Ltd
» Centre for Eye Research Australia (CERA)
» Cyberinc
» Data Solutions Group
» 国家澳大利亚银行

**职位**
» Python开发人员
» 数据基础设施工程师
» 项目经理
» 软件工程师/开发者
» Android/iOS开发人员
» 定量分析员
» 数据科学家
» 前端开发人员
» 算法工程师
» 网页开发人员
Course structure
As a Master of Information Technology student, you’ll undertake four core subjects in:
» Programming and Software Development
» Algorithms and Complexity
» Internet Technologies
» Database Systems and Information Modelling

You’ll also choose an area of information technology to specialise in, tailoring your program to suit your interests and career goals:

<table>
<thead>
<tr>
<th>Specialisations</th>
<th>Overview</th>
<th>Focus on</th>
<th>Career opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing</td>
<td>Design, implement and evaluate IT projects and future needs.</td>
<td>» IT project and change management</td>
<td>» Deep learning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Software development</td>
<td>» Data mining</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Programming languages</td>
<td>» Business and data analytics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Artificial intelligence</td>
<td>» Database, web or app development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Software design</td>
<td>» Artificial intelligence, machine learning and data science</td>
</tr>
<tr>
<td>Cybersecurity</td>
<td>Discover how to create new technologies to improve existing security and</td>
<td>» System design and programming new technologies</td>
<td>» Security analytics, software and auditing</td>
</tr>
<tr>
<td></td>
<td>minimise vulnerability in design systems.</td>
<td>» Cryptography</td>
<td>» Cryptography</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Testing the resilience of systems</td>
<td>» Forensics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>» Incident response</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>» Network security</td>
</tr>
<tr>
<td>Distributed</td>
<td>Learn to manage large quantities of data through networked computers.</td>
<td>» Mobile computer systems programming</td>
<td>» eBusiness and cloud computing</td>
</tr>
<tr>
<td>computing</td>
<td></td>
<td>» Cloud computing</td>
<td>» Mobile systems programming</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» High performance computing</td>
<td>» Sensor networks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Distributed algorithms</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Parallel computing</td>
<td></td>
</tr>
<tr>
<td>Human-computer</td>
<td>Evaluate interactive technologies and learn how to create the next</td>
<td>» User experience</td>
<td>» UI development and engineering</td>
</tr>
<tr>
<td>interaction</td>
<td>generation of interfaces.</td>
<td>» Interaction design</td>
<td>» VR, AR web and other IT product design</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Social computing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Information architecture</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Ubiquitous computing</td>
<td></td>
</tr>
<tr>
<td>Spatial</td>
<td>Analyse, communicate and visualise spatial information.</td>
<td>» Spatial databases</td>
<td>» Urban systems and smart cities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Spatial programming</td>
<td>» Location-based apps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Mapping and spatial services</td>
<td>» Infrastructure and transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Satellite positioning</td>
<td>» Disaster management and response</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Remote sensing</td>
<td>» Policy and government</td>
</tr>
</tbody>
</table>

In addition to your area of specialisation, 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.

How should I study cybersecurity?
You can study cybersecurity in the Master of Information Technology and Master of Information Systems – but which option is best for you?

If you want to develop new technologies to improve existing security, you can focus on system design, programming and cryptology in the Master of Information Technology.

On the other hand, all security issues have a human element. If you’re interested in governance strategy, culture and risk assessments, then the Master of Information Systems is for you.

1 The Master of Information Technology (Spatial) is also accredited with the Royal Institution of Chartered Surveyors.
Master of Information Systems

**Designed for:** Students aiming to develop advanced capability in supporting, managing and changing business processes through information and communication technology (ICT).

- Accredited by the Australian Computer Society (ACS)
- Gain advanced skills in ensuring alignment between IT and business
- Choose from one of three specialisations: professional, health or research
- 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.

**Course duration**
- 1-2 years full-time (part-time available), depending on prior study and work experience

**Student experience**
- Undertake an internship with a range of industry partners from startups, non-profit sectors to major Australian firms and multinationals
- Learn key employability skills through an extensive range of industry events and workshops
- Gain professional practice knowledge of real-world IT management through industry links and guest lectures
- Choose electives focusing on health, project and change management, business analytics, interaction design, spatial information, accounting and finance, people and management, operations and marketing
- Join the Computing and Information Systems Students Association (CISSA) and University of Melbourne Competitive Programming Club (UMCPC)

**CHOOSE YOUR SPECIALISATION**

In the Master of Information Systems, you’ll take a range of core subjects exploring IT and its impact on how we do business.

<table>
<thead>
<tr>
<th>Professional</th>
<th>Health</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Build skills to further your career in IT management and digital business. You’ll explore topics as database systems, organisational processes, app development, consulting, business analysis, emerging technologies and IT strategy and governance.</td>
<td>Leverage technology to improve health outcomes in healthcare service provision, public health and biomedical research. You’ll focus on reducing preventable clinical errors and managing cost pressures in healthcare. Access career opportunities in health agencies, health services, biomedical research institutes and ehealth organisations. Work as a health informatician, health IT consultant, medical research data manager or digital and mobile health solution developer.</td>
<td>If you want to pursue a career in research, this specialisation will give you the opportunity to undertake an original investigation into a pressing IT issue with the Information Systems Major Research Project.</td>
</tr>
</tbody>
</table>

**Electives**

You’ll also choose up to four electives, focusing on areas such as:
- Industry experience, including an internship, industry placement or industry project
- Information systems project and change management
- IT service provision
- Business analytics
- IT innovation and interaction design
- Management
- Accounting and finance
- Human resources, operations and marketing
- Spatial information
- Health

Master of Information Systems (Executive)

**Designed for:** Senior information technology executives seeking advanced capability in supporting, managing and changing business processes through information and communication technology.

- Gain strategic expertise to influence decision-making at the most senior level
- Acquire advanced collaborative skills to manage complex teams
- Connect with an extensive network of high-achieving peers from a variety of industries
- Develop advanced knowledge in emerging technologies, technopreneurship, business analytics and enterprise architecture applications

**Course duration**
- 1 year full-time (part-time available)
- Delivered 100% online

For more information visit online.unimelb.edu.au
“Gaining knowledge about how IT influences the workplace is a crucial element of every business. I learned a blend of technical and professional skills through the MIS and had the opportunity to take an internship as a business analyst.”

**Alice Clarke**
Master of Information Systems
Business Analyst, Accenture

Where our graduates work

**INDUSTRIES**
- Business
- Financial Services
- Games and Entertainment
- Health agencies and healthcare services
- Media and Social Media
- Technology R&D
- Telecommunications

**COMPANIES**
- AGL Energy
- Amazon
- ANZ
- Deloitte
- Didi Chuxing
- EY
- Korea Computer & Systems Inc
- KPMG
- National Australia Bank
- Nielsen
- Outware Mobile
- Protivti
- PwC
- Qantas
- RXP Services
- Suncorp Group
- Sydney Opera House
- Telstra
- Zanity

**ANY BACHELOR DEGREE**

**MASTER OF INFORMATION SYSTEMS**

**JOB ROLES**
- Financial Services Manager
- Business Systems Analyst
- IT Solution Lead
- Front-end Developer
- Agile Delivery Manager
- Analyst
- Data Engineer
- Consultant
- Technology Specialist
- Project Manager
“I completed an internship with an electronics startup company, where I co-led a project to develop an electronic device to help people suffering from Alzheimer’s disease. The greatest benefit of this experience was applying the skills I had learnt in my course to solve a real-life problem.”

RICARDO PARDAVE
Master of Information Technology
Procurement Specialist, Telstra
Master of Data Science

**Designed for:** Students with a background in data science, computer science or statistics who are seeking a career in data analytics.

- Combines data science, computer science and statistics in a single coordinated program

**Course duration**
- 2 years full-time (part-time available)

**Learning outcomes**
- 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

**Careers outcomes**
- The Master of Data Science opens career opportunities as data scientists, business analysts, data engineer, climate and weather forecaster or data analyst. Graduates may find employment with Microsoft, Bureau of Meteorology, ANZ Bank, BHP Billiton, Boeing and more.

Master of Science (Bioinformatics)

**Designed for:** Students with an interest in bioinformatics who are 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.

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

**Career outcomes**
- Access career opportunities in medical research institutes and hospitals, government, research-focused companies and academic institutions, with examples including IBM, CSL, Melbourne Bioinformatics, Nectar and RDS. The Master of Science is also a pathway to a PhD or further research.

Master of Science (Computer Science)

**Designed for:** Students with an interest in computer science who are seeking a pathway to PhD study or a technical role in industry.

- Explore technologies and web-based tools that are changing the way we live including the health sciences and social infrastructures.

**Learning outcomes**
- Develop advanced computer science skills
- Undertake a substantial research project
- Specialise in knowledge systems, programming languages and distributed computing; information systems; mathematics; statistics; spatial information science; or linguistics.

**Career outcomes**
- Graduates receive career opportunities in high-profile research groups, medical research institutes, government departments, academic institutions, research infrastructure initiatives and research-focused companies. Roles include applications programmers, information architects, systems and cybersecurity analysts, user-experience designers, software designers and engineers, project managers and computational research experts. The Master of Science is also a pathway to a PhD or further research.
MATERIALS ENGINEERING

From medical devices that aid weak hearts to material systems that efficiently store energy, a degree in materials engineering will give you the skills to improve materials that exist all around us and even create new ones.

What is materials engineering?

Materials engineers design and improve the materials underpinning our devices, processes and technologies. These have applications in biomedical devices, sustainable energy solutions and manufacturing.

Our world-leading materials engineering research:

- Skydiving to investigate nanoparticles
- Clean carbon technology
- Chemical blankets to save coral reefs
- Safer drug delivery for cancer

Master of Engineering (Materials)

- Gain insight into the processing-structure-property relationships of a range of materials
- Focus on materials such as metals, polymers, ceramics, electronics and composites
- Learn the fundamental concepts of atomic bonding, atomic scale structure, phase equilibria and methods of characterisation
- Become proficient in skills needed to advance nanotechnology, energy materials and biomaterials.

Student experience

- Take part in a materials engineering research project, such as developing ceramics, metals and composites to protect infrastructure and vehicles against blast damage.
- Use world-class facilities in the Materials Characterisation and Fabrication platform and learn advanced microscopy techniques to analyse different materials
- Home to the Defence Materials Technology Centre, Hallmark Materials Research Initiative and the Particulate Fluids Processing Centre
- Join the Chemical Engineering Society or the Melbourne University Engineering Students’ Club (MUESC)

Graduate outcomes

- From medical devices that aid weak hearts to material systems that efficiently store energy, a degree in materials engineering will give you the skills to improve materials that exist all around us and even create new ones.

COURSES

- Master of Engineering (Materials)
- Undergraduate pathways
  - Bachelor of Science (Chemical Systems)
  - Bachelor of Science (Mechanical Systems)

INDUSTRIES

- Industrial Design
- Manufacturing
- Processing and Recycling
- Aerospace
- Transportation
- Automotive
- Solar Energy
- Tissue Engineering
- Drug Delivering
- ICT Systems

COMPANIES

- Defence Science and Technology Group
- AECOM
- Deloitte
- Ford
- GlaxoSmithKline
- KPMG
- Orica
- BlueScope Steel
- Morgan Advanced Ceramics
- Austral Bricks
- Qenos

JOB ROLES

- Metallurgist
- Plastics Engineer
- Ceramist
- Adhesive Scientist
- Quality Control Engineer
- Corrosion Engineer

BACHELOR
OF SCIENCE

» Materials
How to study materials engineering

START WITH A BACHELOR DEGREE

OPTION 1: Study the Chemical Systems major through the Bachelor of Science:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem</th>
<th>Core subject</th>
<th>Breadth subject</th>
<th>Elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Engineering Systems</td>
<td>Calculus 2</td>
<td>Chemistry 1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Engineering Systems</td>
<td>Linear Algebra</td>
<td>Chemistry 2</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Material and Energy Balances</td>
<td>Chemistry: Reactions and Synthesis</td>
<td>Engineering Mechanics</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Chemical Process Analysis</td>
<td>Transport Processes</td>
<td>Engineering Mathematics</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Reactor Engineering</td>
<td>Heat and Mass Transport Processes</td>
<td>Mechanics and Materials</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Fluid Mechanics</td>
<td>Safety and Sustainability Case Studies</td>
<td>Engineering Materials</td>
</tr>
</tbody>
</table>

OR

OPTION 2: Study the Mechanical Systems major through the Bachelor of Science

FOLLOWED BY THE MASTER OF ENGINEERING

If you haven’t completed the Chemical Systems or Mechanical Systems major in your undergraduate degree, start the Master of Engineering course here:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem</th>
<th>Core subject</th>
<th>Breadth subject</th>
<th>Elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>Mechanics and Materials</td>
<td>Quantum and Thermal Physics</td>
<td>Engineering Mathematics</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Fluid Mechanics</td>
<td>Engineering Materials</td>
<td>Transport Processes</td>
</tr>
</tbody>
</table>

If you have completed the Chemical Systems major (see above), start the Master of Engineering course here:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem</th>
<th>Core subject</th>
<th>Breadth subject</th>
<th>Elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Engineering Practice and Communication / Creating Innovative Engineering¹</td>
<td>Polymers and Composites</td>
<td>Economic Analysis for Engineers</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Advanced Concepts in Metals</td>
<td>Ceramics and Brittle Fracture</td>
<td>Minerals Materials and Recycling</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Electronic and Magnetic Materials</td>
<td>Particle Mechanics and Processing</td>
<td>Design for Manufacture</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Advanced Materials</td>
<td>Engineering Entrepreneurship</td>
<td>Materials Research Project</td>
</tr>
</tbody>
</table>

“Materials underpin nearly all engineering applications. Materials engineers work in a diverse range of areas, from developing new biomedical engineering devices, to creating sustainable energy solutions and better manufacturing processes. Throughout history, advances in materials technology has enabled civilisation to progress to the next stage; you can be part of the next technology revolution by developing materials that enable the next age.”

PROF GEORGE FRANKS
Department of Chemical Engineering, University of Melbourne

¹ Please note students undertaking a 3-year (300 point) Master of Engineering will study one of these subjects in the first year of their course.
MECHANICAL ENGINEERING AND MECHATRONICS

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

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

What is mechatronics?
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:

- Robots with a human touch
- Low-cost prosthetics
- Improving the efficiency of aircrafts
- 3D-printing to manufacture new body parts

Master of Engineering (Mechanical) or (Mechanical with Business)
- Learn from world-leaders in fluid mechanics, biomechanics, robotics, thermodynamics and materials science
- Participate in cross-disciplinary projects, including medicine, biology and earth sciences
- Discover how to turn energy into power and motion
- Focus on the generation, conversion, design and use of energy
- Examine the construction and operation of devices and systems
- Become an accredited mechanical engineer

Student experience
- Undertake an internship with organisations operating in infrastructure and construction, aerostructures, biotechnology, manufacturing, mining and resources, water resources and health
- Take part in group activities, site visits and industry projects
- Read, write and debug programs in high-level programming languages such as C
- Join the Mechanical Engineering Student Society, MUR Motorsports or the Melbourne University Engineering Students’ Club (MUESC)
- Access cutting-edge laboratories and a heavy engineering workshop for materials testing, engine and turbine testing, wind tunnel investigations and metal forming processing

COURSES

MECHANICAL ENGINEERING
- Master of Engineering (Mechanical)
- Master of Engineering (Mechanical with Aerospace)
- Master of Engineering (Mechanical with Business)
Undergraduate pathways
- Bachelor of Design (Mechanical Systems major)
- Bachelor of Science (Mechanical Systems major)

MECHATRONICS
- Master of Engineering (Mechatronics)
Undergraduate pathways
- Bachelor of Science (Mechatronic Systems major)

1 Alternative pathways to Master of Engineering (Mechatronics) include the Electrical Systems major and Computing and Software Systems major in the Bachelor of Science. Students who undertake one of these alternative pathways must ensure they have completed appropriate subjects from the Mechatronics Systems major in their undergraduate degree to qualify for the 2-year course.
Master of Engineering (Mechanical with Aerospace)

» Focus on aerospace engineering, while also developing advanced skills and knowledge in mechanical engineering
» Learn from world-leaders in autonomous systems, fluid mechanics, thermodynamics and materials science
» Choose your career: be equipped for positions in the aerospace industry or apply your mechanical engineering skills across diverse industries
» Become an accredited mechanical engineer, specialising in aerospace

Student experience

» Take specialised subjects focusing on aerospace dynamics, control, propulsion, vibration and aeroelasticity
» Take part in group activities, site visits and industry projects
» Read, write and debug programs in high-level programming languages such as C
» Join the Mechanical Engineering Student Society or the Melbourne University Engineering Students’ Club (MUESC), and volunteer for the Melbourne Space Program
» Access cutting-edge laboratories and a heavy engineering workshop for materials testing, engine and turbine testing, wind tunnel investigations and metal forming processing

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. The team is currently putting the final touches on the CubeSat, a satellite built by students from scratch that they hope to launch into space.

“During my international internship in Munich, I helped build a ‘smart’ induction furnace using the Internet of Things. It was very hands-on – I learnt both professional and technical skills, which I use in my current role.”

SHRUTI PAL
Master of Engineering (Mechanical) Global Management Trainee, Carlton United Breweries, AB InBev
How to study mechanical engineering

START WITH A BACHELOR DEGREE

**OPTION 1:** Study the Mechanical Systems major through the Bachelor of Design

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem</th>
<th>Core subject</th>
<th>Breadth subject</th>
<th>Elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Engineering Systems Design 1</td>
<td>Calculus 2</td>
<td>Physics 1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Engineering Systems Design 2</td>
<td>Linear Algebra</td>
<td>Physics 2: Physical Science and Technology</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Engineering Computation</td>
<td>Science elective</td>
<td>Science elective</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Engineering Mechanics</td>
<td>Engineering Mathematics</td>
<td>Science elective</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Thermodynamics and Fluid Mechanics</td>
<td>Mechanics and Materials</td>
<td>Science elective</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Systems Modelling and Analysis</td>
<td>Mechanical Design</td>
<td>Science elective</td>
</tr>
</tbody>
</table>

**OPTION 2:** Study the Mechanical Systems major through the Bachelor of Science:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem</th>
<th>Core subject</th>
<th>Breadth subject</th>
<th>Elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Engineering Systems Design 1</td>
<td>Calculus 2</td>
<td>Physics 1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Engineering Systems Design 2</td>
<td>Linear Algebra</td>
<td>Physics 2: Physical Science and Technology</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Engineering Computation</td>
<td>Science elective</td>
<td>Science elective</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Engineering Mechanics</td>
<td>Engineering Mathematics</td>
<td>Science elective</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Thermodynamics and Fluid Mechanics</td>
<td>Mechanics and Materials</td>
<td>Science elective</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Systems Modelling and Analysis</td>
<td>Mechanical Design</td>
<td>Science elective</td>
</tr>
</tbody>
</table>

**OR**

**OPTION 3:** Study the Mechanical Systems major through the Bachelor of Design

**OPTION 2:** Study the Mechanical Systems major through the Bachelor of Science:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem</th>
<th>Core subject</th>
<th>Breadth subject</th>
<th>Elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Engineering Systems Design 1</td>
<td>Calculus 2</td>
<td>Physics 1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Engineering Systems Design 2</td>
<td>Linear Algebra</td>
<td>Physics 2: Physical Science and Technology</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Engineering Computation</td>
<td>Science elective</td>
<td>Science elective</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Engineering Mechanics</td>
<td>Engineering Mathematics</td>
<td>Science elective</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Thermodynamics and Fluid Mechanics</td>
<td>Mechanics and Materials</td>
<td>Science elective</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Systems Modelling and Analysis</td>
<td>Mechanical Design</td>
<td>Science elective</td>
</tr>
</tbody>
</table>
**FOLLOWED BY THE MASTER OF ENGINEERING**

### OPTION 1: Master of Engineering (Mechanical)

If you haven’t completed the Mechanical Systems major in your undergraduate degree, start the Master of Engineering course here:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Systems Modelling and Analysis</td>
<td>Mechanical Design</td>
<td>Thermodynamics and Fluid Mechanics</td>
<td>Foundations of Electrical Networks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Dynamics</th>
<th>Control Systems</th>
<th>Materials</th>
<th>Design for Manufacture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Fluid Dynamics</td>
<td>Solid Mechanics</td>
<td>Engineering Practice and Communication / Creating Innovative Engineering</td>
<td>Design for Integration</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Sem 1</th>
<th>Mechanical Engineering elective</th>
<th>Mechanical Engineering elective</th>
<th>Thermodynamics</th>
<th>Capstone Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Mechanical Engineering elective</td>
<td>Mechanical Engineering elective</td>
<td>Mechanical Engineering elective</td>
<td></td>
</tr>
</tbody>
</table>

--- OR ---

### OPTION 2: Master of Engineering (Mechanical with Business)

Your course plan will be the same as the Master of Engineering (Mechanical), except you’ll replace five elective subjects with business subjects: World of Engineering Management; Engineering Contracts and Procurement; Marketing Management for Engineers; Economic Analysis for Engineers; and Strategy Execution for Engineers. See page 37 for more information.

--- OR ---

### OPTION 3: Master of Engineering (Mechanical with Aerospace)

Your course plan will be the same as the Master of Engineering (Mechanical), except you’ll replace five elective subjects with Aerospace subjects: Advanced Fluid Dynamics; Computational Fluid Dynamics; Aerospace Dynamics and Control; Aerospace Propulsion; and Vibration and Aeroelasticity.

---

1 Please note students undertaking a 3-year (300 point) Master of Engineering will study one of these subjects in the first year of their course.

---

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 Engineering (Mechatronics)

» Blend mechanical, electrical and software engineering to develop automation and advanced manufacturing technologies
» Harness computer control in areas such as robotics, vehicles and CNC machines
» Become an accredited mechatronics engineer

Student experience
» Undertake an internship with organisations operating in the electronics, automotive, biotechnology and manufacturing sectors
» Engage with industry through site visits, guest lectures and industry-based projects
» Join the Mechatronics Society, the Drones and Robotics Club or the Melbourne University Engineering Students' Club (MUESC)
» 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

How to study mechatronics

START WITH A BACHELOR DEGREE
Study the Mechatronics Systems major through the Bachelor of Science:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sem 1</th>
<th>Engineering Systems Design 1</th>
<th>Calculus 2</th>
<th>Physics 1</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Engineering Systems Design 2</td>
<td>Linear Algebra</td>
<td>Physics 2: Physical Science and Technology</td>
<td>Breadth</td>
</tr>
<tr>
<td>Year 2</td>
<td>Sem 1</td>
<td>Engineering Computation</td>
<td>Engineering Mathematics</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td>Sem 2</td>
<td>Foundations of Electrical Networks</td>
<td>Engineering Mechanics</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td>Year 3</td>
<td>Sem 1</td>
<td>Analog and Digital Electronics Concepts</td>
<td>Science elective</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td>Sem 2</td>
<td>Mechatronic System Design</td>
<td>Systems Modelling and Analysis</td>
<td>Numerical Programming for Engineers</td>
<td>Breadth</td>
</tr>
</tbody>
</table>

FOLLOWED BY THE MASTER OF ENGINEERING
If you haven’t completed the Mechatronics Systems major in your undergraduate degree, start the Master of Engineering course here:

<table>
<thead>
<tr>
<th>Year 0</th>
<th>Sem 1</th>
<th>Engineering Mechanics</th>
<th>Engineering Mathematics</th>
<th>Foundations of Electrical Networks</th>
<th>Engineering Computation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Numerical Programming for Engineers</td>
<td>Systems Modelling and Analysis</td>
<td>Mechatronic Systems Design</td>
<td>Analog and Digital Electronics Concepts</td>
</tr>
</tbody>
</table>

If you have completed the Mechatronics Systems (see above), start the Master of Engineering course here:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Control Systems</th>
<th>Dynamics</th>
<th>Engineering Practice and Communication / Creating Innovative Engineering</th>
<th>Programming and Software Development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Advanced Control Systems</td>
<td>Advanced Dynamics</td>
<td>Embedded System Design</td>
<td>Internet Technologies OR Knowledge Technologies</td>
</tr>
<tr>
<td>Year 2</td>
<td>Sem 1</td>
<td>Advanced Motion Control</td>
<td>Mechatronics elective</td>
<td>Mechatronics elective</td>
<td>Mechatronics Capstone Project</td>
</tr>
<tr>
<td></td>
<td>Sem 2</td>
<td>Sensor Systems</td>
<td>Mechatronics elective</td>
<td>Mechatronics elective</td>
<td></td>
</tr>
</tbody>
</table>

1 Please note students undertaking a 3-year (300 point) Master of Engineering will study one of these subjects in the first year of their course.
“I’m working on a power scavenging autonomous drone, with the support of an industry partner. The aim of the project is to design a drone that can find and latch onto power lines, so it can recharge its battery and fly longer distances to monitor the maintenance of power lines.”

**ELENA VELLA**
Master of Engineering (Mechatronics)
Bachelor of Science (Mechatronics Systems)
SPATIAL INFORMATION

In a world where everything is geolocated, spatial information is at the forefront of the Internet of Things, autonomous vehicles and how our cities work.

What is spatial information?
Spatial information, or geomatics, answers the fundamental questions of ‘where’ and ‘when’ in public administration, planning, construction, infrastructure management, navigation, safety and resilience, and the sharing economy.

Our world-leading spatial information research:
- Using social media to find the truth on Twitter
- How ridesharing is going social
- Taking a city’s pulse: touch-ons, transactions and tweets
- Indoor wayfinding and building evacuation

COURSES
- Master of Engineering (Spatial)
- Master of Information Technology (Spatial)

Undergraduate pathways
- Bachelor of Design (Spatial Systems major)
- Bachelor of Science (Spatial Systems major)

Master of Engineering (Spatial)
- Focus on the science and technology of measurement, mapping and visualisation
- Develop skills in geographic information systems (GIS), 3D computer visualisations, surveying and satellite and photographic image processing
- Become an accredited spatial engineer
- Additional accreditation with the Surveyors Registration Board Victoria and the Royal Institution of Chartered Surveyors

Master of Information Technology (Spatial)
- 1-2 years full-time (part-time available)
- Focus on cutting-edge information and communication technology
- Become an accredited IT professional through the Australian Computer Society, with additional accreditation with the Royal Institution of Chartered Surveyors

Student experience
- Undertake an internship with companies and government organisations specialising in transport, infrastructure and surveying
- Learn from experts in disaster management, land administration, 3D modelling, smart cities and buildings, and more
- 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
- Join the Melbourne University Geomatics Society (MUGS) or the Melbourne University Engineering Students’ Club (MUESC)

For more information about the Master of Information Technology (Spatial), see page 46.

Spatial engineering or spatial information technology?
If you have a science or maths background, and want to become an accredited spatial engineer, then the Master of Engineering (Spatial) is for you.

Or, if you want to complement your skillset with knowledge of cloud computing, algorithms, data warehousing and other areas of IT, study spatial information through the Master of Information Technology.
“I have always had a love for maps. In my spare time I volunteer for Missing Maps, where I help respond to a disaster occurring somewhere in the world and remotely map buildings or features of interest from satellite imagery online.”

AMANDA CHONG
Master of Engineering (Spatial)
Geospatial Analyst, Arup
How to study spatial information

START WITH A BACHELOR DEGREE

OPTION 1: Study the Spatial Systems major through the Bachelor of Design

OPTION 2: Study the Spatial Systems major through the Bachelor of Science:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Foundations of Computing</th>
<th>Science elective</th>
<th>Calculus 1</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Foundations of Algorithms</td>
<td>Science elective</td>
<td>Linear Algebra</td>
<td>Breadth</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Sem 1</th>
<th>Applications of GIS</th>
<th>Engineering Computation</th>
<th>Science elective</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Surveying and Mapping</td>
<td>Database Systems</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Sem 1</th>
<th>Engineering Risk Analysis</th>
<th>Imaging the Environment</th>
<th>Science elective</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Integrated Spatial Systems</td>
<td>Land Administration Systems</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
</tbody>
</table>
FOLLOWED BY THE MASTER OF ENGINEERING

**OPTION 1: Master of Engineering (Spatial)**

If you haven't completed the Spatial Systems major in your undergraduate degree, start the **Master of Engineering** course here:

<table>
<thead>
<tr>
<th>Year 0</th>
<th>Sem 1</th>
<th>Engineering Computation</th>
<th>Engineering Risk Analysis</th>
<th>Application of GIS</th>
<th>Imagining the Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Surveying and Mapping</td>
<td>Integrated Spatial Systems</td>
<td>Land Administration Systems</td>
<td>Database Systems</td>
</tr>
</tbody>
</table>

If you have completed the Spatial Systems major (see above), start the **Master of Engineering** course here:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Foundations of Spatial Information</th>
<th>Engineering Practice and Communication/Creating Innovative Engineering¹</th>
<th>Management of Technological Enterprises</th>
<th>Approved elective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Database Systems</td>
<td>Satellite Positioning Systems</td>
<td>Spatial Analysis</td>
<td>Mathematics of Spatial Information</td>
</tr>
<tr>
<td>Year 2</td>
<td>Sem 1</td>
<td>Advanced Surveying and Mapping</td>
<td>Spatial Databases</td>
<td>Approved elective</td>
<td>IE Research Project</td>
</tr>
<tr>
<td></td>
<td>Sem 2</td>
<td>Approved elective</td>
<td>Engineering Project Implementation</td>
<td>Spatial Data Infrastructure</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Programming and Software Development</th>
<th>Algorithms and Complexity</th>
<th>Internet Technologies</th>
<th>Database Systems and Information Modelling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 2</td>
<td>Foundations of Spatial Information</td>
<td>Spatial Visualisation</td>
<td>Spatial elective</td>
<td>Spatial elective</td>
</tr>
<tr>
<td>Year 2</td>
<td>Sem 1</td>
<td>Spatial Databases</td>
<td>Spatial Information Programming</td>
<td>Spatial elective</td>
<td>IT Project and Change Management</td>
</tr>
<tr>
<td></td>
<td>Sem 2</td>
<td>Spatial Data Infrastructure</td>
<td>Spatial Analysis</td>
<td>Spatial IT Project</td>
<td></td>
</tr>
</tbody>
</table>

¹ Please note students undertaking a 3-year (300 point) Master of Engineering will study one of these subjects in the first year of their course.

**OPTION 2: Master of Information Technology (Spatial)**

For more information about the Master of Information Technology, see page 46.
Research at Melbourne

» Join an environment of cross-disciplinary research excellence, and be part of one of the largest engineering and IT research institutions in Australia.

» Work alongside researchers who are creating technological solutions to global challenges, and benefit from strong backing from industry and government.

» Make valuable contributions to key 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.

» Access a range of generous scholarships to support your research goals.

Your research options

As a Melbourne graduate research student, you’ll have the opportunity to carry out an independent and sustained engineering or IT research project under supervision of one of our world-class researchers. You can choose from the Master of Philosophy (MPhil) or Doctor of Philosophy (PhD), which will enable you to:

» Develop advanced research skills and techniques

» Demonstrate academic leadership, independence, creativity and innovation

» Build expertise in a specialist area and acquire a wide range of advanced and transferable skills

The MPhil generally takes 1.5 years full-time to complete, while the PhD is a longer, more comprehensive research program, which typically takes at least 3 years full-time to complete.

Our institutes and partnerships

» Centre for Neural Engineering

» Centre for Disaster Engineering and Public Safety

» Graeme Clark Institute for Biomedical Engineering

» Melbourne Networked Society Institute

» IBM Research

» Peter Cook Centre for Carbon Capture and Storage

» Dairy Innovation Australia Ltd

» Microsoft

» Rio Tinto

» Ford

Home to Australia’s most distinguished research and academic staff in engineering and IT

» Prime Minister's Prize Winner

» Fellows of the Royal Society

» Australian Research Council (ARC) Laureate

» ARC Future Fellows

» Eureka Prize Winners

How to apply for a research course

Before you apply, find a supervisor

As a research student you will work under the guidance of an academic supervisor, who will provide advice and direction throughout your research project. Your project is often part of a larger project run by your supervisor. Identify who you would like to work with, prior to making an application, and supply documented evidence that you have secured a supervisor, who has agreed to work with you on your research proposal.

How to find a project/supervisor

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

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

Application deadlines

Applications for admission may be submitted at any time.

Graduate research 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 at Masters level

» A weighted average equivalent to the University of Melbourne’s 80%.

Graduate Research scholarships

If you’re a new student, 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, Overseas Student Health Cover (OSHC) and sick leave.

Scholarship types:

Melbourne Research Scholarships (MRS): available to high-achieving domestic and international students

Australian Government Research Training Program (RTP) Scholarships: available to high-achieving domestic students

Graduate research students may also be eligible to apply for Conference Travel Scholarships, which are designed to support travel conferences they are presenting at.

What is a competitive score?

80%:

» Competitive for entry, but does not guarantee admission.

» A competitive score for local applicants from Go8 institutions for the Research Training Program (RTP)

85%:

» 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

Please note: these are University of Melbourne equivalent scores taking into consideration transcripts, publications, research experience and the ranking of your previous institution. All applications for admission will be considered for scholarships automatically. Further details are available at: study.unimelb.edu.au/find/courses/graduate/doctor-of-philosophy-engineering/fees
## Research disciplines

Our research is interdisciplinary and collaborative, connecting diverse study areas and working closely with industry. The projects below involve researchers and expertise from multiple areas of engineering and IT.

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Research themes</th>
<th>Our graduate research students work on</th>
</tr>
</thead>
</table>
| **Biomedical engineering**      | » Biomaterials and tissue engineering  
» Biomechanics and mechanobiology  
» Bionics  
» Biomedical imaging and neuroimaging  
» Systems and synthetic biology   | » Human vision during migraine, aging and disease  
» Mapping the human schizophrenia connectome  
» How cardiac cells grow  
» Neural plasticity for brain-machine interfaces |
| **Chemical engineering**        | » Materials development  
» Separations technology  
» Surface chemistry and rheology  
» Bioprocessing               | » 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** | » Data and knowledge  
» Platforms and systems  
» People and organisations    | » 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** | » Communication and networks  
» Control and signal processing  
» Photonic and electronic systems  
» Power and energy systems      | » 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**  | » Civil engineering  
» Geomatics  
» Environmental hydrology and water resources | » 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**      | » Autonomous systems  
» Biomechanics  
» Fluid dynamics  
» Thermodynamics               | » 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.
Commonwealth Supported Places (CSPs)

CSPs are awarded 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.

Guaranteed CSPs for Melbourne graduates

If you have completed a Bachelor degree at the University of Melbourne with a weighted average mark of 65%, you are guaranteed a CSP in the Master of Engineering, Master of Information Systems or Master of Information Technology (provided you meet the program entry requirements). Students enrolled in a Graduate Degree Package into the Master of Engineering will also receive a CSP.

HECS-HELP

HECS-HELP is a loan scheme that allows eligible domestic CSP students to defer their student contribution payments. In the HECS-HELP scheme the Australian Government pays the student contribution amount. You only repay your HECS-HELP loan once your income meets the minimum repayment threshold.

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 transfer available per semester.

Australian Fee Places

If you’re enrolling in an Australian fee place, you’ll be charged tuition fees for each year that you are enrolled. Tuition fees are calculated according to your course and study load each semester. You may defer payment of your fees via FEE-HELP if you are eligible.

FEE-HELP

If you are enrolled in an Australian fee place, you may be eligible for a FEE-HELP loan from the Australian Government. FEE-HELP can cover all or part of your tuition fees. The Australian Government pays the amount of the loan directly to the University. You then repay your loan through the Australian taxation system, when your income is above the minimum repayment threshold.

Graduate Access Melbourne

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

Student Financial Aid

The University’s Student Financial Aid service provides students with advice and assistance, including:

- Student loans and bursaries/grants
- Student income support and other government payments
- Cost of living advice
- Budgeting and tax advice

Other costs

You will also need to consider general course costs (such as textbooks), student club memberships and Melbourne University Sport services.

If you are relocating or moving to Melbourne, remember to factor in the cost of living, housing, flights and visa application fees.

Indicative 2019 annual course fees

<table>
<thead>
<tr>
<th>Course</th>
<th>Domestic full fee</th>
<th>International full fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Certificate in Port Engineering</td>
<td>$16,512 per annum</td>
<td></td>
</tr>
<tr>
<td>Master of Engineering</td>
<td>$34,368 per annum</td>
<td>$43,008 per annum</td>
</tr>
<tr>
<td>Master of Engineering Systems</td>
<td>$34,368 per annum</td>
<td>$43,008 per annum</td>
</tr>
<tr>
<td>Master of Engineering Management</td>
<td>$34,368 per annum</td>
<td>$43,008 per annum</td>
</tr>
<tr>
<td>Master of Engineering Structures</td>
<td>$34,368 per annum</td>
<td>$43,008 per annum</td>
</tr>
<tr>
<td>Master of Environmental Engineering</td>
<td>$34,368 per annum</td>
<td>$43,008 per annum</td>
</tr>
<tr>
<td>Master of Information Systems</td>
<td>$33,216 per annum</td>
<td>$43,008 per annum</td>
</tr>
<tr>
<td>Master of Information Technology</td>
<td>$34,368 per annum</td>
<td>$43,008 per annum</td>
</tr>
<tr>
<td>Master of Philosophy – Engineering and IT</td>
<td>$34,368 per annum</td>
<td>$43,008 per annum</td>
</tr>
<tr>
<td>Doctor of Philosophy (Engineering and IT)</td>
<td></td>
<td>$43,008 per annum</td>
</tr>
</tbody>
</table>

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.

2 Domestic students are exempt from tuition fees under the Australian Government’s Research Training Program (RTP).
SCHOLARSHIP OPPORTUNITIES

Scholarships for engineering and IT students

We offer scholarships to students studying engineering and IT at undergraduate, graduate and PhD level. These scholarships are awarded competitively based on academic merit.

If you are an incoming student, you will be considered for relevant scholarships at the time of course offer and you do not need to make a separate application.

Once you are enrolled, you’ll receive access to scholarships and other funding opportunities to enrich your engineering and IT skills and experience.

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.

Engineering and IT Graduate Coursework Scholarships

<table>
<thead>
<tr>
<th>Scholarship</th>
<th>Eligible Courses</th>
<th>Amount awarded</th>
<th>Who is it for</th>
</tr>
</thead>
</table>
| Melbourne School of Engineering Foundation Scholarships | » Master of Engineering  
» Master of Information Technology  
» Master of Information Systems  
» Master of Energy Systems                                    | $10,000 – $20,000 per annum | Domestic and International students |
| Melbourne School of Engineering Scholarships      | All programs                                                                     | $5,000 – $20,000 per annum   | Domestic and International students |
| Melbourne Graduate Scholarship                    | All engineering and IT coursework programs                                        | 50% fee remission            | International students only       |
| JH Mirams Memorial Scholarships                      | Specialised masters programs:  
» Master of Energy Systems  
» Master of Engineering Management  
» Master of Engineering Structures  
» Master of Environmental Engineering | $5,000 – $10,000 per annum    | Domestic and International students |

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

How to apply for an undergraduate course

Including the Bachelor of Biomedicine, Commerce, Design and Science.

If you’re applying through VTAC, you’ll have the option of applying for one of our Graduate Degree Packages. These packages allow you to apply for both the Bachelor and the Masters degree as a school leaver, which guarantees your Commonwealth Supported Place into the Master of Engineering. Graduate Degree Packages into the Master of Engineering are available for the Bachelors of Biomedicine, Commerce, Design and Science for students with a 96 ATAR or higher.

If you don’t receive a Graduate Degree Package, but study one of our bachelor degrees, you’ll also be guaranteed a Commonwealth Supported Place (CSP) into the Master of Engineering, provided you achieve a 65% average and meet the maths and science entry requirements.

How to apply for a graduate coursework course

Application checklist

1. Check the entry requirements and make sure you’re eligible (See Quick Reference Guide on page 6 for a complete list of entry requirements or go to: handbook.unimelb.edu.au)

2. Ensure you meet the University’s English language requirements (see page 69)

3. Gather the supporting documentation listed below.

4. 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 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

<table>
<thead>
<tr>
<th>Semester 1: (February)</th>
<th>Semester 2: (July)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Professional Masters applicants: 30 November</td>
<td>All Professional Masters applicants: 30 April</td>
</tr>
<tr>
<td>Includes Master of Engineering, Master of Information Systems and Master of Information Technology</td>
<td>Includes Master of Engineering, Master of Information Systems and Master of Information Technology</td>
</tr>
<tr>
<td>International Specialised Masters applicants: 30 December</td>
<td>International Specialised Masters applicants: 30 April</td>
</tr>
<tr>
<td>Domestic Specialised Masters applicants: 30 January</td>
<td>Domestic Specialised Masters applicants: 30 May</td>
</tr>
<tr>
<td>Semester 1: Graduate Certificate in Port Engineering: 30 January</td>
<td>Semester 2: Graduate Certificate in Port Engineering: 30 April</td>
</tr>
</tbody>
</table>

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

*Applicants who have completed a Washington Accord accredited engineering degree and are applying for the same engineering discipline (excluding Biomedical and all “with business” streams) 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.\(^1\)

One of the following scores are required for entry to graduate courses. Required scores must be achieved in one sitting within 24 months before your application. [futurestudents.unimelb.edu.au/admissions/entry-requirements/language-requirements](http://futurestudents.unimelb.edu.au/admissions/entry-requirements/language-requirements)

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](http://hawthornenglish.edu.au/english-language-courses/umelbp)

\(^1\) English language requirements are the same for coursework and research programs delivered by the Melbourne School of Engineering and Faculty of Science.

<table>
<thead>
<tr>
<th></th>
<th>IELTS (academic English only)</th>
<th>TOEFL (paper-based test)*</th>
<th>TOEFL (internet-based test)*</th>
<th>Pearson Test of English (Academic)</th>
<th>Cambridge English Advanced / Certificate of Advanced English (CAE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English language requirements:</strong></td>
<td>6.5 (no band less than 6.0)</td>
<td>577 + TWE 4.5</td>
<td>79+ Writing 21; Speaking 18; Reading 13; Listening 13</td>
<td>58+ No communicative skill below 50</td>
<td>176+ No communicative skill below 169</td>
</tr>
<tr>
<td><strong>Alternative English language requirements</strong></td>
<td>6.0 (no band less than 5.5)</td>
<td>550 + TWE 4.0</td>
<td>60 + Writing 18; Speaking 16; Reading 8; Listening 7</td>
<td>50 No communicative skill below 42</td>
<td>69</td>
</tr>
</tbody>
</table>