CONTENTS

Why choose engineering and IT at Melbourne? 01
Professional accreditation 01
How to study engineering 02
How to study IT 03
Quick reference guide to undergraduate programs 04
Quick reference guide to graduate programs 05
Undergraduate options:
  Bachelor of Biomedicine 10
  Bachelor of Design 10
  Bachelor of Science 10
  Diploma in Informatics 10

Graduate Coursework:
  Master of Engineering 12
  Biomedical Engineering 14
  Chemical and Biochemical Engineering 16
  Civil and Structural Engineering 19
  Electrical and Electronic Engineering 23
  Energy 26
  Engineering Management 27
  Environmental Engineering 28
  Information Technology 31
  Materials Engineering 38
  Mechanical Engineering and Mechatronics 40
  Spatial Information 44

Research:
  Research courses 46
  Research opportunities by discipline 47
  Student opportunities 48
  Internships and industry projects 50
  How to apply for a course 52
  English language entry requirements 53
  Scholarship opportunities 54
  Fees and funding support 55
  Careers and employment 56
WHY CHOOSE ENGINEERING AND IT AT MELBOURNE?

The University of Melbourne attracts Engineering and IT students and staff of outstanding ability from around the world. You will benefit from:

» A world class education of greater technical depth and breadth.
» Professionally accredited courses, many recognised by more than one accreditation body.
» Career opportunities in Australia and overseas, with qualifications that are recognised internationally.

» Fundamental engineering and IT knowledge that will set you up for a successful career, not just your first job.
» Advanced analytical, technical and communications skills valued by industry.
» Competitive access to Australia’s leading entrepreneurship program – the Melbourne Accelerator Program.
» Industry based learning opportunities through internships and industry placements.
» Exposure to real-world industry and research projects that develop the problem-solving and team work skills crucial to industry success.

» Learning from academics, who are world leaders in their field, in an environment of cross-disciplinary research excellence, where important discoveries are being made.
» Generous scholarship programs that support diversity and acknowledge academic achievement.
» Being part of a community of scholars and practitioners, who are dedicated to creating a better world through engineering and IT.

Professional Accreditation

<table>
<thead>
<tr>
<th>Accreditation</th>
<th>Master of Engineering (in 11 technical specialisations)¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers Australia</td>
<td>Master of Engineering (with Business) (in 6 specialisations)²</td>
</tr>
<tr>
<td>EUR-ACE®</td>
<td>Master of Engineering (in 10 technical specialisations)</td>
</tr>
<tr>
<td></td>
<td>Master of Engineering (with Business) (in 5 specialisations)</td>
</tr>
<tr>
<td>Euro-Inf®</td>
<td>Master of Engineering (Software)</td>
</tr>
<tr>
<td></td>
<td>Master of Engineering (Software with Business)</td>
</tr>
<tr>
<td>The Australian Computer Society</td>
<td>Master of Information Systems</td>
</tr>
<tr>
<td></td>
<td>Master of Information Technology</td>
</tr>
<tr>
<td></td>
<td>Master of Engineering (Software)</td>
</tr>
<tr>
<td>Royal Institution of Chartered Surveyors</td>
<td>Master of Engineering (Spatial)</td>
</tr>
<tr>
<td></td>
<td>Master of Information Technology (Spatial)</td>
</tr>
<tr>
<td>Surveyors Registration Board of Victoria</td>
<td>Master of Engineering (Spatial)³</td>
</tr>
<tr>
<td>IChemE</td>
<td>Master of Engineering (Biochemical)</td>
</tr>
<tr>
<td></td>
<td>Master of Engineering (Chemical)</td>
</tr>
</tbody>
</table>

¹ The Master of Engineering (Spatial) is provisionally accredited, until sufficient students graduate from the program. All other technical specialisations are fully accredited.
² The Master of Engineering (with Business) program has been awarded full accreditation status by Engineers Australia in the following specialisations - Master of Engineering (Chemical with Business)/(Civil with Business) and (Mechanical with Business). The Master of Engineering (Biomedical with Business)/(Electrical with Business) and (Software with Business), will continue to be provisionally accredited until sufficient students have graduated from the program. Changes to accreditation status will be backdated, so that all graduates receive full accreditation when it is granted.
³ To be eligible to register as a licensed surveyor with the Surveyors Registration Board of Victoria, students must complete a prescribed set of spatial electives as follows: Property Law, Land Development, and Cadastral Surveying.
HOW TO STUDY ENGINEERING AT MELBOURNE

To become a professionally accredited engineer, you will complete five years of study, starting with an engineering major in a three-year undergraduate degree, followed by a two-year Master of Engineering. A longer Master of Engineering program, of up to three-years duration is available for students, who have not completed the preliminary engineering subjects required in their undergraduate degree, but who meet the maths and science entry requirements.

Study options towards becoming an engineer

<table>
<thead>
<tr>
<th>SCHOOL LEAVERS</th>
<th>MELBOURNE DEGREES (3 YEARS)</th>
<th>Bachelor of Biomedicine</th>
<th>Major:</th>
<th>» Bioengineering systems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bachelor of Design</td>
<td>Majors:</td>
<td></td>
<td>» Civil Systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Computing</td>
<td></td>
<td>» Digital Technologies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Mechanical Systems</td>
<td></td>
<td>» Spatial Systems</td>
</tr>
<tr>
<td></td>
<td>Bachelor of Science</td>
<td>Majors:</td>
<td></td>
<td>» Bioengineering Systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Chemical Systems</td>
<td></td>
<td>» Civil Systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Computing and Software Systems</td>
<td></td>
<td>» Electrical Systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Environmental Engineering Systems</td>
<td></td>
<td>» Spatial Systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Mechanical Systems</td>
<td></td>
<td>» Mechatronics Systems</td>
</tr>
</tbody>
</table>

Study options for career change or advancement

<table>
<thead>
<tr>
<th>YOUR BACHELOR DEGREE QUALIFICATION</th>
<th>YOUR CAREER AIM</th>
<th>OUR COURSE RECOMMENDATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Civil Engineering</td>
<td>Further your structural engineering expertise by studying with world leaders in ecologically sustainable buildings and structures that can withstand earthquakes, wind, fire and explosions.</td>
<td>Master of Engineering Structures</td>
</tr>
<tr>
<td>· Structural Engineering – and at least one year of relevant work experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· Electrical Engineering</td>
<td>Develop advanced knowledge and skills in optimal network design, management and security for modern telecommunications.</td>
<td>Master of Telecommunications Engineering</td>
</tr>
<tr>
<td>· Commerce</td>
<td>Open the door to a range of new and exciting career options in energy. Learn the business, science and technology of energy, and develop expertise in evaluating energy systems, making energy-related investment decisions, designing and implementing energy policy and managing greenhouse gas issues.</td>
<td>Master of Energy Systems</td>
</tr>
<tr>
<td>· Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· Engineering</td>
<td>Take the next step in your career, with a specialisation in either engineering management or engineering project management.</td>
<td>Master of Engineering Management</td>
</tr>
<tr>
<td>· Engineering</td>
<td>Discover the principles underpinning sustainable development and gain advanced professional skills in environmental management.</td>
<td>Master of Environmental Engineering</td>
</tr>
</tbody>
</table>

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

*Subject to Academic Board approval
# HOW TO STUDY IT AT MELBOURNE

## MELBOURNE DEGREES

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

## Exit to employment

## SCHOOL LEAVERS

<table>
<thead>
<tr>
<th>Other Bachelor Degree</th>
</tr>
</thead>
</table>

## 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</td>
<td></td>
</tr>
<tr>
<td>» Software</td>
<td>» Professional¹</td>
<td>» Distributed</td>
<td>» Science</td>
<td></td>
</tr>
<tr>
<td>» Software with Business</td>
<td>» Research²</td>
<td>» Computing</td>
<td>» Computer</td>
<td></td>
</tr>
<tr>
<td>» Spatial</td>
<td></td>
<td>» Human Computer Interaction³</td>
<td>» Interaction³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>» Spatial</td>
<td>» Spatial</td>
<td></td>
</tr>
</tbody>
</table>

## Exit to employment

as an IT professional, spatial expert or a accredited engineer

## Research Higher Degrees

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

¹ Elective streams are available in areas such as: IS Project and Change Management, IT Service Provision, Business Analytics, IT Innovation and Interaction Design, Spatial Information and eHealth.

² Research options are available for eligible students.

³ Subject to academic Board approval.
# QUICK REFERENCE GUIDE

## Undergraduate Programs with Engineering AND IT Pathways

Minimum Entry Requirements Guideline

<table>
<thead>
<tr>
<th>PROGRAM NAME</th>
<th>AUSTRALIAN VCE STUDENTS</th>
<th>IB DIPLOMA</th>
<th>GCE A LEVELS</th>
<th>MODE AND DURATION</th>
<th>ENTRY</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Biomedicine</td>
<td>Clearly in rank 2017: 96.80</td>
<td>38</td>
<td>AAB</td>
<td>Course work: 3 years full-time. Available part-time.</td>
<td>Sem 1</td>
<td>10</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td>Clearly in rank 2017: 85.00</td>
<td>31</td>
<td>BCC</td>
<td>Course work: 3 years full-time. Available part-time.</td>
<td>Sem 1, Sem 2</td>
<td>10</td>
</tr>
<tr>
<td>Bachelor of Design</td>
<td>Clearly in rank 2017: 88.25</td>
<td>31</td>
<td>BCC</td>
<td>Course work: 3 years full-time. Available part-time.</td>
<td>Sem 1, Sem 2</td>
<td>10</td>
</tr>
</tbody>
</table>

**WHAT ARE SUBJECT POINTS?**

A typical subject is worth 12.5 points. A full-time load for one year is 100 points, which is usually divided into two semesters of four subjects each.

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1Entry requirement information is provided as a guide only and cannot be guaranteed in 2018. More information is available at coursesearch.unimelb.edu.au

2 International IB students only. Australian IB students will have their score converted to a notional ATAR.
## Graduate Programs

### COURSEWORK

<table>
<thead>
<tr>
<th>COURSEWORK</th>
<th>MINIMUM ENTRY REQUIREMENTS</th>
<th>MODE, DURATION AND TYPE OF COURSE</th>
<th>ENTRY</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BIOMEDICAL ENGINEERING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (Biomedical) Accredited by Engineers Australia and EUR-ACE®</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects) of first year mathematics, specifically Calculus 2 and Linear Algebra and the equivalent of 25 points (2 subjects) of first year Biology, or 25 points of first year Chemistry, or 25 points of first year Physics.</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the engineering profession.</td>
<td>Sem 1, Sem 2</td>
<td>14</td>
</tr>
<tr>
<td>Master of Engineering (Biomedical with Business) Accredited by Engineers Australia® and EUR-ACE®</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CHEMICAL AND BIOCHEMICAL ENGINEERING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (Biomedical) Accredited by Engineers Australia, EUR-ACE® and IChemE</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects) of first-year mathematics, specifically Calculus 2 and Linear Algebra and 25 points (2 subjects) of first year Chemistry, specifically Chemistry 1 and Chemistry 2 at the University of Melbourne (or equivalent).</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the engineering profession.</td>
<td>Sem 1, Sem 2</td>
<td>16</td>
</tr>
<tr>
<td>Master of Engineering (Biomedical) Accredited by Engineers Australia, EUR-ACE® and IChemE</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects) of first-year mathematics, specifically Calculus 2 and Linear Algebra and 25 points (2 subjects) of first year Chemistry, specifically Chemistry 1 and Chemistry 2 at the University of Melbourne (or equivalent).</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the engineering profession.</td>
<td>Sem 1, Sem 2</td>
<td>17</td>
</tr>
<tr>
<td><strong>CIVIL AND STRUCTURAL ENGINEERING</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Master of Engineering (Civil) Accredited by Engineers Australia and EUR-ACE®</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects) of first-year mathematics, specifically Calculus 2 and Linear Algebra and 25 points (2 subjects) of first year science subjects (any).</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the engineering profession.</td>
<td>Sem 1, Sem 2</td>
<td>19</td>
</tr>
<tr>
<td>Master of Engineering (Civil with Business) Accredited by Engineers Australia and EUR-ACE®</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (Structural) Accredited by Engineers Australia and EUR-ACE®</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects) of first-year mathematics, specifically Calculus 2 and Linear Algebra and 25 points (2 subjects) of first year science subjects (any).</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the engineering profession.</td>
<td>Sem 1, Sem 2</td>
<td>20</td>
</tr>
<tr>
<td>Master of Engineering Structures</td>
<td>A four-year undergraduate degree in Structural or Civil Engineering with a weighted average of at least 65%. In addition, Civil Engineering graduates must have one year of relevant work experience, or 30% of the final year of the degree dedicated to structural engineering subjects.</td>
<td>Coursework: 1 year full-time. Available part-time. A specialised program of professional development for qualified engineers.</td>
<td>Sem 1, Sem 2</td>
<td>22</td>
</tr>
</tbody>
</table>
### COURSES

<table>
<thead>
<tr>
<th>COURSEWORK</th>
<th>MINIMUM ENTRY REQUIREMENTS1</th>
<th>MODE, DURATION2 AND TYPE OF COURSE</th>
<th>ENTRY</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ELECTRICAL AND ELECTRONIC ENGINEERING</strong></td>
<td></td>
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</tr>
<tr>
<td>Master of Engineering (Electrical) Accredited by Engineers Australia and EUR-ACE®</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects) of first-year mathematics, specifically Calculus 2 and Linear Algebra and 25 points (2 subjects) of first year Physics (or equivalent).</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the engineering profession.</td>
<td>Sem 1, Sem 2</td>
<td>23</td>
</tr>
<tr>
<td>Master of Engineering (Electrical with Business) Accredited by Engineers Australia and EUR-ACE®</td>
<td>A four year engineering degree in a related discipline (electrical, communications, computer, information) with a weighted average of at least 65%.</td>
<td>Coursework: 1 year full-time. Available part-time. A specialised program of professional development for qualified engineers.</td>
<td>Sem 1, Sem 2</td>
<td>25</td>
</tr>
<tr>
<td>Master of Telecommunications Engineering</td>
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<tr>
<td><strong>ENERGY</strong></td>
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</tr>
<tr>
<td>Master of Energy Systems</td>
<td>An undergraduate degree in a relevant discipline, such as Commerce, Science or Engineering, with a weighted average of at least 70%, including at least 12.5 points (1 subject) of mathematics, statistics or another quantitative subject at an appropriate level, or equivalent. OR An undergraduate degree in a relevant discipline, such as Commerce, Science or Engineering, with a weighted average of at least 65%, including at least 12.5 points (1 subject) of mathematics, statistics or another quantitative subject at an appropriate level and 2 years of continuous documented work experience in an applicable field, or equivalent.</td>
<td>Coursework: 1.5 years full-time. Available part-time. A specialised program of professional development for qualified engineers.</td>
<td>Sem 1</td>
<td>26</td>
</tr>
<tr>
<td><strong>ENGINEERING MANAGEMENT</strong></td>
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<tr>
<td>Master of Engineering Management</td>
<td>A four-year undergraduate degree in Engineering or an appropriate discipline with a weighted average of at least 65%. OR A three-year undergraduate degree in an appropriate discipline with a weighted average of at least 65% with at least two years of full-time documented and relevant work experience since graduation.</td>
<td>Coursework: 1 year full-time. Available part-time. A specialised program of professional development for qualified engineers.</td>
<td>Sem 1, Sem 2</td>
<td>27</td>
</tr>
<tr>
<td><strong>ENVIRONMENTAL ENGINEERING</strong></td>
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</tr>
<tr>
<td>Master of Engineering (Environmental) Accredited by Engineers Australia and EUR-ACE®</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects) of first-year mathematics, specifically Calculus 2 and Linear Algebra and 25 points (2 subjects) of first year science (any).</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the engineering profession.</td>
<td>Sem 1, Sem 2</td>
<td>28</td>
</tr>
<tr>
<td>Master of Environmental Engineering</td>
<td>A four-year undergraduate degree in Engineering with a weighted average of at least 65%. OR A three-year undergraduate degree in an appropriate discipline with a weighted average of at least 65% and at least two years of full-time, documented and relevant work experience.</td>
<td>Coursework: 1 year full-time. Available part-time. A specialised program of professional development for qualified engineers.</td>
<td>Sem 1, Sem 2</td>
<td>30</td>
</tr>
<tr>
<td>COURSES</td>
<td>MINIMUM ENTRY REQUIREMENTS</td>
<td>MODE, DURATION AND TYPE OF COURSE</td>
<td>ENTRY</td>
<td>PAGE NO.</td>
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<tr>
<td><strong>COURSEWORK</strong></td>
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<tr>
<td><strong>INFORMATION TECHNOLOGY</strong></td>
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</tr>
<tr>
<td>Master of Engineering (Software) Accredited by Engineers Australia, the Australian Computer Society and Euro-Inf®</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects) of first-year mathematics (any), and 25 points (2 subjects) of computing, computer science, programming (or equivalent).</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the engineering and IT profession.</td>
<td>Sem 1, Sem 2</td>
<td>31</td>
</tr>
<tr>
<td>Master of Engineering (Software with Business) Accredited by Euro-Inf® and Engineers Australia</td>
<td>An undergraduate degree in any discipline with a weighted average of at least 65%.</td>
<td>Coursework: 1-2 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the IT profession.</td>
<td>Sem 1, Sem 2</td>
<td>33</td>
</tr>
<tr>
<td>Master of Information Systems Accredited by the Australian Computer Society</td>
<td>An undergraduate degree in an IT related discipline with at least 70% weighted average in the final year (or equivalent) and at least 5 years, but preferably 10 years of documented relevant work experience. A personal statement of goals and employer referee reports are also required.</td>
<td>Coursework: 1 year full-time online only. Available part-time. A specialised program of professional development for experienced IS and IT practitioners.</td>
<td>4 online terms per annum See Handbook for term dates.</td>
<td>34</td>
</tr>
<tr>
<td>Master of Information Technology Accredited by the Australian Computer Society</td>
<td>An undergraduate degree in any discipline with a weighted average of at least 65% and at least one technical subject focused on computer programming (taken at any year level).</td>
<td>Coursework: 1-2 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the IT profession.</td>
<td>Sem 1, Sem 2</td>
<td>35</td>
</tr>
<tr>
<td>Master of Data Science</td>
<td>An undergraduate degree majoring in either computer science, data science or statistics, with a weighted average of at least 65% or equivalent, and a tertiary level 12.5 point subject from computer science or a related discipline with content focussed on computer programming, and the equivalent of 25 points (2 subjects) of first-year mathematics, including Calculus 2 (or equivalent).</td>
<td>Coursework: 2 years full-time. Available part-time. A specialised program of professional development.</td>
<td>Sem 1</td>
<td>36</td>
</tr>
<tr>
<td>Master of Science (Computer Science) Research pathway</td>
<td>An undergraduate degree with a major in computer science, with a weighted average of at least 65% in the major (or equivalent).</td>
<td>Coursework: 2 years full-time. Available part-time. Research entry program – suitable for applicants seeking entry to PhD or MPhil.</td>
<td>Sem 1, Sem 2</td>
<td>37</td>
</tr>
<tr>
<td><strong>MATERIALS ENGINEERING</strong></td>
<td></td>
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</tr>
<tr>
<td>Master of Engineering (Materials)</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects of first-year mathematics and 25 points made up of either 2 chemistry subjects, 1 chemistry and 1 physics or 2 physics subjects.</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the engineering profession.</td>
<td>Sem 1, Sem 2</td>
<td>38</td>
</tr>
<tr>
<td>COURSES</td>
<td>MINIMUM ENTRY REQUIREMENTS¹</td>
<td>MODE, DURATION² AND TYPE OF COURSE</td>
<td>ENTRY NO.</td>
<td></td>
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<td>---------------------------------------------</td>
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<tr>
<td>MECHANICAL ENGINEERING AND MECHATRONICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (Mechanical)</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects) of first-year mathematics, specifically Calculus and Linear Algebra and 25 points (2 subjects) of first year physics (or equivalent).</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the engineering profession.</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Accredited by Engineers Australia and EUR-ACE®</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (Mechanical with Business)</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects) of first-year mathematics, specifically Calculus and Linear Algebra and 25 points (2 subjects) of first year physics (or equivalent).</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the spatial information profession.</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Accredited by Engineers Australia and EUR-ACE®</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (Mechatronics)</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects) of first-year mathematics (any) and 25 points (2 subjects) of first year science (any).</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the spatial information profession.</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Accredited by Engineers Australia, EUR-ACE®, and the Royal Institution of Chartered Surveyors.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPATIAL INFORMATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (Spatial)</td>
<td>An undergraduate degree with a weighted average of at least 65% including the equivalent of 25 points (2 subjects) of first-year mathematics (any) and 25 points (2 subjects) of first year science (any).</td>
<td>Coursework: 2-3 years full-time. Available part-time. Professional entry program – suitable for applicants seeking entry into the spatial information profession.</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Accredited by Engineers Australia, EUR-ACE®, and the Royal Institution of Chartered Surveyors.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### RESEARCH PROGRAMS

**Master of Philosophy – Engineering**

A four-year bachelor degree in a relevant discipline which includes a substantial research component equivalent to at least 25% of one year of full-time study and have achieved a minimum weighted average of 75% in the final year subjects or equivalent or A masters degree in a relevant discipline which includes a substantial research component equivalent to at least 25% of one year of full-time study and achieved a minimum weighted average of 75% or equivalent or A qualification and professional experience considered to be equivalent

Research: 1.5 to 2 years full-time. Available part-time.

**Doctor of Philosophy – Engineering**

A four-year bachelor degree in a relevant discipline which includes a substantial research component equivalent to at least 25% of one year of full-time study and have achieved a minimum weighted average of 75% in the final year subjects or equivalent or A masters degree in a relevant discipline which includes a substantial research component equivalent to at least 25% of one year of full-time study and achieved a minimum weighted average of 75% or equivalent or A qualification and professional experience considered to be equivalent

Research: 3 years full-time. Available part-time.

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1 Minimum entry requirements listed are a guide only and do not guarantee entry into the course. Full entry requirements are available in the University of Melbourne Handbook at handbook.unimelb.edu.au. Required grades listed are calculated as equivalent to University of Melbourne grades. Calculus 2 is a University of Melbourne subject, details at handbook.unimelb.edu.au/subjects/mast10006 for details. Linear Algebra is a University of Melbourne subject, details at handbook.unimelb.edu.au/subjects/mast10007.

2 Advanced standing for students with a first degree or prior study in engineering will be determined upon application. You must supply an academic transcript (original or certified copy) with a copy of subject descriptions you have completed from your institution's subject handbook.

3 This specialisation within the Master of Engineering (with Business) has received provisional accreditation from Engineers Australia. Full accreditation will be granted when sufficient students graduate from the program. Accreditation status will be backdated, so that all graduates receive full accreditation.

4 Students who undertake research study within a professional entry program may also be eligible to undertake a research degree.

5 This course is planned for commencement in 2018, subject to Academic Board approval. Professional accreditation will be sought.

6 Provisionally accredited by Engineers Australia, until sufficient students graduate from the program.
UNDERGRADUATE OPTIONS

Engineering via the Bachelor of Biomedicine
Biomedicine is concerned with the processes and systems that create, sustain and threaten life. Graduates of the Bachelor of Biomedicine will play leading roles in providing innovative solutions to health problems. This pathway into biomedical engineering is ideal for students looking to complement their technical skills with medical knowledge.

Engineering major available:
» Bioengineering Systems
Duration: 3 years full-time
Fee Type: CSP and international fee

Students who have successfully completed the Bachelor of Biomedicine with a Bioengineering Systems major will be eligible for the Master of Engineering and IT, which leads to professional accreditation as an engineer.

Engineering and IT via the Bachelor of Science
The Bachelor of Science is the most flexible option for students interested in engineering or technology, offering the greatest range of subject and discipline choice. The Bachelor of Science offers engineering and IT specialisations, which will lead to the two year Master of Engineering and professional accreditation as an engineer, or to the Master of Information Technology or Master of Information Systems courses.

Engineering and IT majors available:
» Bioengineering Systems
» Chemical Systems
» Civil Systems
» Computing and Software Systems
» Data Science
» Electrical Systems
» Environmental Engineering Systems
» Mechanical Systems
» Mechatronics Systems
» Spatial Systems
Duration: 3 years full-time
Fee Type: CSP and international fee

Students who have successfully completed a Bachelor of Science with an engineering major will be eligible for the Master of Engineering which leads to professional accreditation as an engineer.

How to study Engineering at Melbourne through other University of Melbourne courses
University of Melbourne graduates, who have not completed an engineering pathway course, but would like to study graduate engineering, will need to successfully complete four breadth subjects to meet the entry requirements for the three-year Master of Engineering. These subjects are:
» Calculus 2, 12.5 points
» Linear Algebra, 12.5 points
» 2 x first year level 1 science (relevant to the engineering stream of interest), 12.5 points each (25 points in total)
These subjects are all level 1 subjects. As the University’s breadth rules do not allow completion of more than 37.5 points (3 subjects) of level 1 subjects, students may be required to take one additional subject via the Community Access Program (CAP).

Offer for Bachelor of Commerce students
Students commencing the Bachelor of Commerce at the University of Melbourne in 2018 and 2019, who have completed Calculus 2 and the two relevant science subjects, with a minimum course weighted average of 65% will be eligible to undertake one subject via the CAP free of charge.

IT via the Diploma in Informatics
Complement your course with a Diploma in Informatics to equip yourself with the IT knowledge that employers seek.

In this course you will:
» Learn tools and technologies to solve information-related problems in a range of application areas
» Develop programming skills
» Design web-based solutions
» Develop the skills necessary to work effectively with people in other disciplines.

Informatics opens up career opportunities in finance, economics, biology, geology, chemistry, engineering, health, communications and social media.

The Diploma in Informatics adds one semester to a normal three-year course, allowing you to graduate with a degree and diploma in 3.5 years.

The Diploma provides a pathway to the following graduate programs:
» Master of Engineering (Software)
» Master of Engineering (Software with Business)
» Master of Information Systems
» Master of Information Technology
» Master of Science (Bioinformatics)
Cornelis Bosua undertook a Diploma in Informatics, while he was studying the Bachelor of Commerce. Now he works as a Data Analyst for Australian analytics firm, Quantium.

“Studying the Diploma in Informatics was the best decision for me. It put me ahead of my classmates, when it came time to look for work.

“I would recommend the Diploma in Informatics, as it will give you a competitive edge in today’s workplace.”
MASTER OF ENGINEERING

Technical and ‘with business’ options

The professional Master of Engineering offers an accredited engineering qualification for graduates seeking entry into the engineering profession, in the following 11 technical specialisations: Biomedical, Biochemical, Chemical, Civil, Electrical, Environmental, Spatial, Mechanical, Mechatronics, Software and Structural Engineering and six ‘with business’ specialisations in Biomedical, Chemical, Civil, Electrical, Mechanical and Software Engineering.

Students who undertake the Master of Engineering (with Business) replace five advanced technical electives with five business subjects that have been tailored specifically for engineering students and co-developed with Melbourne Business School.

The Master of Engineering will suit:

- Graduates of the University of Melbourne with an appropriate Engineering Systems major.
- Holders of an undergraduate degree from any university with the appropriate maths and science background.
- Engineers wishing to upgrade their skills and knowledge or make a career change.

The Master of Engineering offers you:

- An advanced program in a broad range of technical and ‘with business’ specialisations
- Dual accreditation for professional recognition around the world – the first postgraduate engineering course in Australia to be awarded European accreditation through EUR-ACE®, as well as being accredited by Engineers Australia, which provides international recognition in 18 countries around the world.
- A curriculum, developed in consultation with industry and exposure to industry through lectures, industry projects and competitive entry to a 25 point Industry Based Learning subject.
- Practical experiences through hands-on workshops, design projects, field trips and site visits.
- Cutting-edge research projects with and world-class researchers.
- Professional skills development including teamwork and communication.
- A generous scholarship program.

Master of Engineering – advanced standing and duration

The Master of Engineering is a two to three year program depending upon your academic background. The first 100 points (one year) is made up of foundation study tailored to students from non-engineering backgrounds. Students with some prior study in engineering, or those with an engineering degree seeking to change engineering disciplines, may be eligible for advanced standing of up to 100 points and will complete the Master of Engineering in two years. Students can meet this requirement either by completion of a prescribed University of Melbourne engineering systems major within a Bachelor of Biomedicine, Bachelor of Science or Bachelor of Design, or via an equivalent study of engineering from another institution that is approved by the Melbourne School of Engineering.

Sample plan: Master of Engineering (Chemical with Business)¹

Foundation subjects for students without engineering subjects in the undergraduate degree.

<table>
<thead>
<tr>
<th>Sem 1</th>
<th>Reactor Engineering</th>
<th>Material and Energy Balances</th>
<th>Engineering Mathematics</th>
<th>Transport Processes</th>
</tr>
</thead>
</table>

Usual entry point for applicants from an engineering background, who have received 100 points advanced standing.

<table>
<thead>
<tr>
<th>Sem 1</th>
<th>Engineering Practice and Communication / Creating Innovative Engineering¹</th>
<th>Bioprocess Engineering</th>
<th>Particle Mechanics and Processing</th>
<th>Process Equipment and Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sem 2</td>
<td>Process Dynamics and Control</td>
<td>Chemical Engineering elective</td>
<td>The World of Engineering Management</td>
<td>Engineering Contracts and Procurement</td>
</tr>
<tr>
<td>Sem 1</td>
<td>Chemical Engineering Research Project / Industry Project</td>
<td>Process Engineering</td>
<td>Economic Analysis for Engineers</td>
<td></td>
</tr>
<tr>
<td>Sem 2</td>
<td>Chemical Engineering Design Project</td>
<td>Marketing Management for Engineers</td>
<td>Strategy Execution for Engineers</td>
<td></td>
</tr>
</tbody>
</table>

¹ Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-eng
² 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.
The University of Melbourne

#1 in Australia

#28 in the world

for Engineering and Technology

QS World University Rankings by Broad Subject Area 2017
Biomedical Engineering has enormous potential to make a positive impact on human health. Biomedical engineers address healthcare problems from a unique perspective, blending an understanding of biomedical science with specialist knowledge of engineering techniques and problem-solving skills.

Courses in Biomedical Engineering
» Master of Engineering (Biomedical)
» Master of Engineering (Biomedical with Business)

Master of Engineering (Biomedical) or (Biomedical with Business)
You will focus on human systems, the design and operation of devices and processes, and the application of engineering skills to new medical treatments, instruments and machines. Our reputation for biomedical innovation in areas such as medical bionics, prostheses and tissue engineering, ensures you are learning from leaders in the field, who are working on exciting projects aimed at solving major health dilemmas. These professional-entry-level courses will lead to a formal qualification in biomedical engineering.

Career Outcomes
Biomedical engineers: develop new drug therapies; study the electrical and/or mechanical activity of organs such as the brain, heart, muscle and bone; build artificial organs, limbs, heart valves and bionic implants to replace lost function; develop orthopaedic devices to treat bone and joint conditions; and grow living tissues to replace failing organs. Employment opportunities exist in the biotechnology, biomedical, pharmaceutical, medical device and equipment industries, in research and innovation, in the health services and hospitals, in government and consulting, and for companies such as Cochlear, Sanofi, Cell Therapies, Compumedics, GlaxoSmithKline and Zimmer Biomet.

“I enjoy many aspects of science and technology, so the multidisciplinary nature of biomedical engineering really appealed to me. I am inspired by the fact that engineering solutions can have a real impact on people’s lives. I want to create technical solutions that directly improve the wellbeing of others.”

SARAH FINK
Master of Engineering (Biomedical)
### Studying Biomedical Engineering in your undergraduate degree

Sample plan: Bachelor of Biomedicine with a major in Bioengineering Systems

<table>
<thead>
<tr>
<th>Year 1</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>Year 1</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 2</td>
<td>Sem 1</td>
<td>Biomechanical Physics and Computation</td>
<td>Molecular and Cellular Biomedicine</td>
<td>Breadth</td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>Sem 2</td>
<td>Engineering Mathematics</td>
<td>Human Structure and Function</td>
<td>Breadth</td>
<td></td>
</tr>
<tr>
<td>Year 3</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 3</td>
<td>Sem 2</td>
<td>Biotransport Processes</td>
<td>Biosystems Design</td>
<td>Frontiers in Biomedicine</td>
<td>Breadth</td>
</tr>
</tbody>
</table>

### Studying Biomedical Engineering in your graduate degree

Sample plan: Master of Engineering (Biomedical)

Foundation subjects for students without engineering subjects in the undergraduate degree.

<table>
<thead>
<tr>
<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>Sem 2</td>
<td>Chemistry 1</td>
<td>Biotransport Processes</td>
<td>Biosystems Design</td>
<td>Bioengineering elective</td>
</tr>
</tbody>
</table>

Usual entry point for applicants from an engineering background, who have received 100 points advanced standing.

### Usual entry point for applicants from an engineering background

<table>
<thead>
<tr>
<th>Sem 1</th>
<th>Clinical Trials and Regulations</th>
<th>Bioinstrumentation</th>
<th>Introduction to Biomechanics</th>
<th>Bioengineering elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sem 2</td>
<td>Biomaterials</td>
<td>Engineering Practice and Communication / Creating Engineering</td>
<td>Anatomy and Physiology for Engineers</td>
<td>Bioengineering elective</td>
</tr>
<tr>
<td>Sem 1</td>
<td>Biomedical Engineering Capstone subject</td>
<td>Biomedical Engineering Management</td>
<td>Bioengineering elective</td>
<td>Approved elective</td>
</tr>
<tr>
<td>Sem 2</td>
<td>Biomedical Engineering Design Project</td>
<td>Approved elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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1 Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-eng
2 Sample plans assume entry requirements for Calculus 2 and Linear Algebra have been met.
3 Master of Engineering (Biomedical with Business) students will replace two Approved electives, two Bioengineering electives and Biomedical Engineering Management with five business subjects.
4 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.
CHEMICAL AND BIOCHEMICAL ENGINEERING

Chemical and Biochemical Engineering creates solutions to the most pressing problems the world is facing in relation to energy, food, water and the environment.

Courses in Chemical and Biochemical Engineering
» Master of Engineering (Biochemical)
» Master of Engineering (Chemical)
» Master of Engineering (Chemical with Business)

Master of Engineering (Biochemical)
You will design novel bioproducts and bioprocesses that will have applications in food and beverage engineering, production of pharmaceuticals and cosmetics, and environmental remediation. You will benefit from interaction with industry representatives and work on a design or research project, which may take the form of an industrial placement. This professional-entry-level course will lead to a formal qualification in biochemical engineering.

Career Outcomes
Biochemical engineers explore the development of large-scale processes using microbial, plant or animal cells and design novel bioprocesses that have applications in the production of bioproducts, such as cosmetics, cheese, beer, wine, biofuels and pharmaceuticals. You may enter a variety of industries including: food and beverage processing; pharmaceutical manufacture; cosmetics; biological waste treatment and bioremediation. Employment opportunities exist with companies, such as CSL Limited, GlaxoSmithKline (GSK), National Foods, Nestlé, Mondelez International and Melbourne Water and with organisations such as the Environmental Protection Authority (EPA).

Open a pathway to niche industries

“Biochemical engineering can provide pathways to niche industries, such as food, water and pharmaceuticals. I’ve had the opportunity to explore biochemical engineering beyond the lecture theatre, undertaking vacation work in the dairy industry with Dairy Innovation Australia Ltd, and going on site tours to Siemens, CSIRO and GSK.”

NICHOLAS ADRIAN BUTTIGIEG
Master of Engineering (Biochemical)
Chemical engineers invent, design and implement industrial-scale processes through which raw materials are converted into products that we rely on every day, such as fuel, plastics, food additives, fertilisers, paper and pharmaceuticals. You will develop practical, laboratory-based skills, combined with expertise in computing and simulation, while you are guided by internationally renowned experts in areas, such as nanotechnology, carbon capture and storage, minerals and materials, natural gas processing and solvent extraction. You will have the opportunity to complete an industry project in conjunction with a relevant industry partner. These professional-entry-level courses will lead to a formal qualification in chemical engineering.

**Career Outcomes**
Career opportunities in chemical engineering are extensive and exist in petrochemical, minerals processing, mining, chemical manufacturing, natural gas, explosives and fertiliser production and environmental consulting. Our graduates are employed in a diverse range of industries, for companies including: ExxonMobil, BP, PETRONAS, Schlumberger, Nyrstar, BHP Billiton, Rio Tinto, Worley Parsons, ThyssenKrupp, WSP Parsons Brinckerhoff, Wood Group PSN, GHD, AECOM, Mars and Unilever.

Get industry ready, while you study

"I was impressed with the industry exposure I had during the course of my study. I worked on an actual current project for Rio Tinto, critically analysing a problem, and using the resources provided by both the University and Rio Tinto to suggest a solution."

**SHOHINI SHOME**
CSL Limited
**Studying Chemical Engineering in your undergraduate degree**

Sample plan: Bachelor of Science with a major in Chemical Systems

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

**Studying Biochemical Engineering in your graduate degree**

Sample plan: Master of Engineering (Biochemical)

Foundation subjects for students without engineering subjects in the undergraduate degree.

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

Usual entry point for applicants from an engineering background, who have received 100 points advanced standing.

<table>
<thead>
<tr>
<th>Sem 1</th>
<th>Engineering Practice and Communication / Creating Innovative Engineering</th>
<th>Particle Mechanics and Processing</th>
<th>Bioprocess Engineering</th>
<th>Chemical Engineering Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sem 2</td>
<td>Biochemical and Pharmaceutical Engineering</td>
<td>Process Dynamics and Control</td>
<td>Biochemical Engineering Research Project or Industry Project</td>
<td></td>
</tr>
<tr>
<td>Sem 1</td>
<td>Food Engineering</td>
<td>Process Equipment Design</td>
<td>Process Engineering</td>
<td>Biochemical Engineering elective</td>
</tr>
<tr>
<td>Sem 2</td>
<td>Biochemical Engineering Design Project</td>
<td>Biochemical Engineering elective</td>
<td>Biochemical Engineering elective</td>
<td></td>
</tr>
</tbody>
</table>

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1 Sample plans assume entry requirements for Calculus 2 have been met. See handbook.unimelb.edu.au/subjects/mast10006
2 Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-eng
3 Master of Engineering (Chemical with Business) students will replace one elective and four other subjects with five business subjects.
4 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 engineers plan, design and construct the built environment, providing essential services and infrastructure. From restoring infrastructure after natural disasters to building structures that can withstand extreme events, civil and structural engineers have a huge impact on the world.

Courses in Civil and Structural Engineering
- Master of Engineering (Civil)
- Master of Engineering (Civil with Business)
- Master of Engineering (Structural)
- Master of Engineering Structures

Master of Engineering (Civil) or (Civil with Business)
These professional-entry-level courses will lead to a formal qualification in civil engineering and cover many facets of civil engineering including sustainable urban developments, environmental protection, the conservation of energy and water resources, as well as the traditional disciplines of structural, geotechnical, hydraulic and transportation engineering. The program is led by an internationally-recognised team of academics and is designed to produce a broader and deeper approach to civil engineering by incorporating extra education in sustainability design and environmental processes.

Career Outcomes
As a civil engineer you could design and create a range of solutions, in areas ranging from sustainable urban development, environmental protection, conservation of energy and water resources, to geotechnical, hydraulic or transport engineering. Career opportunities exist in construction, property, infrastructure, consulting, mining, land, water and waste, for a wide range of organisations including manufacturing companies, research organisations, academic institutions, mining companies, energy agencies, local, state and federal governments and local authorities. Equipped with a diverse skill set across a range of areas, you will be highly employable and have opportunities to work both locally and internationally with companies, such as John Holland, Jacobs, Aurecon, Brookfield Multiplex, CPB Contractors and many others.

Construct a real-world career
Master of Engineering (Civil) graduate William Thay chose to make the switch to engineering, after studying and working in pharmacy.

“I wanted to become an engineer because the world is on the brink of great change, where the expertise of engineers will be needed to make life more sustainable.”

WILLIAM THAY
Construction Management Graduate
ProBuild
Be inspired by your work

“I am inspired by the structures that define and facilitate the cities that we live in, as well as the innovative disruptions and technological advancements of today. My summer internship with Arup was an amazing experience that gave me a glimpse of what it is like to practice as a structural engineer, confirming this is the career for me.”

CARLO GUILLERMO
Master of Engineering (Structural)

Master of Engineering (Structural)

Structural engineers design, develop and evaluate materials and systems used in constructing load-bearing infrastructure, such as roads, bridges, buildings, railway lines and dams. You will be guided by researchers, who are recognised internationally for their expertise in high-rise structures, and earthquake and blast-resistant technologies.

You will have access to some highly specialised subjects in structural engineering, including the design of resilient structures to counter extreme conditions. Design seminars, field work and workshops provide opportunities to work with industry professionals. This professional-entry-level course will lead to a formal qualification in structural engineering.

Career Outcomes

Career opportunities exist in a variety of roles related to the design and development of structures, their longevity, and their ability to withstand extremes, such as earthquake, high winds, blast or fire, and the risk assessment of infrastructure, for government, consultancies and industry. You will find employment with national and global companies such as Arup, Bonacci Group, Brookfield Multiplex, GHD, WorleyParsons and AECOM.
### Studying Civil Engineering in your undergraduate degree

**Sample plan: Bachelor of Design with a major in Civil Systems**

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

### Studying Civil Engineering in your graduate degree

**Sample plan: Master of Engineering (Civil)**

Foundation subjects for students without engineering subjects in the undergraduate degree.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<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>

Usual entry point for applicants from an engineering background, who have received 100 points advanced standing.

<table>
<thead>
<tr>
<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>Sem 2</td>
<td>Engineering Project Implementation</td>
<td>Civil Hydraulics</td>
<td>Transport Systems</td>
<td>Engineering Practice and Communication / Creating Innovative Engineering^4</td>
</tr>
<tr>
<td>Sem 1</td>
<td>IE Research Project 1</td>
<td>Risk Analysis</td>
<td>Integrated Design (Civil)</td>
<td>Civil Engineering elective</td>
</tr>
<tr>
<td>Sem 2</td>
<td>Construction Engineering</td>
<td>Civil Engineering elective</td>
<td>Civil Engineering elective</td>
<td></td>
</tr>
</tbody>
</table>

### Studying Structural Engineering in your graduate degree

**Sample plan: Master of Engineering (Structural)**

Foundation subjects for students without engineering subjects in the undergraduate degree.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<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>

Usual entry point for applicants from an engineering background, who have received 100 points advanced standing.

<table>
<thead>
<tr>
<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^4</th>
</tr>
</thead>
<tbody>
<tr>
<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>
<tr>
<td>Sem 1</td>
<td>IE Research Project 1</td>
<td>Geotechnical Engineering</td>
<td>Structural Engineering elective</td>
<td>Structural Engineering elective</td>
</tr>
<tr>
<td>Sem 2</td>
<td>Construction Engineering</td>
<td>Integrated Design (Infrastructure)</td>
<td>Structural Engineering elective</td>
<td></td>
</tr>
</tbody>
</table>

^1 Sample plans assume entry requirements for Calculus 2 have been met. See handbook.unimelb.edu.au/subjects/mast10006
^2 Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-eng
^3 Master of Engineering (Civil with Business) students will replace five subjects with five business subjects.
^4 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

The Master of Engineering Structures provides a unique opportunity for both graduate and experienced civil and structural engineers to learn from internationally recognised experts in structural engineering. You will further your knowledge in the advanced design of engineering structures, in particular, the design of ecologically sustainable and resilient structures. You will gain a thorough understanding of structural systems, conceptual design and advanced analysis techniques and have access to a dynamic mix of guest and local seminar presentations on leading research topics. This program will suit qualified engineers wanting to upskill, change their career, or extend their current knowledge of structural engineering.

Career Outcomes

Career opportunities exist in a variety of roles related to the design of structures, their longevity, and their ability to withstand extreme conditions, such as earthquakes, high winds, explosions, fire and other high-impact loads. In addition to designing, building and assessing new structures, you may be involved in the risk assessment of existing structures. Your advanced knowledge of the theory and practice of structural engineering will be an asset in industry, enhancing your technical, management and leadership skills. You will find employment with national and global companies such as Arup, AECOM, Bonacci Group, Hyder Consulting, Cardno and Beca.

Course Structure

Students will complete a one year (100 point) full-time (or part-time equivalent) program, consisting of eight subjects of 12.5 points each. Students take two core subjects (25 points), a minimum of three structural engineering electives (37.5 points), and up to three infrastructure engineering electives (37.5 points).

Core subjects

» High Rise Structures
» Structural Theory and Design 3

Structural Engineering electives

» Earthquake Resistant Design of Buildings
» Extreme Loading of Structures

Infrastructure Engineering electives

» 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

Please note: subjects offered may change from year to year. Refer to University Handbook for up-to-date subject listings at: handbook.unimelb.edu.au/courses/746st

Challenge yourself every day

“I chose the University of Melbourne because I wanted to go to the best university in Australia and learn from the best lecturers and tutors. I did the Master of Engineering Structures because I wanted to learn key aspects of structural engineering, things that many engineers would not know about, such as earthquake design and explosive design. It is very satisfying solving challenges and hurdles, or coming up with solutions that no one has thought of.”

RINAY SINGH
Structural Engineer
Cardno
Electrical and electronic engineers play a key role in the design, implementation and management of electrical systems to solve practical problems, such as systems for automation, surveillance, energy conversion, power distribution, telecommunications and information processing.

Courses in Electrical and Electronic Engineering
- Master of Engineering (Electrical)
- Master of Engineering (Electrical with Business)
- Master of Telecommunications Engineering

Master of Engineering (Electrical) or (Electrical with Business)
You will develop technical skills through fundamental theory and practical laboratory work, learning from leading experts, who are working on a range of groundbreaking projects from developing bionic implants and creating models and devices to better understand and treat diseases, such as autism and epilepsy, to creating energy efficient telecommunication systems and deploying sensor networks to monitor and manage the environment. You will have the opportunity to take part in a research project in electronic and photonic system design, telecommunications, power networks, signal processing and automatic control systems. These professional-entry-level courses will lead to a formal qualification in electrical engineering.

Career Outcomes
Design and create a range of technical solutions, in areas ranging from medical bionics and neural engineering, to energy conversion, power distribution and communications networks. Career opportunities exist as technical specialists and managers in fields such as the power industry, telecommunications, electronics, biotechnology, manufacturing, automation, transport, defence and the computer industry, as well as roles in research and innovation. You will find employment with companies such as Telstra, Siemens, Airbus Group Australia Pacific, BHP Billiton, Chevron, Alcoa, Compumedics and Cochlear Ltd.

Engineer an exciting career
Danielle Grant has commenced work as an electrical engineer at ExxonMobil’s Altona Refinery, after completing a Bachelor of Science majoring in electrical systems and a Master of Engineering (Electrical with Business).

“What I love most about engineering is the potential scope of work I may be involved in. Being an engineer is like being a trained problem solver and these skills will continue to be useful in whatever I pursue. It also provides a platform where I may be innovative and constantly challenged, which I find exciting.”

DANIELLE GRANT
Electrical Engineer
ExxonMobil

#1 in Australia for Electrical Engineering
QS World University Rankings by Subject 2017
### Studying Electrical and Electronic Engineering in your undergraduate degree

Sample plan: Bachelor of Science with a major in Electrical Systems\(^1,2\)

<table>
<thead>
<tr>
<th>Year 1</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>Year 1</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>Year 2</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>Digital Systems Design</td>
<td>Electrical Network Analysis and Design</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td>Year 3</td>
<td>Sem 2</td>
<td>Electrical Device Modelling</td>
<td>Signals and Systems</td>
<td>Recommended Science elective (Electronic System Implementation)</td>
<td>Breadth</td>
</tr>
</tbody>
</table>

### Studying Electrical and Electronic Engineering in your graduate degree

Sample plan: Master of Engineering (Electrical)\(^2,3\)

Foundation subjects for students without engineering subjects in the undergraduate degree.

<table>
<thead>
<tr>
<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>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(^5)</td>
</tr>
</tbody>
</table>

Usual entry point for applicants from an engineering background, who have received 100 points advanced standing.

<table>
<thead>
<tr>
<th>Sem 1</th>
<th>Probability and Random Models</th>
<th>Digital Systems Design(^4)</th>
<th>Electronic Circuit Design</th>
<th>Introduction to Power Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sem 2</td>
<td>Communication Systems</td>
<td>Signal Processing</td>
<td>Embedded System Design</td>
<td>Control Systems</td>
</tr>
<tr>
<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>Sem 2</td>
<td>Electrical Engineering elective</td>
<td>Electrical Engineering elective</td>
<td>Approved elective</td>
<td></td>
</tr>
</tbody>
</table>

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\(^1\) Sample plans assume entry requirements for Calculus 2 have been met. See handbook.unimelb.edu.au/subjects/mast10006

\(^2\) Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-eng

\(^3\) Master of Engineering (Electrical with Business) students will replace five electives with five business subjects.

\(^4\) 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.

\(^5\) University of Melbourne pathway students are recommended to take Creating Innovative Engineering. Students undertaking a 3 year (300 point) Master of Engineering will take one of these subjects in the first year of their course.
Master of Telecommunications Engineering

Electrical engineering graduates wishing to specialise in telecommunications will develop advanced design and analytical skills, as well as a broad understanding of telecommunications networks. You will learn from leading industry professionals and influencers in telecommunications in Australia and worldwide. This program will suit qualified electrical engineers wanting to upskill, change their career, or extend their current knowledge of telecommunications engineering.

Career Outcomes

As a telecommunications engineer you will design and develop emerging communications technology, digital communications and signal processing, wireless systems and telecommunications hardware and software. Career opportunities exist in the design and development of emerging communications technology, digital communications and signal processing, wireless systems and the development of telecommunications hardware and software. Your skills will be in demand in Australia and overseas, working for telecommunications companies such as Telstra, Siemens, Ericsson and Nokia.

Course Structure

You will complete a one year (100 point) full-time (or part-time equivalent) program, consisting of a choice of eight subjects of 12.5 points each. Up to eight subjects can be selected from Master of Telecommunications Engineering electives, at least two of which must be chosen from the subjects marked with an asterisk.*

» Network Design and Optimisation*
» Signalling and Network Management*
» Directed Studies*
» Mobile and Wireless Networks and Design*
» Broadband Access Networking and Design*
» Optical Networking and Design*
» Multimedia Content Delivery*
» Internet Engineering
» Wireless Communication Systems
» Lightwave Systems
» Advanced Communication Systems
» Business of Telecommunications

Please note: subjects offered may change from year to year. Refer to University Handbook for up-to-date subject listings at: handbook.unimelb.edu.au/courses/364aa

Contribute to cutting edge technology

Fernando Jurado decided to study telecommunications engineering because it is a fast growing field that is making a big contribution to technological development.

“The Master of Telecommunications Engineering has provided me with analytical, design, communications, teamwork, research and technological skills to solve problems related to telecommunications and engineering.”
The Master of Energy Systems brings together engineers, scientists and specialists in economics, finance and energy systems to provide a unique course that will prepare you for a role in the energy sector.

Master of Energy Systems
This course is strongly supported by an Industry Advisory Panel that includes senior representatives from industry and government, ensuring that students benefit from a relevant program, internship opportunities and contact with future employers. You will learn from specialists in renewable, thermal and nuclear energy and transport. You will acquire the skills to make informed decisions that incorporate technical, economic, environmental and social considerations. This program will suit graduates of engineering, science, business, finance and economics, looking to make a career change to the energy sector.

Career Outcomes
The global energy sector needs more qualified experts to manage how we source, store, transport and use energy.

You will develop skills in:
» Analysing energy systems from technical, commercial and policy standpoints
» Energy finance, economics and energy markets
» The operation of renewable and non-renewable energy systems
» Auditing different types of energy systems, including carbon emissions
» Combining technical and commercial knowledge to guide business decision-making.

You will find employment in industry and government in the following areas:
» Evaluating the technical and economic performance of energy systems
» Energy-related investment decisions
» Policy development and implementation
» Greenhouse gas and pollutant reporting, regulation and compliance.

Course Structure
You will complete a one-and-a-half year (150 point) full-time (or part-time equivalent) program, comprising eight compulsory core subjects and four electives.

Core Subjects
» Introduction to Energy Systems
» Analysing Energy Systems
» Managerial Economics
» Financial Management
» Non-Renewable Energy
» Renewable Energy
» Energy Supply and Value Chains
» Electrical Power Systems

Elective subjects
» Energy Systems Project (internship – 25 points)*
» Energy Regulation and the Law**
» Sustainable Infrastructure Engineering
» Economics for public policy
» Solar Energy
» Energy Systems Project
» Climate Change Mitigation
» Environmental Modelling
» Project Finance
» Construction Law**
» Optimisation for Industry
» Supply Chain Management
» Business Analysis & Decision Making
» Optimisation for Industry
» Adapting to Climate Change
» Sustainability Accounting
» Transport Systems
» Engineering Contracts and Procurement
» Climate Change Politics and Policy
» Environmental Policy Instruments
» Climate Modelling and Climate Change
» Sustainable Buildings

*with approval from the academic course coordinator (an average of 75% in preceding subjects is required)
**with approval from the Law Faculty

Preferred course plans are available from the University Handbook at: handbook.unimelb.edu.au/courses/mc-engysys. Other subjects may be taken with the approval of the program coordinator.

Create sustainable solutions to the energy crisis

Master of Energy Systems graduate Leesa Blazeley is co-founder of energy startup Solafast. She is developing a breakthrough technology that uses printable solar panels integrated into building material for commercial and industrial applications.

“We want to increase the penetration of renewable solar energy, by creating a material that is easier and quicker to install over larger areas than conventional solar.”

Leesa says the Master of Energy Systems gave her a greater understanding of the technologies used to generate, store and transmit energy, how energy systems operate and the problems caused by fossil fuel consumption, as well as potential solutions to create a more sustainable future.

“Understanding the social outcomes as well as the commercial realities, gave me a practical approach to dealing with the complexities of energy solutions in a professional environment.”

LEESA BLAZELY
Co-founder and Director Solafast
ENGINEERING MANAGEMENT

Take the next step in your engineering career with the Master of Engineering Management, designed to unlock your career potential in both technical and general management positions. You will enhance your technological problem-solving skills, as well as gain the business skills to manage people, projects and resources in complex organisational settings.

The Master of Engineering Management (Change Management) will suit engineers, who wish to fast-track their careers into managerial roles in a wide variety of settings. You will understand the legal, commercial, marketing and personnel issues that a manager encounters within a technical environment.

The Master of Engineering Management (Project Management) will suit engineers, who have a specific interest in developing advanced project management skills in managerial roles. You will understand the theory and practice of project management, including project procurement, team leadership, risk management, communication, financial management and human resources.

Career Outcomes
Engineering managers lead engineering projects and personnel, in a range of technical fields such as product development, manufacturing, construction, design engineering, industrial engineering, software engineering and telecommunications. Your career opportunities will be varied and the skills you develop will be in high demand. Our graduates work in management or consultancy roles in areas such as general management, project management, human resources, finance, quality assurance, education, contract arbitration and policy development within technically-focused organisations.

Course Structure
Students will complete a one year (100 point) full-time (or part-time equivalent) program.

The Master of Engineering Management has been developed in conjunction with Melbourne Business School to offer broader business study opportunities to our students, regardless of their level of work experience.

Engineering Management subjects:
All students will complete the following core subject:
» Engineering Management Capstone
Students may then select three subjects (37.5 points) from one of the two streams, Change Management or Project Management.
Students may choose all 3 subjects from one stream or two from one stream and one from the other.

Change Management Stream
» Management and Leadership for Engineers
» Quality and Reliability
» Building Information Modelling
» Managing Change for IS Professionals
» Engineering Entrepreneurship

Project Management Stream
» Sustainable Infrastructure Engineering
» Project Management Practices
» Engineering Project Implementation
» Engineering Contracts and Procurement
» Transport System Modelling

Business and Management subjects
All students must complete four subjects from the following:

Option 1: Master of Management subjects
Students will select three electives (37.5 points) from the below list:
» Supply Chain Management
» Management Competencies
» Accounting for Decision Making
» Business Analysis and Decision Making
» Financial Management
» Managerial Economics

Plus the following compulsory capstone subject – 12.5
» Strategic Management

Option 2: MBA subjects
Students with more than two years of work experience may be eligible to select three electives from the following MBA subjects. Please note, quota restrictions apply to these subjects so early application and enrolment is recommended.

Students will select three electives (37.5 points) from the below list:
» Financial Management
» Operations
» Data Analysis
» Managing People
» Financial Accounting
» Managerial Economics

Plus the following capstone subject – 12.5
» Integrative Business Capstone

Please note: subjects offered may change from year to year. Refer to University Handbook for up-to-date subject listings at: handbook.unimelb.edu.au/courses/761em
ENVIRONMENTAL ENGINEERING

As an environmental engineer you can make a difference to the world in which you live, and be part of a profession that has a profound impact on human health and quality of life.

Courses in Environmental Engineering
» Master of Engineering (Environmental)

Master of Engineering (Environmental)

Environmental engineers design and build sustainable solutions to environmental problems, such as climate change, water scarcity and bushfire management. You will learn from leaders in hydrology, hydraulics, water resources and waste management. You will be guided by consultants, who will share their expertise in environmental engineering projects from around the world, in countries, such as China, Vietnam, Thailand, Nepal, Sri Lanka and India. The course features guest lectures and seminars by industry professionals, community project work, technical society meetings and site visits. This professional-entry-level course will lead to a formal qualification in environmental engineering.

Career Outcomes

Environmental engineering is a rapidly growing field and is an exciting area for anyone with an interest in understanding complex environmental systems and developing the technical, management and policy solutions to deal with these issues. With growing opportunities, as well as new kinds of jobs being developed in environmental areas, such as bushfire protection, carbon management, climate change, sustainable systems, land and water management, conservation and hydrology, waste management and renewable energy, you can be assured of a satisfying career. Employment opportunities exist in consulting firms, conservation and natural resource management agencies, environmental protection agencies, catchment management authorities, and in research, government and academia. Companies that employ environmental engineering graduates include: GHD, Golder Associates, Alluvium, Jacobs, John Holland, Coffey International Pty Ltd and AECOM.

Engineer a sustainable environment

Master of Engineering (Environmental) graduate Amanda Shipp works for environmental engineering company Alluvium, on urban water projects, such as designing wetlands and constructed waterways, modelling water quantity and quality, and assessing waterway health.

“I enjoy working on a variety of projects with people, who are industry leaders. The challenge of trying to engineer the environment, while working with it, rather than against it, is a great part of my job.”

AMANDA SHIPP
Environmental Engineer
Alluvium
Studying Environmental Engineering in your undergraduate degree

Sample plan: Bachelor of Science with a major in Environmental Engineering Systems1,2

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

Studying Environmental Engineering in your graduate degree

Sample plan: Master of Engineering (Environmental)2

Foundation subjects for students without engineering subjects in the undergraduate degree.

<table>
<thead>
<tr>
<th>Sem 1</th>
<th>Engineering Mechanics</th>
<th>Engineering Mathematics</th>
<th>Fluid Mechanics</th>
<th>Analysis of Biological Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sem 2</td>
<td>Environmental Engineering Systems Capstone</td>
<td>Earth Processes for Engineering</td>
<td>Biotransport Processes</td>
<td>Systems Modelling and Design</td>
</tr>
</tbody>
</table>

Usual entry point for applicants from an engineering background, who have received 100 points advanced standing.

<table>
<thead>
<tr>
<th>Sem 1</th>
<th>Quantitative Environmental Modelling</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>Sem 2</td>
<td>Engineering Project Implementation</td>
<td>Civil Hydraulics</td>
<td>Environmental Analysis Tools</td>
<td>Monitoring Environmental Impacts</td>
</tr>
<tr>
<td>Sem 1</td>
<td>IE Research Project 1</td>
<td>Environmental Engineering elective</td>
<td>Environmental Engineering elective</td>
<td>Environmental Engineering elective</td>
</tr>
<tr>
<td>Sem 2</td>
<td>Integrated Design – (Infrastructure) OR Integrated Design (Civil)</td>
<td>Environmental Engineering elective</td>
<td>Environmental Engineering elective</td>
<td>Environmental Engineering elective</td>
</tr>
</tbody>
</table>

1 Sample plans assume entry requirements for Calculus 2 have been met. See handbook.unimelb.edu.au/subjects/mast10006
2 Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-eng
3 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

Environmental engineers manage and evaluate sustainable solutions for their impact on the economy, society and the environment. This program provides engineers with advanced knowledge and skills in sustainable development and environmental management. You will develop a broad understanding of environmental management practice, while investigating themes that focus on waste management, energy and water resources. You will model and analyse the environmental impacts of engineering solutions and discover the best ways to manage the environmental aspects of business.

The program has a strong industry focus with at least half of all subjects led by industry practitioners. You may also undertake a research project in industry as part of your course. You will develop skills in an environmental sector of your own interest. Topics covered will range from air pollution, water and wastewater, municipal solid wastes, cleaner production, environmental management systems, noise, vibration, water resources management and energy resources management, to politics, the law and the economy. This program will suit qualified engineers wanting to upskill, change their career, or extend their current knowledge of environmental engineering.

Career Outcomes

Environmental engineering is a growth area with many job opportunities in fields such as bushfire protection, carbon management, climate change, sustainable systems, land and water management, conservation and hydrology, waste management and renewable energy.

Career opportunities exist in government environmental organisations and in a variety of consulting and technical roles in industry. Our graduates work as environmental officers with local councils and other government authorities and in water and land management roles for the Environment Protection Authority, Department of Sustainability and Environment, water and water catchment authorities and as consultants. Companies that employ environmental engineering graduates include: GHD, Golder Associates, Alluvium, John Holland, Coffey International and Jacobs.

Course Structure

You will complete a one year (100 point) full-time (or part-time equivalent) program, consisting of eight subjects of 12.5 points each. Students must take four 12.5 point core subjects and 37.5 points of subjects from one of the following three themes:

- **Waste Management focus – 37.5 points**
  - IE Research Project 1 (with approval)
  - IE Research Project 2 (25 points) (with approval)
  - Solid Wastes to Sustainable Resources
  - Water and Waste Water Management
  - Environmental Management ISO 14000
  - Groundwater Hydrology

- **Energy focus – 37.5 points**
  - IE Research Project 1 (with approval)
  - IE Research Project 2 (25 points) (with approval)
  - Energy for Sustainable Development
  - Solar Energy
  - Energy Efficiency Technology
  - Sustainable Buildings

- **Water Resources focus – 37.5 points**
  - IE Research Project 1 (with approval)
  - IE Research Project 2 (25 points) (with approval)
  - Environmental Applied Hydrology
  - Water and Waste Water Management
  - Sustainable Water Resources Systems
  - International River Basement Management
  - Groundwater Hydrology

Suggested Approved electives – 12.5 points

- Environmental Applied Hydrology
- Foundations of Spatial Information
- Geotechnical Applications
- Engineering Contracts and Procurement
- Sustainable Water Resources Systems
- Groundwater Hydrology

Remaining 12.5 points select one subject from a range of approved electives.

Please note, subjects offered may change from year to year. Refer to University Handbook for up-to-date subject listings at: handbook.unimelb.edu.au/courses/206ec

Expand your environmental expertise

Jorge Orjuela works as a consultant in the energy industry. He decided it was time to learn more about environmental engineering, so that he could answer the increasing number of environmental questions and concerns of his customers.

“My clients have been asking questions, not just in relation to energy management, but also water management and waste management and about sustainability and the environment. Studying the Master of Environmental Engineering seemed like a great opportunity to expand my knowledge in these areas.”

Jorge Orjuela Pinzon
Energy and Environmental Reporting Manager, Energy Action
Information Technology is revolutionising our society, from business and health, to manufacturing and entertainment. IT underlies scientific discoveries and medical breakthroughs, helps develop innovative new products and services, and is central to many aspects of modern life.

Courses in Information Technology
» Master of Engineering (Software)
» Master of Engineering (Software with Business)
» Master of Information Systems
» Master of Information Systems (Executive)
» Master of Information Technology
» Master of Science (Computer Science)
» Master of Data Science

Master of Engineering (Software) or (Software with Business)
Software engineers use an understanding of computer science, design, engineering, management, mathematics and psychology to enable team production of large software systems. You will combine mathematical, scientific and technical knowledge with creativity to tackle large-scale software design and development projects. You will have the opportunity to work closely with IT professionals in a year-long industry project, as well as building the essential teamwork skills required to implement and operate software engineering solutions in industry. These professional-entry-level courses will lead to a formal qualification in software engineering.

Career Outcomes
The IT industry is experiencing a critical skills shortage in Australia and highly-trained graduates are in strong demand. Career opportunities exist in a wide variety of roles, including as software designers and developers, project managers, database managers, programmers, web producers, analysts, gaming software authors and consultants to the private sector or government. Our graduates work for companies such as AMP, Google, IBM, Microsoft, NAB, Fujitsu, GE, KPMG, BHP Billiton and Deloitte.

Gain valuable industry skills
Mathew Blair completed his Master of Engineering (Software) in 2015. He is now working for Google in San Francisco as a Software Engineer.

“The unique thing about the program is that it prepares students to be collaborative and client focused. There is a huge focus on working in larger teams, which is really indicative of what it’s like to work in the industry. Through our final year project we had the opportunity to work in an industry placement – we had an office, and a group of ten of us were able to operate like a small start-up with industry involvement.”

MATHEW BLAIR
Software Engineer
Google
### Studying Software Engineering in your undergraduate degree

Sample plan: Bachelor of Science with a major in Computing and Software Systems\(^1,2,3\)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Sem 1</th>
<th>Foundations of Computing</th>
<th>Calculus 2</th>
<th>Science elective</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>Sem 2</td>
<td>Foundations of Algorithms</td>
<td>Linear Algebra</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td>Year 2</td>
<td>Sem 1</td>
<td>Design of Algorithms</td>
<td>Science elective</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td>Year 2</td>
<td>Sem 2</td>
<td>Object Oriented Software Development</td>
<td>Database Systems</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td>Year 3</td>
<td>Sem 1</td>
<td>Software Modelling and Design</td>
<td>Computer Systems</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
<tr>
<td>Year 3</td>
<td>Sem 2</td>
<td>IT Project</td>
<td>Models of Computation</td>
<td>Science elective</td>
<td>Breadth</td>
</tr>
</tbody>
</table>

### Studying Software Engineering in your graduate degree

Sample plan: Master of Engineering (Software)\(^2,4\)

Foundation subjects for students without engineering subjects in the undergraduate degree.

<table>
<thead>
<tr>
<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>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>

Usual entry point for applicants from an engineering background, who have received 100 points advanced standing.

<table>
<thead>
<tr>
<th>Sem 1</th>
<th>Software Requirements Analysis</th>
<th>IT Project and Change Management</th>
<th>Engineering Practice and Communication / Creating Innovative Engineering(^5)</th>
<th>CIS Advanced elective</th>
</tr>
</thead>
<tbody>
<tr>
<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>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>Sem 2</td>
<td>Software Design and Architecture</td>
<td>CIS Advanced elective</td>
<td>Approved elective</td>
<td></td>
</tr>
</tbody>
</table>

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1. Sample plans assume entry requirements for Calculus 2 have been met. See handbook.unimelb.edu.au/subjects/mast10006
2. Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-eng
3. This plan is general and based on a student having no programming experience. The Department of Computing and Information Systems offers a programming proficiency test. Students who pass this test may follow a different course plan.
4. Master of Engineering (Software with Business) students will replace five electives with five business subjects.
5. 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 Systems

The Master of Information Systems (MIS) is a leading professional course for aspiring and current consultants in digital business. The course was designed in consultation with leading IT decision-makers, ensuring that it is among the most industry-relevant graduate IT programs in Australia, covering critical topics, such as project and change management, emerging technologies, IT strategy and governance, security and service provision. You will develop a strong capability in supporting, managing and changing business processes through information and communications technology and information systems. You will also develop valuable transferable skills in solving business problems, collaboration, project management and application of models, frameworks and management theory.

Career Outcomes

This course is for graduates and career changers interested in professional or research careers in IT management and digital business; professionals consulting, managing and changing business processes through information and communications technology and systems. MIS graduates are highly-regarded by top firms and government agencies searching for tomorrow’s digital business thinkers and leaders. Graduate jobs include roles such as management consultant, systems analyst/designer, IT infrastructure manager, business analyst and data architect. You will find employment opportunities with organisations such as Accenture, PwC, KPMG, Ernst & Young, IBM, Deloitte and AMP.

Course Structure

The MIS is a two year (200 point) full time program. Applicants with an IS or IT undergraduate qualification and work experience may be eligible for advanced standing, which may shorten the duration of the course by one semester, and up to a maximum of one year full-time. Within the MIS students choose one of three specialisations.

Professional Specialisation: for those interested in a professional career in IT management and digital business.

Foundation Core subjects – 50 points: Information Systems, Database Systems, Organisational Processes, Application Development


Research Specialisation

A research specialisation is available for students receiving less than 50 points of advanced standing, or a research studies elective stream may be available for other entrants.

For more information about subjects, specialisations, research pathways, and internship and industry based learning subjects view the University Handbook online at handbook.unimelb.edu.au/courses/mc-is

Foundation Core subjects – 50 points: Information Systems, Database Systems, eHealth & Biomedical Informatics Systems, Application Development

Lower core subjects – 50 points: Analysis and Design, Project Management, eHealth & Biomedical Informatics Methods, EHealth Infrastructure

Upper core subjects – 50 points: Enterprise Applications, IS Strategy and Governance, EHealth Applications and Solutions, eHealth Infrastructure

Capstone Core subjects – 25 points: Health IT Project or Industry Based Learning (health project)


Health Specialisation: for those interested in focusing on the use of IT to process health information.

Unleash your ideal IT career

“I was looking for a program that would quickly make me relevant in the IT industry again. The MIS program had the right curriculum and industry relevance that focused on training students in the latest IT trends. I gained skills in enterprise architecture, data analytics and cloud computing technologies, as well as how to manage change in organisations, how to work in a global team and the interpersonal skills required for a success.”

JANANI VENKATACHALAM
Business Analyst
Deloitte Australia
Master of Information Systems (Executive)

The Master of Information Systems (Executive) is a unique online course covering critical areas in information systems management and digital business for ambitious senior information technology executives.

You will develop advanced capability in supporting, managing and changing business processes through information and communication technology. You can tailor this course to your career aspirations, with study areas available in IT strategy, emerging technologies, information assurance, and outsourcing and contracting.

Career Outcomes

This course has been designed for ambitious senior information technology managers, with a minimum of five years, but preferably 10 years of work experience, who want to take their knowledge and leadership to the next level. It will suit those already in an executive role, who are aspiring for very senior roles, such as Chief Technology Officer or Chief Information Officer.

You will gain strategic expertise to influence decision-making at the most senior level and will learn advanced collaborative skills to manage complex teams. You will gain the knowledge to take the next executive-level step in your career and you will acquire an extensive network of high-achieving peers from a variety of industries.

Course Structure

The MIS (Executive) is a one year (100 point) full time, or two year part-time, online program.

You will select at least 6 subjects from the following in addition to the compulsory subject Managing Information Systems (Capstone). At least 4 subjects (50 points) of the following 6 must be completed before enrolling in Managing Information Systems (Capstone):

» Advanced Change Management
» Information Assurance
» Outsourcing & Contracting
» Emerging Technologies in Organisations
» Technopreneurship & Innovation
» Business Analytics & Decision-Making
» Information Systems Strategy
» Information Economy & Society
» Enterprise Architecture Applications
» Managing IT Professionals
» Compulsory Capstone Project (25 points)
» Managing Information Systems (Capstone)

More information at: handbook.unimelb.edu.au/courses/mc-isexec

“We’ve designed this course to address international demand for high quality online education for Enterprise Leaders in Information Systems and Digital Business, drawing on a wealth of knowledge and practical experience from both leading experts in academia and industry.”

Dr Atif Ahmad,
Course Coordinator
Master of Information Systems (Executive)
**Master of Information Technology**

Are you passionate about cutting-edge information and communication technology? Do you want to use sophisticated computing power to solve real-world problems across areas of business, government, health and society? The Master of Information Technology (MIT) will provide you with advanced technical skills and knowledge to be a leader of IT innovation.

The program is available in four specialisations – Computing, Distributed Computing, Human-Computer Interaction and Spatial. You will learn the fundamental technical skills, which are applicable across a range of IT platforms and will not date as new technologies emerge. Knowledge gained in applied algorithmics, data mining, distributed computing, and human-centred design will allow you to evolve with and adapt to the swift pace of technology. As industry continues to be transformed by IT, a new workforce with transferrable problem-solving skills is in high demand. The MIT is closely aligned with industry and includes competitive enrolment in a 25 point industry placement.

**Career Outcomes**

As critical skills shortages continue in the IT industry, MIT graduates will be well placed to secure exciting roles worldwide, whatever their specialisation. MIT graduates will possess the essential knowledge and skills that will make them globally-mobile and sought-after by industry. A wealth of graduate careers are available in areas such as cloud computing, web and mobile app development, disaster management, and GPS technology, in senior IT roles such as, data analyst, system programmer, cloud computing specialist, user-experience (UX) expert and mobile-location based system designer, and many more.

**Course Structure**

The MIT is a two year (200 point) full-time program. Applicants with a previous qualification in IT and work experience may be eligible for advanced standing, which may shorten the duration of the course by one semester, and up to a maximum of one year full-time. The first 50 points of the MIT are made up of the following core subjects:

- Programming and Software Development
- Algorithms and Complexity
- Internet Technologies
- Database Systems and Information Modelling

For the remaining 150 points, students will select from a range of core and elective subjects depending on which specialisation of the course they are enrolled in. Details are available in the University Handbook at: handbooks.unimelb.edu.au/courses/mc-it

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<table>
<thead>
<tr>
<th>MIT (Computing)</th>
<th>MIT (Distributed Computing)</th>
<th>MIT (Human Computer Interaction)¹</th>
<th>MIT (Spatial)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A flexible course option for attaining transferrable technical and problem-solving skills. You will work across disciplines and learn how to design, analyse, implement and evaluate IT projects and future needs in the changing context of the IT industry. Major strands of study include: IT project and change management, software development, programming languages, artificial intelligence, software design. Employment opportunities: Senior IT and network positions, e.g. data analyst, business analyst, database developer, web developer, mobile app developer and system programmer. Learn to manage large quantities of data through distributed systems. You will develop cloud computing solutions, devise innovative broadband applications, and work on team projects applying distributed computing technologies to e-science and e-business. Major strands of study include: mobile computer systems programming, cloud computing, high performance computing, distributed algorithms, parallel computing. Employment opportunities: Senior roles in web services, e-business, cloud computing, mobile systems programming and sensor networks, working as project leaders, network analysts, mobile applications developers and more. A comprehensive course on human-centred design, development and evaluation of interactive technologies. You will acquire expertise in fieldwork techniques, design-thinking and user-centred evaluation to create the next generation of interfaces that are useful, usable and satisfying. Major strands of study include: user experience (UX), interaction design, social computing, information architecture, ubiquitous computing. Employment opportunities: UI developer, interaction designer, user experience expert, user interface engineer, IT product design, design researcher, web design, mobile design, VR/AR design, game design, front-end engineer and service design expert. Prepare for a career in the spatial information industry, one of the fastest-growing IT sectors in the world. You will learn to analyse, communicate and visualise spatial information in all its forms. Major strands of study include: spatial databases, spatial programming, web and mobile mapping and spatial services. Plus electives in: satellite positioning, remote sensing, and more... Employment opportunities: Senior roles in designing mobile location based applications and games, working with spatial ICT to manage infrastructure and transport issues, optimising disaster management and response, working as policy advisors to governments and NGOs.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

¹ Pending Academic Board approval.

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Unlock the power to create

“I enjoy creating things and IT gives me this power. With coding skills and some IT knowledge it is really easy to turn an idea into an actual product. I have recently completed a summer internship with Nasdaq, where I worked on a software project that improved the efficiency of one of their products. The experience was fun and boosted my confidence as a software developer.”

POSUNG CHEN
Master of Information Technology (Computing)
Master of Data Science

The management and analysis of big data is becoming increasingly important in commerce, industry and applied science. Data science is a rapidly growing field that has evolved to address this need and sits at the intersection of statistics and computer science. The newly-established Master of Data Science combines these disciplines in a single coordinated program. Students will develop the technological abilities and analytical skills needed to manage and gain insights from large and complex collections of data. You will additionally become well-versed in using statistical tools, techniques and methods, along with in-depth analysis and evaluation, to solve real-world problems in the data realm.

Career Outcomes

Graduates will find employment in a wide variety of settings in the information technology industry, in commerce and finance and in the applied sciences.

Course Structure

You will complete a two year (200 point) full-time or part-time equivalent course, consisting of 50 points of prerequisite subjects in either Statistics or Computer Science, depending upon your previous studies, four core subjects (50 points) in Statistics and four core subjects (50 points) in Computer Science, a two-subject (25 points) capstone project in Data Science and two electives (25 points). Students who meet the prerequisites for both Statistics and Computer Science, may be eligible for advanced standing of up to 50 points.

Statistics Prerequisites (50 points)
for students who meet the Computer Science prerequisites.
» Methods of Mathematical Statistics (25 points)
» A First Course in Statistical Learning (25 Points)

OR

Computer Science Prerequisites (50 points)
for students who meet the Statistics prerequisites.
» Programming and Software Development
» Algorithms and Complexity
» Knowledge Technologies
» Database Systems and Information Modelling

Core subjects – Statistics (50 points)
» Mathematical Statistics
» Statistical Modelling
» Computational Statistics and Data Mining
» Multivariate Statistical Techniques

Core subjects – Computer Science (50 points)
» Cluster and Cloud Computing
» Web Search and Text Analysis
» Statistical Machine Learning
» Advanced Database Systems

Capstone Project (25 points)
» Data Science Project Pt1
» Data Science Project P2

Electives (50-75 points)
Remaining points selected from a range of subjects, full details are available from the university handbook at: handbook.unimelb.edu.au/courses/mc-datasc
Master of Science (Computer Science)

The Master of Science (Computer Science) is a research training program for students to undertake a substantive research project in a field of choice, as well as a broad range of coursework subjects including a professional skills component, as a pathway to PhD study, or to the workforce.

The technologies covered in the program are changing the way we live our lives, especially in the health sciences, and in social infrastructures delivered by web-based tools.

In addition to a broad grounding across the breadth of advanced computer science, you will develop specialist knowledge in at least one of the following areas: knowledge systems, programming languages and distributed computing, information systems, mathematics, statistics, spatial information, or linguistics.

Career Outcomes
Computer scientists find roles as data analysts, applications programmers, information architects, systems and network analysts, software designers and engineers, project managers, research engineers and computational researchers.

Course Structure
You will study a combination of discipline and professional skills core subjects, as well as undertake a research project of 75 points, for a total of 200 credit points of study.

Discipline Core Subjects – 50 points
- Knowledge Technologies
- Distributed Systems
- Declarative Programming
- Research Methods

Research Project – 75 points
- Computer Science Research Project

Select one or two professional skills subjects from:
- Thinking and Reasoning with Data
- Systems Modelling and Simulation
- Statistics for Research Workers
- Communication for Research Scientists
- Science in Schools
- Science Communication
- Science and Technology Internship

Select 50 or 62.5 points of discipline elective subjects.

View list at handbook.unimelb.edu.au/courses/mc-scicmp/subject-options.

Please note: subjects offered may change from year to year.

The technologies covered in the program are changing the way we live our lives, especially in the health sciences, and in social infrastructures delivered by web-based tools.
MATERIALS ENGINEERING

Materials underpin nearly all engineering applications. Materials engineering plays a significant role in a range of applications from developing new biomedical engineering devices, to creating sustainable energy solutions and better manufacturing processes and products.

Master of Engineering (Materials)

By creating new materials or improving existing ones, materials engineers make a valuable contribution to the design of new products and devices and the improvement of existing ones. You will gain insight into the processing-structure-property relationships of a range of materials, such as metals, polymers, ceramics, electronic materials and composites. You will learn the fundamental concepts of atomic bonding, atomic scale structure, phase equilibria and methods of characterisation from materials engineering experts who are conducting world leading research in areas such as biomaterials, tissue engineering, nanomaterials, polymers, ceramics, materials modelling and characterisation.

Career Outcomes

The Master of Engineering (Materials) will equip graduates for careers as metallurgists, plastics engineers, ceramists, adhesive scientists, process and quality control engineers and corrosion engineers.

You will work in industrial design, manufacturing, processing and recycling, and select and design materials for: aerospace vehicles; ground transportation systems; automotive industry; solar energy and battery devices; tissue engineering and drug delivery; information and communication systems; electronic and magnetic devices and systems; and optical and opto-electronic components. You will conduct failure analysis of materials in a variety of applications including those mentioned above.

Employment opportunities exist working in research and development, academia, national laboratories including the Defence Science and Technology Group and industry for companies such as: AECOM, Deloitte, Ford, GlaxoSmithKline, KPMG, Orica, BlueScope Steel, Morgan Advanced Ceramics, Austral Bricks and Qenos. Materials engineers are in demand and receive some of the highest salaries in the engineering industry.

1 Pending Academic Board approval.
Studying Materials Engineering in your undergraduate degree

Sample plan: Bachelor of Science with a major in Chemical Systems\(^1,2,3\)

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

Studying Materials Engineering\(^4\) in your graduate degree

Foundation subjects for students without engineering subjects in the undergraduate degree.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sem 2</td>
<td>Fluid Mechanics</td>
<td>Engineering Materials</td>
<td>Transport Processes</td>
<td>Mechanical Design</td>
</tr>
</tbody>
</table>

Usual entry point for applicants from an engineering background, who have received 100 points advanced standing.

<table>
<thead>
<tr>
<th>Sem 1</th>
<th>Engineering Practice and Communication / Creating Innovative Engineering(^5)</th>
<th>Polymers and Composites</th>
<th>Economic Analysis for Engineers</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sem 2</td>
<td>Advanced Concepts in Metals</td>
<td>Ceramics and Brittle Fracture</td>
<td>Minerals Materials and Recycling</td>
<td>Advanced Thermo and Reactor Engineering</td>
</tr>
<tr>
<td>Sem 1</td>
<td>Electronic and Magnetic Materials</td>
<td>Particle Mechanics and Processing</td>
<td>Design for Manufacture</td>
<td>Thermodynamics</td>
</tr>
<tr>
<td>Sem 2</td>
<td>Advanced Materials</td>
<td>Engineering Entrepreneurship</td>
<td>Materials Research Project</td>
<td>Materials Research Project</td>
</tr>
</tbody>
</table>

\(^1\) Engineering pathways students will be required to complete an additional 25 points of core subjects to complete the requirements of the Master of Engineering (Materials) – i.e. Engineering Mechanics and Engineering Practice and Communication.

\(^2\) Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au

\(^3\) Please note the undergraduate course plan supplied shows the chemical systems pathway via the Bachelor of Science, alternative pathways include the mechanical systems major via the Bachelor of Design or the Bachelor of Science.

\(^4\) At the time of printing, the Master of Engineering (Materials) was pending Academic Board approval.

\(^5\) 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

Mechanical and Mechatronic Engineering applies human and material resources to the design, construction, operation and maintenance of machines to move people, goods and materials, generate energy, produce goods and services, control pollution and dispose of wastes.

Courses in Mechanical Engineering and Mechatronics
- Master of Engineering (Mechanical)
- Master of Engineering (Mechanical with Business)
- Master of Engineering (Mechatronics)

Love your work

“Engineering is all about helping people by creating a better world and it also provides incredible opportunities to be involved in fascinating and life changing projects. My work impacts people’s lives in so many different ways. I’ve worked on improving safety processes, environmental outcomes, energy usage and efficiency, and on a more qualitative level, have looked at how to improve the overall liveability or ambiance of an area.

I love how varied my work is. I take theory or skills that I learnt at uni and apply them to a range of problems. Every project is completely different, so I am continually learning new things and developing my engineering skills.

CATHERINE PHILLIPS
Mechanical Engineer
Arup

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

Mechanical engineers turn energy into power and motion, focusing on the generation, conversion and use of energy, as well as the design, construction and operation of devices and systems. You will learn from world leaders in fluid mechanics, turbulence and biomechanics. Opportunities to consolidate theory with practice will come from group activities, site visits and industry projects.

You will have access to well-equipped laboratories for materials testing, engine/turbine testing, wind tunnel investigations, simulation and metal forming processes. A heavy engineering workshop is available for the manufacture of testing facilities and research apparatus, as well as extensive computer facilities. These professional-entry-level courses will lead to a formal qualification in mechanical engineering.
Career Outcomes

Mechanical engineering not only interacts with all other disciplines of engineering, but increasingly with other disciplines such as medicine and biology, supported by sophisticated computer technology. You will develop a breadth of skills and depth of fundamental knowledge, which will open up a wide variety of possible career directions. Career opportunities exist in a diverse range of industries from aeronautics, automotive, biomedical, manufacturing, construction and building to robotics and the environment. Emerging technologies in bioengineering, materials science, and nanotechnology will create further opportunities. Our graduates are employed by companies such as AECOM, Alcoa, BP Australia, ExxonMobil, Orica Limited, Origin Energy, Bosch, Shell, Jacobs and OZ Minerals.

Studying Mechanical Engineering in your undergraduate degree

Sample plan: Bachelor of Science with a major in Mechanical Systems\textsuperscript{1,2}

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

Studying Mechanical Engineering in your graduate degree

Sample plan: Master of Engineering (Mechanical)\textsuperscript{3,4}

Foundation subjects for students without engineering subjects in the undergraduate degree.

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<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>

Usual entry point for applicants from an engineering background, who have received 100 points advanced standing.

<table>
<thead>
<tr>
<th>Sem 1</th>
<th>Dynamics</th>
<th>Control Systems</th>
<th>Materials</th>
<th>Design for Manufacture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sem 2</td>
<td>Fluid Dynamics</td>
<td>Solid Mechanics</td>
<td>Engineering Practice and Communication / Creating Innovative Engineering\textsuperscript{5}</td>
<td>Design for Integration</td>
</tr>
<tr>
<td>Sem 1</td>
<td>Mechanical Engineering elective</td>
<td>Mechanical Engineering elective</td>
<td>Thermodynamics</td>
<td>Capstone Project</td>
</tr>
<tr>
<td>Sem 2</td>
<td>Mechanical Engineering elective</td>
<td>Mechanical Engineering elective</td>
<td>Mechanical Engineering elective</td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{1} Sample plans assume entry requirements for Calculus 2 have been met. See handbook.unimelb.edu.au/subjects/mast10006
\textsuperscript{2} Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-eng
\textsuperscript{3} Master of Engineering (Mechanical with Business) students will replace five electives with five business subjects.
\textsuperscript{4} 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 (Mechatronics)

Mechatronics Engineering is a fast-changing discipline that blends mechanical, electrical and software engineering to develop automation and advanced manufacturing technologies. You will develop in-depth technical knowledge across the interdisciplinary domain of automation, which encompasses key components of mechanical and electrical engineering supported by a strong background in computing and software engineering. You will design and create automated solutions with computer control. The course features exposure to industry through site visits, guest lectures and industry-based projects. You will have access to world-class facilities, such as a state-of-the-art wind tunnel, alternative fuel engines, rehabilitation and tele-operated robots, motion tracking fluoroscopy, intelligent automotive platforms, service robotics, UAV platforms and intelligent large-scale irrigation and water management systems. This professional-entry-level course will lead to a formal qualification in mechatronics.

Career Outcomes

Mechatronics can lead to a wide variety of interesting careers, such as developing ‘smart’ products and systems in various industries. Job opportunities exist with companies that use advanced automation equipment and computer integrated manufacturing systems, in fields such as aerospace, advanced manufacturing, product development, computing and electronics, software systems, mining, renewable energy and biomedical engineering for companies like Bosch, Honeywell, CNC Design, Ford, ResMed, Siemens, BAE Systems and Invotech Australia.

Unravel the mysteries of man and machine

“I am fascinated by innovative technology and autonomous systems. My capstone subject focuses on a power scavenging autonomous UAV, more commonly known as a drone. The project is supported by an industry partner, and has helped me to develop key engineering skills in communication, problem solving and delving creatively into the unknown.”

ELENA VELLA
Master of Engineering (Mechatronics)
Studying Mechatronics in your undergraduate degree

Sample plan: Bachelor of Science with a major in Mechatronics\(^1,2\)

<table>
<thead>
<tr>
<th>Year 1</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>Year 1</td>
<td>Sem 2</td>
<td>Engineering Systems Design 2</td>
<td>Linear Algebra</td>
<td>Physics 2: Physical Science &amp; 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>Year 2</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>Year 3</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>

Studying Mechatronics in your graduate degree

Sample plan: Master of Engineering (Mechatronics)\(^2\)

Foundation subjects for students without engineering subjects in the undergraduate degree.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<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>

Usual entry point for applicants from an engineering background, who have received 100 points advanced standing.

<table>
<thead>
<tr>
<th>Sem 1</th>
<th>Control Systems</th>
<th>Dynamics</th>
<th>Engineering Practice and Communication / Creating Innovative Engineering(^3)</th>
<th>Programming and Software Development</th>
</tr>
</thead>
<tbody>
<tr>
<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>Sem 1</td>
<td>Advanced Motion Control</td>
<td>Mechatronics elective</td>
<td>Mechatronics elective</td>
<td>Mechatronics Capstone Project</td>
</tr>
<tr>
<td>Sem 2</td>
<td>Sensor Systems</td>
<td>Mechatronics elective</td>
<td>Mechatronics elective</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Sample plans assume entry requirements for Calculus 2 have been met. See handbook.unimelb.edu.au/subjects/mast10006

\(^2\) Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-eng

\(^3\) 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.
Spatial information is an essential and indispensable part of any economy’s infrastructure. It is a rapidly expanding field, fuelled by the growth in information and communication technology, satellites for imaging and positioning, and the web and communication infrastructure for access to spatial data using smart devices.

**Master of Engineering (Spatial)**

The Master of Engineering (Spatial) focuses on the science and technology of measurement, mapping and visualisation. You will develop sought-after skills in areas, such as geographic information systems (GIS), three-dimensional computer visualisations, surveying and satellite and photographic image processing. This professional-entry-level course will lead to a formal qualification in spatial information. Applicants with a strong interest in applied computing, information technology and software development, may be interested in the Master of Information Technology (Spatial) (see page 35).

---

**Solve real-world problems**

“I decided to study the Master of Engineering (Spatial) because of the wealth of employment opportunities that are available in the spatial industry. I really enjoy the multi-disciplinary nature of the course and how it has helped me to think about and solve real world problems.”

**SENHAO HUANG**
Career Outcomes
The spatial information industry comprises remote sensing from satellites, aircraft, and ground-based sensors, global positioning systems, conventional surveying, geographic information systems and all forms of data with a geographic coordinate. There is a growing demand for expertise in spatial information, along with a current labour shortage in Australia, ensuring graduates a range of well-paid employment options. Career opportunities exist in roles relating to land and surveying, in environmental remote sensing, disaster management and in firms specialising in land and resource management, mapping, three dimensional visualisation and spatial data infrastructure. You will find work with organisations such as Geomatic Technologies, Spatial Vision, Photomapping Services, the Office of the Surveyor-General, Reeds Consulting and Geoscience Australia.

Studying Spatial Information in your undergraduate degree
Sample plan: Bachelor of Science with a major in Spatial Systems

| Year 1 | Sem 1 | Foundations of Computing | Calculus 2 | Science elective | Breadth |
| Year 1 | Sem 2 | Foundations of Algorithms | Linear Algebra | Science elective | Breadth |
| Year 2 | Sem 1 | Applications of GIS | Engineering Computation | Science elective | Breadth |
| Year 2 | Sem 2 | Surveying and Mapping | Database Systems | Science elective | Breadth |
| Year 3 | Sem 1 | Engineering Risk Analysis | Imaging the Environment | Science elective | Breadth |
| Year 3 | Sem 2 | Integrated Spatial Systems | Land Administration Systems | Science elective | Breadth |

Studying Spatial Information in your graduate degree
Sample plan: Master of Engineering (Spatial)
Foundation subjects for students without engineering subjects in the undergraduate degree.

| Sem 1 | Engineering Computation | Engineering Risk Analysis | Applications of GIS | Imaging the Environment |
| Sem 2 | Surveying and Mapping | Integrated Spatial Systems | Land Administration Systems | Database Systems |

Usual entry point for applicants from an engineering background, who have received 100 points advanced standing.

| Sem 1 | Foundations of Spatial Information | Engineering Practice and Communication / Creating Innovative Engineering | Creating Innovative Engineering | Advanced Imaging |
| Sem 2 | Spatial Analysis | Mathematics of Spatial Information | Satellite Positioning | Approved elective |
| Sem 1 | Management Competencies or The World of Engineering Management | Spatial Databases | IE Research Project 1 | Approved elective |
| Sem 2 | Approved elective | Engineering Project Implementation | Spatial Data Infrastructure | |

1 Sample plans assume entry requirements for Calculus 2 have been met. See handbook.unimelb.edu.au/subjects/mast10006
2 Sample plans are an indicative guide only and subjects may change. See handbook.unimelb.edu.au/courses/mc-eng
3 Students interested in spatial information may also undertake the Master of Information Technology (Spatial). See page 35.
4 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.
At the Melbourne School of Engineering, we aim to create technological solutions to significant problems faced by our world today, in areas such as: water resource management, clean energy, disaster management, climate change, safer and more efficient transport, cancer treatment, epilepsy suppression, food processing, automated interpretation of data, personalised medicine, and smart grids.

Research is undertaken by multidisciplinary teams from across the School and the University, and in collaboration with academic and industry partners. With strong backing from industry and government, the MSE offers a well-supported research environment, with many opportunities for research students to work on leading projects.

Measured on research income, we are one of the largest engineering research institutions in Australia. We are home to large-scale research consortia such as the Centre for Neural Engineering, the Centre for Disaster Management and Public Safety and the Melbourne Networked Society Institute. We have close, ongoing partnerships with IBM Research, the Peter Cook Centre for Carbon Capture and Storage, Dairy Innovation Australia Ltd, Microsoft, Rio Tinto and Ford, and we work on projects with many more private and public sector organisations in Australia and internationally.

We have some of Australia’s most distinguished research and academic staff in the fields of engineering and IT, including a Prime Minister’s Prize Winner, Fellows of the Royal Society, an Australian Research Council (ARC) Laureate, ARC Future Fellows and Eureka Prize winners.

**Master of Philosophy (MPhil) – Engineering**

The MPhil is an internationally recognised masters by research program that provides students with the opportunity to carry out an independent and sustained research project under supervision. Students will develop advanced research skills and techniques, and present findings in a documented, scholarly format.

An MPhil is normally a one-and-a-half year full-time program, with a minimum duration of one year full-time and a maximum of two years part-time. MPhil students may apply for transfer to PhD candidature, ideally before the end of their first year. The transfer application must have the strong support of the candidate’s supervisor and department. More information is available at: eng.unimelb.edu.au/study/degrees/phd/overview

**Doctor of Philosophy (PhD)**

The PhD is designed for students to demonstrate academic leadership, independence, creativity and innovation in their research work. In addition, professional doctoral studies provide advanced training designed to build expertise in a specialist area, while encouraging the acquisition of a wide range of advanced and transferable skills. The PhD thesis demonstrates authority and contributes to knowledge in the candidate’s field. It is deeper and more comprehensive than the MPhil. Initial admission to PhD candidature is probationary. After 12 months, full-time candidates are eligible for admission to confirmed candidature. Confirmed candidature is normally for a further period of two years full-time. Candidates are guided by a research supervisor, who arranges a research program designed to suit the individual requirements and interests of the candidate. More information is available at: eng.unimelb.edu.au/study/degrees/phd/overview

**Finding a research project**

Graduate Research Opportunities are advertised online at: eng.unimelb.edu.au/research/graduate-research-opportunities
RESEARCH DISCIPLINES

Biomedical Engineering
The Department of Biomedical Engineering drives research and education in medical technologies, health informatics and healthcare delivery. Combining the expertise of engineers, biomedical researchers, clinical practitioners and industry partners, we create innovative medical solutions that have societal and economic impact.

Key themes of research within biomedical engineering include: Biomaterials and tissue engineering; Biomechanics and mechanobiology; Bionics, biomedical imaging and neuroengineering; and Systems and synthetic biology.

For details and currently available PhD projects go to: bme.unimelb.edu.au/research

Chemical Engineering
The Department of Chemical Engineering has a diverse range of innovative research programs, which focus on four key engineering themes: materials development; separations technology; surface chemistry and rheology; and bioprocessing.

For details and currently available PhD projects go to: chemeng.unimelb.edu.au/research

Computing and Information Systems
The School of Computing and Information Systems is an international research leader in computer science, information systems and software engineering. The School is focused on delivering impact in three key areas of Data and Knowledge, Platforms and Systems, and People and Organisations.

For details and currently available PhD projects go to: cis.unimelb.edu.au/research

Electrical and Electronic Engineering
The Department of Electrical and Electronic Engineering has a vibrant, internationally recognised research program, which is focused in three key discipline areas: information, computation and communications networks; photonics, electronics and nanoengineering; and signals, systems, control, optimisation and power engineering.

For details and currently available PhD projects go to: ee.unimelb.edu.au/research

Infrastructure Engineering
The Department of Infrastructure Engineering is a unique blend of the disciplines of civil and environmental engineering and spatial information, focused on solving large infrastructure problems, such as improving building construction, transport, water resource systems, catchment management and agriculture.

For details and currently available PhD projects go to: ie.unimelb.edu.au/research

Mechanical Engineering
The Department of Mechanical Engineering is acknowledged internationally for its excellence in research, with a focus on four major programs in autonomous systems, biomechanics, fluid dynamics and thermodynamics.

For details and currently available PhD projects go to: mech.unimelb.edu.au/research
Global Mobility Program (Exchange and Study Abroad)

The University of Melbourne offers a range of scholarships, bursaries, and other funding options to help you complete part of your course at one of approximately 180 exchange partner institutions in 39 countries. Options include intensive short-term programs undertaken in summer/winter holiday breaks, and coursework programs of either one or two semesters. Students also have the opportunity to undertake research towards their final-year capstone or research project at an overseas institution, allowing them to hand-pick projects that match well with their personal research interests. Investigate engineering exchange scholarship opportunities before embarking on a semester of study overseas. For more information about study abroad and exchange visit: mobility.unimelb.edu.au

Girl Geek Dinners Melbourne

Girl Geek Dinners (Melbourne chapter) is a non-profit organisation dedicated to breaking down gender stereotypes, identifying and removing barriers to participation in technology, and encouraging women to enter technology industries. In addition to dinners, events include panel discussions, workshops and field trips. Further information at:
facebook.com/ggdmelb
twitter.com/ggdmelb
meetup.com/Girl-Geek-Dinners-Melbourne

Clubs and societies

There are many student clubs and societies, which provide a diverse range of interests and activities throughout the year. It’s a great way to make friends and create networks that will last a lifetime.

Some of these clubs include:
- Aerospace and Robotics Society
- Engineering Music Society
- Engineers Without Borders (University of Melbourne chapter)
- Melbourne University Engineering Student Club (MUESC)
- MUR Motorsports
- Computing and Information Systems Students Society (CISSA)
- Robogals (Melbourne chapter)
- Women in Technology


Women in Science and Engineering (WISE)

WISE is a student club aiming to attract more female science and engineering students into industry. WISE holds regular networking events, and offers academic and career assistance to female engineering and science students. WISE events include coffee and cake days, industry panels, workshops, site visits and more. Further information at:
facebook.com/wiseunimelb
twitter.com/wiseunimelb
wiseunimelb.com

STUDENT OPPORTUNITIES
Engineers Without Borders

Engineers Without Borders (EWB) is an organisation that aims to make a difference globally through humanitarian engineering. Our partnership with Engineers Without Borders creates unique opportunities to:

» Gain skills and knowledge to make a positive contribution in support of the world’s most disadvantaged communities.
» Get involved in special educational programs, where you may design a creative solution to a real world problem or collaborate on a sustainable project.
» Inspire high school students about sustainable engineering and community development through outreach programs.
» Network with industry partners, attend industry events and find a project mentor.
» Gain access to work and internship opportunities.

For more information about EWB at the University of Melbourne visit: ewb.org.au/explore/chapters/unimelb

Melbourne Space Program

The Melbourne Space Program seeks to promote innovation, technological advancement and education in support of a strong Australian aerospace sector that contributes significant social and financial value both nationally and internationally.

The Program began in 2014, when a group of ambitious students got together to work on an engineering project to build a nanosatellite to be launched in 2018. Now the program has over 100 volunteers. If you have a passion for technology and innovation and want to play a role in establishing and expanding the Australian space industry, consider volunteering for the Melbourne Space Program.

For more information visit: melbournespace.org

Melbourne Accelerator Program

Engineering and IT students can turn their innovative ideas into successful startups thanks to the Melbourne Accelerator Program (MAP). This unique startup incubator gives students and alumni 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 13th entrepreneurial program in the world by the leading Swedish-based UBI Index. MAP aims to support entrepreneurs of all stages, through a program of public events, workshops and feeder programs and to accelerate the growth of world class startups.

Creating a dream machine with MAP

Engineering alumnus George Li is co-founder of BajaBoard, an exciting new startup taking the adventure sports world by storm.

The BajaBoard is an all-terrain electric skateboard, which George describes as “a combination of snowboard and off-road buggy”. The latest model features pneumatic tyres, wireless controller, enclosed electronics and a top speed of about 50 km/h.

In 2016, BajaBoard was selected for the MAP program, providing the startup with a crucial $20,000 in seed funding. But, more importantly, MAP provided multiple contacts for business development, pathways to market and opportunities for partnerships with industry.

“MAP really helped us with networks and with access to the alumni network throughout the university and overseas,” says George.
Strengthen your employment prospects by undertaking an internship in industry, or an industry project. Internships and industry projects are available to eligible students enrolled in professional entry Masters courses, including:

» The Master of Engineering
» The Master of Information Technology
» The Master of Information Systems

**Internships**

The internship subject allows students to undertake professional-level work to develop workplace skills and prepare for employment in industry. Internships run for 10-15 weeks, for a total of approximately 350 hours. The program runs three times a year and is worth 25 credit points.

Entry into an internship is competitive. High achieving final year students from the Master of Engineering, Master of Information Technology and Master of Information Systems will be selected into a limited number of placements.

An additional internship subject “Creating Innovative Engineering” was introduced to the curriculum in 2017, which will expand internship opportunities for engineering students, who will receive industry mentorship, while working on group projects in industry.

Master of Information Systems and Master of Information Systems students can also access a two semester internship elective “Industry Based IT Experience that has been developed in conjunction with the Australian Computer Society (ACS). Students are teamed with an ACS mentor and undertake a 12 week internship in industry.

**Industry Projects**

Industry projects are available to all students from the Master of Engineering, Master of Information Technology and Master of Information Systems courses. Students work on a collaborative industry research or design project. Projects are usually taken part-time over a full year (12.5 points per semester), or part-time for one semester (25 points), or full-time during summer semester.

**Other industry opportunities**

Students enrolled in IT courses may also be interested in applying for Tin Alley beta internships, for an opportunity for internships in the IT startup community. All budding entrepreneurs are welcome to apply for a position in the Melbourne Accelerator Program (MAP), or to learn from its many non-accelerator activities.

Other opportunities for students to gain exposure to industry include site visits, field work, guest lecturers, industry nights and networking events.
My internship at Cardno has given me the opportunity to work on a variety of high profile infrastructure and surveying projects in Australia. I have met a great number of professionals in the industry and have learnt a vast amount through their experience in the short period since starting work.

VIRAJ UDAYANGA ABEEKOON
Master of Engineering (Civil)
HOW TO APPLY

How to apply for an undergraduate course

Domestic students
Domestic students applying for an undergraduate course must apply through the Victorian Tertiary Admissions Centre (VTAC). Full details at: vtac.edu.au

More information at: futurestudents.unimelb.edu.au/admissions/applications/ug-dom

International students
International students who are currently studying in Australia (either completing Year 12 or studying another undergraduate course) must apply through VTAC.

International students currently studying outside of Australia can either apply directly to the University online or through a local University of Melbourne representative.

More information at: futurestudents.unimelb.edu.au/admissions/applications/ug-int

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 pages 5-8 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 53)

3. Gather the supporting documentation listed below.

4. Complete the online application form: eng.unimelb.edu.au/study/degrees

Required documentation (non-UoM graduates only)
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)*

*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 syllabus/subject description.

Additional documentation
Evidence of any relevant work experience if required (see pages 5-8 for entry requirements). Evidence of work experience includes: 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 commencement)</th>
<th>Semester 2: (July commencement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Masters: 30 November</td>
<td>Professional Masters, all applicants: 30 April</td>
</tr>
<tr>
<td>Specialised Masters International Students: 30 December</td>
<td>30 April1</td>
</tr>
<tr>
<td>Specialised Masters Domestic students: 30 January</td>
<td>30 May1</td>
</tr>
</tbody>
</table>

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

1 Please note, the Master of Energy Systems is only offered for entry in semester one.
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. It is your responsibility to identify who you would like to work with, prior to making an application and to 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 eng.unimelb.edu.au/study/degrees/phd/projects

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

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 4th year Bachelor’s or at Master’s level
» A weighted average equivalent to the University of Melbourne’s 80%.

Full details are available at: eng.unimelb.edu.au/study/degrees/phd/apply-now

Scholarships – what is a competitive score?

| 80% | » Competitive for entry, but does not guarantee admission. |
|     | » A competitive score for local applicants from Go8 institutions for an Australian Postgraduate award |

| 85% | » A competitive score for local applicants from non Go8 institutions for an Australian Postgraduate Award |
|     | » 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: eng.unimelb.edu.au/study/degrees/phd/fees-scholarships

Application deadlines

Applications for admission may be submitted at any time.

English language requirements

All students studying at the University of Melbourne must satisfy the University of Melbourne English language entry requirements.

Full details are available at: futurestudents.unimelb.edu.au/admissions/entry-requirements/language-requirements

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.

<table>
<thead>
<tr>
<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>English language requirements:</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>
</tr>
<tr>
<td>Alternative English language requirements*</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 and no communicative skill below 42</td>
</tr>
</tbody>
</table>

*International applicants who have met the alternative English language scores may gain entry by successfully completing the University of Melbourne English Language Bridging Program (UMELBP). For more details: hawthornenglish.com/UMELBP.html
SCHOLARSHIP OPPORTUNITIES

Engineering and IT Scholarships

The Melbourne School of Engineering offers a range of scholarships for students at undergraduate, graduate and PhD level. All scholarships are awarded on a competitive basis based on academic performance. Separate applications are not required for incoming student scholarships, all students will be considered for the relevant scholarships at the time of their course offer.

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 at undergraduate, graduate and PhD level. 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. To view the full range of Melbourne scholarships visit: services.unimelb.edu.au/scholarships

Engineering & 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>
<tbody>
<tr>
<td>Melbourne School of Engineering Foundation Scholarships</td>
<td>Master of Engineering, Master of Information Technology, Master of Information Systems, Master of Energy Systems</td>
<td>$10,000 – $20,000</td>
<td>Domestic and International students</td>
</tr>
<tr>
<td>Melbourne School of Engineering Scholarships</td>
<td>All programs</td>
<td>$5,000 – $20,000</td>
<td>Domestic and International students</td>
</tr>
<tr>
<td>International Postgraduate Coursework Awards</td>
<td>All engineering and IT coursework programs</td>
<td>50% fee remission</td>
<td>International students only</td>
</tr>
<tr>
<td>JH Mirams Memorial Scholarships</td>
<td>All specialised masters programs</td>
<td>$5,000 – $10,000</td>
<td>Domestic and International students</td>
</tr>
</tbody>
</table>

Scholarships for current students

Once enrolled, students will be eligible to apply for a range of scholarship opportunities. These include graduate scholarships as well as The Paterson Scholarship for undergraduate engineering pathway students.

Full details of all engineering and IT scholarship opportunities for current students are listed at: currentstudents.eng.unimelb.edu.au/coursework/scholarships

Information and Enquiries:

13 MELB (13 6352)
+61 3 9035 5511
13melb@unimelb.edu.au
Commonwealth Supported Places (CSPs)
Domestic students, who are offered a CSP, pay part of the tuition fee (the student contribution) and the Australian Commonwealth Government pays the remaining contribution. The amount of the student contribution is based on the subjects in which you enrol, rather than the overall course. Eligible students can apply for a HECS-HELP loan.

Australian Fee Places
Domestic students, who are offered an Australian Fee Place are required to pay the full cost of tuition for a course, without a government subsidy. Eligible students can apply for a FEE-HELP loan.

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. More information at: studyassist.gov.au

Transferring from an Australian fee place to a CSP
High achieving students, who are eligible for a CSP, will be considered for an automatic transfer from an Australian fee place into a CSP, for the remainder of their course, upon completion of the first 100 points of their studies. There is a limited number of transfers available per semester.

Graduate Access Melbourne
Graduate Access Melbourne provides access to local applicants with personal circumstances that have had a sustained adverse effect on their academic achievement at undergraduate level, or who are members of a specified group known to be under-represented in higher education, such as women in engineering and IT. More information at: gradaccess.unimelb.edu.au

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
More information at: services.unimelb.edu.au/finaid

### 2018 Course Fees

<table>
<thead>
<tr>
<th>Course</th>
<th>Domestic fee1</th>
<th>International fee1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Engineering</td>
<td>$33,024 per annum</td>
<td>$41,344 per annum</td>
</tr>
<tr>
<td>CSPs will be available2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Energy Systems</td>
<td>$33,024 per annum</td>
<td>$41,344 per annum</td>
</tr>
<tr>
<td>Master of Engineering Management</td>
<td>$33,024 per annum</td>
<td>$41,344 per annum</td>
</tr>
<tr>
<td>Master of Engineering Structures</td>
<td>$33,024 per annum</td>
<td>$41,344 per annum</td>
</tr>
<tr>
<td>Master of Environmental Engineering</td>
<td>$33,024 per annum</td>
<td>$41,344 per annum</td>
</tr>
<tr>
<td>Master of Information Systems</td>
<td>$30,848 per annum</td>
<td>$41,344 per annum</td>
</tr>
<tr>
<td>CSPs will be available2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Information Technology</td>
<td>$33,024 per annum</td>
<td>$41,344 per annum</td>
</tr>
<tr>
<td>Master of Telecommunications Engineering</td>
<td>$33,024 per annum</td>
<td>$41,344 per annum</td>
</tr>
<tr>
<td>Master of Philosophy – Engineering</td>
<td>RTP places available3</td>
<td>$41,728 per annum</td>
</tr>
<tr>
<td>PhD</td>
<td>RTP places available3</td>
<td>$41,728 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. More details can be found at: futurestudents.unimelb.edu.au/admissions/fees
2 Information about Commonwealth Supported Place (CSP) rates available at: futurestudents.unimelb.edu.au/admissions/fees
3 Domestic students are exempt from tuition fees under the Australian Government’s Research Training Program (RTP).

Further Information
Detailed information about fees and funding support for international and local students including undergraduate and postgraduate local and international fee brochures, scholarships, loans and grants, youth allowance, Austudy and ABSTUDY, currency converters, the cost of living in Melbourne and financial aid, is available at: futurestudents.unimelb.edu.au/admissions/fees
CAREERS AND EMPLOYMENT

Australia’s digitally-driven economy is growing, and a workforce equipped with engineering and IT skills is essential to consolidating this opportunity. Innovation in disruptive technologies, such as the Internet of Things, 3D printing and robotics is of key importance in the workplace today. Organisations and individuals within the science, technology, engineering and mathematics (STEM) sector are uniquely positioned to shape this dynamic landscape. Employers are seeking candidates with the right combination of technical and professional skills to fill these valuable STEM roles. The need for technical expertise is strengthening, while business and communication skills are increasingly valued.

Our graduates enter the workforce with the ability to lead projects and teams, and the creativity to analyse problems and develop innovative solutions. You will develop strong business, technical and interpersonal skills, to fill these roles. The need for technical expertise is strengthening, while business and communication skills are increasingly valued.

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Useful websites:
- Australian Government Job Outlook – joboutlook.gov.au
- Melbourne Careers Centre – careers.unimelb.edu.au

Graduate salaries¹

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Median annual salary before tax</th>
<th>Job category on Job Outlook website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomedical Engineering</td>
<td>$78,936</td>
<td>Engineering – Other</td>
</tr>
<tr>
<td>Chemical and Biochemical Engineering</td>
<td>$82,732</td>
<td>Engineering – Chemical and Materials</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>$99,996</td>
<td>Engineering – Civil</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>$104,000 $85,020</td>
<td>Engineering – Electrical</td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>$78,936 $99,996</td>
<td>Engineering – Other</td>
</tr>
<tr>
<td>Spatial Information²</td>
<td>$78,936 $99,996</td>
<td>Engineering – Other</td>
</tr>
<tr>
<td>IT Professionals</td>
<td>$87,256 $104,000</td>
<td>ICT Business and Systems Analyst</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>$86,112 $104,000</td>
<td>ICT Manager</td>
</tr>
<tr>
<td>Mechatronic Engineering²</td>
<td>$86,112</td>
<td>Engineering – Industrial, Mechanical and Production</td>
</tr>
<tr>
<td>Software Engineering</td>
<td>$83,720</td>
<td>Software and Applications Programmers</td>
</tr>
<tr>
<td>Structural Engineering</td>
<td>$99,996</td>
<td>Engineering – Civil</td>
</tr>
</tbody>
</table>

¹ The salary information has been estimated from weekly gross median salary figures taken from the Australian Government’s Job Outlook website. This information is intended to be an indicative guide only and salaries will vary on a case by case basis.
² Some discipline areas were not covered by the web site, in which case similar disciplines or job titles have been supplied to give a rough guideline.