Course progression map for 2022 commencing students

This progression map provides advice on the suitable sequencing of units and guidance on how to plan unit enrolment for each semester of study. It should be used in conjunction with the requirements of the course as specified in the Handbook. The map is subject to updates. Update version: 20/11/2023

E6014 Master of Engineering
Specialisation - Biological engineering

| YEAR 1 | Semester 1 | ENG5100 Professional engineering in organisation and society | ENG5001 Advanced engineering data analysis | CHE5886 Advanced biopolymers | CHE5321 Advanced bioprocess technology |
| YEAR 1 | Semester 2 | ENG5410 Research practice in engineering | Enhancement unit | CHE5882 Biomass and biorefineries | CHE5322 Advanced biochemical engineering |

- Part A. Common core units
- Part B. Specialist core units
- Part C. Enhancement units

Biological engineering enhancement units

- BEX5411 Creativity and entrepreneurship
- BEX5413 Technology and innovation for start-ups
- CHE5883 Nanostructured membranes for separation and energy production
- CHE5889 Food engineering and processing
- ENG5008 Work integrated learning *
- GCH5010 Introduction to green chemistry
- MGF5020 Business ethics in a global environment
- MGF5600 Managing innovation

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**E6014 Master of Engineering**

Specialisation - Civil engineering

<table>
<thead>
<tr>
<th>Year 1 Semester 1</th>
<th>ENG5100 Professional engineering in organisation and society</th>
<th>ENG5001 Advanced engineering data analysis</th>
<th>Specialist core unit</th>
<th>Specialist core unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR 1 Semester 2</td>
<td>ENG5410 Research practice in engineering</td>
<td>Enhancement unit</td>
<td>Specialist core unit</td>
<td>Specialist core unit</td>
</tr>
</tbody>
</table>

- **Part A. Common core units**
- **Part B. Specialist core units**
- **Part C. Enhancement units**

### Civil engineering enhancement units

- BEX5411 Creativity and entrepreneurship
- BEX5413 Technology and innovation for start-ups
- CIV5135 Advanced structural design
- CIV5177 Advanced road engineering
- CIV5301 Advanced traffic engineering
- CIV5314 Planning urban mobility futures
- CIV5882 Flood hydraulics and hydrology
- CIV5883 Surface water hydrology
- CIV5887 Infrastructure rehabilitation and monitoring
- CIV5888 Advanced computational methods
- ECE5146 Multimedia technologies
- ECE5179 Neural networks and deep learning
- ENG5002 Engineering entrepreneurship
- ENG5008 Work integrated learning *
- MEC5882 Instrumentation, sensing and monitoring
- MEC5888 Renewable energy systems
- MGF5020 Business ethics in a global environment
- MGF5600 Managing innovation
- MTE5197 Engineering with nanomaterials
- MTE5883 Environmental durability and protection of metals and engineering materials

### Civil engineering specialist core units

Below are suggested units to guide you in focusing in a field of civil engineering suited to your previous study. You may also choose freely from the civil units listed below.

- **Structural engineering**
  - CIV5885 Infrastructure dynamics
  - CIV5887 Infrastructure rehabilitation and monitoring
  - CIV5888 Advanced computational methods or CIV5899 from 2023
  - CIV5899 Infrastructure information management

- **Geotechnical engineering**
  - CIV5886 Infrastructure geomechanics
  - CIV5887 Infrastructure rehabilitation and monitoring or CIV5148
  - CIV5888 Advanced computational methods
  - CIV5899 Infrastructure information management

- **Transport engineering**
  - CIV5301 Advanced traffic engineering or CIV5598 from 2023
  - CIV5302 Traffic engineering and management
  - CIV5304 Intelligent transport systems Replace with CIV5309 from 2024
  - CIV5314 Planning urban mobility futures

- **Water engineering**
  - CIV5881 Ground water hydraulics or CIV5899 from 2023
  - CIV5882 Flood hydraulics and hydrology
  - CIV5883 Surface water hydrology
  - CIV5884 Water sensitive stormwater design

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E6014 Master of Engineering
Specialisation - Electrical engineering

<table>
<thead>
<tr>
<th>YEAR 1</th>
<th>ENG5100 Professional engineering in organisation and society</th>
<th>ENG5001 Advanced engineering data analysis</th>
<th>ECE5881 Real-time system design</th>
<th>ECE5883 Advanced signal processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td>ENG5410 Research practice in engineering</td>
<td>Enhancement unit</td>
<td>ECE5882 Advanced electronics design</td>
<td>ECE5884 Wireless communications</td>
</tr>
</tbody>
</table>

- Part A. Common core units
- Part B. Specialist core units
- Part C. Enhancement units

### Electrical engineering enhancement units

- BEX5411 Creativity and entrepreneurship
- BEX5413 Technology and innovation for start-ups
- CHE5882 Biomass and biorefineries
- CHE5883 Nanostructured membranes for separation and energy production
- ECE5122 Advanced electromagnetics
- ECE5143 Optical communications
- ECE5146 Multimedia technologies
- ECE5153 Power system analysis
- ECE5156 Advanced power electronics
- ECE5178 Intelligent robotics
- ECE5179 Neural networks and deep learning
- ECE5886 Smart grids
- ENG5007 Translation and commercialisation of medical technologies
- ENG5008 Work integrated learning *
- MEC5881 Engineering systems performance analysis
- MGF5020 Business ethics in a global environment
- MGF5600 Managing innovation
- MTE5883 Environmental durability and protection of metals and engineering materials
- MTE5886 Additive manufacturing of metallic materials

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E6014 Master of Engineering
Specialisation - Materials engineering

<table>
<thead>
<tr>
<th>PART</th>
<th>YEAR</th>
<th>SEMESTER</th>
<th>UNIT CODE</th>
<th>UNIT NAME</th>
<th>COMPULSORY OR SPECIALIST CORE</th>
<th>ENHANCEMENT</th>
<th>REMARKS</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>1</td>
<td>ENG5100</td>
<td>Professional engineering in organisation and society</td>
<td>Specialist core unit</td>
<td>Specialist core unit</td>
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</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>ENG5001</td>
<td>Advanced engineering data analysis</td>
<td>Specialist core unit</td>
<td>Specialist core unit</td>
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<tr>
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<td>1</td>
<td>ENG5410</td>
<td>Research practice in engineering</td>
<td>Enhancement unit</td>
<td>Specialist core unit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>ENG5410</td>
<td>Research practice in engineering</td>
<td>Enhancement unit</td>
<td>Specialist core unit</td>
<td></td>
</tr>
</tbody>
</table>

**Materials engineering enhancement units**

- BEX5411 Creativity and entrepreneurship
- BEX5413 Technology and innovation for start-ups
- CHE5883 Nanostructured membranes for separation and energy production
- ENG5008 Work integrated learning *
- MGF5020 Business ethics in a global environment
- MGF5600 Managing innovation
- MTE5194 Engineering alloy design, processing and selection
- MTE5197 Engineering with nanomaterials
- MTE5881 Applied crystallography in advanced materials characterisation
- MTE5883 Environmental durability and protection of metals and engineering materials
- MTE5886 Additive manufacturing of metallic materials

**Materials engineering specialist core units**

- MTE5190 Advanced materials modelling
- MTE5193 Materials and sustainability
- MTE5194 Engineering alloy design, processing and selection
- MTE5197 Engineering with nanomaterials
- MTE5881 Applied crystallography in advanced materials characterisation
- MTE5882 Advanced polymeric materials
- MTE5883 Environmental durability and protection of metals and engineering materials
- MTE5884 Advanced photovoltaics and energy storage
- MTE5885 Biomaterials and biomechanics
- MTE5886 Additive manufacturing of metallic materials
- MTE5887 Additive manufacturing of polymeric and functional materials

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E6014 Master of Engineering
Specialisation - Mechanical engineering

| YEAR 1 | ENG5100 Professional engineering in organisation and society | ENG5001 Advanced engineering data analysis | MEC5883 Mechanical systems design | MEC5885 Energy efficiency and sustainability engineering |
| YEAR 1 | ENG5410 Research practice in engineering | Enhancement unit | MEC5881 Engineering systems performance and analysis | MEC5884 Sustainable engineering systems |

Part A. Common core units
Part B. Specialist core units
Part C. Enhancement units

Mechanical engineering enhancement units

- BEX5411 Creativity and entrepreneurship
- BEX5413 Technology and innovation for start-ups
- ENG5002 Engineering entrepreneurship
- ENG5008 Work integrated learning *
- MEC5156 Advanced robotics in manufacturing
- MEC5882 Instrumentation, sensing and monitoring
- MEC5885 Renewable energy systems
- MEC5897 Lean manufacturing
- MGF5020 Business ethics in a global environment
- MGF5600 Managing innovation
- MTE5193 Materials and sustainability
- MTE5882 Advanced polymeric materials
- MTE5883 Environmental durability and protection of metals and engineering materials
- MTE5884 Advanced photovoltaics and energy storage
- MTE5886 Additive manufacturing of metallic materials

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