Chemical Engineering

CEICAH

Chemical Engineering involves researching, developing and improving properties of products we use every day through the selection of raw materials, the design of chemical processes, and improving the conditions for production. It's about taking projects from inception as a research proposal, through product development and on to commercialisation and manufacture. You'll learn how to apply your knowledge in chemical engineering and chemistry to optimise complex chemical processes in environmental management, general industry and services like water delivery. You'll master the entire process, extrapolating small scale, laboratory chemistry into large, industrial scale production. To get work ready, you'll apply these skills through 60 days of approved industry training.
**Faculty**
Faculty of Engineering

**School**
School of Chemical Engineering

**Study Level**
Undergraduate

**Minimum Units of Credit**
168

**Specialisation Type**
Honours
Available in Program(s)

Program(s) in which this honours is available

Bachelor of Engineering (Honours) - BE (Hons)

**3707 Engineering (Honours)**
Faculty: Faculty of Engineering
Campus: Kensington
Units of Credit: 192
Typical Duration: 4 Years

Bachelor of Engineering (Honours) - BE (Hons)
Master of Biomedical Engineering - MBiomedE

**3768 Engineering (Honours)/Biomedical Engineering**
Faculty: Faculty of Engineering
Campus: Kensington
Units of Credit: 240
Typical Duration: 5 Years
Specialisation Structure

Students must complete 168 UOC.

Level 1 Core Courses

Students must take 42 UOC of the following courses.

**CHEM1811 | 6 UOC**  
Engineering Chemistry 1A

**CHEM1821 | 6 UOC**  
Engineering Chemistry 1B

**ENGG1000 | 6 UOC**  
Introduction to Engineering Design and Innovation

**ENGG1811 | 6 UOC**  
Computing for Engineers

One of the following:

**MATH1131 | 6 UOC**  
Mathematics 1A

**MATH1141 | 6 UOC**  
Higher Mathematics 1A

One of the following:

**MATH1231 | 6 UOC**  
Mathematics 1B

**MATH1241 | 6 UOC**  
Higher Mathematics 1B

One of the following:

**PHYS1121 | 6 UOC**  
Physics 1A
PHYS1131 | 6 UOC
Higher Physics 1A

Level 2 Core Courses

Students must take 48 UOC of the following courses.

CEIC2000 | 6 UOC
Material and Energy Systems

CEIC2001 | 6 UOC
Fluid and Particle Mechanics

CEIC2002 | 6 UOC
Heat and Mass Transfer

CEIC2004 | 6 UOC
Industrial Chemistry for Chemical Engineers

CEIC2005 | 6 UOC
Chemical Reaction Engineering

CEIC2007 | 6 UOC
Chemical Engineering Lab A

MATH2089 | 6 UOC
Numerical Methods and Statistics

One of the following:
MATH2018 | 6 UOC
Engineering Mathematics 2D

MATH2019 | 6 UOC
Engineering Mathematics 2E

Level 3 Core Courses
Students must take 36 UOC of the following courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEIC3000</td>
<td>6</td>
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<tr>
<td>CEIC3001</td>
<td>6</td>
</tr>
<tr>
<td>CEIC3004</td>
<td>6</td>
</tr>
<tr>
<td>CEIC3005</td>
<td>6</td>
</tr>
<tr>
<td>CEIC3006</td>
<td>6</td>
</tr>
<tr>
<td>CEIC3007</td>
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</table>

**Process Modelling and Analysis**

**Advanced Thermodynamics and Separation**

**Process Equipment Design**

**Process Plant Design**

**Process Dynamics and Control**

**Chemical Engineering Lab B**

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**Level 4 Core Courses**

Students must take 30 UOC of the following courses.

<table>
<thead>
<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>CEIC4000</td>
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<tr>
<td>CEIC4001</td>
<td>12</td>
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<tr>
<td>CEIC4951</td>
<td>4</td>
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<tr>
<td>CEIC4952</td>
<td>4</td>
</tr>
<tr>
<td>CEIC4953</td>
<td>4</td>
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</tbody>
</table>

**Environment and Sustainability**

**Process Design Project**

**Research Thesis A**

**Research Thesis B**

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Research Thesis C

**Discipline (Depth) Electives**

Students must take at least 6 UOC, up to a maximum of 12 UOC of the following courses.

- **CEIC6004 | 6 UOC**  
  Advanced Polymers

- **CEIC6711 | 6 UOC**  
  Complex Fluids Microstructure and Rheology

- **CEIC8102 | 6 UOC**  
  Advanced Process Control

- **CHEN6701 | 6 UOC**  
  Advanced Reaction Engineering

- **CHEN6703 | 6 UOC**  
  Advanced Particle Systems Engineering

- **CHEN6706 | 6 UOC**  
  Advanced Transport Phenomena

**Level 1 Prescribed Electives**

Students must take at least 6 UOC of the following courses.

- **BABS1201 | 6 UOC**  
  Molecules, Cells and Genes

- **BIOM1010 | 6 UOC**  
  Engineering in Medicine and Biology

- **BIOS1301 | 6 UOC**  
  Ecology, Sustainability and Environmental Science
<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEIC1000</td>
<td>6</td>
<td>Sustainable Product Engineering and Design</td>
</tr>
<tr>
<td>COMP1521</td>
<td>6</td>
<td>Computer Systems Fundamentals</td>
</tr>
<tr>
<td>COMP1531</td>
<td>6</td>
<td>Software Engineering Fundamentals</td>
</tr>
<tr>
<td>CVEN1701</td>
<td>6</td>
<td>Environmental Principles and Systems</td>
</tr>
<tr>
<td>ELEC1111</td>
<td>6</td>
<td>Electrical and Telecommunications Engineering</td>
</tr>
<tr>
<td>ENGG1100</td>
<td>6</td>
<td>Grand Challenges for Engineering</td>
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<tr>
<td>ENGG1200</td>
<td>6</td>
<td>Undergraduate Special Projects</td>
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<tr>
<td>ENGG1300</td>
<td>6</td>
<td>Engineering Mechanics</td>
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<tr>
<td>ENGG1400</td>
<td>6</td>
<td>Engineering Infrastructure Systems</td>
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<tr>
<td>GEOS1111</td>
<td>6</td>
<td>Fundamentals of Geology</td>
</tr>
<tr>
<td>GMAT1110</td>
<td>6</td>
<td>Surveying and Geospatial Engineering</td>
</tr>
<tr>
<td>MATH1081</td>
<td>6</td>
<td>Discrete Mathematics</td>
</tr>
</tbody>
</table>
As a part of the CEICAH stream, students are required to select one elective from the Disciplinary Electives (Depth) list given above. Students studying a single degree in chemical engineering are required to select another two disciplinary electives, one from the Disciplinary Electives (Breadth) list and the remaining from either the Depth, Breadth, or Practice lists.

**Breadth Electives**

Students can take up to a maximum of 12 UOC of the following courses.

**CEIC6005 | 6 UOC**
Fuel and Energy

**CEIC8204 | 6 UOC**
Topics in Business Management in Chemical Engineering

**CEIC8330 | 6 UOC**
Process Engineering in the Petroleum Industry

**CEIC8341 | 6 UOC**
Membrane Processes
<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
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<tbody>
<tr>
<td>CHEM2041</td>
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<tr>
<td>Analytical Chemistry: Essential Methods</td>
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<tr>
<td>ELEC4445</td>
<td>6</td>
</tr>
<tr>
<td>Entrepreneurial Engineering</td>
<td></td>
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<tr>
<td>ENGG3001</td>
<td>6</td>
</tr>
<tr>
<td>Fundamentals of Humanitarian Engineering</td>
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</tr>
<tr>
<td>FOOD3010</td>
<td>6</td>
</tr>
<tr>
<td>Food Preservation</td>
<td></td>
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<tr>
<td>FOOD8450</td>
<td>6</td>
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<tr>
<td>Advanced Food Engineering</td>
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<tr>
<td>GSOE9111</td>
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<tr>
<td>Energy Storage</td>
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<tr>
<td>POLY3000</td>
<td>6</td>
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<tr>
<td>Polymer Science</td>
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</table>

**Practice Electives**

Students can take up to a maximum of 6 UOC of the following courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
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<tbody>
<tr>
<td>CEIC4954</td>
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<tr>
<td>Research Thesis Extension</td>
<td></td>
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<tr>
<td>ENGG3060</td>
<td>6</td>
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<tr>
<td>Maker Games</td>
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<td>ENGG4060</td>
<td>6</td>
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<tr>
<td>Student Initiated Project</td>
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<tr>
<td>ENGG4102</td>
<td>6</td>
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</tbody>
</table>

**Recommended Level 1 Elective**

The suggested Level 1 Elective for this stream is,

- CEIC1000 Product Engineering Design (6 UOC)

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**Enrolment Disclaimer**

You are responsible for ensuring you enrol in courses according to your program requirements. myUNSW enrolment checks that you have met enrolment requirements such as pre-requisites for individual courses but not that a course will count towards your program requirements. Do not assume that because you have enrolled in a course that the course will be credited towards your program.
Additional Information

Industrial Experience Requirements

Students are required to complete a minimum of 60 days of Industrial Training.

Further Requirements

Students are expected to possess a calculator having exponential capabilities, however, more advanced calculators and personal computers, will be found useful.

Students of both Chemical Engineering and Industrial Chemistry are advised to have a copy of Perry J H Ed. Chemical Engineers Handbook 6th Ed. McGraw-Hill. This book is used extensively for most courses and units.

Professional Recognition

Successful completion of the BE (Hons) (Chemical Engineering) degree program is accepted by the Institution of Chemical Engineers and by Engineers Australia as sufficient academic qualification for membership.
Pre-2019 Handbook Editions

Access past handbook editions (2018 and prior)

Pre-2019 Handbook Editions
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Authorised by Deputy Vice-Chancellor (Academic)
CRICOS Provider Code 00098G
ABN: 57 195 873 179