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
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

CEIC2005  |  6 UOC
Chemical Reaction Engineering

CEIC2007  |  6 UOC
Chemical Engineering Lab A

DESN2000  |  6 UOC
Engineering Design and Professional Practice

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.

- **CEIC3000 | 6 UOC**  
  Process Modelling and Analysis

- **CEIC3001 | 6 UOC**  
  Advanced Thermodynamics and Separation

- **CEIC3004 | 6 UOC**  
  Process Equipment Design

- **CEIC3005 | 6 UOC**  
  Process Plant Design

- **CEIC3006 | 6 UOC**  
  Process Dynamics and Control

- **CEIC3007 | 6 UOC**  
  Chemical Engineering Lab B

**Level 4 Core Courses**

Students must take 30 UOC of the following courses.

- **CEIC4000 | 6 UOC**  
  Environment and Sustainability

- **CEIC4001 | 12 UOC**  
  Process Design Project

- **CEIC4951 | 4 UOC**  
  Research Thesis A

- **CEIC4952 | 4 UOC**  
  Research Thesis B

- **CEIC4953 | 4 UOC**
**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

- **CEIC6789**  |  6 UOC
  Data-driven Decision Making in Chemical Engineering and Food Science

- **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
<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS1301</td>
<td>6</td>
<td>Ecology, Sustainability and Environmental Science</td>
</tr>
<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>
</tr>
<tr>
<td>ENGG1200</td>
<td>6</td>
<td>Undergraduate Special Projects</td>
</tr>
<tr>
<td>ENGG1300</td>
<td>6</td>
<td>Engineering Mechanics</td>
</tr>
<tr>
<td>ENGG1400</td>
<td>6</td>
<td>Engineering Infrastructure Systems</td>
</tr>
<tr>
<td>GEOS1111</td>
<td>6</td>
<td>Fundamentals of Geology</td>
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<tr>
<td>GMAT1110</td>
<td>6</td>
<td>Surveying and Geospatial Engineering</td>
</tr>
<tr>
<td>Course Code</td>
<td>UOC</td>
<td>Course Title</td>
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<tr>
<td>------------</td>
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</tr>
<tr>
<td>MATH1081</td>
<td>6</td>
<td>Discrete Mathematics</td>
</tr>
<tr>
<td>MATS1101</td>
<td>6</td>
<td>Engineering Materials and Chemistry</td>
</tr>
<tr>
<td>MATS1110</td>
<td>6</td>
<td>Introduction to Materials for Engineering Applications</td>
</tr>
<tr>
<td>MINE1010</td>
<td>6</td>
<td>Mineral Resources Engineering</td>
</tr>
<tr>
<td>PHYS1231</td>
<td>6</td>
<td>Higher Physics 1B</td>
</tr>
<tr>
<td>PSYC1001</td>
<td>6</td>
<td>Psychology 1A</td>
</tr>
<tr>
<td>SOLA1070</td>
<td>6</td>
<td>Sustainable Energy</td>
</tr>
</tbody>
</table>

**Discipline Electives (Single Degree Mode)**

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.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEIC6005</td>
<td>6</td>
<td>Fuel and Energy</td>
</tr>
<tr>
<td>CEIC6712</td>
<td>6</td>
<td>Pharmaceutical Design and Engineering</td>
</tr>
</tbody>
</table>
CEIC8204  |  6 UOC
Topics in Business Management in Chemical Engineering

CEIC8330  |  6 UOC
Process Engineering in the Petroleum Industry

CEIC8341  |  6 UOC
Membrane Processes

CHEM2041  |  6 UOC
Analytical Chemistry: Essential Methods

ELEC4445  |  6 UOC
Entrepreneurial Engineering

ENGG3001  |  6 UOC
Fundamentals of Humanitarian Engineering

FOOD3010  |  6 UOC
Food Preservation

FOOD8450  |  6 UOC
Advanced Food Engineering

GSOE9111  |  6 UOC
Energy Storage

POLY3000  |  6 UOC
Polymer Science

**Practice Electives**

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

CEIC4954  |  6 UOC
**Recommended Level 1 Elective**

The suggested Level 1 Elective for this stream is,

- CEIC1000 Product Engineering Design (6 UOC)

**Enrolment Disclaimer**

Unless advised otherwise by your program authority, you should follow the rules for the handbook for the year you commenced your program. You are also 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.
**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