Chemical Product Engineering

CEICDH

Chemical Product Engineering involves researching, developing and improving the properties of the products that we use every day through the selection and design of the materials that are used. Product engineers work on the fluids that you use in your everyday life, including chemicals (cosmetics, pharmaceuticals, shampoos, paints, glues), foods, and drinks. As a product engineer, you will learn to take consumer needs and turn them into technical requirements, finding the right combinations of chemicals to deliver those properties and then developing the product and strategies for commercialisation and manufacture. You will learn how to apply your knowledge of engineering and chemistry to design complex chemical products for the pharmaceutical, consumer products and food industries. You'll master the entire development process, testing out ideas for products and extrapolating small scale, laboratory chemistry into large, industrial scale production. In the final year Product Design Project, you will work with industry partners to develop a new consumer product up to the point where it could be patented and commercialised. To get work ready, you'll apply these skills through 60 days of approved industry training.

The courses listed below have to be completed to finish the degree, but the order in which they are taken is important and you need to follow advice on this. Many courses are offered only once per year and others have pre-requisites or exclusions which govern the order in which they can be taken. Both of these things can have a big impact on enrolment planning if poor choices of course combinations are made. You are strongly encouraged to consult the School website and follow the recommended course sequence linked here.

The timing of the general education courses and elective courses may be modified to optimise your choice of courses. It is your responsibility to plan your enrolment appropriately. Assistance is available from the School of Chemical Engineering Student Office, should you require it.
<table>
<thead>
<tr>
<th><strong>Faculty</strong></th>
<th>Faculty of Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School</strong></td>
<td>School of Chemical Engineering</td>
</tr>
<tr>
<td><strong>Study Level</strong></td>
<td>Undergraduate</td>
</tr>
<tr>
<td><strong>Minimum Units of Credit</strong></td>
<td>168</td>
</tr>
<tr>
<td><strong>Specialisation Type</strong></td>
<td>Honours</td>
</tr>
</tbody>
</table>
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
# Specialisation Structure

Students must complete 168 UOC.

## Level 1 Core Courses

Students must take 42 UOC of the following courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM1811</td>
<td>6</td>
<td>Engineering Chemistry 1A</td>
</tr>
<tr>
<td>CHEM1821</td>
<td>6</td>
<td>Engineering Chemistry 1B</td>
</tr>
<tr>
<td>ENGG1000</td>
<td>6</td>
<td>Introduction to Engineering Design and Innovation</td>
</tr>
</tbody>
</table>

One of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH1131</td>
<td>6</td>
<td>Mathematics 1A</td>
</tr>
<tr>
<td>MATH1141</td>
<td>6</td>
<td>Higher Mathematics 1A</td>
</tr>
</tbody>
</table>

One of the following:

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</tr>
</thead>
<tbody>
<tr>
<td>MATH1231</td>
<td>6</td>
<td>Mathematics 1B</td>
</tr>
<tr>
<td>MATH1241</td>
<td>6</td>
<td>Higher Mathematics 1B</td>
</tr>
</tbody>
</table>

One of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS1121</td>
<td>6</td>
<td>Physics 1A</td>
</tr>
<tr>
<td>PHYS1131</td>
<td>6</td>
<td>Higher Physics 1A</td>
</tr>
</tbody>
</table>
Level 2 Core Courses

Students must take 54 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

CHEM2021  |  6 UOC
Organic Chemistry: Mechanisms and Biomolecules

CHEM2031  |  6 UOC
Inorganic Chemistry: The Elements

CHEM2041  |  6 UOC
Analytical Chemistry: Essential Methods

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 24 UOC of the following courses.

CEIC3001  |  6 UOC
Advanced Thermodynamics and Separation

CEIC3005  |  6 UOC
Process Plant Design

CHEM3021  |  6 UOC
Organic Chemistry: Modern Synthetic Strategies

POLY3000  |  6 UOC
Polymer Science

**Level 4 Core Courses**

Students must take 30 UOC of the following courses.

CEIC4000  |  6 UOC
Environment and Sustainability

CEIC4007  |  6 UOC
Product Design Project Thesis A

CEIC4008  |  6 UOC
Product Design Project Thesis B

CEIC6711  |  6 UOC
Complex Fluids Microstructure and Rheology
One of the following:

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

**ELEC4445 | 6 UOC**
Entrepreneurial Engineering

**Discipline Electives**

Students must take at least 12 UOC of the following courses.

**CEIC4951 | 4 UOC**
Research Thesis A

**CEIC4952 | 4 UOC**
Research Thesis B

**CEIC4953 | 4 UOC**
Research Thesis C

**CEIC4954 | 6 UOC**
Research Thesis Extension

**CEIC6005 | 6 UOC**
Fuel and Energy

**CEIC8105 | 6 UOC**
Advanced Polymer Science and Research

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

**CEIC8341 | 6 UOC**
Membrane Processes

**CHEN6701 | 6 UOC**
Advanced Reaction Engineering

CHEN6703  |  6 UOC
Advanced Particle Systems Engineering

ENGG3001  |  6 UOC
Fundamentals of Humanitarian Engineering

ENGG3060  |  6 UOC
Maker Games

ENGG4060  |  6 UOC
Student Initiated Project

ENGG4102  |  6 UOC
Humanitarian Engineering Project

FOOD8450  |  6 UOC
Advanced Food Engineering

GSOE9111  |  6 UOC
Energy Storage

**Level 1 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>
</tr>
</thead>
<tbody>
<tr>
<td>CEIC1000</td>
<td>6</td>
</tr>
<tr>
<td>Sustainable Product Engineering and Design</td>
<td></td>
</tr>
<tr>
<td>COMP1521</td>
<td>6</td>
</tr>
<tr>
<td>Computer Systems Fundamentals</td>
<td></td>
</tr>
<tr>
<td>COMP1531</td>
<td>6</td>
</tr>
<tr>
<td>Software Engineering Fundamentals</td>
<td></td>
</tr>
<tr>
<td>CVEN1701</td>
<td>6</td>
</tr>
<tr>
<td>Environmental Principles and Systems</td>
<td></td>
</tr>
<tr>
<td>ELEC1111</td>
<td>6</td>
</tr>
<tr>
<td>Electrical and Telecommunications Engineering</td>
<td></td>
</tr>
<tr>
<td>ENGG1100</td>
<td>6</td>
</tr>
<tr>
<td>Grand Challenges for Engineering</td>
<td></td>
</tr>
<tr>
<td>ENGG1200</td>
<td>6</td>
</tr>
<tr>
<td>Undergraduate Special Projects</td>
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</tr>
<tr>
<td>ENGG1300</td>
<td>6</td>
</tr>
<tr>
<td>Engineering Mechanics</td>
<td></td>
</tr>
<tr>
<td>ENGG1400</td>
<td>6</td>
</tr>
<tr>
<td>Engineering Infrastructure Systems</td>
<td></td>
</tr>
<tr>
<td>GEOS1111</td>
<td>6</td>
</tr>
<tr>
<td>Fundamentals of Geology</td>
<td></td>
</tr>
<tr>
<td>GEOS3321</td>
<td>6</td>
</tr>
<tr>
<td>Fundamentals of Petroleum Geology</td>
<td></td>
</tr>
<tr>
<td>GMAT1110</td>
<td>6</td>
</tr>
<tr>
<td>Surveying and Geospatial Engineering</td>
<td></td>
</tr>
</tbody>
</table>
MATH1081  |  6 UOC
Discrete Mathematics

MATS1101  |  6 UOC
Engineering Materials and Chemistry

MINE1010  |  6 UOC
Mineral Resources Engineering

PHYS1231  |  6 UOC
Higher Physics 1B

PSYC1001  |  6 UOC
Psychology 1A

SOLA1070  |  6 UOC
Sustainable Energy

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 Chemical Product Engineering 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.

**Professional Recognition**

UNSW is seeking provisional accreditation for this stream with Engineers Australia.
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