Specialisation

Chemical Product Engineering

CEICDH  |  168 Units of Credit
Overview

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>
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</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.

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

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

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

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

  One of the following:
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP1511</td>
<td>6</td>
<td>Programming Fundamentals</td>
</tr>
<tr>
<td>COMP1911</td>
<td>6</td>
<td>Computing 1A</td>
</tr>
<tr>
<td>ENGG1811</td>
<td>6</td>
<td>Computing for Engineers</td>
</tr>
</tbody>
</table>

**Level 2 Core Courses**

Students must take 54 UOC of the following courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
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</tr>
</thead>
<tbody>
<tr>
<td>CEIC2000</td>
<td>6</td>
<td>Material and Energy Systems</td>
</tr>
<tr>
<td>CEIC2001</td>
<td>6</td>
<td>Fluid and Particle Mechanics</td>
</tr>
<tr>
<td>CEIC2002</td>
<td>6</td>
<td>Heat and Mass Transfer</td>
</tr>
<tr>
<td>CEIC2005</td>
<td>6</td>
<td>Chemical Reaction Engineering</td>
</tr>
<tr>
<td>CHEM2021</td>
<td>6</td>
<td>Organic Chemistry: Mechanisms and Biomolecules</td>
</tr>
<tr>
<td>CHEM2031</td>
<td>6</td>
<td>Inorganic Chemistry: The Elements</td>
</tr>
<tr>
<td>CHEM2041</td>
<td>6</td>
<td>Analytical Chemistry: Essential Methods</td>
</tr>
<tr>
<td>DESN2000</td>
<td>6</td>
<td>Engineering Design and Professional Practice</td>
</tr>
</tbody>
</table>
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

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

- CEIC6712 | 6 UOC
  Pharmaceutical Design and Engineering

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

- CEIC8105 | 6 UOC
  Advanced Polymer Science and Research

- CEIC8330 | 6 UOC
  Process Engineering in the Petroleum Industry
Level 1 Electives

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

**BABS1201** | 6 UOC
Molecules, Cells and Genes
<table>
<thead>
<tr>
<th>Subject 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>
</tr>
<tr>
<td>Code</td>
<td>Units</td>
<td>Course Description</td>
</tr>
<tr>
<td>----------</td>
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<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>GMAT1110</td>
<td>6 UOC</td>
<td>Surveying and Geospatial Engineering</td>
</tr>
<tr>
<td>MATH1081</td>
<td>6 UOC</td>
<td>Discrete Mathematics</td>
</tr>
<tr>
<td>MATS1101</td>
<td>6 UOC</td>
<td>Engineering Materials and Chemistry</td>
</tr>
<tr>
<td>MATS1110</td>
<td>6 UOC</td>
<td>Introduction to Materials for Engineering Applications</td>
</tr>
<tr>
<td>MINE1010</td>
<td>6 UOC</td>
<td>Mineral Resources Engineering</td>
</tr>
<tr>
<td>PHYS1231</td>
<td>6 UOC</td>
<td>Higher Physics 1B</td>
</tr>
<tr>
<td>PSYC1001</td>
<td>6 UOC</td>
<td>Psychology 1A</td>
</tr>
<tr>
<td>SOLA1070</td>
<td>6 UOC</td>
<td>Sustainable Energy</td>
</tr>
</tbody>
</table>

**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