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
<table>
<thead>
<tr>
<th>Available in Program(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program(s) in which this honours is available</td>
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**Bachelor of Engineering (Honours) - BE (Hons)**

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

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**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
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.

- **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

CEIC6111  |  6 UOC  
Complex Fluids Microstructure and Rheology

CEIC802  |  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
CEIC1000  |  6 UOC  
Sustainable Product Engineering and Design

COMP1521  |  6 UOC  
Computer Systems Fundamentals

COMP1531  |  6 UOC  
Software Engineering Fundamentals

CVEN1701  |  6 UOC  
Environmental Principles and Systems

ELEC1111  |  6 UOC  
Electrical and Telecommunications Engineering

ENGG1100  |  6 UOC  
Grand Challenges for Engineering

ENGG1200  |  6 UOC  
Undergraduate Special Projects

ENGG1300  |  6 UOC  
Engineering Mechanics

ENGG1400  |  6 UOC  
Engineering Infrastructure Systems

GEOS1111  |  6 UOC  
Fundamentals of Geology

GMAT1110  |  6 UOC  
Surveying and Geospatial Engineering

MATH1081  |  6 UOC  
Discrete Mathematics
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.

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
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
Research Thesis Extension

ENGG3060 | 6 UOC
Maker Games

ENGG4060 | 6 UOC
Student Initiated Project

ENGG4102 | 6 UOC
Humanitarian Engineering Project

Recommended Level 1 Elective

The suggested Level 1 Elective for this stream is,

- CEIC1000 Product Engineering Design (6 UOC)

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