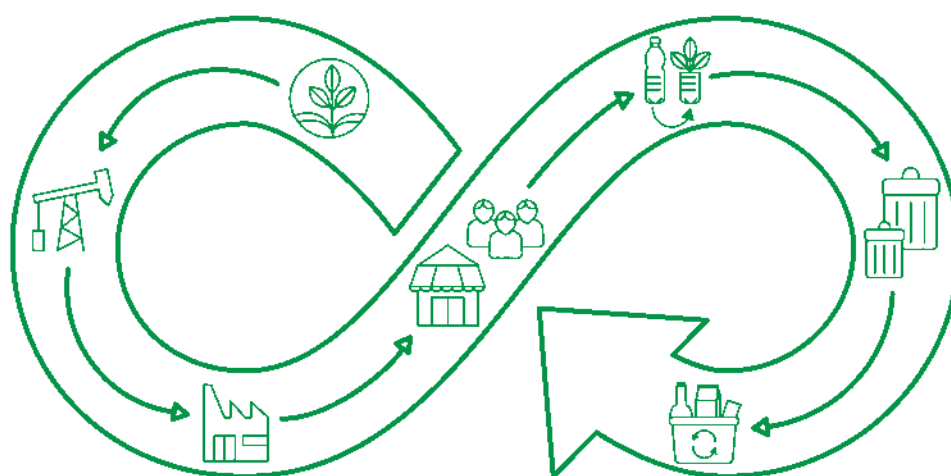


What can I do with a degree in Chemical and Process Engineering?

Chemical and Process Engineering.



Career planning: what do I need to know?

Knowledge of yourself is important for career decision making. Start by looking at your personal goals, abilities, values and interests to explore study and career options that are relevant to you. Some of these may change over time, so it is important to self-reflect and evaluate your career on an ongoing basis.

What do employers look for?

Many employers look for generic skills such as communication, customer-focus, cultural awareness and teamwork. With technology and globalisation changing the nature of society, skills such as resilience, problem solving and adaptability are valuable at work as well as in life.

How can I develop these skills?

- Some skills are developed through your degree
- Extra-curricular activities can help, for example

getting involved in clubs, mentoring, cultural groups, part-time work or volunteering

- Be open to professional and personal development opportunities. Whether it is undertaking an internship, overseas exchange, skills seminar, or joining an industry group – these activities will enhance your employability.

What else should I know?

The career options in this brochure are examples only and the list is not exhaustive. Some careers may require further study beyond a first degree or additional work experience. Some pathways and degrees have a recommended school background. Find more subject details at www.canterbury.ac.nz/subjects/ench

If this brochure does not answer your questions, talking to an expert such as a career consultant can help you to identify the next steps in your career decision making journey. www.canterbury.ac.nz/careers

What is Chemical and Process Engineering?

Engineers revolutionise the world. With a Chemical and Process Engineering degree you will be equipped to provide society's most basic needs such as:

- Supplying clean, safe drinking water
- Creating sustainable energy opportunities
- Improving society's health and well-being
- Providing a sustainable food supply.

Chemical and process engineers transform raw materials into products by chemical, physical or biological means. They design processes in facilities for processing oil and gas, metals, chemicals, fertilisers, wood, paper, food, medicines and more. They take science experiments from the laboratory and operate them at commercial scale. Others are involved in the research and development of new products and processes.



AT A GLANCE

MORE

chemical, industrial, production, plant, and petroleum engineers are needed in Aotearoa New Zealand*

160+

organisations are committed to ensuring diversity throughout engineering and architecture firms**

\$120k

is the salary senior chemical engineers can expect to earn up to but principal engineers may earn more***

What skills have UC graduates gained?

Through their Chemical and Process Engineering degree graduates develop a large amount of technical knowledge about the processing of chemicals and other materials. They also gain a valuable set of transferable skills that includes:

- Problem solving and decision making
- Logical and quantitative thinking
- Commercial and economic awareness
- Application of engineering technology and science
- Knowledge of chemical composition and processes
- Measuring and evaluating systems and processes
- Written and verbal communication
- Programming.

Applied learning is an important part of your degree, through work placements, consulting projects and fieldtrips. These experiences can deepen your skillset, awareness of others, working knowledge and employability.

Where have UC graduates been employed?

Chemical and Process Engineers are found in organisations that make products or process materials, ranging from aluminium to waste. UC graduates have found roles in sectors and with employers such as:

Professional, scientific, and technical consulting:

eg. Beca, Harrison Grierson, Aurecon, Worley Parsons, Safety Solutions, Earth Systems, IVS Labs, Technix, Callaghan Innovation, Thermo Fisher Scientific, CRL Energy, Genesis Oil and Gas Consultants, Plant and Platform Consultants

Food, beverage, pharmaceutical and packaging:

eg. Goodman Fielder, Fonterra, Harrington's Breweries, Westland Milk Products, Wineworks, Heinz Watties, Tetra Pak, Comvita

Heavy industry

eg. Alcoa, Pacific Aluminium, Dow, NZ Aluminium Smelters, Golden Bay Cement, NZ Steel

Electricity, gas, water and waste services

eg. Christchurch City Council, Transpower, Origin Energy, Powerco, Water Corporation, Watercare Services Limited, Ecolabs, Linde BOC

Energy and mining

eg. Todd Energy, OceanaGold, Shell Todd Oil Services, Orica Mining and Chemicals, Methanex, Renewable Energy Corporation, Petronas, Woodside Energy, Lightsource Renewable Energy, Petra Resources, IOXM

Agriculture, Forestry and Fishery

eg. Carter Holt Harvey, Forest Research Institute Malaysia, Ravensdown, Norske Skog Tasman, Oji Fibre solutions, Ballance Agri-Nutrients, Scion

Construction and infrastructure

eg. Babbage Consultants, Rationale, Marley Pipelines, Mott MacDonald, Metrix, Thysenkkrupp Industrial Solutions.

* Immigration New Zealand's 2019 long-term skill shortage list

** www.diversityagenda.org

*** www.careers.govt.nz

What jobs and activities do graduates do?

Chemical and Process Engineering graduates are employed in a wide variety of jobs — see some examples below.

Note: Some of the jobs listed may require postgraduate study. See the 'Further study' section.

Chemical and process engineer

- Researches and develops factory processes
- Examines the effects on the environment
- Prepares and presents reports

Process control / improvement engineer

- Evaluates and optimises equipment
- Monitors materials, processes and surroundings for problems
- Documents and records information

Field engineer / officer

- Installs and maintains products and equipment
- Ensures safety of equipment
- Coordinates the workloads of staff

Research engineer

- Tests materials, products and processes
- Writes and presents findings and reports
- Advises and consults with others

Pharmaceutical engineer

- Designs and produces pharmaceutical products
- Conducts pharmaceutical research
- Assesses the quality assurance of processing

Food engineer

- Develops techniques for processing, packaging and preserving food or beverage products
- Designs manufacturing equipment
- Researches and creates new food or beverages

Project engineer, project manager

- Manages a project plan, budget and schedule
- Supervises a project's daily progress
- Liaises with project staff and clients

Energy engineer / consultant

- Tests environmental samples for pollution
- Identifies solutions and designs systems/ machinery to meet energy-saving targets

Drilling engineer, well services engineer

- Monitors well operations and rig sites
- Develops drilling plans and programmes
- Adheres to environmental protection standards

Quality assurance technologist, quality analyst

- Ensures products and processes meet standards
- Develops company quality policies/procedures
- Reduces waste and increases efficiency

Application engineer / scientist

- Understands customer needs
- Participates in product development life cycle
- Provides applications support eg, training

Entrepreneur

Entrepreneurship and innovation are an increasing part of the working landscape. Through generating a business idea, or getting involved in a start-up/business venture, you have the potential to create a work opportunity that aligns with your knowledge, skills, values and risk profile. To get started on how to establish, run and grow a new business, go to Te Pokapū Rakahinonga | Centre for Entrepreneurship at the University of Canterbury

📍 www.canterbury.ac.nz/uce

What professional organisations can I engage with?

Connecting with professional bodies and organisations can help you to establish professional networks and learn more about different career options in your area of interest. Gaining valuable insight into a profession can assist in making informed career decisions.

- Institution of Chemical Engineers
📍 www.icheme.org
- Engineering New Zealand
www.engineeringnz.org
- Engineering New Zealand
📍 www.engineeringnz.org
- The Association of Consulting Engineers New Zealand Inc
📍 www.acenz.org.nz

Having a professional presence on social media networks such as www.linkedin.com and Facebook can help you to keep up to date with important industry developments and trends, networking opportunities, events and job vacancies. Following relevant professional bodies, organisations, companies and thought leaders is a great way to gain a deeper awareness of the industries that interest you. Social media presents an opportunity to build and enhance networks as well as to display your involvement in projects and any academic successes.

Why do further study and what are my options?

Postgraduate study can facilitate many career benefits such as specialist skills, entry into a specific occupation, higher starting salary, faster progression rate, and advanced research capability. It is important to determine which, if any, further study will help you in your future career.

UC offers postgraduate study in Chemical and Process Engineering up to PhD level, as well as conversion qualifications in subjects such as management, teaching and business. Advanced study can lead to an academic career in teaching and research. For qualification listings visit
📍 www.canterbury.ac.nz/courses

Useful links

- Te Rōpū Rapuara | UC Careers
📍 www.canterbury.ac.nz/careers
- Careers New Zealand
📍 www.careers.govt.nz
- whynotchemeng
📍 www.whynotchemeng.com



Jan



Bachelor of Engineering with Honours in
Chemical and Process Engineering
Graduate Process Engineer, Methanex
New Zealand Ltd, New Plymouth

What are your daily activities as a Graduate Engineer?

My role is to gain knowledge and technical skills by working alongside the Process team and other departments. This includes providing support to both the Process Department and Operations Department in order to achieve daily excellence in the areas of operation, reliability, safety, productivity, efficiency and plant change. I provide on-call assistance as part of the Gas Nominations Team and participate in and lead both hazard and risk reviews.

How relevant is your degree to your work?

My degree did a very good job at preparing me for the job I currently have. If you were to look somewhere to apply university textbook Chemical and Process Engineering, Methanex would be the place. I regularly refer to textbooks and course notes from my final years of study.

What is interesting about your job?

I am very involved with university research to understand our chemical process better and research improvements in the design of our plants.

For instance, I worked with a group of UC final-year Mechanical Engineering students looking

to better understand the catalyst crushing that happens as a result of thermal cycles occurring in Methanex reformers.

What are your career goals?

My short-term career goal is to progress as a Process Engineer and to eventually attain professional chartership. Looking longer term, I enjoy working with people and would like to move into a people or business management role.

Do you have any tips for prospective students?

Speak to people working in the industry to get a better understanding of what work they typically do on a day-to-day basis. Chemical and Process Engineers can end up in a range of fields doing a range of jobs!

Read more online

Read more stories about our students' university experiences online. UC alumni make a difference in varied ways around the globe. To find out where graduates are now visit www.canterbury.ac.nz/getstarted/whyuc/student-profiles

The information in this brochure was correct at the time of print but is subject to change.

More information

UC students seeking study advice.

Te Tari Pūhanga Tukanga Matū | Department of Chemical and Process Engineering

We are proud of our work-ready graduates, whose careers take them all over the world. Our staff are at the forefront of developments in bioprocessing, nanotechnology, dairy industry processes, environmental technology, energy technologies, thermophysical property measurement and wood technology – industries that are shaping our global future.

T: +64 3 369 3784

E: engdegreeadvice@canterbury.ac.nz

www.canterbury.ac.nz/engineering/schools/cape

Anyone seeking careers advice.

Te Rōpū Rapuara | UC Careers

CIE offers intending and current students and recent graduates a wide range of services, including individual career guidance, seminars, career resources and student and graduate employment opportunities.

T: +64 3 369 0303

E: careers@canterbury.ac.nz

www.canterbury.ac.nz/careers

Prospective students seeking study advice.

Te Rōpū Takawaenga | Student Liaison

The liaison team provide advice to future students who are starting their degree for the first time. They can assist with information on degrees, scholarships, accommodation, and other aspects of university life. We have offices in Christchurch, Auckland and Wellington.

Ōtautahi | Christchurch

T: 0800 VARSITY (0800 827 748)

E: liaison@canterbury.ac.nz

Tāmaki Makaurau | Auckland

T: 0800 UCAUCK

E: auckland@canterbury.ac.nz

Te Whanganui-a-Tara | Wellington

T: 0800 VARSITY (0800 827 748)

E: wellington@canterbury.ac.nz

www.canterbury.ac.nz/liaison

