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 tackle some of society’s greatest challenges 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 processed, marketable products by chemical, physical or biological means. They design and improve processes in facilities for processing oil and gas, metals, chemicals, fertilisers, wood, paper, food, pharmaceuticals and more. They take science experiments performed in the laboratory and operate them on a commercial scale. Others are involved in the research and development of new products and processes.
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.

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. Recent 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

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, Thyssenkrupp Industrial Solutions.

For more examples of employers go to www.canterbury.ac.nz/recruitingemployers

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AT A GLANCE

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

MORE

food and beverage manufacturers in Christchurch

285

the Institute of Chemical Engineers has 44,000 members globally

44k


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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 performance
- 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 and environmental engineer / consultant
- Tests environmental samples for pollution
- Minimises the environmental impact of projects
- 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

Materials engineer
- Determines the quality of materials
- Develops methods for material production
- Considers environmental and economic impacts of material production

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

Secondary school teacher
- Inspires the next generation in maths, physics and chemistry and their real-world applications

Entrepreneur and CEO
- Develops an idea to form their own business
- Gets involved in a start-up

Get started at www.canterbury.ac.nz/careers/Entrepreneurship/getting_started.shtml

What professional bodies can people link to?

As they progress, students and graduates often join professional bodies or organisations relevant to their area of interest. These organisations can provide regular communications and offer the chance to network with others.

- Institution of Chemical Engineers
  www.icheme.org
- Institution of Professional Engineers New Zealand
  www.ipenz.org.nz
- The Association of Consulting Engineers New Zealand Inc
  www.acenz.org.nz

Social media networks such as LinkedIn, Facebook and Twitter can provide avenues to keep up-to-date with industry knowledge, networking opportunities, events and job vacancies.

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

UC Careerhub
UC students and alumni can find details of internships, job vacancies and employability tips at www.careerhub.canterbury.ac.nz

Useful links

UC Careers, Internships & Employment
www.canterbury.ac.nz/careers

UC Department of Chemical and Process Engineering
www.canterbury.ac.nz/engineering/schools/cape

Careers New Zealand
www.careers.govt.nz

Future in Tech
www.futureintech.org.nz

whynotchemeng
www.whynotchemeng.com
Jan Coetzee

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 Jan’s full story about his university experience on our profiles site. UC alumni like Jan make a difference in varied ways around the globe. Find out where Chemical and Process Engineering graduates are now at www.canterbury.ac.nz/profiles

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More information
UC students seeking study advice.
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Te Rāngai Pūkaha | College of Engineering
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Te Whanganui-a-Tara | Wellington
T: 0800 VARSITY (0800 827 748) ext 93231
E: wellington@canterbury.ac.nz

Te Mākena | Auckland
T: 0800 UCAUCK
E: auckland@canterbury.ac.nz

Te Rāngai Pūkaha
UC ENGINEERING

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

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