

What can I do with a degree in Chemistry?

Chemistry.



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/chem

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 Chemistry?

Chemistry is the central science. It deals with the composition, structure and behaviour of the atoms and molecules that make up all forms of matter.

Understanding the world at an atomic level is essential to all areas of science. Chemistry interlinks and contributes to medicine, geology, materials science, molecular physics, biology and astronomy. Its central role is emphasised by the fact that chemistry merges with biological sciences (the field of biochemistry) at one extreme and with physics (physical chemistry and chemical physics) at the other.

Chemistry propels advances in modern society and has an important role to play in solving major global challenges such as energy sustainability, food supply, health and the environment. Every day we utilise products developed by experimental chemists such as plastics, fabrics, petrol and pharmaceuticals.



AT A GLANCE

4.6%

growth expected in the employment of natural and physical scientists by 2020*

\$10–30k+

scholarships of course fees plus \$10–30,000 available for high school science teacher trainees#

1000

members of the New Zealand Institute of Chemistry

What skills have UC graduates gained?

Through their Chemistry degree, graduates gain a valuable set of transferable skills such as:

- Analytical thinking
- Problem solving
- Creative, logical and quantitative thinking
- Good planning and organisational skills
- Oral and written communication
- Cooperation, teamwork and leadership
- Mathematical and computer competencies
- Observation, research and development abilities.

Applied learning opportunities are available such as laboratory sessions and fieldtrips. These experiences deepen your skillset, awareness of others, working knowledge and employability.

Where have UC graduates been employed?

Many types of organisations employ Chemistry graduates. They include:

- Government departments and agencies
- Intellectual property agents
- Crown Research Institutes (CRIs)
- Other research organisations and laboratories
- Manufacturing firms
- Industrial plants
- Environmental consultants
- Pharmaceutical companies
- Food and drink producers
- Research and development organisations
- Energy companies
- Secondary schools and universities
- Health sector.

Aotearoa New Zealand's unique mix of primary and secondary industries provides a wide choice of chemistry careers. Expanding industries include:

- New sources of energy
- Development of forestry and dairy resources
- Materials, pharmaceuticals and biotechnology
- Tech sector including nanotechnology, app development and data science.

📄 www.canterbury.ac.nz/recruitingemployers

* 2017 MBIE Occupational Outlook

2018 TeachNZ scholarships

www.teachnz.govt.nz/scholarships

What jobs and activities do UC graduates do?

Graduates with this degree are employed in a range of jobs — see some examples below.

Note: Some of the jobs listed may require further study at postgraduate level. See also 'Further study' on this page.

Research scientist / associate

- Designs and conducts research experiments
- Analyses the data and results
- Publishes journal papers, files patents, and presents information at conferences

Toxicologist, chemical consultant

- Identifies toxic substances and evaluates potential harmful effects
- Conducts laboratory and field experiments
- Produces research reports and advises business, government and industry

Environmental scientist / technician

- Applies knowledge of atmospheric, water and soil chemistry to the environment
- Carries out field and lab tests and records data eg, measures level of pollutants
- Conducts analysis and writes technical reports
- Develops and oversees policy and procedures
- Interprets regulations and monitors compliance

Field / laboratory technician

- Plans and carries out research experiments with guidance
- Maintains and calibrates equipment
- Liaises with scientists and industry personnel
- Collects and collates data, and drafts reports

Laboratory manager

- Manages laboratory staff, budgets, workloads
- Maintains and updates lab documentation
- Ensures safety and quality standards
- Reviews methods and validates results

Secondary school teacher

- Plans and delivers instructional lessons
- Evaluates performance and provides feedback
- Sets and marks assignments and tests

Science communicator

- Presents science topics to various audiences eg, publicising research findings

- Manages educational programmes eg, exhibitions, outreach events, seminars
- Produces content eg, media releases, videos

Patent attorney / advisor

- Researches technical or scientific documents, to assess if a product is new and innovative
- Maintains knowledge of laws and regulations
- Writes patent applications for new chemical inventions, including medicines and materials
- Advises businesses, government and industry

Quality manager

- Ensures that products, processes and systems meet quality standards
- Develops policies and procedures
- Solves problems, makes decisions and supports others to achieve these standards

Data analyst / technician

- Analyses data and models techniques to solve problems
- Uses software and computer programs, may develop these for new products
- Gains insight for decision-making purposes

Entrepreneur and CEO

- Develops an idea to form their own business
- Gets involved in a start-up
- Offers their services as a consultant

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

UC Careerhub

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



What professional bodies can people link to?

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

- New Zealand Institute of Chemistry www.nzic.org.nz
- Royal Society of Chemistry www.rsc.org
- Royal Australian Chemistry Institute www.raci.org.au
- Royal Society of New Zealand www.royalsociety.org.nz
- New Zealand Association of Scientists <http://scientists.org.nz>
- Science Communicators Association of New Zealand www.scanz.co.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 career benefits such as specialist skills, entry into a specific occupation, higher starting salary, and advanced research capability. It is important to determine which, if any, further study will help you.

Chemistry graduates can progress into a number of programmes from honours through to master's and PhD level. These degrees provide advanced research and writing skills. Advanced study can lead to an academic career.

UC also has a range of conversion degrees eg, in Teaching and Learning, Journalism, Applied Data Science, Engineering Management, and Business Management. www.canterbury.ac.nz/courses

Useful links

- UC Careers, Internships & Employment www.canterbury.ac.nz/careers
- Careers New Zealand www.careers.govt.nz
- Association for Women in the Sciences NZ www.awis.org.nz
- Crown Research Institute careers www.careers.sciencenewzealand.org
- Future in Tech www.futureintech.org.nz

Emily Mace



Bachelor of Science in Chemistry
Studying towards a Master of Science in
Environmental Science

Why did you choose to study Chemistry?

My favourite subject in high school was chemistry, but I also enjoyed calculus. Thus, I decided to pursue Chemical and Process Engineering. However, after a year I decided there was not enough chemistry for me to really maintain an interest and decided to switch over to Chemistry. I have definitely enjoyed university more because of the switch.

What do you enjoy about your degree?

A BSc is relatively flexible and I really enjoyed this as I got to sample some of the other degrees offered here at UC.

Practical work has always been my forte so naturally labs became my favourite part of my degree. I also really enjoy writing reports as they have a very systematic approach which my brain is wired to enjoy. I have also had some fabulous Chemistry lecturers, which certainly spiced up lectures.

How has UC prepared you for a future in your chosen field so far?

There have been labs for Chemistry which is great for putting the theory learnt into practice.

In one of my Chemistry courses I worked in a small team to compare the iron content of various types of flour. We had to design

the whole experiment ourselves. It was a very innovative process which I really enjoyed.

Also, the Chemistry department is full of really cool instruments and machines and we did a whole course just learning about them. There's heaps of fascinating technology here and it's kept really up-to-date.

Did you receive any scholarships?

Yes, I received one of the summer scholarships offered at UC. My scholarship was sponsored by Ravensdown to improve their fertiliser production by characterising phosphate rock feedstock.

Is there anything you're particularly grateful for?

The Chemistry department is filled with staff ready to provide support no matter the circumstances, even when you are just a first-year student. Their continual support has been very valuable, even though it is hard to measure.

Read more online

Read Emily's full story on our profiles website. UC alumni make a difference in varied ways around the globe. Find out where Chemistry graduates are now at www.canterbury.ac.nz/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.

School of Physical and Chemical Sciences
Te Kura Matū

The school carries out research, teaching and scholarship in all of the traditional areas of the discipline – inorganic, organic, physical, theoretical, environmental and analytical chemistry. It is also involved with the teaching of Biochemistry and provides service courses for engineers, biologists and foresters.

Undergraduate laboratories and researchers are equipped with excellent facilities. Staff research activities are considerable, cutting-edge and diverse. Come and talk to us about your study interests and future goals.

T: +64 3 364 2100

E: chemistry@canterbury.ac.nz

www.chem.canterbury.ac.nz

Anyone seeking careers advice.

Careers, Internships & Employment
Te Rōpū Rapuara

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 3 364 3310

E: careers@canterbury.ac.nz

www.canterbury.ac.nz/careers

[UCCareersEmployment](#)

Prospective students seeking study advice.

Student Liaison
Te Rōpū Takawaenga

Student Liaison provides intending students with information about the university system in general and the courses, qualifications, support and facilities available at UC.

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) ext 93231

E: wellington@canterbury.ac.nz

www.canterbury.ac.nz/liaison