

What can I do with a degree in Geology?

Geology.



What is Geology?

Geology is the study of Earth; it explores the earth building processes of our planet and its natural hazards. Understanding Earth's history informs our response to climate change, helps us plan land developments and infrastructure, and ensures we make the best use of our precious natural resources.

Geoscientists additionally search for the natural resources which sustain our society, including water. The construction of buildings, bridges, roads, dams and reservoirs requires geological expertise in the investigation of foundations.

For those with a passion for understanding our planet, the broader field of Earth and Space Science, or who have a commitment to environmental sustainability may find geological sciences a rewarding path.

Learn more

It is important to do some research when planning a future career. Speak with, ask questions of, and follow relevant professional bodies, organisations, companies, thought leaders and industry professionals to learn more about:

- Career opportunities, work environments and salary information
- Education and training requirements.

Examples of professional bodies

- Geoscience Society of New Zealand
<https://gsnz.org.nz>
- New Zealand Hydrological Society
<https://www.hydrologynz.org.nz>
- New Zealand Geotechnical Society Inc
www.nzgs.org
- New Zealand Geothermal Association
www.nzgeothermal.org.nz
- International Association of Emergency Managers www.iaem.com

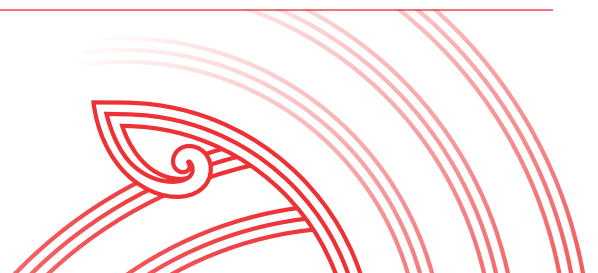
Career and study information

Some study pathways and degrees have a recommended school background, and some careers may require further study beyond a first degree or additional experience.

Gather helpful information from:

- Subject-specific content at
www.canterbury.ac.nz/study/academic-study/subjects/geology
- Job profiles on career websites like
www.careers.govt.nz
- Job adverts/vacancy descriptions
- Industry professional bodies.

This resource is part of a set of brochures focused on subject majors; many can also be studied as minors.





What skills can graduates gain?

Through studying a degree in Geology, graduates develop a valuable set of skills and competencies, which can include:

- Scientific analysis and research of the outdoors; observation, data collection, analysis and interpretation
- Information management; critically assessing, synthesising and presenting literature and data
- The ability to synthesize spatial and temporal data
- Capacity to think creatively, logically and quantitatively
- Problem solving
- Oral and written communication
- Time-management, planning and organisation
- Collaboration, teamwork and leadership
- Technology and computer literacy.

Applied learning

Applied learning opportunities are available through fieldwork and laboratory-based courses, as well as researching and developing solutions to real-world challenges. These experiences deepen graduates' skillset, awareness of others, working knowledge and employability.

What do employers look for?

Many employers look for geologic skills such as spatial data analysis and interpretation with a 3D understanding of the Earth and the importance of geologic time and environmental change. In addition, they value generic skills such as communication, client/customer-focus, bicultural competence, cultural awareness, teamwork and initiative.

With technology, globalisation, and other drivers changing society, skills such as resilience, problem solving, and adaptability are important.

Skills that are likely to grow in importance include analytical and creative thinking, systems thinking and technological literacy.*

*World Economic Forum: www.weforum.org/agenda/2023/05/future-of-jobs-2023-skills

How can these skills be developed?

- Some skills are gained through studying
- Extra-curricular activities can help, such as getting involved in clubs, mentoring, cultural groups, part-time work or volunteering
- Be open to professional and personal development opportunities, whether it is undertaking work experience, overseas exchange, skills seminar, or joining an industry group.

Where have graduates been employed?

Geology graduates have been employed within:

- Engineering, geotechnical engineering and professional consultancies e.g. Pells Sullivan Meynink, Pattle Delamore Partners, Opus International, ENGEO Ltd, KGA Geotechnical
- National and local government e.g. Environment Canterbury, Civil Defence NZ, regional councils
- Geological, geophysical and environmental consultancies e.g. Geological Solutions, Southern Geophysical Ltd, Geos Mining Mineral Consultants
- Engineering contractors e.g. Fulton Hogan, Downer
- Energy companies e.g. Mercury Energy
- Natural resources exploration and production e.g. Vermilion Energy, Oceanagold Corporation, Terra Search, BHP Billiton, Orica Mining Services, Baker Hughes
- Research e.g. GNS Science, NIWA
- Software e.g. ARANZ Geo
- Conservation and agriculture
- Education e.g. Secondary schools
- Museums and science centres
- Mining and petroleum industries.

What jobs and activities might graduates do?

Graduates with this degree are employed in a range of jobs from the lab to the field — see some examples below.

Note: This list is not exhaustive, and some jobs may require further study, training or experience. It is recommended to start with the section 'How can I gain a sense of career direction?'

Environmental scientist/consultant

- Interpret regulations and develop environmental land/water solutions
- Ensure compliance through field tests, data analysis, and technical reports

Environmental technician

- Assess and monitor various aspects of the environment, which can include air, water, soil, and ecosystems
- Collect samples from different environmental media to assess pollution levels

Natural hazards/geohazard analyst

- Perform site-specific assessments to gather/maintain natural hazards data
- Advise relevant managers and local authorities

Geophysicist, field seismologist

- Position seismic equipment to investigate subsurface geology and earthquake seismicity
- Analyse geological and seismological data and write reports

Field/laboratory technician

- Plan and carry out research experiments in the lab and the field
- Maintain/calibrate field or lab equipment
- Collect and collate data, and draft reports, and liaise with scientists and industry personnel

Engineering geologist

- Advise on site selection using geological maps, aerial imagery and remote sensing
- Use software to assess ground suitability, and provide advice on construction materials and testing

Environmental geologist

- Prevent soil and groundwater contamination

Mining geologist

- Analyse geological data to locate new mineral resources
- Test ore blending, advise on mine production and control plans

Volcanologist

- Study volcano formation and eruption patterns/risk

Marine geologist

- Study hazards e.g. earthquakes and their effects on coastal areas, ocean resources, and their ecosystems

Paleontologist

- Study fossil remains to understand extinct and living organisms and their environment

Fluvial geomorphologist

- Study river systems and advise on river restoration, floodplain management, and environmental impact assessment

Petroleum geologist

- Find natural resources, and collect geological information on site
- Interpret geological data for petroleum exploration

Operations geologist

- Work at drilling sites/production facilities to monitor geological formations encountered during drilling
- Optimise operations and minimize risks

Examples of other job titles and careers include:

- Earthquake specialist
- Geochemist
- Geoscientist
- Geotechnical engineer
- Hydrogeologist
- Energy engineer
- Mudlogger
- Drilling engineer
- Materials/minerals surveyor
- Teaching assistant
- Demonstrator
- Hazmat adviser
- Asbestos lab tech
- Project manager/coordinator
- Enterprise risk advisor
- Research analyst
- Data analyst.

Further study options

Graduates can advance in Geology through an honours, master's or PhD qualification; these enable independent research and project work.

UC Geological Sciences also offers the Professional Master of Engineering Geology and the Master of Disaster, Risk and Resilience.

UC has a range of higher degrees in, for example, Environmental Science, GIS, Teaching and Learning, and Water Resource Management.

Further study may facilitate 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 options align with future career aspirations.

For further UC study options visit:

www.canterbury.ac.nz/study/academic-study

How can I gain a sense of career direction?

Understanding yourself and others is important to gain a sense of direction. This grows with experience; therefore, trying new things and reflecting on an ongoing basis is important.

Career planning checklist

Discover and reflect on:

- Your values, interests, strengths, abilities, and aspirations
- Your connection to whānau, people, and places
- Lifestyle preferences and location
- The skills you want to gain, use, or enhance

Engage in a variety of experiences to learn about:

- How you want to contribute to society, the environment, and global challenges
- The tasks, responsibilities and work environments you prefer
- Your work values, priorities and interests

Learn more and gather career and study information

(refer to page one of this resource)

- Speak with people working in careers that interest you; check the realities of a job/career
- Gather information from various sources

Identify your next steps

- Talking to a career consultant can help you to identify your next steps. Visit: www.canterbury.ac.nz/life/jobs-and-careers



What have other students and graduates done?

Explore career stories of students' university experiences and UC alumni who make a difference globally in varied ways.

Visit: www.canterbury.ac.nz/about-uc/why-uc/our-students/student-stories



Sophie

Engineering Geologist, Golder Associates Ltd
Master of Science in Engineering Geology
Bachelor of Science in Geology

Tell us about your work:

As an Engineering Geologist, I work in the realm where the ground meets the structure, which means working with other technical professionals and engineers to solve design problems.

What do you enjoy about your work?

I enjoy being presented with a problem, coming up with a strategy to investigate it, collecting the data and then using that to produce practical and useful advice for a client. It is always satisfying to see something take shape that you had a part in designing.

What are some of your goals?

To have fun and never stop learning.

What is your advice to those looking to study?

Work hard and learn as much as you can, but don't sweat the small stuff – the learning will never stop. I made friends for life, many laugh out loud memories, and gained a degree that has directly set me up for a career I love.

Career guidance

Career services are available for future and current students, and recent graduates. To learn more, contact:

Te Rōpū Rapuara | Careers

T: +64 3 369 0303

E: careers@canterbury.ac.nz

www.canterbury.ac.nz/life/jobs-and-careers

Helpful career insights

- Speaking with employers is key to finding opportunities; not all jobs are advertised
- Developing an online presence is useful as employers can search for future employees online
- Learning about recruitment patterns and where to find opportunities is important.

Study advice

Student Advisors at UC help with questions focused on starting, planning and changing studies. To connect with Student Advisors, visit:

www.canterbury.ac.nz/study/study-support-info/study-support

Future students – contact:

The Future Students team

T: 0800 VARSITY (0800 827 748)

E: futurestudents@canterbury.ac.nz

First year students – contact:

Kaitoko | First Year Student Advisors

T: +64 3 369 0409

E: firstyearadvice@canterbury.ac.nz

Continuing students – contact:

Te Kaupeka Pūtaiao | Faculty of Science

T: +64 3 369 4141

E: science@canterbury.ac.nz

www.canterbury.ac.nz/study/academic-study/science

