“Structural geology really interests me. Forces within the earth work on the rocks through time and produce an end product that can then be hit with a hammer and mapped out millions of years later. I find it quite challenging to try and decipher the story.”

Lindsay Maw
Oceana Mining, Central Otago

Applied Geology looks at how geological issues affect the lives of human beings. Applied Geologists deal with problems that have a major impact on human populations. They need a broad education based in the real world, so they can work with engineers, planners, and environmental managers as they look for solutions to these issues. Many problems have major financial implications, so a thorough awareness of sound commercial practice is important. People working in this field are concerned with naturally-occurring geological hazards, including earthquakes, landslides, volcanic eruptions and land erosion. They also address environmental problems, like waste disposal and groundwater contamination, and how to manage and access natural resources, such as groundwater, petroleum, coal and minerals.

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Why study Applied Geology?
It’s challenging! Geological problems are notoriously difficult to solve and organisations around the world are looking for people with an innovative approach. You’ll combine a thorough grounding in theoretical and practical geology with technical and commercial skills. You get to study a subject that uses the world as a laboratory. New Zealand is a great place to study earth processes because it is an extremely active geological place, with frequent earthquakes, erupting volcanoes, and actively rising mountains.

Background required
Students from a range of backgrounds are welcome to study for Otago’s BAppSc in Applied Geology. A reasonable high school science and mathematics background is recommended. No prior knowledge of geology is required as this is taught in the compulsory courses.

Career opportunities
With a Bachelor of Applied Science (BAppSc) in Applied Geology from Otago, you’ll be well placed to work in any number of branches of applied geology around the world. You might:
- be involved in the mining industry looking for new mineral deposits, making sure that existing mines operate efficiently, or ensuring that mines have no adverse effects on the downstream environment.
- work with waste management engineers and local authorities, designing landfill sites so that groundwater is not polluted, or helping to improve historic sites.
- work for a government research organisation, assisting with geological problems, or developing new approaches to find more resources. This could mean researching and monitoring active volcanoes, faults with high earthquake risk, or landslides that threaten centres of population.
These roles might be as part of a large organisation, or equally, you could work for a consultancy firm. There’s plenty of variety, and opportunities for travel.

What will I study?
The environmental aspects of Applied Geology have long interested Amanda Black. While studying for her M.Sc in Environmental Science at the University of Otago, she focused on the environmental impacts of mining and its impact on water quality.
Since graduating, she has worked as an Environmental Scientist at a Regional Council, where she was responsible for managing contaminated sites and environmental compliance. More recently she worked as an Environmental Scientist for a private research and consulting company that provided specially tailored environmental solutions to various clients.

The work is exciting and no two problems are ever the same. We’ve come to a head in our society, where we need to constantly consider our impacts on the environment as it has the power to severely affect our quality of life as well as our livelihoods. Having a degree in geology has helped put things into a planetary perspective. It’s challenging work but extremely rewarding, knowing that you are making progress and initiating change.

Amanda Black

Amanda works in the field of applied science for the Otago Regional Council, as an Environmental Compliance Officer specialising in contaminated sites.

“Basically,” she says, “I’m responsible for managing and quantifying many varied environmental issues, such as ensuring contaminated sites within the Otago region are suitably managed.”

In her role, Amanda keeps a close eye on operations such as active mine sites, timber treatment plants and historic landfills, as well as looking at sites contaminated with potentially hazardous material, such as pesticides and petroleum products.

“It’s been a challenge,” Amanda says. “We deal with real people, and real situations. But there’s a good feeling we are making progress, and initiating change.”

What will I study?
The required papers at 100-level are: EAOS 111 GEOL 112 and MATH 160.
From second year onwards, you’ll study a wide variety of geology papers, covering topics like minerals and rocks, geological hazards, and environmental issues.
NB: Check the latest paper details in the Guide to Enrolment published with enrolment material each year, or visit our website at otago.ac.nz/appliedgeology

What will I learn?
You’ll gain a thorough and practical understanding of Earth processes, and how to apply this knowledge to human-related issues such as mineral deposits, slope stability or environmental problems.
You’ll also learn the skills you’d need in the workforce, like field observations, geological mapping, and using remote sensing technologies.

For questions about Applied Geology
otago.ac.nz/appliedgeology