UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND
SAPERE AUDE

Oceanography

Take the plunge

"My PhD in Antarctic Oceanography prepared me for leading my own research within multi-disciplinary projects. I regularly collaborate with environmental scientists and engineers, and constantly find new, interesting and diverse applications for my skills."

Natalie Robinson PhD (2012) University of Otago Department of Marine Science
Marine Physicist, National Institute of Water and Atmospheric Research (NIWA)

Though oceans cover 70% of Earth's surface, their depths are truly our "last frontier" – this watery world is so challenging to explore, that we have more detailed maps for the surfaces of the Moon, Mars, and Venus. Yet understanding our ocean planet is essential for meeting the challenges of our collective future. The physical, biological, chemical, and geological processes that power the Earth system unite in the ocean, determining Earth's climate, regulating the composition of our atmosphere, supporting human civilisation, and sparking our curiosity.

The University of Otago is uniquely placed to study these interlinked processes and their effects on our lives. The Southern Ocean is on our doorstep, with a wide range of marine environments easily accessible to our research fleet. We work from shallow harbours to the deep ocean, around sub-Antarctic islands and in majestic fiords, alongside temperate coastlines and floating over tropical reefs.

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Why study Oceanography?

Dive into the complex network of physical processes at work in the sea and you will never see Earth the same way again! A qualification in Oceanography from the University of Otago will open your eyes to the dynamic chemistry of seawater; the nature of currents, waves and tides; the history of oceans preserved in underwater geology and sediments; the invisible underpinnings of marine life; and the way that all of these processes and systems interact.

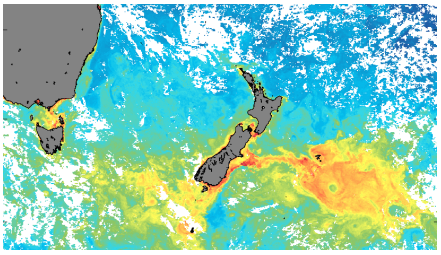
We are the only university in New Zealand to offer undergraduate study in Oceanography, and our truly interdisciplinary approach leads to an ocean of opportunities.

Career opportunities

Your degree in Oceanography will open doors to a diverse array of careers. Oceanography students at Otago develop a broad foundation in all areas of oceanography, with opportunities to concentrate in physical oceanography, biological oceanography, marine geology or marine chemistry. Throughout your programme, you will work with classmates to plan and execute field expeditions, collecting, evaluating, and presenting real-world data. Our degree is designed to support you to develop the problem-solving, teamwork, and data-handling skills that are valued by employers.

As an Oceanography graduate, your career path may lead you to:

- Assess effects of tsunami for a regional council
- Develop tidal turbines for an alternative energy company
- Advocate for responsible policy through an NGO
- Pursue a teaching career at any level
- Conduct oceanographic and Antarctic research at a university or government agency
- Explore for petroleum or minerals in the resource industry
- Track trace metals to see where shellfish come from



Oceanographic research can take you from the poles to the tropics, Antarctica to Rarotonga, from regional councils to government agencies, such as NIWA, GNS, and the Ministry for Primary Industries. Otago graduates have launched their careers in private consultancy firms, within the IT industry, in science communication media (for example, Dunedin's Natural History New Zealand Ltd), and government science policy groups. Other graduates continue their Marine Science careers within the educational system, through science teaching and community engagement, or university research and teaching positions. Those interested in pursuing postgraduate study may end up working as a research scientist for an oceanographic institute or university anywhere in the world.

Background required

Students with a passion for the marine environment who enjoy the physical sciences and maths will find a natural home in Oceanography. A solid foundation in Physics, Chemistry, and Calculus through Year 13 will prepare you to dive right in to our BSc programme. Earth and Space Science and Geography will also set the stage for your Oceanography degree.

What will I learn?

A BSc in Oceanography opens your eyes to the dynamic processes that define our ocean planet. You will delve into the physics and maths that drive our climate and power the ecosystems on which we depend, see first-hand how physical processes influence the distribution of marine organisms, and get your hands dirty with the marine sediments that hold clues to the history of our planet. Board our fleet of research vessels to experience the practical side of oceanography, and use the samples and data you collect to develop your skills in writing, collaborative problem-solving, and quantitative exploration of the marine system. Your study in oceanography is designed to help you build mastery of observation, interpretation, and understanding from microscopic to global scales.

To get started, enrol in:

- EAOS111 (Earth and Ocean Science)
- MARI112 (Global Marine Systems)

Health Science students may enrol in MARI112 as their optional eighth paper, making it easy to continue in Oceanography.

How will I study?

Oceanography is a hands-on discipline. Apart from attending lectures and tutorials, you will also have practical laboratories and field trips at sea. The Marine Science department, which offers the Oceanography degree, has research and teaching facilities on the main campus in Dunedin, a major research laboratory at Portobello on the Otago Peninsula, and field stations on Stewart Island and at Doubtful Sound. A fleet of research vessels, including the expedition vessel RV Polaris II, provides access to coastal and off-shore environments.

Can I combine my Oceanography study with other subjects?

Yes! Many subjects mix well with Oceanography. It is most- easily combined with other sciences like Physics, Chemistry, Geology, and Maths, but adding it to other disciplines, such as Education, Law, Geography, or Tourism would lead to interesting job opportunities.

What about further study?

BSc graduates from a wide range of disciplines can apply to our postgraduate programmes. The Department of Marine Science offers research opportunities in diverse fields, including:

Ocean physics, Antarctic science, Coastal processes, Ocean acidification, Climate change, Remote sensing, Paleoceanography, Microbial ecology, Carbonate geochemistry

Learn more about our ocean of opportunities at otago.ac.nz/marinescience

PROFILE

Steph Lambie

Oceanography Graduate

Steph Lambie is a real trail-blazer – she is the first person ever to earn a BSc in Oceanography from a New Zealand university.

Beginning her studies as a chemistry major in 2012, Steph quickly discovered that Otago is New Zealand's 'centre of the action' for marine science, offering enthusiastic staff, a fleet of research vessels, two field stations, and Portobello Marine Lab on the Otago Peninsula. And Steph's timing couldn't have been better: Otago's brand new BSc in Oceanography rolled out just as she was returning from a year-long study-abroad in Iceland. "After taking all the courses for a marine science minor, as well as my chemistry degree, I was given the opportunity to change my degree structure to a double major to include oceanography," says Steph. "I jumped at this chance, because the oceanography side of marine science was the side that got me excited! The rest is history!"

It's no surprise that Steph was attracted to the interdisciplinary aspect of oceanography. "I particularly enjoyed the appreciation that came with understanding how interconnected our whole earth system is. In studying oceanography, you don't just learn about the oceans, but the ground beneath the oceans, the atmosphere above the oceans, how things living in and around the oceans affect them, and just how important the oceans really are to life as we know it."

For Steph, an oceanography qualification from Otago came with many benefits, including field-based opportunities to work with sediment cores from Fiordland and explore the effects of salmon farming in Paterson Inlet, Stewart Island. She even had the chance to join a scientific expedition to Antarctica!

"Oceanography is a fantastic study path if you want to get your hands dirty!" she says. "I now know how to work many of the tools onboard an ocean research vessel myself. Furthermore, and most importantly, the department is small and very caring. I always felt like they knew who I was and were interested in making my education the best it possibly could be, for me."

For questions about Oceanography
otago.ac.nz/marinescience/

january 2017