



# marine science

## Exploring the Uncharted Depths



Marine Science involves studying the ocean and its life, gaining an understanding of the vast ocean environment that covers over 70% of our planet. Marine scientists investigate sea water; waves and tides, sediment, shells, marine plants and animals and how they intertwine: chemists may need to know about plankton; geologists need to understand wave motion; marine biologists may have to explore seafloor sediments.

We still know too little about the oceans and their inhabitants. The largest animal to have ever lived on our planet – the Blue Whale – is still such an enigma we don't know how long they live or even where they breed. We know more about the surface of Mars than we do about the deep ocean.

*"I was interested in diseases in the wild marine environment and the implications they have for wildlife management. Very few people in the world have a veterinary knowledge of marine animals. I hope to change that."*

**Dr Hendrik Nollens** MSc in Marine Science, 2001

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## Some reasons for studying Marine Science

A qualification in Marine Science from the University of Otago is internationally recognised, and its multi-disciplinary nature opens up a variety of career opportunities. Scientists are valued, not only in learning institutions, but also by governments and large corporations. Many organisations need people with analytical minds on their team. A career in Marine Science will never be tedious. When your office is the open ocean, every day is a new challenge.

You may work on conserving the marine environment through better scientific understanding. The world is waking up to just how important the marine environment is to the survival of our planet. Studying Marine Science will require you to transcend the boundaries of science.

## Background required

Applicants to the Marine Science postgraduate programme (Postgraduate Diploma of Science, Master of Science) should either have a BSc, (B average or better in final year), or other qualifications or experience acceptable to the Pro-Vice-Chancellor.

## Career opportunities

Graduates with a Marine Science qualification find employment in a wide variety of areas, from regional councils to government agencies, such as the Department of Conservation, NIWA and the Ministry of Fisheries. Careers have also been started in private consultancy firms, within the IT industry, the media (for example, Dunedin's Natural History New Zealand Ltd.) and government science policy groups. Other graduates continue their Marine Science careers within the education system, moving into post-doctoral research positions, working at other universities and colleges of education, as well as in science, environmental and public education.

The fledgling but growing market of aquaculture is just one example of an area that needs the special skills found in a Marine Science graduate. The ability to understand yet harness important marine resources so they may continue to produce food in years to come is a vital part of any aquaculture venture. Whether you choose to work for a government agency, private company or to go out on your own, the employment opportunities for marine science graduates are as varied as the oceans themselves.

## What will I be learning about?

It is important for Marine Scientists to understand the whole marine environment, so our students study the four major scientific disciplines: Marine Biology, Marine Chemistry, Marine Geology, and Physical Oceanography.

Undergraduate students may choose to enrol in papers which add up to a Minor in Marine Science to give your BSc a salty flavour. For a more applied approach, we also offer a four-year BAppSc in Aquaculture and Fisheries.

BSc graduates can apply to one of our postgraduate programmes: Postgraduate Diploma of Science (1 year), Master of Science (2 years) or PhD (3+ years). These programmes offer a wide range of topics such as pollution, subtidal ecology, coastal management, and marine conservation.

## How will I study?

Marine Science is very much a hands-on course. Apart from attending lectures and tutorials, you will also have practical laboratories and off-site field trips. The Marine Science department has research and teaching facilities at 310 Castle Street in Dunedin and a major research laboratory at Portobello on the Otago Peninsula. The workhorse of the department is the research vessel, *RV Polarix II*, which is based locally. Away from Dunedin there are field stations at Doubtful Sound and Stewart Island.

Assessment is a combination of assignments, exams, essays, presentations and written projects. Postgraduate Diploma students produce a short independent research project during the year, whereas MSc students write a proposal during their first year and carry out a larger research project which leads to an examined MSc thesis during their second year.

Student input is welcomed and encouraged. Student-elected representatives are present at most staff meetings. The Marine Science department places great importance on building strong student/supervisor relationships in order to help students learn in a friendly, helpful department that is well equipped to guide you along your path of study.

## Do I have to know about animals and biology?

No! Marine Science is much more than biology. For example, students who are interested in physics, maths, engineering or computing, and would like to pursue a career in Marine Science can study Physical Oceanography. Oceanographers make measurements from ships and moorings, work with satellites and develop computer models to predict how the physical ocean environment will behave and change both locally and globally.

Marine Science is truly a multi-disciplinary science that appeals to students wanting to get "the bigger picture" of what is going on in the marine world.

## profile

### CORALIE DIGNAN

PGDipSci Marine Science

Coralie Dignan studied Zoology for her BSc and she thoroughly enjoyed it. A Postgraduate Diploma was the next natural step, and she'd always been keen on Marine Science. She'd included undergraduate Marine Science papers in her BSc, and then carried on with the PGDipSci.

"When I was studying Zoology, we had technicians in the department who were doing PhDs or Masters in marine science and had lots of exciting things to say about it. A lot of the other students were also planning to do marine science at postgraduate level."

In her Marine Science studies, Coralie particularly enjoyed the practical stuff, and the smaller class sizes and postgraduate nature of the course meant a lot more interactive learning.

"My favourite papers were the coastal marine environment paper and the field marine science paper. Most of the things studied during the course cross over into real-life work. Though I should have paid more attention in statistics classes!"

Now Coralie works for an environmental consulting company, with the bulk of her work being contracted to the Ministry of Fisheries, Biosecurity New Zealand.

"Some major projects have included baseline biosecurity port surveys at Stewart Island and Chatham Islands; risk assessments of hull fouling on vessels heading to the Subantarctic islands, Chatham islands or Fiordland; and testing the efficacy of a steam sterilisation method for eradicating an invasive Japanese kelp. I will also be getting trained to do scientific diving for my company."

Coralie's advice? "If you are passionate about something – do it."



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