“Climate change is the defining challenge of our time. The response of Antarctica and the Southern Ocean to climate change remains a key uncertainty in a warming world, and our students and graduates play an important role in our efforts to improve future projections.”

Associate Professor Nancy Bertler
Antarctic Science Platform Director, Antarctic Research Centre
EXPLORE POSTGRADUATE STUDY OPTIONS

www.victoria.ac.nz/postgraduate
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Cover: PhD candidate Dan Lowry’s research focuses on the Ross Ice Shelf. Using mathematical models, he interpreted the history of the ice sheet, assessed its sensitivity to past atmospheric and oceanic changes, and provided future projections of changes.

Inside cover: Victoria University of Wellington is part of world-leading Antarctic ice core research. This research focuses on recovering ice cores to help determine how the Antarctic is responding to climate change and the consequences, both globally and for New Zealand. The ice core research is a collaboration between GNS Science, the University, and NIWA under the Joint Antarctic Research Institute. Go to www.victoria.ac.nz/antarctic for more information about the centre. Image: Dan Zwartz

Victoria University of Wellington has been awarded five stars overall in the QS global university ratings. In addition, the University received five stars in each of the eight categories.

Important notice: Victoria University of Wellington uses all reasonable skill and care to ensure the information contained in this document is accurate at the time of being made available. However, matters covered by this document are subject to change due to a continuous process of review, and to unanticipated circumstances. The University therefore reserves the right to make any changes without notice. So far as the law permits, the University accepts no responsibility for any loss suffered by any person due to reliance (either whole or in part) on the information contained in this document, whether direct or indirect, and whether foreseeable or not.
Welcome to the Faculty of Science at Victoria University of Wellington. Postgraduate study is an opportunity for you to extend your undergraduate experience, become an expert in your chosen field, and take the next step in your career. It will challenge your ideas and satisfy your search for new knowledge.

The Faculty of Science is home to five schools and a large community of postgraduate students who come from all around the world. We're also one of New Zealand's top research institutions and our academics are some of the most respected in the world. This commitment to research is reflected in the most recent Performance-Based Research Fund rankings, which rated the University first for research quality in New Zealand.

Postgraduate students are a key part of our research community. Carrying out work that leads to scientific breakthroughs, students regularly present at international conferences and publish in peer-reviewed international journals.

Wellington is home to the highest concentration of scientific research organisations in New Zealand. These organisations contribute to our programmes and enhance the experience we provide to our students by ensuring the content of our courses is industry-relevant and at the cutting edge of knowledge, and through opportunities for research placements and future employment opportunities.

We hope you will be excited at the prospect of undertaking your postgraduate study here and being part of our mission to educate the next generation of scientists. We wish you every success in your future study.
STUDYING AND LIVING IN WELLINGTON

LEADING RESEARCH
Victoria University of Wellington is ranked number one in New Zealand for intensity of high-quality research* and ranked in the top 2 percent of universities worldwide in the 2019 QS World Rankings.

*Performance-Based Research Fund 2019.

INTERNATIONAL COMMUNITY
Students come to study here from all over the world—each year, students from more than 100 different countries make up the student population, with more than 120 university partners worldwide. There are many international communities in Wellington—Chinese, Indonesian, Japanese, and Malaysian among others—that help to make international students feel at home in their new learning environment. The programmes and research within the Faculty of Science draw on examples and findings worldwide, but have a special focus on New Zealand and the Asia–Pacific region.

OUR NATURAL LABORATORY
Situated at the southernmost point of the North Island, Wellington is a beautiful city that makes the most of its natural setting. Wellington is home to conservation island Matiu/Somes Island, a gateway to the rugged beauty of the South Island, and is located on two major highways that provide easy access to North Island regions, including Egmont, Tongariro, and Whanganui National Parks. In just minutes, you can escape our compact city life to explore our varied biodiversity.
SCIENCE CAPITAL OF NEW ZEALAND

Wellington has the highest concentration of science organisations in the country.

Our location means Victoria University of Wellington is at the heart of scientific discovery. Our postgraduate students have opportunities for research collaboration with many organisations, including Callaghan Innovation, the Department of Conservation, GNS Science, and NIWA.

Notably, collaboration between Victoria University of Wellington and GNS Science was ranked ninth worldwide in the 2017 Nature Index review of corporate–academic collaborations.

THE BUSTLING CAPITAL LIFESTYLE

Wellington has an excellent public transport system, vibrant nightlife centred on Cuba Street and Courtenay Place, and something for everyone with great shopping, beaches, bush walks, reserves, mountain-bike trails, museums, restaurants, festivals, and live shows every night of the week. You can swim, kayak, surf, windsurf, and sail within 15 minutes’ travel from the centre of the city.
Just three days after submitting his research thesis, Hedley Stirrat stepped into the role of metabolomics technician at AgResearch, where he analyses the mass of molecules in produce.

“AgResearch tries to add value to the agriculture industry through science. I’m a technician in the metabolomics team, which is part of the food, nutrition, and health team. I work mainly with mass spectrometers—analytical instruments that determine the mass of certain molecules.

“We might look at whether the composition of certain molecules in milk changes depending on what cows are fed, or whether we can distinguish between produce from New Zealand and overseas by the composition. From this, we can advise our agricultural industry about producing more valuable products in a more efficient and environmentally friendly way.”

The opportunity to learn from industry experts and academics is what drew Hedley to the Master of Drug Discovery and Development programme. It ensured he gained a mix of practical and theoretical knowledge.

“I have a comprehensive understanding of the current state of drug development and how it’s carried out in industries,” he says.

Hedley values his qualification, not only because of what he learnt about the subject, but also because of the other skills he developed in that time, including time management and science communication.

Find out more about the Master of Drug Discovery and Development on page 14.
MADDIE WHITE

Master of Applied Statistics
Assistant Research Fellow, University of Otago, Wellington

Taking a compulsory, 100-level Statistics course led to Maddie White discovering her interest in statistics and realising that it would enable her to pursue her passion in public-health research.

“During my Master’s, I did a practicum and research project at the Ministry of Health. My supervisor was very supportive of me trying to make the most out of that opportunity because he knew I wanted to keep doing health research after graduating. I can draw a lot of links from what I did during my Master’s to the work I do now as a researcher.”

A big part of Maddie’s current role involves working with other researchers and community organisations to collect, analyse, and report data on the outcomes of housing-related interventions.

“As a Master’s student, you get real experience working through a research project from start to finish and all of the exciting (and frustrating) complexities that this involves. Without this experience, I don’t think I would have had the skills to start work as a researcher straight out of university, and I most definitely wouldn’t have had the confidence.

“I love my role in the public-health department; I’m surrounded by people and research groups that are passionate about the work they are doing to address public health issues. I feel I have something positive to contribute because of the knowledge and skills I developed throughout my study.”

Find out more about the Master of Applied Statistics on page 16.

BETH LAWSON

Postgraduate Diploma in Geographic Information Science
Geospatial Data Analyst, Land Information New Zealand

With interests in geography, IT systems, problem-solving, nature, and data visualisation, Beth decided that a Postgraduate Diploma in Geographic Information Science was for her.

“I wanted to do a postgraduate qualification that would combine these interests and keep my options open. Geographic information science (GIS) is a growing industry with so many career opportunities, so this qualification ticked all the boxes.”

As part of the course, Beth completed a GIS internship with Land Information New Zealand. Once she’d completed the internship, she stayed on and now works there full time as a geospatial data analyst.

“I am in the biosecurity and biodiversity team. We deal with biosecurity threats to Crown-owned property. My main project is working on spatial data for the New Zealand Wildling Conifer Management Strategy. Wildling conifers are very invasive, especially in the South Island. This programme is key for preventing these trees from overwhelming native landscapes.

“This postgraduate degree is a great option if you want to pursue a career in the GIS sector. It gives you a well-rounded foundation of knowledge, skills, and practical experience. The courses are interesting, and the lecturers are fantastic and come from different backgrounds within the GIS sphere.”

Find out more about the postgraduate GIS programmes on page 16.
MONIQUE HOLMES  
**Master of Science in Marine Biology**  
**Graduate Policy Analyst, Te Ohu Kaimoana**  
Growing up around the beaches of Tauranga, Monique Holmes always loved the ocean. Studying marine biology gave her the chance to combine what she loved with learning.  
“I feel very passionate about conservation of the marine environment and preserving that environment for future generations,” she says.  
Monique’s research was part of a larger project being undertaken by NIWA, called Crustacean Indicators of Marine Environmental Change. She studied how marine amphipods could be indicators of heavy-metal pollution in the coastal marine environment.  
“Collecting and examining marine invertebrates was one of my favourite parts of my research. It was also a bonus that watching David Attenborough’s *Blue Planet* could be considered studying.”  
Since handing in her thesis, Monique has been working as a graduate policy analyst at Te Ohu Kaimoana, where she provides advice on policy issues concerning marine fisheries.  
She was also the recipient of a Global Fisheries Scholarship from Moana New Zealand, which offers the opportunity of a lifetime to Māori seeking a career in the fishing industry.  
In 2021, as part of this scholarship, Monique will embark on a one-year programme to Japan, where she’ll immerse herself in Japanese language and culture and work at Nippon Suisan Kaisha Ltd to further her knowledge and understanding of the fishing industry.

SEBASTIAN COLLINS-SMYTH  
**Master of Science in Forensic Psychology**  
**Adviser, New Zealand Department of Corrections**  
There’s something unique about studying forensic psychology in Wellington—it’s both the world’s coolest little capital and the heart of the criminal justice system in Aotearoa New Zealand, says Sebastian Collins-Smyth, who emphasised the many opportunities the University’s location provides in the public sector.  
“This Master’s study furthered my career in multiple ways. Not only did it provide me with the skills to work as an intern at the Department of Corrections, it also gave me many professional development opportunities and refined my critical-thinking skills.”  
“I've always been fascinated by the intersection between psychology and crime. For my thesis, I focused on young people. International research suggested that young people with neurodisabilities are overrepresented in youth justice jurisdictions and this, among other findings, indicates that current avenues for addressing their offending could be more effective.”  
Wanting to have a positive impact in this area, Sebastian adapted a theoretical framework for practitioners to use in the treatment of young people with neurodisabilities who engage in antisocial behaviour.  
Sebastian now works at the Department of Corrections, where he is an adviser in the probation and case management space. “I work on a variety of different projects. I’m mainly writing reports and occasionally putting together literature reviews to keep on top of evidence in the field,” he says.  
*Find out more about the Forensic Psychology programme on page 35.*
JAMES McCLINTOCK
Master of Science in Geology
Geohazard analyst, GNS Science

With a love for science and the outdoors, and a fascination with understanding how the world works, James McClintock realised that geology was a natural fit for him.

“Geology allows you to piece together the history of a location. You can determine if the rocks you’re standing on were once at the bottom of a deep ocean trench, or a tidal estuary, or an ancient river that flowed when the dinosaurs still roamed the earth.”

James found the Faculty’s staff to be passionate and knowledgeable, and the social aspects of the Geology Society fantastic, but the best part for him was the field trips.

“Wellington is near so many great areas for geology—Takaka, Kekerengu, Martinborough, Whanganui, and more. I found the field activities to be the most effective way to learn by far. They were also a great way to meet other students and get to know the professors.

“I’m now employed at GNS Science in their new 24/7 national geohazard monitoring facility. We are New Zealand’s first science response to natural hazards such as earthquakes, volcanoes, and tsunamis, and we liaise with Civil Defence to coordinate the country’s disaster response.”

TENEYA NICOL
Master of Science in Society
Pasifika engagement adviser, Victoria University of Wellington

While participating in outreach events during Bachelor of Science study, Teneya Nicol realised that people learnt more effectively through interactive activities than other sources, and she wanted to understand why.

“The Master of Science in Society gave me the tools to explore this and allowed me to develop skills in science communication,” she says.

“As part of this Master’s, I completed an internship with the Society of Māori Astronomy Research and Traditions (SMART). They’re looking at the relationship between climate change and traditional Māori indicators. I located and observed numerous native tree species in Otari-Wilton’s Bush that have been recognised as indicators. I also participated in workshops, and reviewed resources made by SMART to make them more effective.”

Teneya now works as the Pasifika engagement adviser for the Faculties of Science and Engineering. This involves her providing Pasifika students with holistic support that covers areas such as academic mentoring, financial advice, and overall wellbeing, to make their university journey as smooth as possible.

“Studying at university made me realise that I want to help other Pasifika people take up the opportunity of higher education and push the boundaries of societal norms.

“My aim is to help increase the percentage of Pasifika graduates and to inspire our Pasifika community to strive for success.”

Find out more about the Master of Science in Society on page 16.
To explore the available subjects in the following degrees, see page 12.

**GRADUATE DIPLOMA**

The Graduate Diploma in Science (GDipSc) enables you to transition to postgraduate study in a new area, or to learn about new developments in your original discipline.

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<th>One year full time or up to four years part time</th>
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<td>PREREQUISITES</td>
<td>Bachelor's degree in any discipline</td>
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**POSTGRADUATE CERTIFICATES**

Postgraduate certificates are designed to deepen your knowledge in an area of expertise or in a new branch of science. Many interesting courses are offered, and a research project is not required.

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<th>DURATION</th>
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<td>PREREQUISITES</td>
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**POSTGRADUATE DIPLOMAS**

Postgraduate diplomas provide an alternative to Honours for graduates who wish to extend their subject expertise. They do not require a research project, although a project may be included in some programmes.

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<td>PREREQUISITES</td>
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**BACHELOR'S DEGREE WITH HONOURS**

An Honours degree is a one-year full-time programme of coursework. A research project is an important part of the work and provides practical training in research methods. An Honours degree can lead directly to PhD study.

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<th>DURATION</th>
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<td>PREREQUISITES</td>
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*Students may also qualify for entry if they have appropriate experience, as approved by the associate dean (students).

**MASTER’S BY THESIS**

In a Master’s by thesis, you’ll complete one year of coursework, followed by a 120-point thesis where you’ll work under the supervision of an academic staff member. If you already have a postgraduate diploma or an Honours degree in a relevant subject area, you may be permitted to advance to the thesis year without completing the coursework.

A Master’s by thesis is a way of advancing your understanding and skill in your undergraduate major or, in some cases, to undertake study in a new professional area. This Master’s degree is evidence of the ability to work independently, critically evaluate research, and interpret and communicate with a high level of skill.

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<th>DURATION</th>
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<td>PREREQUISITES</td>
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**MASTER’S BY COURSEWORK**

With a 180-point Master’s by coursework, you’ll gain an internationally recognised qualification in one year of full-time study, or you can study part time.

You’ll take some core courses and choose from a range of elective courses, so you can tailor your programme to your interests and career aspirations.

With small class sizes you’ll learn through seminar-style discussions with leading researchers and academics.

You’ll also have the opportunity to undertake a trimester-long research project, or practical placement, where you’ll apply what you’ve learnt.

Admission to these programmes is at the discretion of the programme coordinators.

To explore your options in the Master’s by coursework programmes, see pages 14–16.
DOCTOR OF PHILOSOPHY

The Doctor of Philosophy (PhD) programme requires a major piece of original research that makes a significant contribution to the knowledge or understanding of a field of study.

Although coursework does not form an integral part of a PhD, you may be required or encouraged to undertake a limited amount of coursework. On completion, each thesis is assessed by three examiners, one of whom is from an overseas university. This assessment is followed by an oral examination.

Supervision for PhD research is available in almost all subject areas offered by the Faculty of Science.

DURATION

The PhD programme normally requires at least three years of full-time study.

A PhD may also be undertaken part time.

PREREQUISITES

You will need a First Class or Second Class Honours degree or a Master’s degree to apply for a PhD.

However, meeting this requirement does not guarantee a place, as you also need to be accepted by the School and assigned a supervisor.

ENROLMENT

The Faculty of Graduate Research provides a first contact point for all students enrolling in a PhD, including international students.

Application is available online. There are three application deadlines each year—1 March, 1 July, and 1 November.

For any enquiries about PhD admission and enrolment, contact pg-research@vuw.ac.nz

Broken line indicates pathways that are possible in some programmes.

* Some postgraduate diploma courses can lead to Master’s study. For details, contact the postgraduate liaison officer at postgrad-enquiries@vuw.ac.nz

** Some Bachelor’s degrees offer pathways straight into a Master’s programme.
## OUR PROGRAMMES

### BIOLOGICAL SCIENCES

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<th>Field</th>
<th>GDipSc</th>
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### CHEMICAL AND PHYSICAL SCIENCES

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*Taught in collaboration with the Ferrier Research Institute and the School of Biological Sciences.
# GEOGRAPHY, ENVIRONMENT AND EARTH SCIENCES

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# MATHEMATICS AND STATISTICS

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# PSYCHOLOGY

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# SCIENCE IN SOCIETY

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MASTER’S BY COURSEWORK PROGRAMMES

BIOTECHNOLOGY
Every year, millions of people are affected by disease and health conditions for which there are no treatments. Learn alongside world-leading experts to understand how immunology can be leveraged to keep us healthy, or how to identify and develop drugs and vaccines for untreated medical conditions. Study in this area will put you at the forefront of the global health industry.

Master of Clinical Immunology
Clinical immunology sits at the centre of all aspects of human health and is one of the most exciting and active areas of biological discovery. This Master’s will equip you with the skills required to assess, analyse, and undertake clinical research in immunology. You will be trained in clinical trial design, biostatistics, and advanced immunological theory and techniques.

We have close ties to the Malaghan Institute of Medical Research, the Medical Research Institute of New Zealand, Wellington Regional Hospital, and the Wellington School of Medicine, University of Otago. Clinicians and researchers from these organisations contribute to this programme by delivering lectures, sharing their expertise, and leading research.

To apply for this programme, you’ll need a Biomedical Science degree majoring in Molecular Pathology or an equivalent qualification.

Master of Drug Discovery and Development
Research into drug discovery and development operates at the interface between the fields of chemistry and biology. You’ll learn the research processes used to identify drug targets, develop new therapeutics, and help improve human or animal health through creating new or more effective drugs and medicines. You’ll also learn about protecting intellectual property, assessing the financial viability of drugs, and the pre-clinical and clinical trial processes.

This Master’s is taught by the Ferrier Research Institute, the Schools of Chemical and Physical Sciences and Biological Sciences, and the Centre for Biodiscovery. The expertise of the staff in these groups is highly sought after by companies around the world to overcome difficult synthetic and analytical problems.

To apply for this programme, you’ll need an undergraduate degree in a relevant subject area with an average grade of B+ or higher.

www.victoria.ac.nz/clinical-immunology
CLIMATE AND THE ENVIRONMENT

The impact of climate change and environmental degradation are two of the most pressing challenges we face. Gain the skills you need to become a leader in protecting the natural world. With headlines dominated by stories of polluted oceans, rising sea levels, and biodiversity loss, the time to act is now.

Master of Climate Change Science and Policy
See page 16.

Master of Conservation Biology
With 13 national parks, a diverse dramatic coastline, and breath-taking native bush, New Zealand’s natural living space is a biological scientist’s dream. Study Conservation Biology to make a valuable contribution to the preservation of native species in their natural environments in New Zealand and abroad.

In this programme, you’ll take three core courses, including a three-week field course to key conservation sites throughout New Zealand, and choose further relevant electives that suit your interests. You’ll learn from internationally respected scientists whose work informs the management of New Zealand’s unique biota and conservation.

You’ll need an undergraduate degree in a relevant subject area, or to be accepted by the programme coordinator.

www.victoria.ac.nz/conservation-biology

Master of Environmental Science

Environmental Science is about how humans connect with, and change, the natural environment and is taught through a range of scientific disciplines such as biology, chemistry, geography, mathematics, and physics.

Wellington is the ideal place for students to see how environmental science ranges from the field to policymaking. The region has active city and regional councils as well as the Zealandia eco-sanctuary, GNS Science, and NIWA, all of which are involved in the programme.

You’ll need an undergraduate degree in Biology, Chemistry, Earth Sciences, Environmental Science, Mathematics, Physical Geography, or Physics with a B average.

www.victoria.ac.nz/menvsc

Master of Marine Conservation

With the increasing pressures on the marine environment, experts in the conservation and management of marine organisms and ecosystems are in demand.

In this programme, you’ll examine marine conservation issues and practices using examples from New Zealand, Australia, the South Pacific, and the wider Indo-Pacific region. Two of the three core courses are field-based, and you’ll visit several world-renowned marine conservation sites in New Zealand and overseas.

You’ll be prepared for a career in a range of marine conservation areas worldwide, including the conservation and management of marine organisms and ecosystems.

To apply for this programme, you’ll need an undergraduate degree in a relevant subject area with a B+ average.

www.victoria.ac.nz/mmarcon

Master of Meteorology

Be part of New Zealand’s first Master’s degree in Meteorology and become an expert in studying and predicting weather and climate and the relationship these patterns have with other environmental processes and humanity.

The programme is recognised throughout the world and complies with the World Meteorological Organization standards. It is taught in partnership with New Zealand’s official weather forecaster, MetService, which will provide you with practical work experience. This practical work is formally recognised as part of the qualification, preparing you for a role in industry.

To apply for this programme, you’ll need an undergraduate degree in Geophysics, Mathematics, Physics, or a similar subject.

www.victoria.ac.nz/mmet
DATA AND STATISTICS

Learn how to leverage data to solve problems, uncover insights, and inform decision-making. Our programmes focus on real-world applications, giving you a mix of theoretical and practical skills ideal for starting your career.

Master of Applied Statistics

Statisticians are in demand. The huge variety and quantity of data generated today means more people are needed who can analyse and make sense of it.

This programme is designed to train you in a range of advanced techniques and to provide you with an appreciation of the variety of work undertaken by professional statisticians and consultants. It is made up of both coursework and practical training, allowing you to develop skills in research and consultancy. You’ll then apply these skills in a work placement in a relevant government department or business.

For this programme, you’ll need an undergraduate degree in a relevant subject area with a B+ average.

★ www.victoria.ac.nz/applied-statistics

Master in Geographic Information Science

Geographic information science (GIS) relates to the concepts behind the creation and use of computer-based systems that allow you to explore, store, manipulate, analyse, and visualise data with a spatial or geographic component. These skills are in high demand.

In this programme, you’ll learn to harness data to enable a better understanding of what happens on Earth for both the physical environment and human populations. Postgraduate certificate and diploma options are also available.

Wellington is a key employment market for GIS professionals and we have close ties to government agencies at both central and local levels, Crown research institutes, and private companies.

You’ll need an undergraduate degree with a B+ average and two undergraduate GIS courses or extensive relevant industry experience.

★ www.victoria.ac.nz/mgis

POLICY AND ENGAGEMENT

Science is an important part of our society, and scientific knowledge belongs outside the lab. Policy and decision-making informed by science, and a scientifically literate population are vital if we are going to successfully address the challenges we face.

Master of Climate Change Science and Policy

Globally, we are already seeing some of the consequences of climate change.

How we go about reducing our emissions and how we adapt to changes that have already happened require scientists and policymakers with a broad understanding of both the physical science and human systems that are involved.

This programme will give you the necessary combination of policy and science knowledge to address the real-world problems of climate change. It is taught by world-renowned experts in climate change and we have close relationships with government bodies, research institutes, and other key agencies in Wellington and in New Zealand.

To apply for this programme, you’ll need an undergraduate degree with a B average (or equivalent) or extensive and relevant practical, professional, or scholarly experience.

★ www.victoria.ac.nz/mccsp

Master of Science in Society

This programme is perfect for science graduates who are interested in developing skills for effective public engagement around scientific issues or are keen to pursue a career in science policy or advocacy.

Taught by award-winning teachers, researchers, and practitioners, you’ll develop critical thinking and communication skills. You’ll look at the theory and practice of science communication, gain a grounding in contemporary scientific issues, and explore perspectives on science from across different cultures and disciplines.

To apply for this programme, you’ll need an undergraduate degree with a B+ average (or equivalent) or extensive and relevant practical, professional, or scholarly experience.

★ www.victoria.ac.nz/master-of-science-in-society
Biology is studied in two main areas: Ecology and Marine Biology, and Cell and Molecular Bioscience. Our topics include biotechnology, cell biology, conservation biology, drug discovery and development, ecological restoration, marine biology, and microbiology.

Te Toki a Rata Building, Kelburn Campus

+ 04 463 5339 or 0800 22 77 55
+ biosci@vuw.ac.nz

OUR STRENGTHS

- Victoria University of Wellington ranked in the top three universities nationally for Ecology, Evolution and Behaviour, and Molecular, Cellular and Whole Organism Biology in the most recent Performance-Based Research Fund quality evaluation.
- Our academics are considered some of the best researchers in New Zealand.

RESEARCH LINKS

We have close ties to the Biological Heritage National Science Challenge, Capital and Coast District Health Board, Cawthron Institute, Department of Conservation, Ferrier Research Institute, Malaghan Institute of Medical Research, Maurice Wilkins Centre of Research Excellence, and NIWA.

OUR STUDY ENVIRONMENT

Our award-winning science building, Te Toki a Rata, has state-of-the-art research and teaching laboratories and equipment covering a range of biological disciplines and our coastal ecology lab, overlooking the Taputeranga Marine Reserve, is purpose-built with two seagoing research vessels and two wet-lab facilities.

An interdisciplinary approach is celebrated within the School. We often conduct research at the intersections of biology and chemistry, psychology, or earth sciences.
YOUR STUDY OPTIONS

If you are interested in a one-year postgraduate programme, consider a Master’s by coursework in Clinical Immunology, Conservation Biology, Drug Discovery and Development, or Marine Conservation. Find out more on pages 14–15.

Alternatively, if you want to complete a research thesis, or pursue another area of biology, check out your options in the postgraduate diploma, Honour’s, Master’s by thesis, and Doctoral programmes on pages 12–13.

PROGRAMME COORDINATORS

If you have a question or are interested in one of our programmes, contact biosci@vuw.ac.nz or the appropriate coordinator.

<table>
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<tr>
<th>Programme</th>
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<tbody>
<tr>
<td>Biology</td>
<td>Associate Professor Ken Ryan <a href="mailto:ken.ryan@vuw.ac.nz">ken.ryan@vuw.ac.nz</a></td>
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<tr>
<td>Biomedical Science</td>
<td>Associate Professor Peter Pfeffer <a href="mailto:peter.pfeffer@vuw.ac.nz">peter.pfeffer@vuw.ac.nz</a></td>
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<tr>
<td>Biotechnology</td>
<td>Professor David Ackerley <a href="mailto:david.ackerley@vuw.ac.nz">david.ackerley@vuw.ac.nz</a></td>
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<tr>
<td>Cell and Molecular Bioscience</td>
<td>Associate Professor Peter Pfeffer <a href="mailto:peter.pfeffer@vuw.ac.nz">peter.pfeffer@vuw.ac.nz</a></td>
</tr>
<tr>
<td>Clinical Immunology</td>
<td>Professor Anne La Flamme <a href="mailto:anne.laflamme@vuw.ac.nz">anne.laflamme@vuw.ac.nz</a></td>
</tr>
<tr>
<td>Clinical Research</td>
<td>Professor Elaine Dennison <a href="mailto:elaine.dennison@vuw.ac.nz">elaine.dennison@vuw.ac.nz</a></td>
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<tr>
<td>Conservation Biology</td>
<td>Associate Professor Nicola Nelson <a href="mailto:nicola.nelson@vuw.ac.nz">nicola.nelson@vuw.ac.nz</a></td>
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<tr>
<td>Drug Discovery and Development</td>
<td>Dr Simon Hinkley <a href="mailto:simon.hinkley@vuw.ac.nz">simon.hinkley@vuw.ac.nz</a></td>
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<tr>
<td>Ecological Restoration</td>
<td>Dr. Julie Deslippe <a href="mailto:julie.deslippe@vuw.ac.nz">julie.deslippe@vuw.ac.nz</a></td>
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<td>Associate Professor Ken Ryan <a href="mailto:ken.ryan@vuw.ac.nz">ken.ryan@vuw.ac.nz</a></td>
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<td>Marine Biology</td>
<td>Professor James Bell <a href="mailto:james.bell@vuw.ac.nz">james.bell@vuw.ac.nz</a></td>
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CAREER OPPORTUNITIES

Our graduates work in biosecurity, biotechnological innovation, environmental consultancy and monitoring, field ecology, genetic counselling, immunology, laboratory management, marine biology, policy analysis, research science, teaching, and much more.

RESEARCH CENTRES

Centre for Biodiscovery
We are dedicated to understanding the biological basis of disease, finding new chemical entities for cures, and developing diagnostics through multidisciplinary collaborative research.

Operating at the boundary of chemistry and biology, the Centre is staffed by scientists from the School of Biological Sciences, the School of Chemical and Physical Sciences, the Ferrier Research Institute, and the Malaghan Institute of Medical Research. Our researchers are respected as national leaders in natural products-based drug discovery, cancer biology, development of vaccines, enzyme engineering, proteomics, and chemical genetics.

www.victoria.ac.nz/biodiscovery

Centre for Biodiversity and Restoration Ecology
Research in the Centre for Biodiversity and Restoration Ecology explores a range of topics under the areas of reservation, restoration, and reconciliation ecology. Our specialist topics include mammalian pest management, invasive plant and insect species, ecology, translocation, and meta-population management and monitoring.

The Centre works in collaboration with local, city, and regional government, and non-governmental agencies, including Zealandia.

www.victoria.ac.nz/biodiversity
GETTING TO THE ROOT OF TREE BLIGHT

Kauri are a keystone species, critical for the survival of their surrounding ecosystems, and are a taonga (treasure) for all New Zealanders.

A research group within the University’s School of Biological Sciences is looking at the microbe that causes kauri dieback disease, which is threatening this iconic species with extinction.

This work started with a study trying to understand the molecular basis of how microbes ‘see’ or ‘smell’ what’s around them, which led to an exploration of how Phytophthora agathidicida (the microbe that causes kauri dieback disease) senses kauri roots and navigates through the soil.

“Kauri dieback is a serious issue. The loss of kauri means the loss of sacred living ancestors for Māori, as well as an important part of New Zealand’s ecosystems,” says Dr Monica Gerth, who is leading the group.

“We’re trying to identify the chemical signals from native plants that attract or repel the spores. We’re also focusing on the lifecycle of the spore to discover its weaknesses. This is an exciting project for us, that combines mātauranga Māori with cutting-edge biochemistry and microbiology techniques.

“These are big problems. I hope we’re the ones to make a breakthrough, but if not, I hope we’ve contributed to the fundamental insights that help the next generation achieve it. I got into science because I wanted to help, and I truly believe research has the power to be transformative.”

Dr Gerth’s research has received funding from the National Science Challenge for New Zealand’s Biological Heritage, the Ministry of Business, Innovation and Employment’s Smart Ideas programme. She has also received funding for an outreach and education project—Te Kura o te Kauri—from the Unlocking Curious Minds fund.

“Through our work with iwi we have become aware of the importance of ‘kauri ora, mauri ora’—the health of the forest is connected to the wellbeing of the people. We want to use our Unlocking Curious Minds fund to share this knowledge with other New Zealanders and show how science, arts, and mātauranga Māori can all work together.”
KAURI GUARDIANS

While working at the Arataki visitor centre and on the Auckland Council kauri dieback team, Te Amohaere Ngata-Aerengamate realised there was a lack of necessary tools for managing kauri dieback.

"Research must be undertaken to find better options to manage and reduce the spread of the pathogen and Victoria University of Wellington has a team of microbiologists dedicated to looking at this issue," she says.

Te Amohaere first met Dr Gerth at a talk about kauri dieback in the Waitakere Ranges. "She was talking about the research her team had done and the results were so intriguing that I wanted to be part of it. I’ve joined this team as a Master’s student and Dr Gerth has been a fantastic supervisor with many great research ideas.

“My main interests lie in the world of mātauranga Māori. The research I’m looking at involves collaborating with mātauranga Māori experts and exploring their treatments for kauri dieback. Once I’ve completed my degree, I’ll return to the Auckland Council with new knowledge to continue fighting kauri dieback.”

Another Master’s student in Dr Gerth’s group, Monica Summers, is investigating the diversity and composition of kauri’s microbiome by looking closely at soil and companion plants. She will be evaluating the potential of microbes associated with kauri companion plants to produce bioactive chemicals that inhibit kauri dieback. "Being part of a project that could have important environmental impacts is so exciting. The programme and University have well and truly lived up to my expectations.

“I’ve had plenty of opportunities to further my skills, build my confidence, and deal with the challenges faced in research. The facilities at the University for learning and researching in biology are top notch.”

For Dr Gerth, supporting her research group to achieve career success is important. “I enjoy teaching via research and mentoring my research group. My postgraduate students are not only becoming world-class researchers, but they are also developing transferable skills such as writing and presenting for different audiences. Our lab is a supportive environment where students can push past their limits and achieve their goals.”
Physics and chemistry are the disciplines that form the basis of our technological society. If your intellectually curious and innovative mind is seeking challenge and inspiration, join us at the cutting edge of science in New Zealand.

OUR STRENGTHS

- The calibre of scientists in the School attracts significant external and internal funding.
- Our alumni and faculty members are often awarded prestigious national and international science awards. Notably, in 2000, alumnus Professor Alan MacDiarmid was awarded the Nobel Prize in Chemistry.

RESEARCH LINKS

The School interacts closely with the nation’s leading research institutes such as Callaghan Innovation, Ferrier Research Institute, GNS Science, NIWA, and the Robinson Research Institute.

In addition, we have excellent links with the School of Biological Sciences, the Centre for Biodiscovery, and the Malaghan Institute of Medical Research, with joint programmes in the discovery and evaluation of new bioactive compounds for the treatment of disease.
OUR STUDY ENVIRONMENT

You’ll have access to state-of-the-art research equipment, including nuclear magnetic-resonance and Raman spectrometers, X-ray-diffraction and ultra-fast laser facilities, an electron microscope suite, and a clean-room facility.

Our postgraduate student workshop series is a popular ongoing event and will allow you to better your communication and research skills.

An interdisciplinary approach is celebrated within the School. We often conduct research at the intersections of biology and chemistry, psychology, or earth sciences.

YOUR STUDY OPTIONS

The nature of our disciplines provides a learning environment in which chemists and physicists enable each other to find solutions to things that matter. You might look at renewable energy, marine natural products, astrophysics, or computational modelling.

Alternatively, if you are passionate about the intersection of biology and chemistry, then consider the Master of Drug Discovery and Development. Find out more on page 14.

PROGRAMME COORDINATORS

Contact a programme coordinator to discuss your potential research projects or study options.

**Chemistry**

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<tr>
<td>Master’s and PhD</td>
<td>Associate Professor Mattie Timmer</td>
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**Drug Discovery and Development**

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**Physics**

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<td>Master’s and PhD</td>
<td>Associate Professor Petrik Galvosas</td>
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CAREER OPPORTUNITIES

Your chemistry skills will be in demand in industries ranging from food and wine production to cosmetics companies and Crown research institutes. Our graduates are employed in analytics and production monitoring, biotechnology, the energy sector, environmental protection, government departments, and pharmaceutical industries.

The principles of physics are essential in many applied disciplines and, with a postgraduate degree, you’ll have a diverse range of career options, from fundamental physics research to analyst and consultant roles. Our graduates work for technology companies, government laboratories, hospitals, traffic and aviation engineering, and in related fields such as environmental and earth science.

RESEARCH CONNECTIONS

**MacDiarmid Institute for Advanced Materials and Nanotechnology**

The MacDiarmid Institute for Advanced Materials and Nanotechnology is a national network of leading scientists who create high-tech solutions to problems such as climate change.

The Institute creates materials and devices from atoms and molecules through developing and applying cutting-edge techniques in physics, chemistry, and engineering.

[www.macdiarmid.ac.nz](http://www.macdiarmid.ac.nz)

**Ferrier Research Institute**

The Ferrier Research Institute consists of a team of internationally recognised carbohydrate chemistry experts and analysts working to bring better drugs, materials, and technology to the world. Their work includes a broad range of applied research projects and commercial work for clients.

[www.victoria.ac.nz/ferrier](http://www.victoria.ac.nz/ferrier)

**Robinson Research Institute**

The multidisciplinary Robinson Research Institute melds innovative engineering and applied physics to build advanced technologies for businesses worldwide. Master’s and PhD students can apply to study with the Robinson Research Institute.

[www.victoria.ac.nz/robinson](http://www.victoria.ac.nz/robinson)

**Centre for Biodiscovery**

Find out more on page 19.

[www.victoria.ac.nz/biodiscovery](http://www.victoria.ac.nz/biodiscovery)
NATURE’S TREASURE TROVE

Nature is home to an abundance of chemical compounds that provide endless opportunities for treating diseases and understanding life at a molecular level.

The School’s Natural Products research group looks mainly at chemical compounds from marine invertebrates—such as sponges, ascidians, and bryozoans—and algae, to identify new pharmaceutical compounds for a variety of diseases, including cancer and fungal infections.

“We collect marine organisms from around New Zealand and in the wider Pacific region, like Tonga, and use solvents to make crude extracts that contain a multitude of compounds,” says Dr Robert Keyzers, who leads the group.

“Invertebrates are a good source for new drug discoveries. Their sedentary nature means they’ve developed defensive chemicals to deter predators and some of those chemicals exhibit biomedical properties.

“The chemical identification part of our research is heavily analytical and is a real detective process of finding bits of disparate data, linking them together, and then building a bigger picture of what the structure is—so it’s real Sherlock Holmes-type stuff.”

Sarah Andreassend completed a Master of Science with the group in 2017 and has since worked as a research assistant in the lab.

“My Master’s project involved synthesising a range of analogues based on an anti-malarial marine natural product, malonganenone A. In total, I made 75 compounds to test whether the activity and specificity could be improved.

“The programme was challenging. Balancing classes, studying, exams, as well as a research project, was a lot to handle in the first year. The second year was focused only on research, which was a great opportunity to get a feel for what that truly involves—trial and error, problem-solving, and a lot of reading.”

Sarah now works on two separate research contracts. One involves organic synthesis based on the marine natural product, pateamine, and the other investigates the chemistry involved in kauri dieback disease.
REVEALING THE UNKNOWN

“Every student has potential. The secret is to try to reveal the student’s aptitude to themselves, to give them the confidence to help maximise that potential.”

That’s the teaching philosophy of Dr Robert Keyzers, who says that one of the most rewarding experiences is seeing ‘the penny drop’ with a student who has been struggling with a difficult concept. “You can really see a gleam in their eyes as it all just clicks into place, which is a magical moment for any teacher.”

Dr Keyzers says that the opportunity to work in marine environments and make discoveries is what drew him to his research specialisation. “I’ve been provided with excellent research facilities, funding to go and collect sponges in Tonga, and great students.”

One of those students is PhD candidate, Joe Bracegirdle, who credits Dr Keyzers’ amazing balance between being laid back and approachable with being professional. “He gives me good direction without many restraints, which suits my explorative type of research perfectly.”

Joe completed a Bachelor of Science with Honours and two summer scholarships in Dr Keyzers’ research lab. He loved the field, so the decision to continue with a PhD in marine natural products was easy.

“We’re looking at organisms that have never been investigated before. There’s a chance we’ll find a new penicillin or aspirin, which could improve treatment of a disease or aliment. The complete unknown at the start of each project is so exciting.”

Joe says that the programme has exceeded his expectations and given him multiple opportunities, such as completing a Scuba certification and attending conferences around New Zealand. “I’ve also travelled a fair bit of the world—I worked at Griffith University on the Gold Coast, attended a course on seaweed biodiversity in Java, Indonesia, and travelled to Portugal for a conference.”
To become an expert in your field, you must consider multiple disciplinary takes on a subject. The School covers the spectrum of earth and environmental studies from fundamental sciences to present-day processes and issues, and the impact these have on people. We are one of New Zealand’s leading voices in the race to understand and address climate change and environmental hazards such as earthquakes and volcanoes.

SCHOOL OF GEOGRAPHY, ENVIRONMENT AND EARTH SCIENCES
TE KURA TĀTAI ARO WHENUA

OUR STRENGTHS
- Earth Sciences at Victoria University of Wellington was ranked first among New Zealand universities for research quality in the most recent Performance-Based Research Fund quality evaluation.
- Earth and Marine Sciences, Development Studies, and Geography at the University were all ranked in the top 100 in the most recent QS rankings.
- In 2017, our collaboration with GNS Science was ranked ninth worldwide in the prestigious annual Nature Index.

RESEARCH LINKS
The School has strong, longstanding links with key national science organisations such as GNS Science, MetService, and NIWA, and with governmental and non-governmental organisations, including the Ministry for the Environment, the Ministry of Foreign Affairs and Trade, NZAID, and the Earthquake Commission.
OUR STUDY ENVIRONMENT

We are situated within easy access of the volcanic plateau to the north, glaciated landscapes to the south, and many other unique geological and geographic features throughout New Zealand. Your research could even take you across the globe, to the Pacific, Latin America, Antarctica, and beyond.

The School has state-of-the-art laboratories and facilities and you’ll experience first-hand a fascinating range of urban, rural, and remote environments through field work, which is at the core of our teaching.

Our students often have two supervisors, one from the University and another from an external science organisation. These relationships provide opportunities to work on large-scale projects.

YOUR STUDY OPTIONS

If you are interested in a one-year postgraduate programme, consider a Master’s by coursework in Climate Change Science and Policy, Environmental Science, Geographic Information Science, or Meteorology. Find out more on pages 15–16.

Alternatively, if you want to complete a research thesis, or pursue another area in the School, check out your options in the postgraduate diploma, Honours, Master’s by thesis, and Doctoral programmes on pages 12–13.

PROGRAMME COORDINATORS

Contact a programme coordinator to discuss your potential research projects or study options.

<table>
<thead>
<tr>
<th>Climate Change Science and Policy</th>
<th>Dr Alex Lo <a href="mailto:alex.lo@vuw.ac.nz">alex.lo@vuw.ac.nz</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Studies</td>
<td>Professor John Overton <a href="mailto:john.overton@vuw.ac.nz">john.overton@vuw.ac.nz</a></td>
</tr>
<tr>
<td>Earth Sciences*</td>
<td>Professor Colin Wilson <a href="mailto:colin.wilson@vuw.ac.nz">colin.wilson@vuw.ac.nz</a></td>
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<tr>
<td>Environmental Science</td>
<td>Dr Lynda Petherick <a href="mailto:lynda.petherick@vuw.ac.nz">lynda.petherick@vuw.ac.nz</a></td>
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<tr>
<td>Environmental Studies</td>
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</tr>
<tr>
<td>Geographic Information Science</td>
<td>Dr Mairéad de Róiste <a href="mailto:mairead.deiroiste@vuw.ac.nz">mairead.deiroiste@vuw.ac.nz</a></td>
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<tr>
<td>Geography</td>
<td>Associate Professor Sara Kindon <a href="mailto:sara.kindon@vuw.ac.nz">sara.kindon@vuw.ac.nz</a></td>
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<tr>
<td>Physical Geography</td>
<td>Associate Professor Bethanna Jackson <a href="mailto:bethanna.jackson@vuw.ac.nz">bethanna.jackson@vuw.ac.nz</a></td>
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</table>

*Geology, Geophysics, and Meteorology.

RESEARCH CENTRES

Antarctic Research Centre

The Antarctic Research Centre seeks to improve understanding of Antarctic climate history and processes and their influence on the global climate system. This field provides exciting opportunities and challenges for postgraduate researchers, and they will gain insight that is the basis for international debate and policy development on global climate change issues.

Our recent research has had a particular focus on paleoclimate reconstructions, glaciology, and glacier and climate modelling.

www.victoria.ac.nz/antarctic

Institute of Geophysics

The Institute of Geophysics coordinates research in geophysics, meteorology, and tectonics, including studies of earthquakes and earth structure, within the School of Geography, Environment and Earth Sciences and in collaboration with other schools within the Faculty of Science.

www.victoria.ac.nz/institute-geophysics

New Zealand Climate Change Research Institute

The New Zealand Climate Change Research Institute develops interdisciplinary climate change research, with emphasis on work that spans the natural and social sciences. Our aim is to produce high-quality and decision-relevant climate change research for private and public sector decision makers. To do this, we draw on the skills and experience of our staff and postgraduate students to produce leading collaborative research that is relevant to policymakers.

www.victoria.ac.nz/climate-change
CHANGING COASTLINES

Climate change is one of the most important issues facing humanity. It is an urgent and challenging area, but it’s not too late to make a difference.

Researchers and students throughout the School and the Antarctic Research Centre are tackling this issue by both investigating the physical nature behind it and looking at the possible solutions.

“There is a major role for environmental scientists to provide evidence and advice to decision makers so that we reduce the negative impacts of climate change,” says earth scientist Professor Tim Naish.

A national programme that awarded Professor Naish $7 million funding is looking at how much and how fast the Antarctic ice sheets will melt and contribute to future sea-level rise. “We have a large research programme that aims to produce more accurate sea-level projections for New Zealand. This will not only consider the new Antarctic estimates but also factor in vertical land movements, which are significant.”

The results of this collaborative research programme—NZSeaRise—will provide stakeholders, decision makers, and the public with improved sea-level projections for the whole New Zealand coastline to better anticipate and manage the impacts of future sea-level rise.

“These will feed into the Ministry for the Environment Coastal Hazards Guidance for Local Government and will be utilised more widely by the insurance, financial, building, and infrastructure sectors.

“Our research also contributes to the Intergovernmental Panel on Climate Change assessment reports, which inform governments on setting greenhouse gas emissions targets, such as the United Nations Paris Climate Agreement, so it has global implications.

“We can do something to avoid the worst consequences of global climate change. While we must continue to put as much effort as we can on limiting global warming to less than 2°C, we must also be prepared to adapt.”

(Top) Professor Tim Naish holds up the projection of coastline change for the worst-case scenario for Petone, Wellington in 2120.

(Bottom) The south coast of Wellington.
USING THE PAST AS THE KEY TO THE FUTURE

“I’d really encourage young people to take up the challenge of climate and environmental change research to help shape a more resilient and sustainable future,” says Professor Tim Naish.

“My days are spent teaching and supervising students, giving public lectures, talking with stakeholders, and doing some really cool research. I have led and worked with international multidisciplinary teams to extract geological drilling records of past ice-sheet change from Antarctica to compare with past sea levels recorded in the geological strata of the Whanganui Basin.”

Recent graduate Dr Georgia Grant worked on this project at the Antarctic Research Centre, under the supervision of Professor Naish and Dr Gavin Dunbar. “The Centre has an amazing international reputation, so it was the obvious place to do this research.”

For her PhD, Georgia studied climate cycles that took place between 3.3 and 2.5 million years ago by analysing samples from the Whanganui Basin. “I reconstructed the timing and magnitude of sea-level changes three million years ago, which was the last time Earth’s climate was as warm as it will be in the coming decades.”

Georgia’s research shows that global sea levels rose by as much as 25 metres above present day due to melting parts of the Antarctic ice sheet. This melting happened under warmer climate conditions, when carbon dioxide levels in the atmosphere were like today—400 parts per million. “This provides insight into what might happen to global sea level if we keep carbon dioxide above this level.”

During her PhD, Georgia travelled to the United States to undertake laboratory work at Stanford University, and to learn and develop a software program at Western Michigan University. She also presented at conferences in the United States and Italy.

“From a small corner of the world, Victoria University of Wellington places huge importance on international collaboration, which allows you to be a part of a wider scientific community.”

She is now planning on applying for a postdoctoral position overseas. “My aim will be to model ice-sheet response to warmer climates of the past and, in particular, to constrain the contribution of sensitive marine-based sectors of Antarctica to global sea level.”
Mathematics is renowned for its precision, subtlety, and beauty, while at the same time providing the powerful tools that underpin technological advances in the physical and life sciences, engineering, computing, and the social sciences.

OUR STRENGTHS
- We have leading international and early-career researchers who are forging new directions in a range of theoretical and applied disciplines.
- We ranked in the top three universities nationally in Pure and Applied Mathematics in the most recent Performance-Based Research Fund quality evaluation.

RESEARCH LINKS
We have active partnerships with a range of government, business, and public and private research organisations, including Accident Compensation Corporation; Contact Energy; Department of Conservation; GNS Science; Ministry of Business, Innovation and Employment; Ministry of Health; NIWA; and Statistics New Zealand.
OUR STUDY ENVIRONMENT

A degree in mathematics or statistics will help you develop skills in finding patterns, drawing conclusions, dealing with abstract concepts, analysing large quantities of data, and approaching problems in an analytical and rigorous way.

You might research the sustainability of fisheries, the analysis of native birdsong, fundamental advances in theory of computation, the structure of matroids, or high-dimensional statistical analysis.

Our approachable staff undertake research at an international level. When you study with us, you will experience a collegial learning environment.

YOUR STUDY OPTIONS

In the Master of Applied Statistics you will develop skills in research and consultancy and then apply these skills in a practical work placement with a relevant government department or business. Find out more about this programme on page 16.

If you choose to take a Master of Science or PhD, you’ll undertake research on academic or externally funded projects with our academic supervisors. While your thesis topic might be linked to broader academic research, these topics are flexible with room for you to set your own course.

PROGRAMME COORDINATORS

Contact a programme coordinator to discuss your potential research projects or study options.

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<thead>
<tr>
<th>Programme</th>
<th>Coordinator</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Statistics</td>
<td>Dr Yuichi Hirose</td>
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<tr>
<td>Mathematics</td>
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<tr>
<td>Statistics</td>
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<tr>
<td>Stochastic Processes in Finance and Insurance</td>
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</table>

CAREER OPPORTUNITIES

There is a growing demand for mathematical and statistical expertise due to the increasing volume of data worldwide, and an appreciation of how this can inform better decision-making. Graduates with degrees in mathematics and statistics are recognised as earning the third-best salaries in the United Kingdom, according to a recent study by QS Digital Solutions and mathematics-related occupations have been ranked among the top 10 careers over several years, in an annual survey run by the United States company CareerCast.

The scope for careers in mathematics and statistics is constantly expanding as new research and ideas are discovered.

Our recent graduates work in research, analysis, policy and management in education, finance, government, IT, and science sectors. More specifically, graduates have taken on roles as actuaries, meteorologists, risk analysts, and statisticians, in computer-generated imagery development, fisheries management, digital games, and a range of creative and research organisations.

RESEARCH AREAS

The demand from industry for applicants with postgraduate qualifications in statistics, data science and applied mathematics is high. Our researchers and thesis supervisors are highly knowledgeable across a range of mathematics and statistics disciplines and areas including applied mathematics, data science, geometry and analysis, logic and algebra, and probability and statistics.
Fisheries is one of the key primary industries in New Zealand, and avoiding overfishing is crucial for managing our fish stocks, says Dr Nokuthaba Sibanda.

“We can use statistical modelling of population dynamics and stock levels to inform management decisions. The complex nature of fisheries data from surveys and commercial catches means that standard methods are not ideal, and research is required to improve existing methods or develop new ones.

Dr Sibanda is both a senior lecturer in Statistics and a senior research fellow in Biostatistics in the Centre for Women’s Health Research. Her work involves developing and applying methods to better understand patterns in areas ranging from health to ecology and fisheries.

One of the projects that Dr Sibanda is involved in—Ecosystem-Based Fisheries Modelling—is part of the Sustainable Seas National Science Challenge.

“The ecosystem approach is increasingly being used to better understand the direct and indirect effects of fisheries on marine ecosystems. This requires mathematical models and, although several models have been built for this purpose, each relies on different assumptions and methods. The main aim of this project is to test the assumptions made in one of these models, Atlantis, and to compare its performance against the other types of models.”

Dr Sibanda’s aim is to use statistics to have an impact on real-world problems. “I use data to help people understand what is going on around them. I enjoy the entire process of investigating and answering questions regarding a specific hypothesis. The wide applicability of the methods allows me to work in several different areas and that keeps each day interesting and challenging.

“If you want to be useful in almost any field, then I highly recommend studying Statistics. There are so many employers looking for people with mathematical, computational, and data analysis skills. A Statistics degree will give you all of that.”
ENDLESS OPPORTUNITIES

“Every set of data has a story to tell and what I love about my work is that I get to uncover these stories. Statistics interfaces with a diverse range of subjects. Given the ever-increasing availability of data in many fields, the opportunities are endless,” says Dr Nokuthaba Sibanda.

Dr Sibanda emphasises that the Statistics programme has something for everyone, including theoretical, applied, and computational topics, from undergraduate level all the way through to PhD research. “We offer an amazing opportunity for students to specialise in programmes such as the Master of Applied Statistics or the Master of Science in Stochastic Processes in Finance and Insurance.”

A current PhD student in the fisheries statistics field is Kyuhan Kim, who studied fisheries science in South Korea, before choosing to study at Victoria University of Wellington.

“I love how interdisciplinary this research is, combining my interests in biology and statistics. Modelling fish population dynamics requires a good understanding of both disciplines. Although a statistical description can provide quantitative results, without a biological interpretation, those results are meaningless.” Kyuhan is looking closely at fisheries population modelling and trying to develop a fish-stock assessment model that can be used in data-poor conditions.

“Statistical analyses are fundamental to fisheries stock assessments, but the data is often riddled with both process and observation errors that make traditional models inaccurate. We need methods that are suited to these conditions. I’m hoping that the model I’m developing will eventually be applied to data from commercial fisheries and produce accurate results that can inform management.”

The chance to study in Wellington was a dream come true for Kyuhan. “Not only is it one of the best student cities in the world, but also, New Zealand is internationally recognised for its high-quality fish-stock assessments and management systems. Studying at the University has given me great opportunities to interact with top-notch fisheries experts and develop links with organisations such as NIWA.”
The human mind presents some of science’s greatest challenges, and an understanding of behaviour is the key to solving some of humanity’s most pressing problems. As a postgraduate student in Psychology, you will have the opportunity to deepen your understanding of the human condition and collaborate with active scholars across all fields of psychology.

OUR STRENGTHS

- Psychology at the University was ranked in the top 100 in the most recent QS rankings.
- We offer a range of Psychology programmes, including New Zealand’s only programme in forensic psychology and one of the only programmes in cross-cultural psychology worldwide.

RESEARCH LINKS

We have links with Capital and Coast District Health Board, the Department of Conservation, the Department of Corrections, Ministry of Justice, Oranga Tamariki, and the New Zealand Police, among others.

OUR STUDY ENVIRONMENT

We address a range of questions about human behaviour. You might look at why only some drug users develop addiction, why some people are violent and how we can prevent this, how we can treat, and prevent, depression, how culture influences business negotiations, or how to change human attitudes to climate change.

We have state-of-the-art laboratories with eye-tracking equipment, a brain stimulation lab, an EEG-recording suite, and an infant observation lab.
YOUR STUDY OPTIONS

If you want to independently design your own programme and explore several areas of psychology, then consider a postgraduate degree in Psychology. Alternatively, if you are interested in one specific area of psychology, you might choose to undertake one of our specialised degrees.

Cognitive and Behavioural Neuroscience
Cognitive and behavioural neuroscientists study neural mechanisms that determine how we think, feel, and act. The postgraduate programme provides students with a strong foundation in relevant theory, and the opportunity to conduct research in animal and human participants using a range of technologies.

www.victoria.ac.nz/neuroscience

Cross-cultural Psychology
Cross-cultural psychology is the study of the relationship between culture and human behaviour. Our programme assists students to develop the skills needed to critically assess and engage in research that spans indigenous, culture-specific, and culture-general perspectives.

www.victoria.ac.nz/cross-cultural-psychology

Forensic Psychology
Forensic psychology is the study of human behaviour applied to the legal and criminal justice system. The postgraduate programme aims to equip students with a sound understanding of antisocial and offending behaviour and its effects on victims, and the necessary skills to produce and apply psychological evidence to a variety of legal and criminal justice issues.

www.victoria.ac.nz/forensic-psychology

Clinical Psychology
Clinical psychology involves the assessment, understanding, and treatment of psychological disorders. The School offers the highly regarded Postgraduate Diploma in Clinical Psychology that is studied alongside a research degree. Students will graduate as qualified clinical psychologists.

www.victoria.ac.nz/clinical-psychology

RESEARCH CENTRES

Centre for Applied Cross-Cultural Research
The Centre links cross-cultural and social scientists who are interested in culture, including disciplines such as cultural anthropology, developmental studies, international business, linguistics, and sociology. The Centre has links to community groups, government, and international associations.

www.victoria.ac.nz/cacr

Victoria Psychology Clinic
The Victoria Psychology Clinic provides a training-based facility for the School’s Clinical Psychology programme. It offers a range of psychological services to members of the public who work with trainees in the programme and their supervisors.

www.victoria.ac.nz/psychology-clinic

PROGRAMME COORDINATORS

If you have further questions, contact the relevant programme coordinator to discuss your research plans.

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<th>Programme</th>
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<td>Professor Karen Salmon</td>
<td><a href="mailto:karen.salmon@vuw.ac.nz">karen.salmon@vuw.ac.nz</a> (or programme administrator Helen Lloyd</td>
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<td><a href="mailto:helen.lloyd@vuw.ac.nz">helen.lloyd@vuw.ac.nz</a>)</td>
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<tr>
<td>Cognitive and Behavioural</td>
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<td>Forensic Psychology</td>
<td>Associate Professor Louise Dixon</td>
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<td>Psychology (Master’s and PhD)</td>
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<tr>
<td>Psychology (Honours and Graduate Diploma)</td>
<td>Associate Professor Sue Jackson</td>
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CAREER OPPORTUNITIES

Graduates from our postgraduate programmes have skills suited to a range of careers. The value of research-based degrees is growing in industry and government positions, as is the need for graduates who can measure, analyse, and change human behaviour.

Our graduates work in research roles, counselling and therapy, education, government policy, healthcare, human resources, information technology, law, police, and corrections and social services.
INFLUENCING POLICIES AND PROCESSES

Family violence is a common and pervasive issue in New Zealand. The recently published New Zealand Crime and Victims Survey found that violent interpersonal crimes affected almost 300,000 adults in 2018.

“This shows that there is a compelling need to understand this problem so that effective preventions and policies can be implemented to ensure New Zealanders are safe,” says Associate Professor Louise Dixon, who leads the University’s Interpersonal and Family Aggression Lab.

One of Associate Professor Dixon’s projects looks at the journey of adult male survivors of sexual abuse, including the services they need, what they have received, and how they have experienced receiving it.

“This will shed light on men’s experiences and identify gaps in service provision and delivery. It is intended that this information will provide knowledge to the Ministry of Social Development that will guide their decision-making when it comes to the funding and provision of support services for adult male survivors of sexual abuse in New Zealand.”

Master’s student Jakob Scotts-Bahle was drawn to forensic psychology because of its strong focus on using psychological research to benefit some of society’s most vulnerable members. He is now working on a related project with Associate Professor Dixon as part of a Forensic Psychology thesis, alongside a Postgraduate Diploma in Clinical Psychology.

“The option of completing the Forensic Psychology Master’s alongside the clinical programme is unique to Victoria University of Wellington and it was a big drawcard for me. It means that I can apply my clinical skills to an area I’m really interested in.”

For his thesis, Jakob conducted interviews with male university students about their experiences of harm from an intimate partner. “I feel like I’m contributing to an under-researched but really important area. My research also has very direct implications for informing policy and practice guidelines, and will hopefully make a difference on an international level as well as to New Zealanders.”
MAKING A DIFFERENCE

“Through my Master’s research, I hope that I can give evidence-based advice and ultimately, have a positive impact on the lives of New Zealanders,” says Forensic Psychology student Anjela Frost.

Under the supervision of Associate Professor Dixon, Anjela is working with a counselling service that runs family violence prevention programmes. She’s exploring the reasons people might drop out of these programmes, and hopes this information could be used to improve attendance and efficacy of the programmes.

“Louise is a fantastic supervisor and very passionate about the work that she does. We have similar research interests and we have put together a practical project for my thesis, which is exactly what I wanted to do.

“I am going to conduct my own interviews, apply my research experience and, most importantly, take all the skills I’ve learnt so far at university and use them to have a positive impact in the world outside of academia,” Anjela says.

The Master’s programme has exceeded Anjela’s expectations and she credits the interesting topics, internships, and chance to build links with professionals in the field for allowing her to develop a range of capabilities.

“These opportunities have seen me learn and refine multiple techniques such as networking, psychometric testing, time management, interviewing, public speaking, and tutoring. I know that all these techniques will be very useful once I graduate.”

For Associate Professor Dixon, watching her students grow in confidence and ability over their university journey, and seeing them go on to make a difference for people in the real world, is very rewarding.

“Forensic psychology can lead to a fulfilling career and this programme will provide you with a host of skills that can be used in many different roles across the criminal justice system.”
Many of the most pressing issues facing society today—including climate change, loss of biodiversity, and how to respond to new technologies—cannot be solved using traditional scientific approaches. The Centre for Science in Society looks at the relationships between science, technology, environment, and society and explores the way we think and talk about science.

OUR STRENGTHS

- The Centre is a leader in the field of science communication, public engagement with science, natural and social science, the humanities, and the arts.
- Our research looks at science in its wider social context and investigates contemporary and historical issues in science, technology, and the environment.
- We offer the only qualifications in Science in Society in New Zealand.

RESEARCH LINKS

We have strong and active connections with the Science Communicators Association of New Zealand, the Science Media Centre, and Te Pūnaha Matatini, which facilitate placements and funding.

OUR STUDY ENVIRONMENT

You’ll be taught and supervised by award-winning teachers, researchers, and practitioners.

Wellington is the centre of media, government, and policy-making in New Zealand, and has a thriving scientific community, making it an ideal city in which to learn about science in society.
YOUR STUDY OPTIONS

If you would like to develop practical skills in communication and critical thinking and develop a broader understanding of science, then the one-year Master of Science in Society might be for you. Find out more about this programme on page 16.

Alternatively, if you’re interested in the intersection between science and society and would like to explore this from both a practical and academic perspective, then consider a Master of Science or a PhD at the Centre for Science in Society.

ASSOCIATE PROFESSOR
REBECCA PRIESTLEY

Interdisciplinary scholar and science writer

“Science is an integral part of society, and our courses show students that it does not exist, and cannot operate, in isolation from this wider disciplinary and society context,” says Associate Professor Rebecca Priestley.

Working at the boundary between science and the humanities, her research focuses on New Zealand and Antarctica. She is also a creative non-fiction writer who seeks to engage audiences on scientific and environmental issues.

“Being a writer has given me the opportunity to visit some incredible places. A definite highlight for me was visiting Antarctica for the first time in 2011, on an Antarctica New Zealand media programme.”

In her research portfolio, Associate Professor Priestley asks questions about what New Zealand and Antarctic scientists do, and did in the past, and how and why they seek to engage people with their science. She explores attitudes to issues such as climate change, sea level rise, and nuclear power, and investigates ways in which scientists, the media, and artists communicate about these issues.

“As citizens, we have decisions to make about some really important issues facing our future. Science doesn’t necessarily have all the answers, but it’s got a big role to play. We need scientists working on these problems, and we need citizens who can engage in meaningful debate and make informed decisions.”

“Through our postgraduate programmes, we hope to introduce students to some interesting—and sometimes challenging—ideas and readings from history, sociology, feminist theory, anthropology, and more.”

CAREER OPPORTUNITIES

You might work as a policy analyst, researcher, or science communicator at a government agency, a non-governmental organisation, or a Crown research institute such as GNS Science or NIWA.

Alternatively, you might use your knowledge of scientific concepts and processes to support your career in areas such as journalism, communications, public relations, and patent law.
The world of work is changing at an exceptional pace and increasingly requires curious and agile lifelong learners. Employers look for well-rounded, adaptable graduates who demonstrate the ability to communicate, work collaboratively, think creatively, and solve problems. Graduates who can demonstrate employability skills from both academic learning and extracurricular experiences will have a competitive edge when applying for jobs.

CAREERS AND EMPLOYMENT
The Careers and Employment team connects you with employers and the community, and prepares you for future employment. We can help you explore your study and work options, apply for jobs and internships, and establish a career path by providing advice for ongoing career development.

We have services at both the Kelburn and Pipitea campuses where you can attend one-to-one appointments, drop-in sessions for CV checks, and workshops on a range of career topics, including networking and interview preparation.

You also have access to our employability development programmes and comprehensive resources, job vacancy listings, and career events.

All current students can participate in the Victoria Plus service and leadership programme, the GrowMe employability programme, and our Alumni as Mentors programme that connects final-year students with the University’s alumni.

Jobs on CareerHub
CareerHub has everything you need to keep your career on track:

- search for a range of jobs, from internships, voluntary, and part-time work to graduate positions
- be the first to hear about careers expos, employer information sessions, and seminars
- find resources to assist with your job search, CV, and interview preparation
- book for career advice appointments, workshops, and events.

www.victoria.ac.nz/careerhub

Develop your skills and experience and launch your career with confidence.

Careers and Employment
Room HU120, Hunter Building, Kelburn Campus
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careers-service@vuw.ac.nz
www.victoria.ac.nz/careers

Victoria International provides support and services to international students, from enrolment and orientation through to graduation. Our international advisers can provide personal, academic, and cultural information and advice, and they work closely with the University’s student services, faculties, and academic staff to provide you with the support you need to succeed.

Victoria International can assist you to renew your student visa and make insurance claims through the University’s preferred insurer, Studentsafe.

Victoria International
Level 2, Easterfield Building, Kelburn Campus
04 463 5350
vi-support@vuw.ac.nz
www.victoria.ac.nz/international-student-support

Victoria University of Wellington is committed to supporting and encouraging students who embody and display the key attributes of excellence, leadership, and commitment to community, and helping remove the barriers to university study that exist for students facing hardship or disadvantage.

We offer a range of scholarships for all levels of study, from awards for school leavers and undergraduates, to postgraduate and doctoral scholarships to support you in your studies.

www.victoria.ac.nz/scholarships

SCHOLARSHIPS
MĀORI STUDENTS

Āwhina is the support team for Māori students. Our kaupapa (goal) is to provide academic and holistic support for Māori students enrolled in any degree or course on any of our campuses. Our experienced staff offer one-on-one advising and mentoring sessions, study tutorials and wānanga, and a range of workshops to help you achieve your study and work goals. Our culturally inclusive environment includes whānau rooms with computer facilities, study areas, free tea and coffee, kitchenettes to prepare food, and space to meet with peers or tuākana (senior students). We can help you transition successfully from secondary education or work into tertiary education. Nau mai, haere mai—come and visit us at the Kelburn, Pipitea, and Te Aro campus spaces listed on our webpage.

āwhina@vuw.ac.nz
www.victoria.ac.nz/āwhina

PASIFIKA STUDENTS

Pasifika engagement advisers and mentoring coordinators foster Pasifika learning and teaching communities in an environment that is welcoming, safe, and focused on academic excellence, personal growth, and wellbeing, with Pasifika culture at the core. Our students have access to a mentoring programme for 100-level to 300-level courses, course-specific study sessions, exam-oriented preparation, and workshops that support learning and development as well as meeting cultural needs. Our team is here to help you navigate the crossing into tertiary study and looks forward to welcoming you on board. We have Pasifika spaces at the Kelburn, Pipitea, and Te Aro campuses.

Pasifika Haos
15 Mount Street
Kelburn Campus
pasifika@vuw.ac.nz
www.victoria.ac.nz/pasifika

WHO TO CONTACT

FACULTY STUDENT AND ACADEMIC SERVICES OFFICE

Your faculty office is your first point of contact for support with anything from enrolment to graduation. Get help choosing your degree, planning your courses, or changing your degree programme.

Room CO144, Cotton Building, Kelburn Campus
04 463 5101
science-faculty@vuw.ac.nz
www.victoria.ac.nz/science

ACCOMMODATION

Contact us for advice on applying for halls of residence, renting, and other accommodation options.

www.victoria.ac.nz/accommodation

ADMISSION AND ENROLMENT

Prospective and current students can visit the Enrolment Office for admission and enrolment information, advice, and support.

www.victoria.ac.nz/apply
www.victoria.ac.nz/re-enrol

COURSE ADVICE

If you are a prospective or new student, visit our website or contact us for course advice and to get your admission questions answered.

www.victoria.ac.nz/study

FEES AND FINANCIAL ADVICE

Get information and advice about fees, payments, student levies, and dealing with StudyLink. Meet with a student finance adviser for all money matters and how to apply for the Hardship Fund.

www.victoria.ac.nz/money

POSTGRADUATE STUDENTS

The Postgraduate Students’ Association (PGSA) represents all postgraduate students at the University.

www.vuwpgsa.ac.nz