WANT A CAREER IN SCIENCE?

LEARN FROM WORLD-LEADING EXPERTS

SOLVE THE BIG ISSUES
AND WELCOME TO THE Wellington FACULTY OF SCIENCE

A SCIENCE DEGREE GOES FAR BEYOND THE LECTURE THEATRE. APPLY YOUR CURiosity TO THE MANY LABORATORIES, FIELD TRIPS, AND SUMMER SCHOLARSHIP OPPORTUNITIES OFFERED BY THE FACULTY.

WELLINGTON SCIENCE CAPITAL OF NEW ZEALAND

CAREER-FOCUSED CURRICULUM

2021

MORE THAN 100 SUMMER SCHOLARSHIPS

3,000 STUDENTS

12 RESEARCH CENTRES

WORLD-CLASS FACILITIES

5 SCHOOLS

26 MAJORS

CAReer-focused curriCulum

Wellington Science Capital of New Zealand

more than 100 summer scholarships

3,000 students

12 research centres

world-class facilities

5 schools

26 majors

A Science degree goes far beyond the lecture theatre. Apply your curiosity to the many laboratories, field trips, and summer scholarship opportunities offered by the faculty.
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As a Science student at Te Herenga Waka—Victoria University of Wellington, you’ll absorb knowledge, observe phenomena, experiment with ideas, and may even be part of making new discoveries.

With challenges such as the climate emergency, the global loss of biodiversity, and a rise in antibiotic resistance currently facing the world, we need more scientists. Curiosity, and a drive to understand the world around them, is what unites scientists. They are creative and critical and, most importantly, they are future thinkers, ready to tackle our biggest challenges.

Our mission is to educate the next generation of scientists. To do this, we provide an inspiring learning environment with excellent teaching staff who are passionate about science, state-of-the-art facilities, and courses and programmes that are always at the cutting edge of knowledge.

In response to the world’s changing demands, we are investing in creating new programmes in distinctive and emerging areas, many of which are unique to Victoria University of Wellington. To do this, research is at the core of our teaching and learning, using unparalleled industry knowledge and technology in the content of our lectures and laboratories.

**STUDYING SCIENCE**

**OUR SCHOOLS**

The Wellington Faculty of Science is home to five schools and a number of research centres. Through these think tanks we deliver a range of high-quality courses and programmes, in 26 subject areas.

- Centre for Science in Society: Science Communication, Science in Society
- School of Biological Sciences: Biology, Biotechnology, Cell and Molecular Bioscience, Ecology and Biodiversity, Human Genetics, Marine Biology, Molecular Pathology, Molecular Pharmacology and Medicinal Chemistry
- School of Chemical and Physical Sciences: Applied Physics, Chemistry, Physics
- School of Geography, Environment and Earth Sciences: Development Studies, Environmental Science, Environmental Studies, Geography, Geology, Geophysics—Meteorology, Geophysics—Solid Earth, Physical Geography
- School of Mathematic and Statistics: Actuarial Science, Data Science, Mathematics, Statistics
- School of Psychology: Psychology

“If you choose to become a Science student at Victoria University of Wellington, you won’t just learn about theory and current research discoveries—you’ll also learn how to do research. By developing these important skills in collecting, analysing, and understanding data you’ll be set up for success whatever your next step is, whether into employment or on to postgraduate study.”

Professor Dave Harper
Dean of Science
YOUR SCIENCE DEGREE

A FLEXIBLE DEGREE
It has been said that the most exciting science happens at the boundaries. Combining biology and chemistry will see you well placed to be at the forefront of drug discovery and development. You could combine data science and computer science and be part of the big data revolution. There are hundreds of unique combinations you could choose from.

DOUBLE MAJOR
You can specialise in two subjects in your degree qualification to suit your passions and future ambitions.

SCIENCE AS A MINOR
A minor requires 60 points of study in one subject, with at least two courses at 200 level and one at 300 level. This might suit someone who wants to develop their scientific knowledge and skills and complement this with another field of study such as Law or Commerce.
Note: All our Science majors can be taken as minors, but Science in Society (see page 49) and Forensic Science (go to www.wgtn.ac.nz/forensic-science) are available as minors but not majors.

DOUBLE DEGREE
You can combine a Bachelor of Science with another degree such as a Bachelor of Arts or a Bachelor of Laws to become an expert in more than one area. This will take you four or more years to complete.

CONJOINT DEGREE
A conjoint degree is a specialised double-degree programme. The time taken is shorter than a double degree and it requires a good level of academic progress.

BACHELOR OF SCIENCE
The Bachelor of Science (BSc) is designed to be flexible, allowing you to tailor your degree plan to explore your passion and skills—and your future career.

YOUR FIRST YEAR
In your first year, you’re likely to take seven or eight courses from a range of subject areas. There are no core courses common to all majors in this year. However, your BSc must include one course in either Econometrics, Mathematics, Physics, or Statistics, and most students do this in their first year.

YOUR SECOND YEAR
This year, you’ll start to get down to the detail of your chosen major and have the opportunity to hone your research skills. You’re likely to take six to eight courses this year—three or four courses in your major subject and the remaining courses chosen from your second major, minor subject, and/or other electives. To add variety and depth to your degree, you might take some courses from outside the sciences.

YOUR THIRD YEAR
In your third year, you’re likely to take three or four courses in your major subject and a further three or four courses that might be your second major, or a mixture of your minor and other electives. You’ll graduate with specialised knowledge in your major, ready to enter the workforce or go on to postgraduate study.

BACHELOR OF BIOMEDICAL SCIENCE
The Bachelor of Biomedical Science (BBmedSc) will give you a basic understanding of molecular and cell biology, along with the research skills you need to start your career in biomedical science.

YOUR FIRST YEAR
You’ll study five core 100-level courses that cover the basics of cell biology (how the body is put together), and animal and human physiology (how the body functions). You’ll look at the biology of disease and you’ll study related areas such as Chemistry, Psychology, and Statistics.

YOUR SECOND YEAR
You’ll build on the foundations of your first year, studying molecular biology and advanced physiology. You’ll do some biochemistry and learn about the genetic make-up of disease.

YOUR THIRD YEAR
During your third year, you’ll be drawing on the solid understanding you have of the concepts and vocabulary of biomedical science relevant to the clinical practices of current health services. You’ll have an excellent base for study at medical school or for postgraduate medical and clinical training programmes.

www.wgtn.ac.nz/bbmedsc
YOUR FUTURE WITH SCIENCE

Throughout your degree, you’ll gain the essential skills needed to become a science innovator in the job market of the future: you could develop new technologies, treat diseases, protect the environment, or address many other problems that require expert scientific minds.

LEARN FROM THE BEST
Victoria University of Wellington is 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.

- Earth Sciences at Victoria University of Wellington was ranked first among New Zealand universities in the most recent Performance-Based Research Fund quality evaluation.
- Victoria University of Wellington ranked in the top three universities nationally for Ecology, Evolution and Behaviour; Molecular, Cellular and Whole Organism Biology; and Pure and Applied Mathematics in the most recent Performance-Based Research Fund quality evaluation.
- Development Studies, Earth and Marine Sciences, Geography, and Psychology at the University were all ranked in the top 100 in the most recent QS World Rankings by Subject.
- In 2017, our collaboration with GNS science was ranked ninth worldwide in the prestigious annual Nature Index.

Our staff are world leaders in their fields of research and you’ll benefit from their expertise in lecture theatres and laboratory sessions. Much of their ground-breaking research is carried out in the University’s excellent facilities and out in the field, collaborating with Wellington’s vibrant science community.

SCIENCE CAPITAL OF NEW ZEALAND
Wellington is the hub of science innovation in New Zealand. Home to many national organisations and the highest concentration of science organisations in New Zealand, our capital city places the University at the heart of scientific discovery.

Our close connections with the science community provide our students with opportunities for research placements and summer scholarships and will position you among academics who are key voices in significant science debates, discussions, and discoveries.

MORE THAN JUST THEORIES
As a Science student at Victoria University of Wellington, you’ll absorb knowledge, observe phenomena, experiment with ideas, and may even be part of making new discoveries.

By developing skills in collecting, analysing, and understanding data, you’ll be set up for success whatever your next step. This practical toolkit, combined with skills in independent critical thinking, creativity, and communication, ensures our students are ready to leap into the careers of the future in one of the many exciting fields of science.

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*Performance-Based Research Fund 2018

SOUGHT-AFTER GRADUATES
The skills you learn and attributes you gain within your Science degree are sought after by employers from many different industries. By studying Science at Victoria University of Wellington, you’ll learn how to:

- carry out research
- collect and analyse data
- communicate effectively in verbal and written forms
- perform practical laboratory work
- think critically and problem-solve.

You can be confident the skills you acquire during your studies will boost your employability in a competitive market.

GROWING JOB MARKET
With New Zealand’s current focus on science and innovation, Science graduates are in demand. According to the Ministry of Business, Innovation and Employment (MBIE), employment opportunities in science are expected to continue growing at more than 3 percent out to 2026. Several science occupations feature on the Ministry’s long-term skills shortage lists.

It’s estimated that 75 percent of the fastest growing occupations require STEM (science, technology, engineering, and mathematics) skills and knowledge, according to a report by the Australian Industry Group.

CAREERS BEYOND THE LAB
Studying Science doesn’t necessarily mean working in a lab. A Science degree opens doors to many careers that aren’t research-based but are still connected to science.

Read more about the majors we offer and check out some of the different career pathways a degree in Science could set you up for.
ROSS ENGELBRECHT
Bachelor of Science in Actuarial Science and Mathematics
Actuarial Analyst, Accident Compensation Corporation (ACC)

Ross Engelbrecht always knew he wanted to be an actuary, so when the Actuarial Science major was introduced at Victoria University of Wellington, there was no question that was where he was meant to be. Ross was one of the first students to graduate from the undergraduate programme and was the recipient of the ACC Jonathan Nicholls Scholarship that awarded him a $2,500 prize for outstanding academic merit. He now works as an actuarial analyst at ACC.

“My job is mainly about helping others understand the consequences of their decisions. I really enjoy meeting new people and developing our relationship so that I can be helpful to them. Studying Actuarial Science is just the beginning of my career. Learning how to use my skill set to help others is the most rewarding part.

“The knowledge that is taught in this major is very useful. Being able to think logically and explain one’s reasoning are extremely important skills. Mathematics is more than numbers; it’s a language. It can communicate in a way that words just can’t.

“Once I’ve finished off my actuarial exams I plan to see the world and use the universal skills I gained from my degree as a passport.”

HEDLEY STIRRAT
Master of Drug Discovery and Development
Metabolomics Technician, AgResearch

Just three days after submitting his research project, 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.”

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.

CLEA MOLANO
Bachelor of Science in Mathematics and Statistics
Data Analyst, Garage Project

When Clea Molano started studying at Victoria University of Wellington, she was under the impression that Mathematics and Statistics would be very narrow subject areas, but she soon found that there was actually a huge variety within both majors.

“During my degree, I started to realise that data visualisation was really important. I began taking more and more related courses and, in my final year, several new Data Science courses were introduced.

“I began working for a media analysis company, MacNamara Research, during my final year. That was all about visualisation and data wrangling. I realised that a big part of any data analyst role is being able to collect data and put it into the format that you want. And that’s something that I learnt through the Data Science courses at Victoria University of Wellington.”

Clea now works as the data analyst for Garage Project. “I do a lot of sales reporting—looking at what beer we’re selling and who we’re selling to. We’re also combining sales data with social media data.

“The role is brand new, so I’ve found that there isn’t really a typical day—I’m updating dashboards and reports, but I’m also building the infrastructure around the data.”
With interests in geography, IT systems, problem-solving, nature, and data visualisation, Beth Lawson decided that a Postgraduate Diploma in Geographic Information Science was for her. “Geographic information science (GIS) is a growing industry with many career opportunities, so this qualification ticked all the boxes.”

As part of the programme, 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.”

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.

Sebastian Collins-Smyth
Master of Science in Forensic Psychology
Adviser, 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 emphasises the many opportunities the University’s location provides in the public sector.

“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 over-represented 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.

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.”
SCHOOL OF BIOLOGICAL SCIENCES
TE KURA MĀTAURANGA KOIORA

At Victoria University of Wellington, you can study Biology at any scale—from the cells that make up our bodies and the viruses that affect us, to the conservation of marine and terrestrial life and the vast diversity of plants, animals, and micro-organisms that live on Earth.

The recent advances in cell and molecular biology and the rising interest in biodiversity, conservation, and the impact of humans on the natural world have placed biologists at the forefront of science discovery worldwide.

From genomics and proteomics to physiology, ecology, and evolution, the future of biology is rapidly growing and constantly changing, and there's no better place to be a part of this than at Victoria University of Wellington.

www.wgtn.ac.nz/sbs

EXPLORE THE FIELD

Our students have many opportunities to explore New Zealand's varied biodiversity through field courses in this natural laboratory. So, whether it's the ocean, mountains, plants, or wildlife that excites you, our undergraduate field courses appeal to all nature lovers.

In just minutes, you can escape our compact city life to explore our varied biodiversity—discover more than 76 kilometres of accessible coastline, traverse acres of native bush, or encounter wildlife at ecosanctuary Zealandia, Wellington Zoo, or simply in the great outdoors.

OUR STRENGTHS

We have recognised research strengths in a range of topics, including Antarctic biology, biomedical science, biotechnology, clinical research, conservation biology, drug discovery, ecology, marine biology, molecular evolution, and systems biology.

We rank in the top three universities nationally for research quality in Ecology, Evolution and Behaviour; and Molecular, Cellular and Whole Organism Biology in the most recent Performance-Based Research Fund quality evaluation.

A Bachelor's degree with a major from Biological Sciences can lead to a range of exciting postgraduate study options within our School. We offer the only Master of Marine Conservation in New Zealand, as well as specialised programmes in Clinical Immunology, Clinical Research, and Conservation Biology.

OUR FACILITIES

The University's purpose-built science building—Te Toki a Rata—has 12,000 square metres of modern biological sciences teaching, research, and laboratory facilities.

We also have an award-winning coastal ecology laboratory, fully equipped with two research vessels and multimillion dollar, state-of-the-art chemical genetics and proteomics facilities.

The more people who get out there now and experience a passion for nature, the more value people will see in our environment and the values of protecting it for future generations.

Nico Lieffering

“Learning about genetics and viruses at secondary school fascinated Nico Lieffering and led to him deciding to pursue a career in science. "I was interested in the medical field, but didn't want to be a doctor. The Biomedical Science programme at Victoria University of Wellington offered a really interesting alternative to health science."

Nico loves living in Wellington. "You can look out from the library and see the harbour, hills, and the city all at once. It's an amazing place. My days are filled with lectures, labs, and assignments. I'm hoping to be granted one of the summer scholarships, so I can get some experience working in a lab."

"I'm also looking at continuing to postgraduate study. I'd like to research cell signalling and how different pathways and cells communicate, or something to do with embryology."

His advice for future students is, "Get to know your classmates. The other students are likely facing similar challenges and concerns as you, and it's always easier when you have people from the same labs and lectures to study with. Also, try to get to know your lecturers and don't be afraid to ask questions—they're there to help you."

Sian Moffitt

Graduate, Bachelor of Science in Ecology and Biodiversity Environmental Studies
Education Coordinator, Kids Greening Taupo

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Nico Lieffering

Student, Bachelor of Biomedical Science in Human Genetics and Molecular Pathology

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Sian Moffitt

Graduate, Bachelor of Science in Ecology and Biodiversity Environmental Studies
Education Coordinator, Kids Greening Taupo
BIOLOGY

Biology is the study of how living organisms work. If you major in Biology, you’ll learn to apply this knowledge of living things to make life better for humans and to help the environment.

The study of biology impacts all aspects of modern life. This means that the field of biology crosses over into fields of study such as commerce, ethics, law, and philosophy. At Victoria University of Wellington, you’ll have the opportunity to debate cultural, environmental, and ethical issues as you gain new scientific knowledge and perspective.

Majoring in Biology enables you to take a selection of courses from the biological sciences and provides a broad grounding in the subject. It’s a great option if you want to combine your passion with another major in the BSc, or with another degree such as a Bachelor of Commerce or a Bachelor of Laws.

What you might study

Find out where living organisms come from and how they develop and work. You might study how organisms consume energy and pass on their genes, or learn about cell biology, plant biology, animal biology, and statistics.

Where biology can take you

New Zealand’s economy is dependent on industries in which understanding biology in a broad sense is essential, making a biology degree a huge asset. Employers are increasingly seeking critical thinking, problem-defining, and problem-solving skills that are honed through the study of biology.

A major in Biology is also a good pathway to a career in teaching.

BIOTECHNOLOGY

If you want to help make products that benefit humanity such as new medicines, better crops, or biofuels for a cleaner environment, the Biotechnology major is right for you.

Biotechnology is the application of science and technology to living organisms, and is closely aligned with biomedical science, which focuses on human health and disease. Although it’s a field that has been studied for decades, its incredible potential is only just being discovered by researchers and industry.

Learn about molecular biology, synthetic biology, and the uses of biotechnology, while considering the commercial, legal, and political implications of bringing new developments to the marketplace. Learn to think critically about related issues such as gene patents, genetically modified organisms, and the cost of drugs.

With this major, you’ll have the opportunity to work at a technical level within a laboratory or industrial setting.

In addition to a sound scientific education, you’ll consider cultural and ethical issues and be introduced to aspects of commercial and patent law.

What you might study

You can specialise in areas such as bioactive compounds, protein and nucleic acid biotechnology, and bioprocessing and microbial biotechnology. You’ll study current issues, including kauri dieback disease and the integration of mātauranga Māori in our efforts to save these taonga (treasured) trees.

Where biotechnology can take you

You could work in horticulture to develop novel crops, or in the pharmaceutical industry to invent new medical treatments. A Biotechnology degree could be valuable if you are considering becoming a patent lawyer, a company chief executive officer, or a science communicator.
There are very few universities around the world so well positioned as Victoria University of Wellington, which is a living laboratory for ecology and conservation and with an ecosanctuary within walking distance, a marine sanctuary at the doorstep of our lab, and the headquarters of government agencies in conservation and biodiversity just a stone’s throw away. I can’t think of anywhere better to learn about New Zealand’s ecology and biodiversity.

If you’re interested in how cells function and the molecules that make them up, and can see yourself leading the way in science innovation and enterprise, then cell and molecular bioscience is the right choice for you.

Discover the mechanics of how life works and how this relates to the health of humans.

If you are looking at cell biology, genetics, and physiology, and study living organisms at the molecular level. Get an introduction to physiology and pharmacology and learn about human organs and organ systems.

Discover the mechanics of how life works and how this relates to the health of humans.

Cell and molecular bioscience is a wide-reaching area of scientific research that can open up a range of career options, and graduates are highly sought after. You may pursue a career in the pharmaceutical industry, developing next generation therapeutics and stem cell therapies to support the transfer of research from the bench to the bedside. You may also apply your knowledge alongside another major, such as Chemistry or Statistics, to develop skills in two areas of science.

Cell and molecular bioscience covers the areas of biochemistry and molecular biology (the science of living organisms at the molecular level), cell biology (the structure and interactive function of cells in animals, plants, and bacteria), genetics (the structure, function, and regulation of genetic material), physiology and pharmacology (the integrated function of human organ systems, cellular physiology, and the effect of drugs), and chemical genetics (discovery, synthesis, and use of small compounds coupled with genetic interaction analysis to understand cell networks).

Be part of one of the most exciting areas in modern science. For example, researchers at Victoria University of Wellington are currently working to find a treatment for the progressive form of multiple sclerosis through processes of immunology and repurposing drugs.

There are very few universities around the world so well positioned as Victoria University of Wellington, which is a living laboratory for ecology and conservation and with an ecosanctuary within walking distance, a marine sanctuary at the doorstep of our lab, and the headquarters of government agencies in conservation and biodiversity just a stone’s throw away. I can’t think of anywhere better to learn about New Zealand’s ecology and biodiversity.

Many parts of the world are facing unprecedented problems resulting from human activities, including biosecurity threats, polluted land and waterways, soil salinisation, ocean acidification, and changes to the global climate. Ecologists are among those at the forefront, working to address these problems.

Ecology and biodiversity unite the subject of ecology—the interactions of living things and their environment—with the study of the animals, plants, and micro-organisms that make up various distinctive communities.

Studying in Wellington offers access to some unique centres of native biodiversity, including Kapiti Island Nature Reserve and Zealandia, the urban ecosanctuary in Karori.

The major in Ecology and Biodiversity focuses on areas of plant, animal, and ecosystem diversity and function, at both local and global scales. Your studies will take you far beyond the lecture theatre—you might visit Zealandia ecosanctuary, the Wellington zoo, or the Nelson Lakes National Park.

The Cell and Molecular Bioscience programme at Victoria University of Wellington is unique. Our students get a really broad understanding of how a cell works—from the functioning of cells within whole organisms to the intricacies of molecular genetics. I love seeing my students discover how a cell works, or what has gone wrong in a particular disease process.

Dr Melanie McConnell
Lecturer in Genetics and Cell Biology

Phil Lester
Professor of Insect Ecology

The Cell and Molecular Bioscience programme at Victoria University of Wellington is unique. Our students get a really broad understanding of how a cell works—from the functioning of cells within whole organisms to the intricacies of molecular genetics. I love seeing my students discover how a cell works, or what has gone wrong in a particular disease process.

Dr Melanie McConnell
Lecturer in Genetics and Cell Biology

Where cell and molecular bioscience can take you

Cell and molecular bioscience is a wide-reaching area of scientific research that can open up a range of career options, and graduates are highly sought after. You may pursue a career in the pharmaceutical industry, developing next generation therapeutics and stem cell therapies to support the transfer of research from the bench to the bedside. You may also apply your knowledge alongside another major, such as Chemistry or Statistics, to develop skills in two areas of science.

Where ecology and biodiversity can take you

The need for people to understand and manage living things and their interactions with humans is growing. Ecology and biodiversity are growing areas of employment. You could work with the Department of Conservation, the Environmental Protection Agency, Manaaki Whenua / Landcare Research, the Ministry for the Environment, the Ministry for Primary Industries, Plant and Food Research, local and regional councils, and iwi.

The major in Ecology and Biodiversity focuses on areas of plant, animal, and ecosystem diversity and function, at both local and global scales. Your studies will take you far beyond the lecture theatre—you might visit Zealandia ecosanctuary, the Wellington zoo, or the Nelson Lakes National Park.

Ecology and biodiversity unite the subject of ecology—the interactions of living things and their environment—with the study of the animals, plants, and micro-organisms that make up various distinctive communities.

Studying in Wellington offers access to some unique centres of native biodiversity, including Kapiti Island Nature Reserve and Zealandia, the urban ecosanctuary in Karori.

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Explore the waters around New Zealand—one of the most extraordinary and unspoilt marine ecosystems in the world—and learn at one of the leading centres for marine biology research in New Zealand.

Marine biology looks at life in the sea—the organisms that live in the world’s oceans and how they interact with one another and their physical and chemical environment.

With so much ocean for us to govern, qualified marine biologists are essential to understanding how we use and protect its resources. Study at our dedicated state-of-the-art marine field station, the Coastal Ecology Laboratory, and benefit from our marine biology links with several other New Zealand and international universities and our close ties with many local public-sector organisations, including NIWA, the Ministry for Primary Industries, and the Department of Conservation. These links will help connect your studies to the real world.

What you might study
You’ll be introduced to the diversity and physiology of marine organisms, the structure and function of marine ecosystems, and marine conservation issues.

You’ll gain an understanding of the marine environment through significant field studies and learn about marine resources through the study of aquaculture and fisheries, Antarctic sea ice and plankton ecology, coral reef biology and ecology, global climate change impacts, and population genetics of marine animals.

BIOMEDICAL SCIENCE

Antibiotic resistance, global disease, gene-editing technology, and drug design are some of the biggest challenges—and opportunities—facing our world.

The Bachelor of Biomedical Science (BBmedSc) is a three-year degree that helps students develop the skills to embark on a range of scientific research careers and to be engaged in the discovery of vital medical developments.

You’ll study the relationship between humans, health, and disease, from researching genetics, neuroscience, and reproduction to understanding the cellular and molecular structure of a disease and searching for cures.

Throughout your degree, you’ll look at real-life health and medical issues and gain first-hand experience of biomedical and clinical research through the University’s close relationship with the Sir Charles F. Chalmers Centre and the Malaghan Institute of Medical Research.

Human Genetics
If you’re interested in syndromes and diseases of genetic origin, ageing, human fertility, and genetic counselling, then a major in Human Genetics is right for you. It covers the study of the human genome, epigenetics, the molecular basis and treatment of disease, evolutionary genomics, molecular biology, and recombiant DNA technology.

Molecular Pathology
This major is an introduction to the molecular basis of disease. You’ll focus on the organs of the body and the changes that occur in cells, tissues, and organs within the body when humans become ill.

You’ll learn about ways that biomedical research can be used to detect disease, prevent the spread of disease, and reduce and repair damage caused by disease.

Where marine biology can take you
Growing employment opportunities exist right in our backyard, with institutions and groups such as the Cawthron Institute, the Ministry for Primary Industries, NIWA, iwi, and regional and local councils.

A BSc in Marine Biology can lead directly to postgraduate study in Marine Biology, or a Master of Marine Conservation. Marine biologists often work in areas such as ecotourism, environmental science, fisheries, marine biodiversity and ecology, marine conservation (in which New Zealand is a world leader), marine law, and public policy.

Where human genetics can take you
Our ability to care for the sick and support the healthy is made greater by our understanding of the human genome. A qualification in human genetics can lead to career paths in genetic counselling, fertility treatment, or health research.

Where molecular pathology can take you
The emphasis is on understanding the changes in structure and function within the body that occur when humans succumb to illnesses. This major will suit students interested in the relationship between health and disease, in clinical biochemistry, microbiology, immunology, neuroscience, and forensics.

Molecular Pathology And Medicinal Chemistry
This major sits at the boundary of chemistry and biology. If you’re interested in how substances are delivered through, and dealt with by, the body, and if you want to learn about modern chemistry methods for the synthesis of drugs and how they work within a living system, then Molecular Pathology and Medicinal Chemistry is right for you.

Where molecular pharmacology and medicinal chemistry can take you
Molecular Pharmacology and Medicinal Chemistry is an important first step to pursuing a career in drug discovery or pharmaceuticals. You could work in research and development for a large multinational company such as Bayer, or combine your degree with law to become a patent lawyer.
Imagine converting sunlight into enough energy to power the world, or building the next generation of electronics, atom by atom. Contribute to the international effort by Victoria University of Wellington’s chemists and physicists to understand how things work. Create knowledge that can have real-world impact in a variety of industries, including electronics, energy, the environment, medicine, and transport.

Unlike other universities in New Zealand, Victoria University of Wellington’s expertise in chemistry and physics is complemented by being located in one school. This facilitates interactions between the disciplines and strengthens key areas such as materials science research.

www.wgtn.ac.nz/scps

EXPERIENCE ISN’T ESSENTIAL

For those without sufficient NCEA Chemistry and Mathematics credits, introductory courses are available in Trimester 3 (in the summer before your first year) and in Trimester 1. The points gained from these courses count towards your degree.

OUR STRENGTHS

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

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Our facilities

The School is housed in the Lady building on the Kelburn campus and occupies specialised new laboratories in the adjoining Alan MacDiarmid building. Undergraduate students have access to modern research equipment, including nuclear magnetic resonance spectrometers, ultrafast- and Raman-laser equipment, clean-room facilities for fabrication of electronic devices, and an electron microscope suite.

Physics and chemistry are the disciplines that form the basis of our technological society and underpin many other branches of science.

The best part about chemistry is having that eureka moment where you suddenly understand a difficult concept, says Steph Lockwood, who finds the subject both challenging and stimulating. “I’ve always loved science and mathematics. I knew chemistry would become an important part of my life, so studying it at university was an easy decision for me.

“Statistics also drew my attention. I’m so glad I pursued it as a second major, as I have come to understand how important and sought after it is in the workplace.”

Steph was originally nervous about leaving home, but found university to be a great experience. “I’ve learnt so much, not just from the subjects I’ve studied, but from the interactions with my lecturers and peers. I’ve had the privilege of demonstrating for a first-year Chemistry course. I also regularly attend University Recreation Wellington exercise classes, which have allowed me to meet people outside my degree. These activities have added to my experience here. University is all about trying new things!”

At the end of her second year, Steph received a Summer Research Scholarship that gave her the chance to work at Callaghan Innovation. Her advice for future students is to “Trust your instincts. Before I came to university, I was told I would hate chemistry, but I have absolutely loved it. And don’t get too stressed about your choice of major. It’s easy to change courses after you start. That being said, make sure you’re aware of your options so you can change courses easily if you want to try something new. One of the highlights of my degree was an elective field-based biology course.”

The specific skills and knowledge I learnt at university on a daily basis. This knowledge has also helped shape my broader understanding of pharmaceutical science, the industry, and its regulation.

Ben Jones

Graduate, Master of Drug Discovery and Development

Medicines Evaluator, Medsafe, Ministry of Health

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Chemistry is all around you. It’s the essence of your body, your clothing, your food, the building you’re in, the devices you use—even the air you breathe.

Understanding chemistry is important in many other branches of science, which is why it’s often described as ‘the central science’. Chemistry is the basis of the creation of new materials, medicines, consumer products, and technologies, and is behind important areas of global development impacting our world, including the development of nanomaterials and nanotechnologies.

A first step towards a career in chemistry is joining Victoria University of Wellington’s innovative, interactive, and research-led environment. You’ll learn from internationally renowned researchers who will teach you how to question and think, and analyse and solve problems.

If you want to understand why things behave the way they do, and you enjoy practical hands-on work, then chemistry is right for you.

What you might study
Chemistry is a pivotal science and provides comprehensive knowledge and skills covering theory, practical laboratory courses, and applications. Learn about the molecules of life, the principles behind their behaviour, and how they interact with each other. Find out how this knowledge is being used in the development of new medicines and to create new molecules and synthetic materials.

You’ll gain hands-on experience and practical skills in analytical chemistry when you’re working in the lab and in small study groups where you’ll brainstorm, collect, and interpret data.

Where chemistry can take you
A Chemistry graduate is not limited to lab work, though there certainly is demand for this in the fields of chemical analysis and product development. After graduating from Victoria University of Wellington, you’ll find that chemists are also highly sought after in process optimisation, production management, process and environmental monitoring, and quality assurance.

Physics examines matter and energy in all forms, from the kinetic energy of a speeding car to the nuclear energy released by fusion in the core of a star.

The concepts you learn can be applied to astronomical, biological, chemical, electrical, magnetic, and mechanical situations. Our courses cover the application of physics to the environment, energy issues, electronics, and modern-materials science. You’ll be able to work with equipment such as lasers and semiconductors and delve into areas including nanoscience and quantum optics.

Collaborative research projects with staff within our School and from other areas of the University, Crown research institutes, Wellington Hospital, and national and international astrophysics consortia leave our students ready to take on the challenges that are facing the world.

Applied Physics
Applied Physics focuses on how the concepts and techniques of physics can be used in technology. Explore examples such as lasers, semiconductors, nanoscience, and quantum optics.

If you want an understanding of physics that will prepare you to develop tomorrow’s advanced technologies and new industries, Applied Physics is right for you.

What you might study
A Physics degree from Victoria University of Wellington will provide you with a thorough grounding in all aspects of physics, including classical mechanics, relativity, electromagnetism, quantum physics, and thermal physics.

In Classical Physics, you’ll study the fundamental theories developed by pioneering physicists such as Newton, Galileo, Faraday, and Maxwell. In Modern Physics, you’ll explore the current understanding of interactions of matter, time, and space, delving into quantum mechanics and relativity.
Whether it’s studying volcanoes in the South American Andes, the shakes of the Kekerengu Fault, or questioning the way that cities are built for different cultures, our staff and students are working to understand the matters that most affect our planet.

We examine how the planet works and how people interact with, and modify, the planet and its resources, and we are one of New Zealand’s leading voices in the race to understand and address climate change.

What is done in the next few years will affect the next few thousand years. The world is facing a climate emergency and the natural world is changing more rapidly than ever. Geography, environment, and earth sciences are among the most policy-relevant academic disciplines.

Raven Maeder developed a strong passion for environmental protection at a young age. This passion grew when she saw the areas she loved being threatened by the expansion of deep-sea oil drilling, the threat of coal mines on conservation land, and the effects of climate change.

“When I came to university, I chose Law because I wanted to understand the systems that govern our society. And I chose Environmental Studies because I wanted to understand the science behind the issues I care about. The programme covers many interesting topics such as conservation, social justice, sustainable development, science, culture, and more.

“Once I finish my degrees, I plan on finding a job in environmental or social justice advocacy. I’ll continue to follow my passion because that’s what leads me, and it’s led me pretty well so far.”

Raven Maeder
Student, Bachelor of Science in Environmental Studies and Bachelor of Laws

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

OUR FACILITIES
The School has a state-of-the-art geochemistry laboratory and electron microprobe facility, labs for geochronological research, sedimentological and groundwater analytical equipment, and sophisticated geophysical field instruments.

OUR STRENGTHS
- Victoria University of Wellington has more A-ranked researchers than any other New Zealand university in Earth Sciences.
- Development Studies, Earth and Marine Sciences, and Geography at Victoria University of Wellington are ranked in the top 100 in the 2019 QS World Rankings.
- The School covers the spectrum of earth and environment studies, from fundamental sciences to present processes and issues, and the impact that these processes have on people.
- Staff members are highly acclaimed for their excellence in teaching and research, and are key voices in significant science discoveries in the media, from the effects of climate change to responding to the Christchurch and Kaikōura earthquakes.

OUR FIELD ACTIVITIES
Fieldwork is central to much of the School’s teaching and research. Our students experience first-hand a fascinating range of urban, rural, and remote environments. We are situated within easy access of the volcanic plateau to the north, glaciated landscapes to the south, and many other geological, geographic, and climatic features throughout New Zealand. Our field activities take students across the globe, visiting the Pacific, Latin America, Antarctica, and beyond.

[www.wgtn.ac.nz/sgees]
DEVELOPMENT STUDIES

Examine poverty and inequality, and explore strategies to address them.

Victoria University of Wellington is the only university in New Zealand offering an undergraduate major in Development Studies. It’s a multidisciplinary programme that investigates why there are vast differences in living standards, how the inequalities between, and within, countries occur; and considers the possible solutions to reducing poverty and promoting greater equality.

Because Development Studies investigates the world and its inhabitants, we encourage our students to live curiously and feel confident taking on global problems. We believe in the exploration of our world, and participating in a Wellington Global Exchange programme to another country can provide insight into another culture and complement your Development Studies degree.

What you might study

The United Nations’ sustainable development goals will be a major feature of your studies. The goals set out 15 years of global action aimed at alleviating or eliminating poverty, improving literacy rates, improving access to education, and addressing health issues such as life expectancy and maternal mortality.

ENVIRONMENTAL SCIENCE

Earth’s natural resources are under increasing pressure and we need skilled professionals who can assess environmental issues, analyse data, and suggest scientific solutions to make sure the planet is more sustainable for future generations.

With a major in Environmental Science, you’ll examine how humans connect with, and change, the natural environment, and you’ll learn the science behind many of our most pressing issues, such as climate change and freshwater quality.

This major is taught across the Wellington Faculty of Science and is taken in partnership with another major chosen from Biological Sciences, Chemistry, Geology, Geophysics, Mathematics, Physical Geography, Physics, or Statistics.

What you might study

You’ll get hands-on experience as you progress through your study and you’ll have the opportunity to develop your own projects, analyse your own data, and present your results. You’ll cover a range of topics, including environmental health, tropical climates, and understanding paleoenvironments.
ENVIRONMENTAL STUDIES

Climate change, resource management, and the state of our natural and built environments are growing concerns to humanity. Environmental Studies connects geography and development studies, and brings in aspects of public policy, law, and management.

Deepen your understanding of the environmental issues facing New Zealand and the world. This major will take you beyond the ‘pure’ sciences, allowing you to study the environment from many different perspectives. You might look at the sustainability of our cities, loss of biodiversity, or consumerism.

Wellington is an ideal place to study Environmental Studies. We have well-established links with many science organisations and government agencies, and we also endeavour to build and maintain relationships with iwi, hapū, and community organisations with whom we do research.

What you might study

You’ll learn about the pressures humans place on Earth and what we can do about them. Study a range of topics from climate change to urban green spaces, from Māori resource management to the impact of humans on Antarctica.

Where environmental studies can take you

As an Environmental Studies graduate, you might find work in local or national government as a policy analyst or in an advisory or educational role. There are also possibilities for graduates in the private sector in roles such as a consultant or a planner.

Many graduates have gone on to work in organisations including the Ministry for the Environment, the Environmental Protection Agency, the Ministry of Foreign Affairs and Trade, and regional or city councils. You might join a non-governmental organisation, a corporation, an iwi organisation, or become an environmental business consultant or social entrepreneur.

In our Environmental Studies programme, we encourage students to view environmental issues from different perspectives. My students come from a range of majors and backgrounds. This diversity in the classroom is a great way to highlight the importance of interdisciplinary approaches.

Dr Wokje Abrahamse
Lecturer in Environmental Studies
GEOGRAPHY

Geography explores the relationship between humans and the environment—the most important relationship of the twenty-first century.

By bringing together the social and natural sciences, geography examines how human activities and physical processes shape the world we live in. It tackles persistent national and global challenges such as inequality, climate change, and natural hazards, and it seeks to understand the underpinning physical and cultural processes, such as globalisation, migration, the carbon cycle, and erosion.

Geographers use their skills and specialist knowledge to support stronger social and environmental outcomes in New Zealand and overseas.

What you might study

You’ll learn about biophysical systems and the way that earth, oceanic, and atmospheric processes behave and interact. You’ll study environmental policy and resource management, socioeconomic and cultural systems, and geographic information systems.

Develop specialist skills and knowledge through hands-on learning in labs, tutorials, and out in the field, as well as through independent research.

You might work with refugee-background communities for resettlement in Wellington, develop flood-risk maps for a region or catchment, or collaborate with organisations in the Pacific to increase resilience to climate change.

Where geography can take you

Our students are prepared for the challenges of navigating social, cultural, and environmental problems. They are equipped with a future-ready skillset and are motivated to pursue careers in policy and research roles for government, research institutes, environmental consultancies, non-governmental organisations, and in education.

Rewi Newnham
Professor of Physical Geography

We confront the big issues of today and tomorrow that concern people and the environment, such as the conflicts between the environment and development, and the causes and impacts of poverty and inequality.

GEOLOGY

Geology is the study of Earth. It covers the origin and evolution of life, the extinction of the dinosaurs, the formation of sedimentary basins and mineral resources, climate and sea-level change, glaciation, volcanism, and landscape evolution.

From the atmosphere to the inner core—learn about Earth and its history. Wellington provides an ideal setting for the study of geology, as it sits between two active faults on a major plate boundary, a few hours’ drive from the North Island’s active volcanoes and a ferry ride away from the South Island. Our backyard is internationally famous as a natural laboratory.

Fieldwork is fundamental to any geology degree and our programme capitalises on this inspirational setting, giving you experience in collecting and analysing data. You’ll also make use of laboratory facilities—from analysing the chemical composition of rock or water samples to determining the age or provenance of rocks based on microscopic analysis of minerals and fossils.

What you might study

You can work and research in the lab and out in the field to discover the origins of the solar system and how magma moves within a volcano, and examine Earth’s changing climate.

Learn how and why rocks change in response to temperature and pressure, and look at fossils to understand the climate and environment of the past. You’ll examine how history is recorded in the geological record in places such as Wellington Harbour, Antarctica, and the Taranaki Basin.

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.

Tim Naish
Professor of Earth Sciences

The continued success of many industries relies on the expertise of qualified geologists. You could join a mining company to locate, or give advice on the use of, natural resources, or support our nation’s ability to manage the risk of natural hazards.

Our graduates find employment around the world in areas such as environmental consultancy, geotechnical engineering, local council and government positions, resource development, utilities, and teaching.
GEOPHYSICS

Geophysicists work to describe and understand the processes governing the fundamental physical phenomena affecting Earth such as earthquakes, volcanoes, mountain building, Earth’s magnetic and gravitational fields, the deep structure of our land, and our atmosphere, weather, and climate.

At Victoria University of Wellington, geophysics gives you the option to focus on meteorology (the science of weather and Earth’s atmosphere) or solid earth geophysics (the structure and properties of Earth).

Focusing on meteorology means you’ll be looking at the weather—covering topics that include the dynamics of the atmosphere, climate change, and the ways humanity influences the planet’s weather.

Solid earth geophysics looks at the structure and properties of Earth. You’ll use mathematical techniques to explore our planet’s natural forces.

What you might study

Meteorology

Gain an understanding of physical and satellite meteorology, weather systems, microclimates, and numerical modelling and climatology. Solve earth-science problems with quality equipment and computing laboratories, including advanced data-analysis labs and grid computing with specialist computer-modelling software.

Solid Earth

You’ll research how New Zealand is put together, study Earth’s magnetism and gravity, and look at volcanic and geothermal activity around the world. Learn about Earth as a planet and explore its mineral and energy resources.

Where geophysics can take you

Meteorology

Being able to understand and predict weather patterns and climate trends is essential for many businesses to operate effectively. Meteorology graduates are major employers of Meteorology graduates, and other industries such as aviation and energy production are also reliant on trained meteorologists.

Solid Earth

Geophysicists may work as advisers for mining companies, or support major infrastructure projects as part of an engineering firm. Crown research institutes such as GNS look for Geophysics graduates to support their research into the geological activity of New Zealand.

PHYSICAL GEOGRAPHY

Physical geography is the study of the interaction of Earth’s processes: its climate, oceans, landforms, soils, animals, plants, and people.

Examine these environmental processes and how they impact on our economic, social, and environmental sustainability. Find out about the physical processes that continuously shape Earth such as the movement of oceans and glaciers, earthquakes, the climate, and animals.

Field and laboratory work lie at the heart of many of these courses, and you’ll gain valuable experience in collecting and analysing data.

What you might study

You’ll study the environment, water, glaciers, the climate and climate change, glaciology, hydrology, and quaternary glaciation. You’ll also learn about techniques for geographical analysis, natural hazards, and coastal and land management.

Where physical geography can take you

Graduates in Physical Geography are highly regarded by employers because of their breadth of knowledge and skills and their adaptability to a range of roles, including land-use planning, environmental consultancy, and resource management. You could work as a land management adviser, a geographical analyst, or become a researcher at a Crown research institute to increase understanding of the natural world in New Zealand or abroad.

James Renwick

Professor of Physical Geography

Victoria University of Wellington is such an exciting place to study climate and environmental science. From the South Island’s alpine glaciers and rivers to the circulation of the global atmosphere and how it’s changing, you can traverse through millions of years of the world’s history and look to its future every day in classes and in conversation.
The expert skills of mathematicians and statisticians, actuarial scientists, and data scientists are crucial for the careers of the future. Mathematics and statistics are part of every science and are used across industry, business, and government. When you study mathematics, you learn to think clearly and independently, solve problems, and communicate your answers.

Mathematics opens doors in many fields and professions in our modern digital world. Data scientist, statistician, mathematician, and actuary were all ranked in the top 10 jobs of 2019 by CareerCast, a US company.

OUR STRENGTHS

■ Our undergraduate Actuarial Science programme is the only one in New Zealand.
■ Our School’s newest major is Data Science, a combination of mathematics, statistics, and computer science that helps us learn how to store, process, and analyse big data.
■ We rank in the top three universities nationally in Pure and Applied Mathematics in the most recent Performance-Based Research Fund Quality Evaluation.

Mathematics is the world’s oldest continuously studied academic discipline, yet with a data-driven future there has never been a time when we have experienced such unparalleled demand for mathematical and statistical expertise.

SCHOOL OF MATHEMATICS AND STATISTICS
TE KURA MĀTAI TATAURANGA

OUR FACILITIES

The University’s student computing laboratories provide access to a range of mathematical and statistical software, including SAS, R, Python, MATLAB, Maple, and Mathemtica.

EXPERIENCE ISN’T ESSENTIAL

If you don’t have sufficient Mathematics credits, you can take the introductory courses in Trimester 3 (in the summer before your first year) and in Trimester 1 of your first year. The points gained from these courses count towards your degree.

We know the field of mathematics and statistics can be tough. That’s why we provide extensive learning support and have staff advisers on hand as you start your career with numbers.

Jean Paul (JP) Birikumana has always been fascinated by science, especially chemistry, biology, and statistics. When he came to university, he began a Bachelor of Biomedical Science but shifted to a Bachelor of Science as he wanted to learn how to use numbers to answer practical questions.

“I’ve now completed my Bachelor’s degree in Statistics and Chemistry. Continuing to postgraduate study was an easy decision for me, as I wanted to keep learning.

“Before I started studying here, I thought that university would be difficult, stressful, and challenging, and that I would spend most of my time in the library. Although it certainly has come with challenges, I’ve found that I managed to balance study and my social life. I had also expected that the courses I was taking would be mainly theory-based, but many of them have been very practical and relatable to real-world issues.”

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JP is from Rwanda and has lived in Wellington for four years. He says that it’s a wonderful city and culturally diverse, so he found it easy to fit in.

“Victoria University of Wellington is internationally recognised and has an amazing reputation. If you’re not from New Zealand, there are plenty of services at the University that can help you. In my first year, I used Student Learning Services to get my essays proofread, which was hugely helpful as I’m not a native English speaker. I would also get learning support to get help with mathematics as I was unfamiliar with the system of teaching here.”

Data and technology have changed rapidly over the past five years—so the way we are working is changing, and we can answer new types of questions. Better decisions are made when they are informed by science.

Kylie Reiri
Master of Science in Applied Statistics
Chief Executive Officer, Nicholson Consulting

Wellington Faculty of Science
ACTUARIAL SCIENCE

How can we plan better, forecast, and manage risks from natural hazards such as earthquakes and storms; personal risks related to health, disease, and lifestyle; or financial risks related to investment or asset management?

The Christchurch earthquakes, the global financial crisis, and climate change have all shone a spotlight on the need to prepare for the future. Study at the only university in New Zealand to offer a programme in Actuarial Science and help companies and organisations manage risk.

At Victoria University of Wellington, you’ll get the knowledge and skills you need to become a qualified actuary. If you love mathematics and like the idea of finding solutions to problems for the benefit of society, this degree is a good option for you.

If you enrol in this major, you may consider taking Actuarial Science alongside a second major or minor in Economics, Finance, Mathematics, or Statistics.

What you might study

Actuarial science concerns the models and methods for undertaking analysis, that relates directly to economics, finance, mathematics, and statistics.

One of the best things about the programme is the opportunity it provides for students to connect with leading members of the profession and develop links with potential employers.

Associate Professor Peter Donelan
School of Mathematics and Statistics

Where actuarial science can take you

Professional actuaries are traditionally involved in superannuation, insurance, and banking. However, there is a growing demand for actuarial skills in a range of business disciplines, including education, finance and stockbroking, government, health, investment, management consultancy, and software development.

DATA SCIENCE

Big data and the internet of things have changed the way society works—we send and receive data constantly, and now we need people who can manage and find hidden insights within it.

Data science combines ideas from statistics, computing, and mathematics to provide new insights that are crucial to the survival of businesses, governments, and institutions that want to transform their data into information, insights, and novel data products. Make discoveries as you dive into data with this major that will set you up for a career in the most high-demand industry of the twenty-first century.

Pair your Data Science major alongside another subject to provide meaningful insights into any field, including biology, chemistry, geography, linguistics, media studies, actuarial science, and economics.

What you might study

You may study courses in discrete mathematics and logic, statistics and probability, programming and databases, as well as core courses in data science. At the same time, you’ll work with real data sets and develop a practical understanding of the social dimensions of data.

You’ll develop technical skills in statistics, computing, databases, and mathematics to explore and understand data in a range of settings and applications. Then, take this knowledge to understand the consequences of the data revolution. You’ll assess the ethics of data collection and use, question privacy and security issues, learn about the importance of communicating effectively with data, and explore how workplaces can ‘put data in its place’.

Data literacy is an essential component of future citizenry—the ability to make sense of data, critique its use, and communicate with, and about it, are becoming hugely valuable skills.

Associate Professor Peter Donelan
School of Mathematics and Statistics

Where data science can take you

The role of data scientist now regularly appears in employment surveys as one of the top careers for opportunity and job satisfaction. You’ll find a range of opportunities in public-sector organisations large and small, ranging from policy and financial roles to media and health, and IT and scientific research. You could work in fields such as bioinformatics, health informatics, business consultancy, smart-city development, and social investment in government.
MATHEMATICS

Pursue your interests—from pure mathematics such as algebra, analysis, logic, and combinatorics to applied mathematics—where the skills you learn are targeted directly at real-life issues from earthquakes to engineering, coding to cosmology.

Mathematics has both a rich history and many new and developing branches. A major in Mathematics requires precise and logical thinking, providing you with an array of techniques for solving problems in a variety of disciplines, scientific and otherwise.

The School has some of New Zealand’s best research mathematicians in areas such as logic and computation, matrix theory and combinatorics, functional analysis, mathematical modelling, and general relativity. Virtually every Science major sits upon a strong foundation of mathematics, making it an excellent complement to another qualification.

What you might study

You’ll begin by studying algebra, calculus, and discrete mathematics and then move on to explore more theoretical concepts or applied mathematics.

Where mathematics can take you

A degree in Mathematics means you’ll be highly valued in the workplace for your numeracy and problem-solving skills, and for your ability to think logically and creatively. Our graduates are frequently employed in the public and private sectors as financial and policy analysts, research mathematicians, scientists, software developers, and systems analysts.

STATISTICS

Statistics is the science of collecting, analysing, and interpreting data that helps us to understand today’s information-rich world.

A statistician distils and organises facts from data and makes inferences about the nature of the process or population from which the data was drawn. Statistics is extremely valuable as a second major or a minor for students of Biology, Economics, Finance, Psychology, and the social sciences.

What you might study

You’re likely to focus on one of two different pathways in your Statistics major.

Mathematical Statistics

You’ll focus on the theoretical aspects of statistics. This is suited to students with a good background in mathematics with calculus.

Applied Statistics

You’ll explore the uses of statistics in life sciences and social sciences.

Where statistics can take you

According to LinkedIn, statistical analysis was rated as the ‘top skill’ to get you hired and “employers need employees with statistical analysis and data mining skills to stay competitive.” Statistics graduates are employed in many areas in the public and commercial sectors. They are in demand as policy and data analysts in government departments, including the Ministries of Education, Health, and Social Development. The financial sector requires graduates with strong quantitative and technical skills, and needs analysts to work closely with dealers. Many of our graduates are employed in the agricultural, conservation, and health sectors, where they are needed for monitoring and forecasting. Such skills are also needed in social science areas such as criminology, education, and psychology.
A Science degree in Psychology at Victoria University of Wellington is right for you if you often question why people behave the way they do, and how the mind works.

From the random to the perplexing, explore some of society’s most fascinating and important questions. How does criminal behaviour develop and what can be done to remedy it? What impact does where you’re born have on your personality and values? Why do we fall in, and out of, love? How can we encourage people to make positive changes for the benefit of society and the environment?

Many of the world’s most pressing issues have a human element, such as climate change and even cybersecurity—how we influence and change behaviour can play a large part in addressing these issues.

We use a scientific approach to study the human psyche and behaviour and you’ll gain valuable skills in assessing, explaining, and even changing human behaviour. These skills are valuable in all areas where humans live, work, and interact: in business, education, forensic science, government, healthcare, law, media, and technology sectors.

Our Strengths
- Psychology was ranked in the top 100 in the most recent QS World Rankings by Subject.
- Victoria University of Wellington offers the broadest range of psychology programmes in the country, including New Zealand’s only programmes in Cross-Cultural Psychology and Forensic Psychology at postgraduate level.
- Our research includes the study of addiction, emotion, language, memory, and human impact on the environment.

Our Facilities
We have excellent facilities, with laboratories in social, developmental, cross-cultural, forensic and clinical psychology, animal behaviour, and cognitive neuroscience. You’ll have access to eye-tracking equipment, a brain stimulation lab, electroencephalography (EEG) technology, and a psychophysiological recording suite.

Many of my clients go from the depths of their struggle with addiction and multiple problems such as poor physical health and housing concerns, to living meaningful lives.

Dr Gauranga Jeram Patel
Graduate, Postgraduate Diploma in Clinical Psychology
Clinical Psychologist, Capital and Coast District Health Board

Always curious about human behaviour, Bella Stroes was particularly interested when it was placed in the criminal context. “As a child, I would read murder mysteries and I became fascinated with how two people with similar backgrounds can end up leading completely different lives.”

When she came to university, she decided to do a double major in Psychology and Criminology as she wanted to obtain an understanding of crime theories and criminals from both perspectives.

“The programme has been amazing. I’ve learnt so many cool things and have been taught by some really interesting and engaging lecturers. Another bonus is that Wellington is a great place to study and live in. It gets a bad rap for the wind, but it’s really not that bad. The weather is often amazing and the view of the harbour from the Kelburn campus is fantastic.”

“I’ve been given the opportunity to support a psychology professor and her PhD students, which is broadening my understanding of what to expect in postgraduate study, as well as my knowledge and connections.”

Bella is hoping to go on to do a Postgraduate Diploma in Clinical Psychology and a Master of Science in Forensic Psychology. “I would love to work with prisoners, or work in the intimate-partner violence area, as I believe they are two areas in New Zealand that need more research and support.”

Her advice for future students is not to panic. “Starting university may seem daunting, but there are thousands of others in the same boat as you, and a lot of advice and support at your fingertips!”

The human mind presents some of science’s greatest challenges, and an understanding of behaviour is the key to answering a number of humanity’s problems.

SCHOOL OF PSYCHOLOGY
TE KURA MĀTAI HINENGARO

Wellington Faculty of Science 43
Psychology is the scientific study of behaviour—how we think, feel, act, and process information.

The Psychology major covers topics such as the relationship between our brain and our behaviour, the environment and our behaviour, social psychology, developmental psychology, cognitive psychology, cross-cultural psychology, abnormal psychology, forensic psychology, and how psychologists conduct research.

You’ll have the opportunity to discuss fascinating questions to gain insights into why people think, feel, and act the way they do.

Our courses are taught by passionate academic staff members who are recognised as international leaders in the field of psychology.

Victoria University of Wellington offers a major in Psychology in the Bachelor of Science and the Bachelor of Arts. Spanning both science and the humanities, this major overlaps with Anthropology, Biology, Computer Science, Criminology, Design, Economics, Education, Engineering, Environmental Studies, Geography, Law, Linguistics, Management, Māori Studies, Marketing, Political Science, Sociology, and Statistics.

What you might study

You’ll learn research and lab skills from your first year that will give you a good grounding to continue your studies and become an expert in interpreting and understanding behaviour. You’ll:

■ examine social behaviour, emotion, personality, and motivation; and consider what leads to healthy development and what causes dysfunction
■ learn about perception—how our brains can tell red from blue or hot from cold—and discover the way we store and retrieve memories
■ consider how we define ourselves and become the people we are by looking at the role of culture, experiences, and thinking processes on how we develop.

Where psychology can take you

The skills you learn while completing your undergraduate degree are attractive to many employers. Your ability to think critically, communicate and write clearly, design experiments, and understand statistics, methodology, and complex human behaviour will set you apart from other graduates.

Clinical psychologists are in high demand in New Zealand, with shortages in both the public and private sectors. A Psychology degree could lead you to work in the healthcare industry, or as part of our criminal justice system.

“Something special happens in these classes—we are able to have conversations, run experiments, and test out our ideas on all the things that fascinate us.”

Professor Marc Wilson
Professor of Psychology
The Centre for Science in Society looks at the relationships between science, technology, the environment, and society, and explores the way we think and talk about science. We look at the role of science and scientists in the present and in the past, how people and governments use science to make decisions about issues such as climate change and vaccination, how the wider community engages with science, and how and why scientific ideas and concepts are communicated. Our researchers also contribute to the revitalisation of mātauranga Māori, creating projects and programmes that work at the interface between Western science and Māori knowledge.

We have strong and active connections with a range of public- and private-sector organisations, including the Science Communicators Association of New Zealand and the Science Media Centre, which provide opportunities for guest lectures and student projects.

**OUR STRENGTHS**

- Our interdisciplinary researchers study contemporary and historical issues such as climate change, medical technologies, sea level rise, and digital technologies.
- We offer the only undergraduate major in Science Communication in New Zealand.

**CENTRE FOR SCIENCE IN SOCIETY**

**PŪTAIAO KI TE PĀPORI**

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, the environment, and society, and explores the way we think and talk about science. We look at the role of science and scientists in the present and in the past, how people and governments use science to make decisions about issues such as climate change and vaccination, how the wider community engages with science, and how and why scientific ideas and concepts are communicated. Our researchers also contribute to the revitalisation of mātauranga Māori, creating projects and programmes that work at the interface between Western science and Māori knowledge.

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**OUR STRENGTHS**

- The Centre is a leader in the practice and scholarly study of science communication and critical engagement with science.
- Our researchers look at science in its wider social context from disciplinary perspectives such as the environmental humanities, science and technology studies, mātauranga Māori, history, and the creative arts.

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**Rebecca Priestley**

Associate Professor of Science in Society

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**ANNIKA BESS**

Graduate, Master of Science in Society
Communications Assistant, Royal Society Te Apārangi

The range of courses offered at the University helped Annika Bess realise the variety of science career paths that exist outside a lab. “After I completed my Bachelor of Science, I decided to pursue the one-year Master of Science in Society, as I loved the questions that it asked. I was particularly interested in exploring the history of science, how society interacts with science and how this differs across cultures, and gaining skills in science communication.

“A vital part of examining science in society is having a critical eye. Everything we studied, we then questioned. This is such an important skill to have in so many different fields. It means you’ll be constantly thinking about how decision-making can be improved.”

As part of the Master’s programme, Annika completed an internship at the Science Media Centre. This led directly into her current role in which she runs the social media channels, organises science campaigns, collects content for the weekly newsletter, conducts interviews, writes stories, and plans science communication projects. “I’ve also been offered an English teaching job in Japan where I’ll learn another language and see how a different society interacts with science.

“Wellington is a great place to study science. You can really see how people interact with scientific information such as through strikes, marches, public science talks, and events. People are interested in science, especially in relation to science in policy and topical scientific issues.”

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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 societal context.
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Annika is a Communications Assistant at the Royal Society Te Apārangi, and a recent graduate of the Master of Science in Society at Victoria University of Wellington. Her work involves running the Society’s social media channels, creating content for the weekly newsletter, and planning science communication projects. Annika is also interested in exploring the history of science, and how society interacts with science in different cultures.
Science, scientists, and science communicators play a vital role in responding to social and environmental challenges and opportunities.

Today’s scientific, health-related, and technological issues are, however, complex. In order to tackle them, it’s increasingly important to have both scientific literacy and expertise in matters such as ethics, policy, scientific process, and mātauranga Māori.

Our programme provides an opportunity to build your knowledge of science and the scientific process, develop an understanding of effective science communication, and develop deeper insights into the role of science in society.

Learn through both online and face-to-face teaching. Hear from enthusiastic and influential experts from government, research, and communication industries.

You’ll develop a knowledge of science communication theory, practical skills in a range of communication tools and techniques, and get hands-on experience designing targeted science communication pieces and events.

What you might study

Science Communication can be taken as part of a Bachelor of Science or a Bachelor of Communications. You’ll pair it with a science major or minor to focus on the area of most interest to you.

A major in Science Communication demonstrates excellent science communication skills.

You’ll graduate with not only great communication skills, but also a broad understanding of the nuances and approaches relevant to different sectors that employers are looking for.

Dr Rhian Salmon
Senior Lecturer in Science in Society

Where science communication can take you

Every organisation needs skilled communications professionals to help raise awareness about their work or design engagement activities for end users. As digital media becomes more important, the need for science communication professionals continues to grow. At the same time, there’s an increasing need for both research scientists and science policy professionals to have excellent science communication skills.

A major in Science Communication demonstrates scientific literacy and an understanding of the challenges and approaches to communicating science. You might work as a science journalist, in science policy, or in communications for a scientific research organisation. Alternatively, you might pursue a career in film making, museums, marketing, media, or research.

Science in Society Minor

Add a Science in Society minor to your degree to develop your scientific literacy and explore the relationships between science and technology, and scientists and society. Look at the history and philosophy of science, and how scientific ideas and issues are communicated to different audiences.

This minor is available to students from all disciplines. It provides Science students with a broader perspective on their discipline and gives non-Science students an introduction to scientific concepts and issues. The courses allow you to develop the writing and communication skills necessary to navigate the research landscape and talk about scientific ideas and issues with a range of audiences.

Many of the courses for this minor are fully online, allowing you to work at your own pace from any location. Stay connected with others through discussion forums and blogs.

Where this minor can take you

Find out about the history, philosophy, ethics, and technology of science. Learn to assess critically the way mainstream media talks about scientific ideas and developments.

Develop your knowledge and understanding of scientific concepts and processes, and draw connections between contemporary scientific issues and your own life.

Learn about mātauranga Māori and develop an understanding of indigenous views on scientific, environmental, and technological issues.

Experience an online course and visit hard-to-reach locations, such as Antarctica, through virtual field trips.

You’ll graduate with a broader perspective on your discipline and more confidence in communicating scientific ideas and issues to different audiences.

www.wgtn.ac.nz/science-in-society

What you might study

■ Find out about the history, philosophy, ethics, and technology of science.
■ Develop your knowledge and understanding of scientific concepts and processes, and draw connections between contemporary scientific issues and your own life.
■ Learn about mātauranga Māori and develop an understanding of indigenous views on scientific, environmental, and technological issues.
■ Experience an online course and visit hard-to-reach locations, such as Antarctica, through virtual field trips.

Students are required to take a 300-level Science Communication course as part of the minor in Science in Society, and an extra 45 points from the 200–300-level Science in Society courses, such as:

■ Antarctic Science and Culture
■ Contemporary Issues in Science, Environment and Technology
■ Energy, Society and the Future
■ Historical Issues in Science in Society.

Other 200- and 300-level courses can be included with the approval of the Science in Society undergraduate programme director.

Where this minor can take you

Work as a policy analyst or researcher at a government agency, a non-governmental organisation, or at a Crown research institute such as GNS Science or NIWA. Use your knowledge of scientific concepts and processes to support your career in areas including communications and public relations, journalism, and patent law.
BACHELOR OF SCIENCE MAJORS IN THE WELLINGTON FACULTY OF ENGINEERING

The Wellington Faculty of Engineering offers four majors under the Bachelor of Science: Computer Graphics, Computer Science, Electronic and Computer Systems, and Renewable Energy Systems.

These programmes will enable you to have a career in artificial intelligence, communications, computer graphics, computer systems, computation, distributed systems, electronics, game development, logic, mechatronics, software engineering, or sustainable energy. These programmes can also lead to postgraduate Honours, Master's degrees, or PhDs.

Computer Graphics
Learn about the key concepts and tools used in the creation of today's computer graphics and effects. Gain the programming, engineering, and maths skills to create your own rendering tools, and get an introduction to the design side of computer graphics.

Computer Science
Discover the concepts, techniques, and theory behind computer science. Explore artificial intelligence, computer games, computer graphics, the design of programming languages, and networking. Learn the basics of computer programming, and how to understand and master algorithms—the mathematical basis of computer languages.

Within the Computer Science major, you can choose to specialise in Artificial Intelligence or Cybersecurity.

Electronic and Computer Systems
Electronic and computer systems engineers can be found in many areas, covering communications and control, electronic design, power systems, and signal processing. Your programme will therefore be broad, covering a range of engineering and scientific ideas.

Renewable Energy Systems
As the world’s energy demands increase, we can no longer ignore the rapid depletion of traditional energy sources and the negative impact fossil fuels have on the environment.

Finding renewable energy solutions is a complex issue that requires a multidisciplinary approach. Studying Renewable Energy Systems gives you the skills to pursue a career designing and implementing cleaner and more sustainable energy options.

For more information about these majors, see the Wellington Faculty of Engineering handbook or go to www.wgtn.ac.nz/engineering
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 spaces 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.

awhina@vuw.ac.nz
www.wgtn.ac.nz/awhina

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.wgtn.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 CD044, Cotton Building, Kelburn Campus
04 463 5105
careers@vuw.ac.nz
www.wgtn.ac.nz/careers

CAREERS
Contact Careers and Employment for professional career advice, support with your job search, and to get prepared for future employment.
www.wgtn.ac.nz/careers

CLUBS AND SOCIETIES
Join a sporting, cultural, social, or political club, group, or association, with more than 170 clubs and societies on campus to choose from.
www.wgtn.ac.nz/clubs

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.wgtn.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.wgtn.ac.nz/money

SCHOLARSHIPS
Contact us for more information on scholarships available at all levels of study.
www.wgtn.ac.nz/scholarships

DISABILITIES
If you have a temporary or ongoing impairment, get advice and support from Disability Services, including coaching, academic liaison, exam support, note-taking assistance, mobility parking, and access to rest and study rooms.
www.wgtn.ac.nz/disability

Image: Wellington Hub