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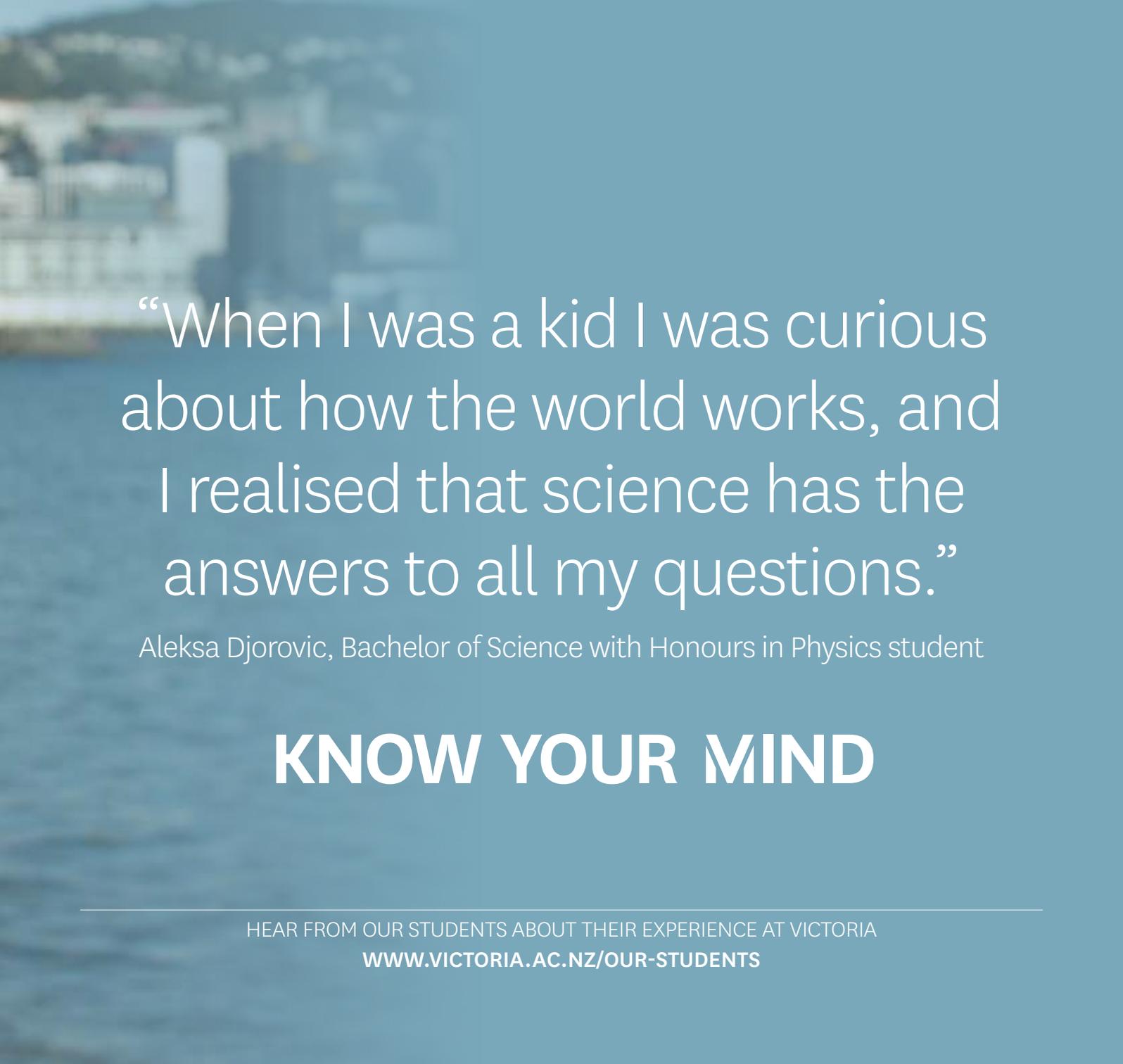
Faculty of
Science

TE WĀHANGA PŪTAIAO



**KNOW
YOUR
MIND**





“When I was a kid I was curious about how the world works, and I realised that science has the answers to all my questions.”

Aleksa Djorovic, Bachelor of Science with Honours in Physics student

KNOW YOUR MIND

HEAR FROM OUR STUDENTS ABOUT THEIR EXPERIENCE AT VICTORIA

WWW.VICTORIA.AC.NZ/OUR-STUDENTS



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Opposite: Victoria University's purpose-built science building adds 12,000 square metres of state-of-the-art collaborative laboratories, facilities and learning and teaching spaces to the Kelburn campus. The design supports sustainable energy solutions and allows spaces to be adapted as needs change.
Image: Warren and Mahoney



Cover: Biotechnology students Hayley Brown and Vincent Collins participate in labs related to staff research programmes. Biotechnology research includes developing strategies for diagnosis and treatment of cancer, and other areas of major emphasis include neurological and infectious diseases. By getting hands-on with research, students gain valuable skills in collecting, analysing and understanding data.



In 2016, Victoria joined 250 universities in 45 countries that have been rated by QS Stars. Victoria achieved an outstanding result of five stars overall. In addition, Victoria received five stars in each of the eight categories.

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Welcome to Science at Victoria

Welcome to the Faculty of Science at Victoria University of Wellington.

Choosing where, and what, to study is an important decision, and if you choose to become a science student at Victoria you will be joining what I believe is New Zealand's top university for science.

Our Faculty is home to five schools and through them we deliver a range of high-quality courses and programmes. When it comes to choosing your subjects, you'll have the freedom to choose between these and tailor a qualification that is right you. We have structured our degrees so you can easily take a second major, or minor. You can also select from a range of elective courses, and sample the full breadth of subjects available.

In the latest national assessment of research excellence, the Faculty was ranked first in New Zealand, and all schools in the Faculty were rated either first or second in their subject areas. Research is at the core of our learning and teaching and this is reflected in the content of lectures and laboratories, which are delivered by some of the most respected academics in the world.

As a student here, you won't just learn about theories, you'll also learn how to do research. By developing 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.

These practical skills combined with developing skills in independent critical thinking, creativity and communication mean that a Victoria science graduate stands out.



We know it's not just about what you learn, it's also the environment you learn in. We place great value on the quality of our student experience and are justifiably proud of the number of our lecturers who have received teaching excellence awards.

Wellington is also a great place to be a science student. It is home to the highest concentration of scientific research organisations in New Zealand, and these organisations contribute to our programmes and enhance the experience we provide to our students. They do this either directly through opportunities for research placements, and ensuring our courses are at the cutting edge of knowledge, or indirectly through future employment opportunities.

I hope that you will be excited at the prospect of studying here, and being part of our mission to educate the next generation of scientists.

Professor Dave Harper

Dean of Science
Faculty of Science

Planning your degree

We encourage you to take advantage of the flexibility of a Science degree and choose programmes that combine your interests and your career aspirations.

School and university are very different. We advise you to not take too much on and to think carefully about your workload.

Look ahead: If you plan to take a course at 200 level make sure you check what prerequisites you may need to do first.

You can email your course plan to course-advice@vuw.ac.nz before you enrol online and we will double check you have it right.

Composition of a degree

Major

This is the subject(s) you specialise in through to your final year. It will normally make up half the courses in your degree.

Double major

Some students will choose to do a double major and specialise in two subjects. Allowing for two majors in your first year is a good way to keep some flexibility. Our Science degrees even let you take a second major from another subject that isn't science based.

Minor

A minor is an optional enhancement to your degree that allows you to delve into your interests and undertake study you will be fully engaged in, and have your passions recognised on your academic transcript.

Electives

Along with taking courses that will go towards your major or minors, you can also take courses in other subjects you are interested in.



Bachelor of Science

The Bachelor of Science (BSc) offers you a strong science education in one or two specialised science subjects (majors) combined with the opportunity to enhance your degree with one or two minors, or a selection of elective courses. Your second major in your BSc can be from any Victoria undergraduate degree.

The BSc is a flexible three-year degree that will give you the knowledge and skills required for direct entry into the workforce or to continue to advanced science study.

Employers recognise that Victoria science graduates, with adaptable skills and the ability to think critically and creatively about challenging issues, are especially suited to the jobs of the twenty-first century.

www.victoria.ac.nz/bsc

BSc degree structure

Year one: 120 points



*Year two: 120 points



*Year three: 120 points



*For combinations of courses that are 15 points rather than 20, two further courses are required in each of years two and three. Courses can be shared at years one and two to meet major/minor requirements.

BSc Minors

A minor requires 60 points of study in one subject, such as Mathematics or Biology, with at least two courses at 200 level and one at 300 level.

Science in Context

The Science in Context minor is offered to students in a range of disciplines. The courses provide science students with a broader perspective on their discipline and provide non-science students with an introduction to scientific concepts and issues.

Science in Context will develop your scientific literacy and communication of scientific ideas and issues. It is based around courses that explore the relationship between science and society, as well as the history, philosophy, economics, ethics and technology of science.

Most courses are fully online and feature pre-recorded lectures and online discussion forums, allowing students to work at their own pace, and from wherever they want.

www.victoria.ac.nz/science-in-context

Forensic Science

The Forensic Science minor is available only at Victoria University and is available to students majoring in Biomedical Science, Cell and Molecular Bioscience or Chemistry. This minor requires a semester of exchange study at the National University of Singapore, one of the world's top universities, ranked twelfth in the world and first in Asia in 2015.

<http://vicoe.dotnous.com/#singapore>

Bachelor of Biomedical Science

The Bachelor of Biomedical Science (BBmedSc) is a three-year degree focused on the relationships between humans, health and disease (see page 17). The BBmedSc equips students with a fundamental understanding of modern molecular and cell biology relevant to the clinical practices of current health services.

The BBmedSc provides an excellent base for study at medical school or for postgraduate medical and clinical training programmes.

Victoria's close relationship with the Capital and Coast District Health Board, the Ferrier Research Institute and the Malaghan Institute of Medical Research ensures students gain first-hand experience of biomedical and clinical research.

www.victoria.ac.nz/bbmedsc

BBmedSc degree structure

In the first year, you will study a core programme of Cell Biology, Chemistry, Human Biology, Psychology and Statistics. In years two and three, you will study courses specific to your selected major.

The BBmedSc is highly structured, but it is possible to include courses from other subjects at Victoria.

BBmedSc majors

- Human Genetics
- Molecular Pathology
- Molecular Pharmacology and Medicinal Chemistry





Te Rōpū Āwhina

Te Rōpū Āwhina (Āwhina) is Victoria University's on-campus whānau for Māori and Pasifika students enrolled in degrees or courses in the Faculties of Science, Engineering, Architecture and Design (SEAD). We provide an inclusive environment that enables Māori and Pasifika students and staff to contribute as whānau members, and where high expectations, aspirations, achievement and collective success are celebrated. Our kaupapa (goal) is to produce architects, designers, engineers, mathematicians, scientists and technologists to contribute to Māori and Pasifika community development and leadership, engaging with students, academics, whānau and communities to achieve success.

Āwhina offers a culturally relevant learning environment for our students. There are whānau rooms on campus that offer computer facilities, study areas, free tea and coffee and a small kitchenette to prepare food, ensuring students feel warm and welcome. The whānau rooms are spaces to meet up with peers or tuākana (older students) who are also studying in SEAD courses. When students sign up to Āwhina they will receive 24-hour access to the whānau rooms and be paired up with mentors who will provide academic mentoring for any SEAD course. To succeed in our kaupapa, Āwhina students will be introduced to staff and tuākana who provide holistic and academic support and introduce students to all support services on campus.

Whāia te iti kahurangi ki te tūohu koe me he maunga teitei.

Seek the treasure you value most dearly: if you bow your head, let it be to a lofty mountain.

Te Rōpū Āwhina

Room 133, Cotton Building, Kelburn Campus

Phone 04-463 5987

Email teropuawhina@vuw.ac.nz

Website www.victoria.ac.nz/awhina



From left: Jazmine Tamaiparea, Shairae Taepa, Jesseallen Te Awhe-Raston, Kapeteni Polutea, Michael Tololi

Meet our tuākana

Āwhina has five tuākana (student leaders) who are studying in science, engineering, architecture or design. They provide the bridge to ensure transitioning into university in your first year is smooth. Tuākana will be in touch to introduce themselves before the start of the academic year and can be found in the whānau room once classes have begun.

Jazmine Tamaiparea

Bachelor of Design Innovation in Media Design

“Before my first year, I had visited Wellington only for the Victoria open day. Now, after living and studying here, there is nowhere else in Aotearoa I would rather be. Victoria offers its students so many opportunities and support systems—like the Āwhina whānau—it has surpassed all of my expectations.”

Shairae Taepa

Bachelor of Engineering with Honours in Electronic and Computer Systems

“I wanted to study at Victoria to be close to my family. Being part of the Āwhina and the Ngāi Tauria Maori Students’ Association is like my own campus whānau. I have been offered support with my study, opportunities for employment and the chance to be a tuākana for other Māori and Pasifika students.”

Jesseallen Te Awhe-Raston

Bachelor of Science in Mathematics and Māori Studies

“I have learnt about things during my time at Victoria that I didn’t even know I was interested in before. Ko te manu e kai ana I te miro, nona te ngahere. Ko te manu e kai ana I te matauranga, nona te ao.” (*The one who partakes of the flora and fauna that will be their domain. The one who engages in education, opportunities are boundless.*)

Kapeteni Polutea

Bachelor of Science in Computer Science and Information Science

“Victoria and my involvement in the Āwhina whānau mentoring has helped me to discover my passions. I want people in my community to know that they can strive high and attend university—your dreams are possible with the support that you can get here at Victoria.”

Michael Tololi

Bachelor of Engineering with Honours in Software Engineering and Bachelor of Science in Computer Science

“The passionate lecturers and tutors at Victoria make learning fun and exciting. From day one, your Āwhina whānau will help you thrive in university life, with a network of friends at your side.”

Making the most of Victoria

Scientists are discoverers looking into the unknown: from the workings of the human brain to the depths of the Antarctic Ocean. At Victoria, we encourage our students to uncover their passions by taking advantage of some of the many extra opportunities we offer beyond the classroom.

Victoria Abroad

Studying science at Victoria can take you to dozens of unique locations, including Argentina, Germany, Hong Kong, Mexico, Spain, the UK and the US.

Victoria Abroad is a student exchange programme offering you the opportunity to complete one to two trimesters of your degree overseas, while paying your normal tuition fees.

www.victoria.ac.nz/exchange

Scholarships

Victoria has a range of scholarships and awards for students at all years of study.

The two main school-leaver scholarships are the Victoria Excellence Scholarship and the Victoria Achiever Scholarship. Both scholarships are valued at \$5,000 for the first year of study. The top 20 Excellence applicants and the top five Achiever applicants will be awarded a \$20,000 Vice-Chancellor's Scholarship, over three years of study, provided a certain grade-point average is maintained.

To search for scholarships you may be eligible for, to see if you are eligible to apply and for up-to-date information and application forms, go to our website

www.victoria.ac.nz/scholarships

Science scholarships and prizes

Science students can apply for a number of scholarships and prizes, at both undergraduate and postgraduate level.

Wellington Rotary Club Science Prizes are awarded to undergraduate students studying Biology, Chemistry, Computer Science, Geography, Geology, Mathematics, Physics, Psychology and Statistics.

www.rcw.org.nz

www.victoria.ac.nz/summer-scholarships

Leadership development

Two leadership development programmes have been established for students who are interested in global leadership or in making a more local contribution.

The Victoria Plus Programme is the University's prestigious service and leadership development programme. It is for students who want to get involved and make a significant contribution to volunteering and student support work within Victoria and the Wellington community. You undertake the programme alongside your degree and successful completion is acknowledged on your academic transcript.

Victoria Plus is a free programme open to all current students. You can tailor the programme to suit your schedule, studies and interests and be involved from your first year. There are two levels of achievement—Certificate and Award. Both levels comprise three components: engagement in activities, attending professional and personal development workshops and reflecting on your learning using the CareerHub ePortfolio.

By participating in the programme you have the opportunity to:

- develop a range of skills and graduate attributes to enhance your CV and employability
- build an understanding of social responsibility and leadership
- gain valuable experience and broaden your thinking and learning
- network, meet people and connect with your community.

www.victoria.ac.nz/victoria-plus

Summer Scholars Scheme

Rather than slogging away every summer break working in a job that doesn't utilise your skills or passions, you could be eligible to gain a Summer Research Scholarship.

The Summer Scholars Scheme offers students the opportunity to work alongside academics and external organisations and gain real-world research experience. It is open to students who have completed at least two years of full-time study for their undergraduate degree.

Depending on the project, students can gain experience and skills in acquiring specialist skills in the laboratory, data analysis, data collection, interviewing techniques, learning to use specialised software and literature reviews.

Each scholarship offers a minimum tax-free stipend of \$6,000 and the experience of working with established researchers at Victoria University or in industry. Recipients will be expected to conduct a research project of approximately 10 weeks' duration (400 hours) under the supervision of an academic staff member or a research team



Jess Shaw

Bachelor of Science in Criminology
and Psychology student

Jess Shaw was the winner for Education and Psychology in the Summer Gold Competition 2016, where she studied the effects of serotonin during the stages of early brain development in infants.

"The Summer Scholarship Scheme was an amazing opportunity to get involved in all stages of a real-life research project and only extended my passion for psychology and neuroscience.

"Because of the scheme, I have become more and more interested in the relationship between the brain and resulting behaviours. Now I am lucky enough to be working with Professor Bart Ellenbroek in the Behavioural Neurogenetics Group's lab, studying the early environmental effects of immune infection for my Honours degree research."

A Bachelor of Science majoring in Criminology and Psychology was the perfect fit for Jess Shaw with her life-long fascination with the behaviour, beliefs and intentions of other people.

She says that the array of undergraduate Psychology papers offered at Victoria was really helpful as she refined the area of psychology that she wanted to specialise in.



School of Biological Sciences

Te Kura Mātauranga Koiora

Now is the time to study Biology, the science of life.

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. What better place to be a part of this than at New Zealand's top School of Biological Sciences?

Our strengths

- We rank first nationally for research quality in Behaviour and Biomedical Science, Ecology and Evolution.
- The School's areas of strength include biomedical science, biotechnology, clinical research, conservation biology, drug discovery, ecology, marine biology, molecular evolution and systems biology.
- Marine Sciences at Victoria was ranked first equal in New Zealand in the 2015 QS World Rankings.

Our facilities

- Victoria's new science building, with 12,000 square metres of modern teaching, research and laboratory facilities is under construction.
- We have an award-winning coastal ecology laboratory, fully equipped with two research vessels.
- We have state-of-the-art chemical genetics and proteomics facilities.

Postgraduate study

We teach many specialised postgraduate programmes, including conservation biology, ecological restoration, marine conservation and molecular microbiology. In tune with the world's emerging demands, Victoria is focused on enhancing current postgraduate programmes, enabling our Biological Science students to flourish.

The School's most popular postgraduate programmes include New Zealand's only graduate programme in Marine Conservation, and the Master of Conservation Biology, which has a popular field trip component.

Career opportunities

Graduates can expect to find employment in a variety of development, policy, research, technical and teaching positions in areas such as biochemistry, conservation, crop research, entomology, fisheries, forestry, marine and terrestrial ecology, medical research and molecular biology.

SCHOOL OF BIOLOGICAL SCIENCES

Room 506, Kirk Building, Kelburn Campus

04-463 5207, 04-463 5339 | biosci@vuw.ac.nz | www.victoria.ac.nz/sbs



Explore the field

With 13 national parks, a diverse dramatic coastline and breathtaking native bush that is home to more than 80,000 species of native animals, plants and fungi, New Zealand's natural living space is a biological scientist's dream.

Blessed with this natural laboratory, the School urges students to explore our varied biodiversity through field courses. Whether it is the ocean, mountains, plants or wildlife that excites you, our undergraduate field courses appeal to all nature lovers.

Students in BIOL 219 New Zealand Flora and Fauna will visit Zealandia, Wellington's wildlife sanctuary, and Otari-Wilton's Bush to understand the biological history of New Zealand.

BIOL 222 Ecology and Environment is an introduction to the principles of Ecology and Environmental Science and has a week-long field trip to the stunning Nelson Lakes National Park.

BIOL 314 Island Biology is an international field course investigating the remarkable ecosystems of Lord Howe Island, a World Heritage Site.

BIOL 370 Field Marine Biology is a field-based course studying the coastal environments in the Wellington region, and provides an introduction to marine ecological fieldwork.

Majors

Biology

The study of Biology impacts all aspects of modern life. Biology crosses over into many fields of study, such as commerce, ethics, law and philosophy, and at Victoria you'll have the opportunity to debate cultural, environmental and ethical issues as you gain new scientific knowledge and perspective.

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

First-year courses lay the foundations for in-depth study of the biological sciences, and cover the conceptual frameworks and basic understandings that underpin study at more advanced levels. While previous experience in biology is an advantage, it is not essential.

Biotechnology

Biotechnology is the application of science and technology to living organisms. Although it has been used for decades, its incredible potential is only just being discovered by researchers and industry.

You can specialise in areas such as bioactive compounds, protein and nucleic acid biotechnology and bioprocessing and microbial biotechnology. With this major, you have the opportunity to work at a technical level within a laboratory or industrial setting. In addition to a sound scientific education, you will consider cultural and ethical issues and be introduced to aspects of commercial and patent law.

Cell and Molecular Bioscience

Cell and Molecular Bioscience is one of the most sought-after and exciting areas in modern science, and 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).

A BSc in Cell and Molecular Bioscience, or a Bachelor of Biomedical Science (BBmedSc), provides ample employment opportunities for graduates in areas including environmental toxicology, communicable diseases and medical research.

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, and ecologists are at the forefront, working to address these problems.

A BSc in Ecology and Biodiversity unites the subject of ecology—the interactions of living things and their environment—with the study of the animals and plants and micro-organisms that make up various distinctive communities. Students will be introduced to the physical processes that influence ecosystems.

Ecology and biodiversity is a growing area of employment in New Zealand and overseas. Positions may be found with the Department of Conservation, the Environmental Risk Management Authority, Landcare Research, the Ministry for the Environment and Plant and Food Research. Local and regional councils and iwi regularly seek people skilled in the areas of ecology and biodiversity.



Jessica Russell

Master of Science in Ecology and
Biodiversity student

Jessica Russell has always been fascinated by the puzzle that makes up our natural world: the biotic and abiotic factors that make everything fit together.

“New Zealand’s natural landscapes sparked my interest in the diversity of ecosystems and their native inhabitants. An undergraduate degree in Ecology and Biodiversity worked so well as a double major with Marine Biology I could explore all of my passions in one three-year degree.”

Jessica says the highlight of her undergraduate degree was the once-in-a-lifetime opportunity to attend a field course to Lord Howe Island, a World Heritage Site.

Jessica completed a Summer Scholarship project and was the winner of the Summer Gold Competition 2016 in the Biology and Ferrier Research Institute category. Her research was on a protocol to raise honeybees in the lab from eggs and was the introduction to a project on increasing viral resistance in bees, which is now going to be the subject of her Master’s thesis.

“It’s an indescribable feeling to know that the hours you’re putting in could potentially help ecosystems on the other side of the globe as well as in New Zealand.”

Marine Biology

Marine Biology is the study of 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 76 km of accessible coastline, Victoria is the perfect place to study Marine Biology. Our state-of-the-art Coastal Ecology Laboratory and marine research vessels are situated in the Taputeranga Marine Reserve, adjacent to Wellington’s southern coast.

The School of Biological Sciences is one of New Zealand’s leading centres for marine biology research. Staff work locally in areas such as coastal and tidal ecology, establishment and review of marine reserves, fish ecology, fisheries science and larval biology.

When studying Marine Biology, you will 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.

Growing employment opportunities exist right in our backyard, with institutions such as the Cawthron Institute, the Ministry for Primary Industries, NIWA and iwi and regional and local councils. A BSc in Marine Biology is ideal for work in areas such as eco-tourism, environmental sciences, fisheries, marine biodiversity and ecology, marine conservation (in which New Zealand is a world leader), marine law and public policy, and oil, gas and minerals exploration.



Tracey Bates

Master of Science in Marine Biology
Biosecurity adviser, Ministry of
Primary Industries

Tracey Bates works as a biosecurity adviser at the Ministry of Primary Industries, keeping our country safe from invasive pests and insects. And, as if that weren’t enough, in her spare time Tracey is a scientific diver for the Department of Conservation.

With a lifelong passion for animals and being a classic New Zealand ‘water baby’, Marine Biology was an obvious programme of study for Tracey and, after one Marine Biology paper at Victoria, she was hooked.

“If you enjoy questioning things, challenging what is known and spending time outdoors, Marine Biology is for you.”

Tracey believes her BSc and MSc at Victoria were invaluable in preparing her for scientific work in a variety of environments.

“The opportunities are endless with a Biological Sciences degree at Victoria. I became a qualified scientific diver, worked with aquaria, designed and built my own experiments, worked in Indonesia and on Kapiti Island.”

Biomedical Science

Have you ever wondered why we age? What causes cancer? How you inherited your mum's eyes and your dad's height?

Biomedical Science is about innovative research into human health. Victoria's Biomedical Science programme covers the entirety of human life and gives you the opportunity to make a difference to the lives of people and communities around the world.

Our courses teach the fundamentals of modern molecular and cell biology relevant to the clinical practices of current health services. Graduates have the knowledge base to move into a variety of fields such as genetic counselling, management and the pharmaceutical industry.

Further study can be undertaken in Victoria's Bachelor of Biomedical Science with Honours and Master of Biomedical Science, Master of Clinical Immunology and Master of Drug Discovery and Development. The degrees also provide an excellent base for study at medical school, or for postgraduate medical and paramedical training programmes.

Majors

Human Genetics covers aspects of the science of human genetics, including the study of the human genome, epigenetics, the molecular basis and treatment of disease, evolutionary genomics, molecular biology and recombinant DNA technology. This major is for those with an interest in diseases of genetic origin, state-of-the-art DNA technology and how genetics and molecular biology affects our lives.

Molecular Pathology provides an introduction to the molecular basis of disease. The emphasis is on the metabolic and other changes 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 and forensics.

Molecular Pharmacology and Medicinal Chemistry focuses on aspects of chemistry in relation to our bodies, including modern chemical methods for the synthesis of drugs and how they are used to treat disease. This major is appropriate for students interested in both chemistry and biology.



Janet Pitman

Senior lecturer in Reproductive Biology

After growing up on a sheep and dairy farm, Dr Janet Pitman always knew her chosen career would be an extension of her two childhood passions: animals and science.

With a PhD in Reproductive Biology, Dr Pitman's main research focuses on how mammalian eggs gradually attain the capability of becoming a viable embryo, or, as she puts it, "what makes a 'good' egg".

This research is fundamental for improving the success rate of in vitro fertilisation (IVF) in women and coming up with new ways of maturing eggs in the most natural way possible.

"The field of reproductive biology has let me work with a diverse range of species, including sheep, cows, possums, red deer, pigs and rodents, as well as humans, to understanding how reproductive processes work."

Dr Pitman teaches undergraduate Biotechnology courses, as well as some Cell and Molecular Biosciences and Biomedical Science courses. At a postgraduate level, Dr Pitman is supervising 10 students.

"Being a senior lecturer at Victoria gives me the best of both worlds. I have the academic freedom to pursue the science that I am passionate about, while also playing a part in nurturing the enthusiasm of future generations of scientists."



School of Chemical and Physical Sciences

Te Wānanga Matū

Make your big discovery

Physics and chemistry are the disciplines that form the basis of our technological society, and also underpin many other branches of science, including earth and biological sciences. If your intellectually curious and naturally innovative mind is seeking challenge and inspiration, join Victoria's School of Chemical and Physical Sciences at the cutting edge of science worldwide.

Our strengths

- We rank first for research quality in Chemistry and Physics in New Zealand.
- The relationships between undergraduates and research students provide an invaluable learning experience where students can develop and apply their knowledge with their peers.
- Our alumni and faculty members are often awarded prestigious national and international science awards. Notably, in 2000, Victoria alumnus Professor Alan MacDiarmid was awarded the Nobel Prize in Chemistry.

Our facilities

- The School offers a modern science education in a vibrant academic atmosphere, with well-equipped laboratories and strong and effective learning support.

- Undergraduates have access to modern research equipment, including nuclear magnetic resonance spectrometers, ultrafast laser facilities, an electron-microscope suite and a palaeomagnetic laboratory equipped with spinner and cryogenic rock magnetometers.

Career opportunities

Our Chemistry graduates have gained employment as scientists in areas such as analysis and monitoring, biomedicine and biotechnology, the energy sector, environmental protection, government departments, pharmaceutical industries, teaching and a range of manufacturing, from agriculture-based industries to advanced materials and nanotechnology.

Our Physics graduates are employed in technology-focused companies (in management or in research and development), government laboratories, hospitals (as medical physicists), traffic and aviation engineering and teaching, and also move into related fields such as environmental or earth science, meteorology, computing and more.

Postgraduate study

We offer many expert programmes for those who want to gain specialised knowledge and skills that are directly applicable to an industry career or pursuing a research-focused PhD or Master's degree.

SCHOOL OF CHEMICAL AND PHYSICAL SCIENCES

Room 101, Laby Building, Kelburn Campus

04-463 5335 | scps@vuw.ac.nz | www.victoria.ac.nz/scps



Majors

Chemistry

Chemistry plays a role in every aspect of your existence. It is the essence of your body, your clothing, your food, the building you are in, the products that you use—even the air you breathe. Known as ‘the central science’, chemistry correlates with many other branches of science, including the development of new nanomaterials and nanotechnologies, which are important areas of global development impacting our world right now.

Chemistry is a pivotal science, and provides comprehensive knowledge and skills covering theory, practical laboratory courses and applications. Our teaching programmes are led by academic staff with international research reputations, who teach you how to question and think, to analyse and to solve problems.

In New Zealand, research is carried out mainly in universities and Crown research institutes, so a first step in a career in chemistry is joining Victoria’s innovative, interactive and research-led environment. After graduating from Victoria, you will find that chemists are highly sought after in the research and development of new materials, products and processes; process optimisation; production management; process and environmental monitoring; and quality assurance.



Rose McLellan

Bachelor of Science in Biotechnology
and Chemistry student

The thought of one day contributing to the world-class chemistry research at Victoria University prompted Rose McLellan's choice to undertake a Bachelor of Science, majoring in Biotechnology and Chemistry.

It is the practical nature of the Science programme that Rose has found most beneficial while studying.

"My degree has a 'real life applications' focus, which has certainly gone beyond my expectations."

By taking up the opportunities for paid and voluntary laboratory work offered by Victoria, Rose feels she has been given a head start to a career in science.

For Rose, the best thing about studying and living in Wellington is the culture. "This city is accepting of everyone—for who you are and who you want to be.

"Wellington is small, but vibrant—perfect for walking to meet people for study groups at Victoria, or heading down to town for awesome food and experiences."



Justin Hodgkiss

Senior lecturer in Chemistry

With a passion for the technical challenges of manipulating ultra-fast laser pulses, Dr Justin Hodgkiss is now using lasers to answer real-world problems such as renewable energy production.

"Not many people understand, or care, about femtosecond lasers, but everybody understands that we need more clean energy in the world and this is why this research is so crucial in the chemical and physical sciences at the moment."

After finishing his PhD in physical chemistry at the Massachusetts Institute of Technology (MIT), Dr Hodgkiss became a lecturer in Physical and Process Chemistry at Victoria in 2009 and then a Rutherford Discovery Fellow. He is now a deputy director of the MacDiarmid Institute at Victoria.

Dr Hodgkiss says that there are many exciting options for undergraduate students within the School of Chemical and Physical Sciences.

"My research and teaching at Victoria look at physical chemistry, particularly how light interacts with matter; for example, understanding how to efficiently convert light into electricity."



Physics and Applied Physics

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 in physics can be applied to astronomical, biological, chemical, electrical, magnetic and mechanical situations. The principles of physics are essential in many applied disciplines such as architecture, engineering, environmental studies and information technology.

A Physics major provides students with a thorough grounding in all aspects of physics, including condensed matter physics, electromagnetism, quantum physics and thermal physics

An Applied Physics major includes the application of physics to, for example, the environment, energy issues, electronics and modern materials science.

The School is a leader in many areas of physics research, including condensed matter and materials physics, educational physics, environmental geophysics, magnetic-resonance imaging and spectroscopy, nano-electronics and optics, radio astronomy and theoretical physics.

Collaborative research projects with chemistry staff within our School, with biology and engineering staff from outside the School and with 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.



James Wrigley

Bachelor of Science student in Applied Physics
and Computer Science
Te Rōpū Āwhina mentor

James Wrigley had an epiphany in the second semester of his first year; it is a career in physics that is going to give him the power to make a real difference in the world.

From that moment on, James has completely immersed himself in his Applied Physics major and plans on one day completing a PhD that he hopes will impact research into renewable energy and the potential power of solar cells.

James has made the most of the opportunities that Victoria has offered him. He is a mentor for Te Rōpū Āwhina, is involved in the Victoria Plus Programme, gives his time as a note-taker for Victoria's Disability Services and hopes to undertake an exchange with Victoria Abroad.

James has advice for future Physics students. "Studying at university level can be really challenging, but you just need to remember why you are here and the difference you are going to make. Then you will always have the motivation to keep going."



Bridget Pyc

Bachelor of Science in Physics and Bachelor
of Commerce in Marketing
Sales engineer, Honeywell

Bridget Pyc says that her flexible conjoint degree in Physics and Marketing fully prepared her for her sales engineer role at international engineering company Honeywell, and opened her mind to a world of interests.

"Marketing and Physics might seem like an unusual combination, but having the flexibility to choose interest papers as part of my degree broadened my horizons."

In her final year at Victoria, Bridget went on an exchange to the UK and was a weekly science columnist for the University's *Salient* magazine, communicating scientific phenomena breakthroughs and research in a platform that was accessible to students.

Bridget says she is learning new things every day. "In my role, I need to build relationships, understand the needs of my clients and tackle tough technical problems."

Naturally drawn to the growing need for energy efficiency, Bridget hopes to use her applied physics knowledge to help make the world more energy efficient, secure, connected and productive.



School of Geography, Environment and Earth Sciences

Te Kura Tātai Aro Whenua

Unearth your passion

Why is the climate changing, and what can we do about it? Where do our economic resources come from, now and in the future? What causes earthquakes and volcanic activity? How does inequality and poverty within and between nations lead to conflict?

If big questions like these often cross your mind, studying at Victoria will help you acquire a deeper understanding of the connections between the environment, society and the economy.

Our strengths

- Victoria is ranked first in New Zealand for research quality in the School's two core disciplines, Earth Sciences and Geography.
- Development Studies and Geography at Victoria ranked in the top 100 in the 2015 QS World Rankings.
- Our staff members are highly acclaimed for their excellence in teaching and research. Professor Colin Wilson was recently elected a fellow of the Royal Society in London—one of the highest honours a scientist can receive.

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.
- We are situated within easy access of the volcanic plateau to the north, glaciated landscapes to the south and many other unique geological, geographic and climatic features throughout New Zealand.

Career opportunities

Our graduates are working in aid and development organisations, conservation, environmental consultancy, foreign affairs, geodesy, geospatial analysis, hazard and resilience planning, hydrology and land management, meteorology, oil and mining industries, policy analysis and resource and urban planning.

Postgraduate study

We offer world-class training at postgraduate level in a range of fields, including the only course for postgraduate training in meteorology in New Zealand.

SCHOOL OF GEOGRAPHY, ENVIRONMENT AND EARTH SCIENCES

Room 311, Cotton Building, Kelburn Campus

04-463 5337 or 04-463 6158 | geo-enquiries@vuw.ac.nz | www.victoria.ac.nz/sgees

MAJORS

Development Studies

Victoria's Development Studies programme is 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 Victoria exchange programme to another country can provide insight into another culture and complement your Development Studies degree (see page 10).

Graduates find employment in many diverse and interesting fields, including New Zealand's aid programme within the Ministry of Foreign Affairs and Trade, and in non-governmental organisations including Caritas, Oxfam, Save the Children, Tear Fund, VSA and World Vision.

Environmental Science

Humanity's interaction with the environment is at the core of the biggest issues facing Earth right now. Climate change, resource management and biodiversity are growing concerns that require skilled professionals to research, monitor, analyse and communicate with the public.

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

Students are prepared with the mathematical and scientific background necessary to be environmental scientists, and graduates are highly sought after for careers in this challenging area.

Environmental Studies

If you're passionate about protecting our natural world, a major in Environmental Studies could be for you.

You can study a range of topics, including Antarctica, architecture, land use, Māori resource management and urban development. In fact, you can study almost anything to do with the environment, from a cultural, economic, scientific or social perspective.

The interdisciplinary nature of this programme is reflected in the range of courses offered, including courses in Architecture, Biological Sciences, Design, Economics, Earth Sciences, Geography, Law, Māori Studies, Marine Biology, Political Science and Public Policy.

As a graduate, you'll have access to a variety of career opportunities, in local and national government and the private sector, where you can make a difference.



Danielle Lindsay

Bachelor of Science in Geology student

With a concern for climate change and a love of our natural environment, Dani Lindsay chose to study Geology at Victoria because of the programme's hands-on teaching style.

"I have had the opportunity to work with my peers and world-renowned Victoria staff on projects that have real-world significance, both in New Zealand and abroad."

Dani says she loves being out in the field, applying the theories that she learns in the lecture theatre in real-life settings.

During her studies, she has been able to discover the contrasting geology of Onekaka, Kekerengu, Wairarapa, Te Muna and Wanganui. Dani also went on a field trip to Argentina and Chile, a 20-day tour that gave her an insight into southern Andean geology.

Dani was a 2015/16 Summer Scholarship winner and spent a summer researching the Alpine Fault for three weeks in collaboration with scientists from around the world.

"I completed a 3D seismic survey of the Whataroa Valley as part of the Deep Fault Drilling Project and am now working with the lead scientists on the project to process and interpret the data, which means I can contribute to the long-term outcome of the project."



Alec Yates

Master of Science in Geophysics student

How does a mathematics and computer science graduate all the way from the Channel Islands end up at Victoria studying Geophysics and monitoring stress on White Island?

Alec Yates says it was after the Seddon earthquakes in 2013 that his passion for geophysics was ignited.

"Being British, the whole experience was almost surreal, and I immediately became fascinated with what happens beneath the Earth's surface."

Alec completed a Graduate Diploma in Geophysics to explore his newfound interest and is now working towards a Master's degree.

Alec was chosen as having one of the most engaging demonstrations of research for his project, Monitoring Magma Movements Underneath New Zealand's Most Active Volcano, during the Summer Scholarship Scheme.

"The scheme was a fantastic opportunity to gain a snapshot into working on a real research problem. In one year I'd gone from learning the very basics of the field to monitoring stress on White Island volcano."

Alec agrees that there aren't many places in the world better placed to study Geophysics. "My experience at Victoria has only motivated me further to continue following my passions and one day to complete a PhD."



Explore the field

Fieldwork is at the heart of much of the School's teaching and research, and students can experience a range of urban, rural and remote environments through field trips. These include:

- ESCI 241 Introductory Field Geology is taught over the course of a week at Onekaka in Golden Bay and students gain an introduction to geological measurements.
- ESCI 341 Sedimentary Field Geology and ESCI 342 Structural Field Geology provide advanced training in geological mapping in the Wairarapa and Kaikoura coast.
- ESCI 343 Volcanic Field Geology involves a week-long trip to the Taupo Volcanic Zone.
- ESCI 344 Field Geophysics is based in the Wairarapa, where students interpret measurements of the Earth's geophysical properties using sophisticated field equipment.
- GEOG 222 Ecology and Environment is an introduction to field methods in terrestrial ecology and environmental science in the Nelson Lakes National Park.
- GEOG 313 Geographies of New Zealand addresses aspects of New Zealand's human geography with a week-long field trip through Taranaki and the central North Island.

Geography

Geography is the study of the world we live in and the natural and cultural processes that have shaped our living environment. It spans understanding general world issues and the environment; specialist expertise in geographic information systems; land management; hydrology; environmental monitoring; and urban transport policies.

Your study in Geography at Victoria can follow one of five themes: socio-economic and cultural systems; biophysical systems; environment and resource studies; regional and development studies; or techniques for geographic analysis.

Geographers have many opportunities for fieldwork and research in exotic places. With our emphasis on field trips and giving you the opportunity to collect and analyse your own data, you could find yourself out and about studying conservation on the West Coast, the landforms and hydrology of the Nelson Lakes and much more.

Note: Victoria's major in Geography is available in a Bachelor of Science or Bachelor of Arts.

Geology

Geology is the study of the formation and structure of the 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.

Wellington provides an ideal setting for the study of Geology, sitting 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 students experience in collecting and analysing data. Our students 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.

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

Geophysics

Geophysics uses physics and mathematics to explore the mysteries of the sky above us and the ground beneath us. Geophysicists work to describe and understand the processes governing the fundamental physical phenomena affecting the Earth, such as earthquakes, volcanoes, mountain-building, the Earth's magnetic and gravitational fields, the deep structure of our land, and our atmosphere, weather and climate.

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

Recent graduates have found employment in emergency management, oil and mineral exploration, the IT industry, weather forecasting, engineering, seismology and, with a postgraduate qualification, in research laboratories.

Physical Geography

Physical Geography is the study of the interaction of Earth's processes: our climate, oceans, landforms, soils, animals, plants and people. It is also concerned with how these processes impact on our economic, social and environmental sustainability.

As a student, you will study the climate and climate change, coastal and land management, environment, glaciology, hydrology, natural hazards, quaternary glaciation and techniques for geographical analysis. Field and laboratory work lie at the heart of many of these courses, and you'll gain valuable experience in collecting and analysing data.

Graduates in Physical Geography are highly regarded by employers because of their breadth of knowledge and skills and their adaptability to a range of employment, including land use planning, environmental consultancy and resource management.



Ian Schipper

Lecturer in Igneous Processes

“Witnessing a volcanic eruption is like feeling the heartbeat of our Earth,” says Dr Ian Schipper, who has spent his career researching volcanology from the tops of the Andes to the bottom of the Pacific Ocean.

“Volcanology provides a perfect mix of field and laboratory work. I get to spend time chasing eruptions in some of the most beautiful and dynamic places on Earth, and then apply high-tech analytical methods when I'm back in the lab.”

Dr Schipper came to Victoria as a postdoctoral researcher and, in 2015, was appointed as a lecturer in Igneous Processes. At undergraduate level he teaches ESCI 111, ESCI 112, ESCI 214, ESCI 241 and ESCI 343.

Dr Schipper was part of the Trail by Fire expedition in the South American Andes.

“We journeyed from the high peaks of Peru to the Southern tip of Chile—climbing some of the Earth's tallest volcanoes to better understand volcanic processes in this part of the world.”

Dr Schipper says that studying volcanology in a Bachelor of Science at Victoria equips you with a foundation in a field that allows you to travel the globe and be at the heart of earth science.



School of Mathematics and Statistics

Te Kura Mātai Tatauranga

The age of mathematics and statistics

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

From how population growth will impact the number of hospital beds a city will need in 20 years, to whether a new bridge design will be damaged in high winds, or even developing uncrackable codes to enhance security, at its core, mathematics and statistics is about gaining skills to solve problems.

Our strengths

- Our undergraduate Actuarial Science programme is the only one in New Zealand.
- A number of prizes and scholarships are awarded annually to the top undergraduate students.
- We provide extensive learning support and have staff advisers for female students, Māori and Pacific students, international students and students with disabilities.

Our facilities

The University's student computing laboratories provide access to a range of mathematical and statistical software including SAS, R, Matlab, Maple and Mathematica.

Postgraduate study

We offer many postgraduate study options, including our specialised Master of Applied Statistics, which provides training in statistical methods, consultancy, research methods and work experience.

Career opportunities

For the second year in a row, actuary, mathematician and statistician have been ranked among the top 10 careers in an annual survey by US company CareerCast. Degrees in mathematics and statistics were also recognised as offering the third-best salaries in the UK in a recent study by QS Digital Solutions.

Employers rely on mathematics and statistics graduates to make sense of big data and to develop analytics tools to improve performance, and to model, analyse and explain the world around us.

Our graduates work in roles including research, analysis, policy and management, and look at topics as diverse as fisheries, finance, quantum theory, cosmology, sand dunes, sea ice, reliability and robotics.

SCHOOL OF MATHEMATICS AND STATISTICS

Room 358, Cotton Building, Kelburn Campus

04-463 5651 | msor-office@vuw.ac.nz | www.victoria.ac.nz/sms

Majors

Actuarial Science

We are increasingly conscious of risks, whether from natural hazards such as earthquakes and storms; personal risk related to health, disease and lifestyle; or financial risks related to investment or asset management. Studying Actuarial Science at Victoria gives you the opportunity to make a difference, as the need to analyse, forecast and manage these risks is paramount. Actuarial science concerns the models and methods for undertaking this analysis, which relates directly to economics, mathematics and statistics.

Students enrolling in this major, available in both the BSc and Bachelor of Commerce, may consider taking Actuarial Science alongside a second major or minor in Economics, Finance, Mathematics or Statistics.

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.

Mathematics

Mathematics requires precise and logical thinking. A major in Mathematics provides students with an array of techniques for solving problems in a variety of disciplines—scientific and otherwise. It is one of the oldest academic disciplines, yet one of the most contemporary with its constant development of new knowledge and applications.

Starting from core courses in calculus, algebra, logic and discrete mathematics, you can progress through pathways that emphasise theoretical or applied aspects of mathematics. You can enrol in Mathematics as a major in either a BSc or a BA (Bachelor of Arts).

The School has some of New Zealand's best research mathematicians in areas such as logic and computation, matroid theory and combinatorics, and general relativity and cosmology. Mathematics graduates are highly valued for their numeracy skills, problem-solving skills and ability to think logically and independently. Our graduates are frequently employed in the public and private sectors as financial and policy analysts, research mathematicians, scientists, software developers and systems analysts.



Ross Engelbrecht

Bachelor of Science in Actuarial Science student

Ross Engelbrecht has always known he wanted to be an actuary, so when the Actuarial Science programme was introduced at Victoria, there was no question that that was where Ross was meant to be.

After majoring in Mathematics for the first two years of his degree, Ross says he was excited when the Actuarial Science major was available in a Bachelor of Science in 2015.

“Mathematics opened my eyes to the limitless possibilities of our minds and I was ready to grow even further in a field that I had always wanted to explore.”

Ross was one of the first students in the undergraduate programme and was the recipient of the ACC Jonathan Nicholls Scholarship that awarded him a \$2,500 prize for outstanding academic merit.

During his study, Ross had the opportunity to work for the Accident Compensation Corporation as an actuarial analyst in one of the largest actuarial teams in New Zealand.

“Once I finish my studies, I plan to go and see the world and use the universal skills I have gained from a degree that has elements of mathematics, statistics, economics and finance.”



John Haywood

Senior lecturer in Mathematics and Statistics

Dr John Haywood’s career at Victoria has spanned many areas of mathematics and statistics, from lecturing in Econometrics and Statistics to being the director of Victoria’s Actuarial Science programme.

“I really enjoy developing ideas that use statistical methods that can cross over into many areas of research. Right now I am working on a project looking at the possible ways to control invasive wasps in New Zealand.”

Dr Haywood says that good statistical modelling is becoming essential in many disciplines, including biology, psychology and the earth sciences.

“There are exciting challenges concerning mathematics and statistics for students in many science disciplines, and students from other majors often become so absorbed by statistics they pick it up as a second major or minor.

“An appreciation of statistical ideas is essential in data science and analytics, and students with these skills are highly sought after in areas of business, finance and actuarial science.”



Statistics

Statistics is the science of collecting, analysing and interpreting data. A statistician distils and organises facts from data and makes inferences about the nature of the process or population from which the data were drawn.

Statistics can be valuable for students of Biology, Economics, Finance, Psychology and the social sciences as a second major or a minor.

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, Social Development and Health. The financial sector requires graduates with strong quantitative skills, and banks, stockbrokers and similar institutions need analysts to work closely with their dealers and give them technical advice.

Increasing numbers of Victoria's Statistics graduates are employed in the health, conservation and agricultural sectors, where they are needed for monitoring and forecasting. Such skills are also needed in social science areas such as criminology, education and psychology.



Billie Berry

Bachelor of Science in Philosophy and
Statistics student

After leaving secondary school, Billie Berry wasn't sure what she wanted to study, but she was sure of one thing—her love of statistics.

“I enrolled in first-year Statistics knowing that I enjoyed it at secondary school and my passion for statistics just continues to develop.”

Billie says that Victoria has opened her mind to a range of topics and learning that she never knew existed. Her decision to take a double major in Statistics and Philosophy and a minor in Geography meant that she could explore all her interests and she says, “I love that I can mix up my degree, rather than sticking to only one major.

“Studying at Victoria has exceeded my expectations. The facilities are great, the tutors are so willing to give guidance and have thoughtful discussions and I keep finding new-found passion for courses that I never knew existed.”

Billie recommends that future Victoria students should keep their options open. “I have found the more I study, the more opportunities I come across. You'd be surprised at the number of opportunities a degree in Statistics can offer you.”



Nancy Wang

Master of Science in Applied Statistics
Statistical analyst, Statistics New Zealand

Nancy Wang works as a statistical analyst, using the skills she acquired at Victoria to help unleash the power of data to change people's lives.

She says that every working day is different. “The best part about my job is that statistics can be applied to almost every field of expertise; one day I might be training integrated data infrastructure researchers on confidentiality, and the next I'll be analysing information about particular iwi in New Zealand.”

The emphasis on practical training was what led Nancy to her study at Victoria. She was given the opportunity during her Master's programme to work at Statistics New Zealand for a five-week placement.

“I developed lots of important skills during those five weeks, and was also exposed to the values and visions of the organisation. This is what put me at the forefront as I had to compete with other graduates to get my current position.”

Nancy says that it's rewarding to know that the skills she learnt during her time at Victoria are now being used to make a difference as she helps use data to make better decisions for New Zealand.



School of Psychology

Te Kura Mātai Hinengaro

Exploring the mind

Studying Psychology at Victoria will answer the mind's most fascinating questions about how the brain works and what drives human behaviour: What is the relationship between thinking and behaviour? Why do we conform to peer-group pressure? How does disturbed or criminal behaviour develop and what can be done to remedy it? What is the nature and origins of romantic love?

Our strengths

- Psychology at Victoria ranked in the top 100 in the 2015 QS World Rankings and first in New Zealand in research quality by the Tertiary Education Commission.
- Our research strengths include the study of abnormal and criminal behaviour, addiction and drugs, culture and behaviour, gender and identity, language across various real-world settings, memory, neuroscience and social and cognitive development.
- Victoria offers the broadest range of psychology programmes in the country, including New Zealand's only programmes in Cross-cultural Psychology and Forensic Psychology.

Our facilities

We have excellent facilities, with laboratories in social, developmental, cross-cultural and clinical psychology, animal behaviour and cognitive neuroscience, eye tracking equipment, a brain stimulation lab, an EEG and psychophysiological recording suite.

Research centres

The Victoria Psychology Clinic is a teaching-based facility for the Clinical Psychology programme and offers short-term psychological assessment and treatment. The Roy McKenzie Centre for the Study of Families supports and carries out interdisciplinary research with a focus on family formations, transitions and relationships in New Zealand.

The Centre for Applied Cross-cultural Research offers postgraduate degrees in Cross-cultural Psychology.

Postgraduate study

As part of completing an Honours degree, you can engage in a range of specialist courses, complemented by a research thesis. We teach four specialist postgraduate programmes: Clinical Psychology, Cognitive and Behavioural Neuroscience, Cross-cultural Psychology and Forensic Psychology.

Career opportunities

A degree in Psychology is an advantage in any job that requires an understanding of people. Our graduates work in basic research roles, counselling/therapy, education, government, healthcare, human resources, information technology, law and corrections and social services.

SCHOOL OF PSYCHOLOGY

Room 630, Easterfield Building, Kelburn Campus

04-463 5373 | psyc@vuw.ac.nz | www.victoria.ac.nz/psyc

Major

Psychology

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

Students have the opportunity to discuss fascinating questions such as do we really see the world the way it is, do we really use only 10 percent of our brain, why is it that two people can witness the same event but remember it in two ways, and even bizarre notions such as how common is the belief that your pet iguana has been replaced by an alien replica?

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

Victoria offers a major in Psychology in the Bachelor of Science or 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.

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, understand statistics, methodology and complex human behaviour will set you apart from other graduates.



Bridget Brox

Doctor of Philosophy in Behavioural
Neuroscience

Animal welfare adviser, Wellington Zoo

Bridget Brox's interest in animal ethics and animal welfare led her to complete a PhD in Behavioural Neuroscience and now she dedicates her time helping to ensure Wellington Zoo is an advocate and an authority on animal welfare best practice.

"While I was studying, I attended an animal welfare conference where I met the Wellington Zoo CEO. We set up a meeting and that led to a project collecting behavioural data for two pairs of their small cats."

This project helped Bridget develop an ethos for how people should approach the care and role of animals in human care.

"We should be their wardens. We have an inherent responsibility to ensure animals experience a welfare state that is positive. This extends beyond animals in zoos to companion animals, production animals, such as those that live on farms, and those used in science and research."

Bridget says that her work is constantly diverse and challenging. "Each species has a distinct history and background. The learning curve is steep and this makes the work incredibly interesting!"



Marc Wilson

Associate Professor in Psychology

Associate Professor Marc Wilson is fascinated about what goes on in people's heads and says the reason he chose a career in psychology is because, basically, he's a bit nosy

"I want to know why people vote the way they do, why some people believe in ghosts and conspiracies and other people don't, and why people (particularly adolescents) hurt themselves deliberately." It's the answers to questions such as these that keep him passionate about his research.

Associate Professor Wilson runs the Youth Wellbeing Study, which follows 1,000 young people throughout their journey through secondary school.

"Almost half of all our secondary school students hurt themselves at least once before they leave school. We now train people to help them manage the emotions that lead to self-harm."

Associate Professor Wilson has been in the Victoria University community since he left secondary school, and won a National Teaching Excellence Award in 2008.

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



Jordyne Craven

Bachelor of Science student in Psychology
Te Rōpū Āwhina mentor

Being able to take papers from the range of programmes within Victoria's School of Psychology was perfect for Jordyne Craven, who saw her first year at Victoria as an opportunity to discover her passion.

"Psychology is perfect if you're thinking of trying out different courses and just giving things a go. It really inspired me to further my education in psychology and look into new areas of human behaviour."

Jordyne says that the whānau values of Te Rōpū Āwhina have really helped her throughout her study. "Having my own mentor as I found my feet at Victoria was awesome, and now it's so rewarding to be a mentor myself and to use my experiences to help other students."

Having moved to Wellington from her hometown of Tauranga, which has an older population, Jordyne says that it has been refreshing to get among the vibrant Wellington lifestyle that offers a young, fresh and inspiring environment for students.

"The best thing you can do at Victoria is to immerse yourself in every opportunity—it's the best way to learn about yourself and make decisions about what's right for you."



School of Engineering and Computer Science

Te Wāhanga Ahunui Pukaha

Plug into your future

Have you dreamt of making the next major breakthrough in technology? Could you create the next big game or come up with the next Facebook? If you're someone who likes problem-solving, creativity, making stuff, understanding how things really work and thinks, "I could improve that", a degree within the School of Engineering and Computer Science could be perfect for you

Our strengths

- Computer Science and Information Systems at Victoria ranked in the top 150 in the 2015 QS World Rankings.
- Our areas of strength include computer graphics, artificial intelligence, network security, mechatronics and programming languages.
- All our majors were designed with input from local companies, including Weta Digital and Pik Pok, to ensure that you have the right skills to be successful in any role in computer science or scientific disciplines.

Our facilities

We have our own electronics workshop and technicians, which means our students have access to facilities and skills to carry out any hardware projects or modifications.

Industry links

Students are given the chance to tap into industry knowledge through guest lectures, internships and summer work experience, and the School has close links to organisations such as Google and Summer of Tech, which provide internship programmes for ICT students.

Career opportunities

As society's dependence on the reliability and correctness of computer-based systems increases, so does the need for experts to design and build the systems. As a graduate, you'll be part of the next generation of computer scientists.

Postgraduate study

Our programmes can also lead to exciting postgraduate study options.

Note: Students who wish to study Engineering should consult the Engineering handbook.

SCHOOL OF ENGINEERING AND COMPUTER SCIENCE

Room 343, Cotton Building, Kelburn Campus

04-463 5341 | engineering@vuw.ac.nz | www.victoria.ac.nz/ecs

Majors

Computer Graphics

Computer graphics is an exciting and rapidly developing industry with countless opportunities for careers working in television and films, computer games, medical imaging, virtual and augmented reality, data visualisation and much more. Whether it is creating new visual effects that enrich our visual experience or creating photorealistic renderings of created scenes, computer graphics is critical to these fields.

A BSc in Computer Graphics will provide you with an interdisciplinary mix of engineering, mathematics and design, based around a set of core Computer Graphics courses. With close links to the School of Design, the School is placed to offer a distinctive programme that includes courses on the artistic and design side of computer graphics.

Weta Digital hosts a number of our postgraduate students for internships or work experience, and our staff includes lecturers who have worked on films such as *The Matrix* sequels and *Avatar*.

Computer Science

Behind the rapid innovation and development of information technology are skilled professionals who keep our high-tech world moving. As computers contribute increasingly to our everyday lives, the demand for computer scientists continues to grow.

The Bachelor of Science major in Computer Science is a comprehensive introduction to the concepts, techniques, theory and tools of computer science. It is the first step for a career in the world's most exciting, innovative and rewarding companies.

The BSc in Computer Science is a flexible three-year degree. You will learn the fundamental skills of computer programming and understanding algorithms, and can include courses from Software Engineering, Network Engineering and other areas of Computer Science such as artificial intelligence, computer graphics and the design of programming languages.

The BSc allows you to focus entirely on Computer Science, or to combine it with other disciplines in the University, giving you a broad interdisciplinary foundation for working in jobs that apply computing to new areas.

Electronic and Computer Systems

The BSc in Electronic and Computer Systems gives you a great deal of flexibility to delve into the cutting-edge research that exists in many fields of emerging technology.

You will be able to combine technical Electronic and Computer Systems (ECEN) courses from the Bachelor of Engineering with Honours with subjects drawn from other fields in science and beyond. For example, you could combine Electronics with Physics to embark on a career in semiconductor devices, or you could combine Chemistry and Control Engineering for a career in chemical or pharmaceutical manufacturing.

You could also combine Statistics and Communication or Signal Processing to build next-generation telecommunications systems or sonar devices. You could even combine Digital Electronics with Computer Science and specialise in the design of next-generation microprocessor chips.



Olivia Carline

Bachelor of Science in Computer Science student

It took only one year of majoring in Computer Science for Olivia Carline to say goodbye to her love of geology and become inspired by everything programming related.

“I initially was studying for a double major, but it didn’t take me long to realise that it was coding applications that was my real passion.”

Olivia made the most of her first year of study. She became involved in the Victoria Plus and Victoria International Leadership Programmes, is an International Buddy and a member of a Victoria-based code club that helps teach coding skills to school children.

“Through my involvement with Victoria Plus, I have been nominated to attend this year’s Aspiring Leaders Forum, and Victoria has also provided me with a once-in-a-lifetime opportunity to study in Hong Kong.”

She adds, “While I’m so lucky to have Wellington with its incredible IT start-up environment at my disposal, my time at Victoria has shown me that computer science can take you anywhere.”



Neil Dodgson

Professor of Computer Graphics

After spending the past 20 years at the University of Cambridge, Professor Neil Dodgson returned to New Zealand to head Victoria’s Computer Graphics programme in the Bachelor of Science.

Professor Dodgson says that what drew him to the field is the way that computer graphics combines his professional expertise in mathematics, physics and computer science with his passion for art and storytelling.

He was a pioneer in 3D television technology in the 1990s and has since moved into studying the mathematics that underlies 3D modelling mechanisms for the industrial design of cars and aircrafts, and the modelling of animated characters for movies and television.

With a Doctor of Science degree from the University of Cambridge for his work in computer graphics, display design and analysis of art, Professor Dodgson brings world-class expertise to Victoria.

“The Bachelor of Science in Computer Graphics equips students with a fantastic mix of skills in science, engineering, mathematics and design, and is the perfect way for students to combine technology, art and creativity in a degree.”

Who to contact

Faculty Student and Academic Services Office

Visit the office for help with anything from enrolment to graduation. Get help with choosing your degree, planning your courses or changing your degree programme. This office should be your first point of contact for any enquiries you have about your studies.

Room 144, Cotton Building, Kelburn Campus

Phone 04-463 5101

Email science-faculty@vuw.ac.nz

Website www.victoria.ac.nz/science

Accommodation Service

Advice on our halls of residence, renting and other accommodation options.

www.victoria.ac.nz/accommodation

CareerHub

Access to part-time jobs, graduate jobs, contract work, tutoring positions, internships, work experience/volunteer opportunities, an ePortfolio and a CV-building tool. Use your student computing account to log in.

www.victoria.ac.nz/careerhub

Disability Services

If you have a temporary or ongoing impairment, you can access coaching and advice, liaison with academic staff, adaptive equipment, technology and training, sign language interpreting, note-taking assistance, mobility parking, ergonomic furniture and access to rest and study rooms.

www.victoria.ac.nz/disability

Marae

Te Herenga Waka, the University marae on our Kelburn campus, is a gathering place as well as a teaching facility. Resources, support and activities include Te Whanake Mauri Tū Computer Suite, lunches in the wharekai (Tuesday to Thursday) and whānau housing.

Recreation Service

Get access to recreation, fitness and sports, to stay healthy and happy during your studies.

www.victoria.ac.nz/recreation

Science Society

A student-run society providing a forum for discussion and networking, as well as tutoring, trips and social events.

www.victoria.ac.nz/science-society

Student Learning—Te Taiako

Academic skill support for all levels of study—resources, workshops, one-to-one help and more.

www.victoria.ac.nz/student-learning

Victoria Clubs

More than 140 clubs at Victoria provide an extracurricular community for students to get involved.

www.victoria.ac.nz/clubs

Victoria University of Wellington Students' Association

Victoria University of Wellington Students' Association (VUWSA) is a students' association. We provide advice, advocacy, events and support for all students.

www.vuwsa.org.nz



**KNOW WHAT
YOU STAND FOR.
KNOW WHERE
YOUR PASSIONS LIE.
KNOW YOUR
NEXT MOVE.**

KNOW YOUR MIND



FACULTY OF SCIENCE

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