

2024



VICTORIA UNIVERSITY OF
WELLINGTON
TE HERENGA WAKA

TOHU PAETAHI PŪTAIAO

BACHELOR OF

SCIENCE







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Te Herenga Waka—Victoria University of Wellington has been awarded an overall five-stars-plus rating in the QS Stars university rating system, one of only 17 universities worldwide to do so. The University gained a total score of 966 out of a possible 1,000 points across eight audited categories, including maximum points for the employability

and inclusiveness categories. Maximum points were awarded for 25 of the more than 30 indicators, including overall student satisfaction; further study; graduate employment rate; international diversity, support, and collaborations; academic reputation; satisfaction with teaching; campus facilities; accreditations; art and cultural investment and facilities; disabled access; scholarships and bursaries; low-income outreach; and student cohort diversity.

IMPORTANT NOTICE: Te Herenga Waka—Victoria University of Wellington uses all reasonable skill and care to ensure the information contained in this document is accurate at the time of being made available. However, matters covered by this document are subject to change due to a continuous process of review and to unanticipated circumstances, including those caused by COVID-19. The University therefore reserves the right to make any changes without notice. So far as the law permits, the University accepts no responsibility for any loss suffered by any person due to reliance (either whole or in part) on the information contained in this document, whether direct or indirect, and whether foreseeable or not.

TOHU PAETAHI PŪTAIAO

BACHELOR OF SCIENCE

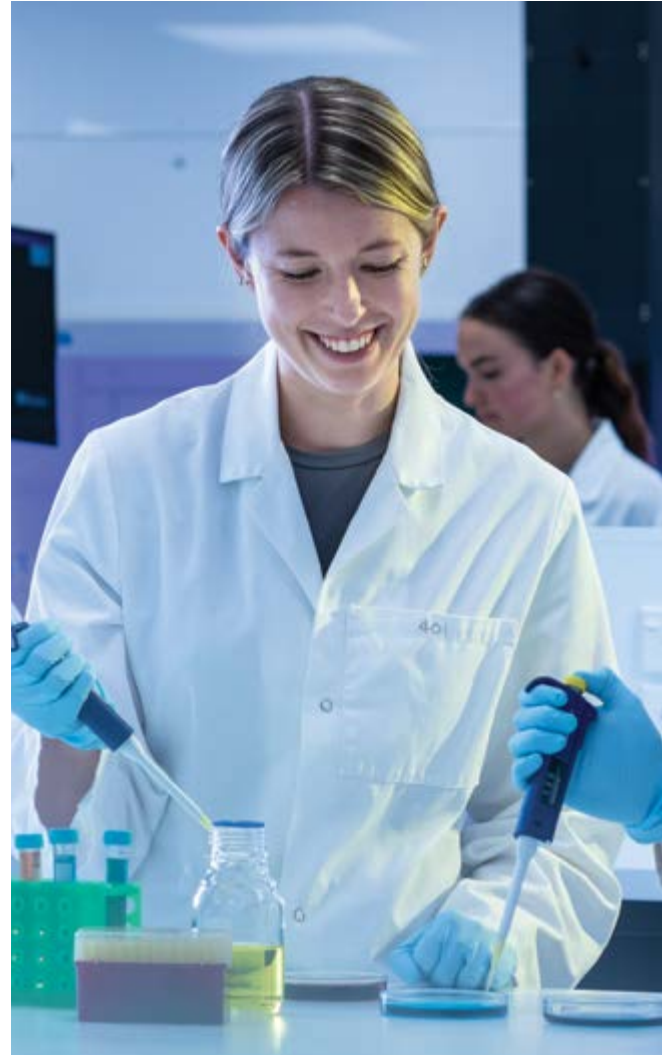
Te Herenga Waka—Victoria University of Wellington’s Bachelor of Science (BSc) degree consistently produces students with scientific skills and experience to flourish in today’s evolving job market. Our BSc is a combination of theory-based learning with world-renowned academics and practical experience, providing you with the ability to collect, analyse, and understand data, think critically and creatively, and communicate your findings effectively.

When you study with us, you’ll have the opportunity to step outside the classroom with hands-on laboratories, field trips, and summer scholarships where you can work with researchers and external organisations such as GNS Science, the National Institute of Water and Atmospheric Research, or Te Papa Tongarewa on all kinds of exciting projects. We have students researching everything from battery technology to kauri dieback.

With the option to choose from more than 25 majors—in everything from Marine Biology to Psychology to Space Science—you’ll have the flexibility to combine subjects that fit your interests and career aspirations to create a degree that is unique to you.

So, if you’re looking for an inspiring learning environment with excellent teaching staff who have unparalleled industry knowledge and passion for their subjects, and if you want to learn about cutting-edge research in state-of-the-art facilities, there’s no better place to study science than Wellington—the science capital of New Zealand.

i www.wgtn.ac.nz/bsc



CAREERS

Our BSc graduates have secured careers all over the world, as geologists, psychologists, and data analysts to name a few. The degree has an excellent reputation among employers both in Aotearoa New Zealand and around the globe for developing knowledgeable, skilled, and creative scientists who are determined to make a difference in their field of expertise.

After completing this degree, you might find yourself developing new software for multinational businesses, working with government officials on reducing the impact of climate change, studying marine life in the Antarctic Ocean, or solving an issue that doesn't exist yet.

Potential jobs include:

- ▶ actuary
- ▶ astronomer
- ▶ cartographer
- ▶ chemist
- ▶ clinical trial manager
- ▶ computer software engineer
- ▶ data scientist
- ▶ environmental engineer
- ▶ geologist
- ▶ government analyst
- ▶ hydrologist
- ▶ marine biologist
- ▶ physicist
- ▶ psychologist
- ▶ research scientist
- ▶ science policy writer
- ▶ therapist.



“Every day I get to launch things into space that are being used by you and me, such as satellites used for GPS systems and Earth observation. When I look at that, I can say, ‘I have had a positive impact.’ I have left a tangible print on things, and I am exceptionally proud of that.”

Julia Rothman

Graduate, Bachelor of Science with Honours in Physics
Director, Launch Complex 1, Rocket Lab

To read the full story of Julia's career, scan the QR code.

To find out more about our new Space Science major, see page 11.



FURTHER STUDY OPPORTUNITIES

Te Herenga Waka—Victoria University of Wellington offers a variety of postgraduate study options that will help boost your career opportunities after completing your BSc.

Bachelor of Science with Honours

Extend your knowledge in a specialised field of science with a Bachelor of Science with Honours (BSc(Hons)). You'll complete an intensive one-year programme and gain the advanced theoretical knowledge and skills you need to pursue a scientific career.

Master's degree

A Master's degree will develop your technical, laboratory, and academic writing skills to further prepare you for a career in science. There are several options available, including a one-year (180 point) coursework degree and a two-year (240 point) coursework and thesis degree.

Doctor of Philosophy

A Doctor of Philosophy (PhD) is an internationally recognised degree for those who wish to pursue a career as a research scientist or as an academic and involves a major piece of specialised original research. Supervision for PhD research is available in almost all subject areas we offer.

i www.wgtn.ac.nz/postgraduate-science



“I really enjoy the way Physics and Maths challenge my problem-solving skills, and the University has really helped grow my interest in subjects that I already loved.”

Joseph Poata (Rongowhakaata)

Student, Bachelor of Science in
Physics and Geophysics

YOUR BSc

ENTRY REQUIREMENTS

An interest in science or mathematics will go a long way to helping you during your degree. Some science courses have specific NCEA Level 3 entry requirements. If you feel you haven't studied enough science at secondary school or have not met the NCEA requirements for a subject, there are alternative pathways available—our student advisers can give you more information.

CHOOSING YOUR MAJOR

A major is the main subject you'll focus on in your degree. Choose a major that suits your passions and future ambitions. You can also add a minor, which is an optional additional area of focus for a degree. There is also the option to do a double major—you can find more information about this below.

DOUBLE-MAJOR DEGREES

Many students add a second major to their BSc degree. Your first major must be a Science subject, and your second major can be a Science subject or a subject from another undergraduate degree. Combining Biology and Chemistry will see you well placed to be at the forefront of drug discovery and development. You could combine Environmental Studies and Science Communication to lead community engagement for environmental projects. There are many combinations to choose from.

CONJOINT DEGREES

You can choose to combine your BSc degree with another in a conjoint degree. This will take you less time than completing two degrees separately. You could combine a BSc in Environmental Studies with a Bachelor of Laws to become an environmental lawyer, or a BSc in Psychology with a Bachelor of Commerce in Marketing to work in advertising. Our student advisers can help you make a plan that will work for you.

DEGREE STRUCTURE

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. 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 develop your research skills. You're likely to take six to eight courses—three or four courses in your major subject and the remaining courses chosen from your second major, minor subject, and/or electives. To add variety and depth to your degree, you might take some courses 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.

 www.wgtn.ac.nz/course-planning

SAMPLE DEGREE PROGRAMMES

Example: BSc with a double major—first major Ecology and Biodiversity, second major Statistics

YEAR 1		YEAR 2		YEAR 3	
TRIMESTER 1	TRIMESTER 2	TRIMESTER 1	TRIMESTER 2	TRIMESTER 1	TRIMESTER 2
BIOL 113 Biology of Plants (15 points)	BIOL 111 Cell Biology (15 points)	BIOL 222 Ecology and Environment (20 points)	BIOL 227 Plants and Algae: Function and Diversity (20 points)	BIOL 327 Population and Community Ecology (20 points)	BIOL 328 Behaviour and Conservation Ecology (20 points)
BIOL 114 Biology of Animals (15 points)	STAT 193 Statistics in Practice (15 points)	BIOL 228 Animal Diversity (20 points)	BIOL 241 Genetics (20 points)	BIOL 325 Global Change Biology (20 points)	STAT 393 Linear Models (15 points)
MATH 141 Calculus 1A (15 points)	MATH 177 Probability and Decision Modelling (15 points)	STAT 292 Applied Statistics 2A (15 points)	BIOL 271 Introductory Marine Ecology (20 points)	STAT 392 Sample Surveys (15 points)	STAT 394 Multivariate Statistics (15 points)
ESCI 111 The Earth System (15 points)	BIOL 132 Biodiversity and Conservation (15 points)		STAT 293 Applied Statistics 2B (15 points)	STAT 391 Mathematical Methods for Applied Statistics (15 points)	
60 POINTS	60 POINTS	55 POINTS	75 POINTS	70 POINTS	50 POINTS
120 POINTS		130 POINTS		120 POINTS	

Total points required: 360

Total points completed: 370

First major Second major Elective

Major: A major is the main subject you'll focus on in your degree.

Elective: Elective courses are courses in other subjects you're interested in and they don't necessarily need to be related to your major or minor subjects.

Example: BSc with a major in Physics and minor in Mathematics

YEAR 1		YEAR 2		YEAR 3	
TRIMESTER 1	TRIMESTER 2	TRIMESTER 1	TRIMESTER 2	TRIMESTER 1	TRIMESTER 2
PHYS 145 Practical Skills for Scientists: Applications in Physics (15 points)	PHYS 142 Calculus-based Physics (15 points)	PHYS 245 Methods of Experimental Physics (15 points)	PHYS 242 Electromagnetism I (15 points)	PHYS 305 Thermal and Statistical Physics (15 points)	PHYS 304 Electromagnetism and Wave Optics (15 points)
MATH 151 Algebra (15 points)	MATH 142 Calculus 1B (15 points)	PHYS 243 Classical Mechanics and Relativity (15 points)	PHYS 241 Quantum Mechanics and Kinetic Theory (15 points)	PHYS 307 Quantum Physics (15 points)	PHYS 345 Advanced Methods of Experimental Physics (15 points)
MATH 141 Calculus 1A (15 points)	MATH 161 Discrete Mathematics and Logic (15 points)	Any 200-level MATH course (15 points)	MATH 243 Multivariable Calculus (15 points)	Any 300-level MATH course (15 points)	Any 300-level course (15 points)
PHYS 101 Introduction to Physics (15 points)	SPCE 102 Introduction to the Universe (15 points)	STAT 193 Statistics in Practice (15 points)	Any 200-level MATH course (15 points)	STAT 292 Applied Statistics 2A (15 points)	Any 300-level course (15 points)
60 POINTS	60 POINTS	60 POINTS	60 POINTS	60 POINTS	60 POINTS
120 POINTS		120 POINTS		120 POINTS	

Total points required: 360

Total points completed: 360

Major

Minor

Elective

Major: A major is the main subject you'll focus on in your degree.

Minor: An optional additional area of focus for a degree.

Elective: Elective courses are courses in other subjects you're interested in and they don't necessarily need to be related to your major or minor subjects.

MAJORS

Other available majors

For more details about Artificial Intelligence, Computer Science, Computer Graphics and Games, or Electronic and Computer Systems majors, see the *Engineering and Computer Sciences* publication. Information Systems can also be taken as a major in the BSc—see the *Bachelor of Commerce* publication for more information on this subject.

Actuarial Science

Get the knowledge and skills you need to become a qualified actuary. Actuarial Science brings economics, mathematics, and statistics together to help companies and organisations forecast and manage risks.

Artificial Intelligence

Artificial intelligence (AI) is the science and engineering of intelligent machines that sense, act, and learn from experience to perform tasks for humans. In this major, you'll gain knowledge of concepts, techniques, and tools in AI, and learn how to apply that knowledge to solve problems. Developing programming skills will enable you to build software tools that incorporate AI technology—and help shape our future.

Biology

Study Biology and get a broad grounding in the biological sciences. Find out where living organisms come from and how they develop, and study the way they work.

Biotechnology

Biotechnology helps us develop products that benefit humanity. This could be in the form of new medicines, better crops, or biofuels for a cleaner environment. You'll study the commercial, legal, and political considerations of bringing new developments to the marketplace, and learn to think critically about related issues.

Cell and Molecular Bioscience

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

Chemistry

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.



“Teaching is a highly rewarding profession that allows me to change the lives of many individuals. Not every student’s academic journey is the same and, as a teacher, I acknowledge these differences and tailor my approach to best suit. There is nothing more satisfying than seeing your student succeed or when the lightbulb moment occurs. I have seen this occur multiple times throughout my teaching career and I believe that it is that moment that can initiate the start of a successful learning journey for the student.”

Dr Courtney Davy

(Above, centre) Lecturer (Teaching) in Te Wānanga Matū—School of Chemical and Physical Sciences

Computer Graphics and Games

Learn about the key concepts and tools used in the creation of games and visual experiences. Gain the programming, engineering, and maths skills to push the frontier of visual effects, game interactions, and design.

Computer Science

Learn to create the building blocks of software development. From the clever speech-recognition algorithm on your phone to any of the myriad complex software systems we depend on every day, new creations continue to arise that would have been impossible without the science of computing.

Data Science

Develop technical skills in computing technologies, statistics, and mathematics and work with real data sets to develop a practical understanding of the social dimensions of data.

Development Studies

Study the enormous differences in living standards around the world and what we can do about them. Examine the relationships between people and institutions, from small communities to government agencies and international organisations.

Ecology and Biodiversity

Learn about the huge diversity of plants, animals, and micro-organisms that live on Earth. Ecology—how living things interact with their environment—and Biodiversity—the diversity among and within plant and animal species—go hand in hand to give you a broad understanding of life on Earth.

Electronic and Computer Systems

Learn the maths and physics that lie at the heart of electronics and mechatronics. Find out why electronic components act the way they do, and study programming and computer science.

Environmental Science

Discover how humans connect with and change the natural environment. Gain an understanding of this relationship, drawing on a range of sciences including Biology, Chemistry, Geography, Mathematics, and Physics. You'll need to choose a second BSc major to complement your Environmental Science major.

Environmental Studies

At their core, all environmental issues are social issues. Social-science approaches allow us to understand the underlying causes and develop solutions to tricky environmental problems. Environmental Studies draws together critical theory, environmental ethics, environmental psychology, mātauranga Māori, policy, and science and technology studies to help you learn how to create change.



“I love piecing together the puzzle of how life works on a chemical and cellular level. During my undergraduate courses, I was exposed to learning the nitty-gritty of animal systems, plants, genetics, chemistry, and microbiology. It never fails to amaze me how one small change in a protein or chemical can have huge effects that we can see with our own eyes.”

Jade Palmer

Student, Bachelor of Science with Honours in Molecular Microbiology

Geography

Focus on the relationship between humans and their environment. Examine how human cultures shape the world around them, and investigate the differences and inequalities between and within different countries and nations.

Geology

Learn about the effects of shifting tectonic plates, how mountains are made, and the power of volcanic eruptions. Work and undertake research in the lab and out in the field to discover the origins of the solar system and how magma moves.

Geophysics (Meteorology)

Look up to the sky and study Meteorology—the science of weather. Use maths and physics to understand natural forces and explore Earth’s atmosphere.

Geophysics (Solid Earth)

Investigate the ground beneath our feet. Understand the world’s most exciting physical phenomena as you use maths and physics to explore the structure and properties of our planet.

Marine Biology

Study life in the sea. Learn about the organisms that live in the ocean and how they interact with one another and their environment.

Mathematics

Explore the potential of Mathematics while you confront some of the world’s most difficult unsolved intellectual challenges. Investigate problem-solving techniques you can use in several disciplines, including pure and social sciences.

Physical Geography

Find out about the physical processes that continuously shape Earth, such as the movement of oceans and glaciers, earthquakes, the climate, and animals. Discover the relationships between these different earth-system processes, and the ways that these can affect economic, social, and environmental sustainability.



“Lots of the core parts of my work now are similar to my experience at university. I’m still learning a lot about science, working with data, writing reports, and working in a lab, but now I also get to travel for fieldwork, and communicate and collaborate with other scientists.”

Hayden Young

Graduate, Bachelor of Science in Physics and Chemistry
Graduate, Bachelor of Science with Honours in Physics
Graduate, Master of Science in Physics
Technical support assistant at GNS Science

Physics

Study the fundamental theories developed by pioneering physicists such as Newton, Galileo, Faraday, and Maxwell. Explore the current understanding of interactions of matter, time, and space, delving into quantum mechanics and relativity.

Psychology

Study the science behind our brains and behaviour. Gain insights into why people think, act, and feel the way they do. Examine social behaviour, emotion, personality, and motivation.

Science Communication

Build your knowledge of science and the scientific process, learn how to communicate science effectively to a range of audiences, and get hands-on experience across different mediums including video and podcasts.

Science in Society

Look at the role of science and mātauranga Māori in our past and present and how these are shaped by political, economic, and social forces. Find out how people and governments use science to make decisions about issues such as climate change and vaccination. (Available only as a minor.)

Space Science

You'll learn about all parts of the space industry—from the technical innovations needed to go into space to the ethical and legal issues that develop as we push out of Earth's orbit. While you'll focus on the practical aspects of space, courses also delve into the history of astronomy and space exploration, alongside perspectives on the night sky in Māori and Pasifika culture.

Statistics

Learn to collect, analyse, and interpret data. Statistics is a mathematical tool to help us understand today's information-rich world, and statisticians work in many different industries—from the financial world to marketing campaigns to government policy.

i www.wgtn.ac.nz/subjects




“My time at the University has been amazing—I’ve learnt to think critically about social issues and to understand the world around me. I’ve had so many opportunities, and a great social life with a good balance of sport, friends, and study.”

Mariano McClean

Student, Bachelor of Science in Environmental Studies and Physical Geography

FIND OUT MORE

 www.wgtn.ac.nz/bsc

 www.wgtn.ac.nz/apply

WHY WELLINGTON?

Te Wāhanga Pūtaiao—Wellington Faculty of Science is one of New Zealand's top research institutions, and our teaching staff are some of the most respected in the world. Our University is ranked first in New Zealand for intensity of high-quality research (2018 Performance-Based Research Fund), and we're ranked in the world's top 50 for Development Studies and the top 100 for subjects including Psychology and Geography (2022 QS World University Rankings).


Our career-focused curriculum and relationships with industry and government will prepare you for success in your chosen field and give you the chance to make a difference. We're home to several leading research institutes—you might learn from someone who is developing vaccines at the Malaghan Institute of Medical Research (the country's largest private medical research institute), designing sustainable technology at the MacDiarmid Institute for Advanced Materials and Nanotechnology (New Zealand's top research institute in materials science), or researching climate change at Te Puna Pātiotio—the Antarctic Research Centre.


ADMISSION AND ENROLMENT

You can apply for admission up to two years in advance of the year you plan to start studying. Apply through our student portal, Pūaha. Once you have met the requirements, you will receive either a conditional or an unconditional Offer of Place. Accept your offer to confirm your admission.

After accepting your Offer of Place, you will be invited to select your courses once course enrolment is open. You select courses for one academic year at a time.

We'd love to see you at one of our information events—check our website for dates.

 www.wgtn.ac.nz/puaha

 www.wgtn.ac.nz/information-evenings


CONTACT US

Te Wāhanga Pūtaiao

Wellington Faculty of Science


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 0800 04 04 04

 info@vuw.ac.nz

 www.facebook.com/vicuniwgtnscience

 www.instagram.com/wgtn_STEM

 www.wgtn.ac.nz/science

COURSE PLANNING

For help with course planning, contact
Te Kahupapa—Future Students.

- 📞 0800 04 04 04
- ✉ future-students@vuw.ac.nz
- 🌐 www.wgtn.ac.nz/courses

OTHER STUDENT RESOURCES

Disability support

- 🌐 www.wgtn.ac.nz/disability

Māori student support

- 🌐 www.wgtn.ac.nz/awhina

Pasifika student success

- 🌐 www.wgtn.ac.nz/pasifika

Rainbow student support

- 🌐 www.wgtn.ac.nz/rainbow

Refugee-background student support

- 🌐 www.wgtn.ac.nz/refugee-background-students

Scholarships

- 🌐 www.wgtn.ac.nz/scholarships

Student services and support

- 🌐 www.wgtn.ac.nz/student-support

SCIENCE SUBJECTS

BACHELOR OF SCIENCE

Actuarial Science	Geography
Artificial Intelligence	Geology
Biology	Geophysics (Meteorology)
Biotechnology	Geophysics (Solid Earth)
Cell and Molecular Bioscience	Information Systems
Chemistry	Marine Biology
Computer Graphics and Games	Mathematics
Computer Science	Physical Geography
Data Science	Physics
Development Studies	Psychology
Ecology and Biodiversity	Science Communication
Electronic and Computer Systems	Science in Society
Environmental Science	Space Science
Environmental Studies	Statistics


For more details about Artificial Intelligence, Computer Science, Computer Graphics and Games, or Electronic and Computer Systems majors, see the *Engineering and Computer Sciences* publication. For more details about Information Systems, see the *Bachelor of Commerce* publication.

BACHELOR OF BIOMEDICAL SCIENCE

Human Genetics
Molecular Pathology
Molecular Pharmacology and Medicinal Chemistry

For more details about these majors, see the *Bachelor of Biomedical Science* publication.



 0800 04 04 04

 info@vuw.ac.nz

 www.wgtn.ac.nz/study