



UNIVERSITY OF
AUCKLAND
Waipapa Taumata Rau
NEW ZEALAND

Science

Undergraduate Prospectus 2024

Biological Sciences | Chemical Sciences | Computer Science | Environment
Exercise Sciences | Marine Science | Mathematics | Physics | Psychology | Statistics



No.1
New Zealand
University¹



Gold Rating
Environmental
Impact²



No.1
In New Zealand
for Employability³



Ko Waipapa Taumata
nei, e karanga nei ki t
ki te kai i te mātaura
Nau mau, haere mai,
ki te whare whakairo

We are Waipapa Taumata Rau, we greet, and we call to the multitudes desire to be sustained by knowledge
Welcome, come forth and tether your waka to the carved meeting house, Tāne-nui-a-rangi

a Rau mātou, e mihi
e marea e hiahia ana
nga

herea mai tōu waka
o Tāne-nui-a-rangi

Nau mai, haere mai

Welcome to the Faculty of Science

Carl Sagan once said, "Science is a way of thinking much more than it is a body of knowledge.". Studying science at Waipapa Taumata Rau, University of Auckland will give you both disciplinary knowledge and that "way of thinking". Together these will allow you to pursue a career in your chosen discipline and provide you with the means to understand and address the challenges confronting society – and science – in the 21st century. We have seen science take centre stage over the last 3 years in addressing COVID, but this is only one of many challenges where science can fundamentally help society.

At the Waipapa Taumata Rau, University of Auckland, we cover a comprehensive range of disciplines in the courses we offer. At the Faculty of Science we're excited to offer two undergraduate programmes, and a diverse range of subject areas.

Our three-year Bachelor of Science is a very flexible degree. It offers a great variety of majors and specialisations, as well as many options for double majors and conjoint degrees.

You also have the option to take an undergraduate programme with a research focus. The four-year Bachelor of Advanced Science (Honours) will accelerate your preparation for postgraduate study. It will also equip you with the depth of knowledge and skills expected by today's employers.

Whatever discipline you choose and whatever courses you take, you will discover that science itself is continually evolving. It integrates and embraces topics from cells to society, quarks to computation, and Mātauranga Māori to the scientific method. Our approach is to provide you with the education to understand that evolution and allow you to enter not only today's science-based careers, but those that will come in the future.

At Waipapa Taumata Rau, University of Auckland, you will benefit from studying at New Zealand's world-ranked university*.

Our staff include the largest group of top-ranked, internationally renowned scientists in New Zealand. They will help you to build your knowledge at the cutting edge of science.

Your education will be enhanced through outstanding teaching facilities. These include the award-winning laboratories in our Science Centre on the City Campus as well as purpose-built facilities in Newmarket for Exercise Sciences, The Goldwater Wine Science Centre on Waiheke Island and the purpose-built marine research campus overlooking Goat Island Reserve in Leigh. You will also be able to enjoy all the recreational and cultural opportunities that Auckland Tāmaki Makaurau has to offer.

Congratulations on your decision to study at Waipapa Taumata Rau, University of Auckland. I look forward to welcoming you to New Zealand's largest Faculty of Science.



AHORANGI | PROFESSOR JOHN HOSKING

Manukura Pūtaiao | Dean of Science

Waipapa Taumata Rau | University of Auckland

Cover attributions:

*science.auckland.ac.nz/excellence

¹Times Higher Education and QS World Rankings 2021

²QS World University Rankings 2022. Gold Ranking Environmental Impact 2022

³QS World Rankings Graduate Employability, number one in NZ and 68th Worldwide in 2021



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Why study with us?



WE'RE NUMBER 1 IN NEW ZEALAND FOR
graduate employability*

11

OF THE
UNIVERSITY'S
SCIENCE SUBJECTS

**Ranked 1st in
New Zealand**

Biological Sciences

Chemistry

Computer Science and Information Systems

Earth and Marine Sciences

Environmental Sciences

Geography

Materials Sciences

Mathematics

Physics and Astronomy

Psychology

Statistics and Operational Research



Our undergraduate programmes
are flexible, allowing you to
**follow your interests
and try different courses,**
while keeping your options open

6 Science subjects rank in the
top 100 worldwide

science.auckland.ac.nz/excellence



We're home to the
Science Scholars and
Tuākana in Science
programmes



We have state-of-the-art
facilities, including our
**award-winning undergraduate
Chemistry laboratory**

science.auckland.ac.nz/sciencescholars

auckland.ac.nz/Tuākana-science

*QS World Rankings Graduate Employability, number one in NZ and 68th Worldwide in 2022



Hapori Our community

Waiho i te toipoto, kaua i te toiroa.

Let us keep close together, not far apart.

Nāu te rourou, nāku te rourou, ka ora ai te iwi.

With your food basket and my food basket the people will thrive.

Science is a many-pointed star, and diversity among staff and students helps all of us to shine in the brightest ways possible. We value equity and diversity and proactively work to create more inclusive and socially-just environments where participation and success are available for all, regardless of background.

What can you study?

Students start their study in Science with either the Bachelor of Science (BSc) or the Bachelor of Advanced Science (Honours) (BAdvSci(Hons)). Within both programmes our subjects can be divided into five areas: Biological, Health and Life Sciences; Chemical and Physical Sciences; Geography, Earth and Environmental Sciences; Human, Social and Behavioural Sciences; and Mathematical and Computational Sciences.

As well as acquiring the academic skills and techniques that are part of your chosen subject, you will also encounter new technologies and cutting-edge research methods.

Bachelor of Science

It takes **3** years to complete a BSc



Can take **2** majors



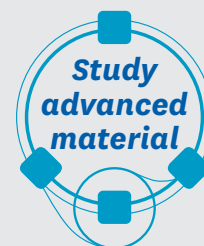
Do a student-led capstone course

Bachelor of Advanced Science (Honours)

It takes **4** years to complete a BAdvSci(Hons)



Do research with an academic mentor



Can progress straight to a PhD

Study a conjoint programme

Transfer between programmes*

*Subject to faculty approval

Glossary

Here are the definitions of some terms you will see and hear as you begin your journey to University:

Capstone course: a student-led project providing you with an opportunity to integrate your previous learning and apply it to a real-world problem in your subject area

Conjoint: a programme in which you study towards two bachelors degrees at the same time

Core course: a course that is integral to your programme, and is therefore compulsory

Major: a subject area that makes up about a third of the courses in your BSc (All majors can be taken as part of a double major, and all are available as part of a conjoint degree.)

Module: a group of three, related skills-based courses that you can choose to include in your programme

Pathway: a group of courses within a major or specialisation that are focused on a particular area of study

Specialisation: a subject area that makes up more than half of the courses in your degree

Science subjects quick reference table

Science subject	Available as a major in the BSc	Available as a specialisation in the BSc	Available as a specialisation in the BAdvSci(Hons)	Available in a conjoint
Biological, Health and Life Sciences (page 12)				
Biological Sciences	✓			✓
Biomedical Science		✓		
Computational Biology			✓	✓
Exercise Sciences	✓			✓
Food Science and Nutrition		✓		
Marine Science	✓		✓	✓
Pharmacology	✓			✓
Physiology	✓			✓
Chemical and Physical Sciences (page 16)				
Applied Physics			✓	✓
Chemistry	✓		✓	✓
Food Science and Nutrition		✓		
Environmental Physics	✓			✓
Green Chemical Science		✓	✓	
Medicinal Chemistry		✓		
Physics	✓		✓	✓
Geography, Earth and Environmental Sciences (page 18)				
Earth Sciences	✓			✓
Environmental Change			✓	✓
Environmental Physics	✓			✓
Environmental Science	✓			✓
Geographic Information Science	✓			✓
Geography	✓			✓
Marine Science	✓		✓	✓
Human, Social and Behavioural Sciences (page 20)				
Anthropological Science	✓			✓
Exercise Sciences	✓			✓
Geography	✓			✓
Psychology	✓		✓	✓
Mathematical and Computational Sciences (page 22)				
Computer Science	✓		✓	✓
Computational Biology			✓	✓
Data Science		✓		
Geographic Information Science	✓			✓
Information and Technology Management	✓			✓
Logic and Computation	✓			✓
Mathematics	✓		✓	✓
Quantitative Economics		✓		
Statistics	✓		✓	✓

“Originally, I came to university planning to go to med school (through a biomed degree), with ambitions of becoming a surgeon. However, the papers I genuinely enjoyed and felt were ‘me’ were BIOSCI 101 and 107. So, by second semester I had switched into a Biological Sciences major.

“I took a Marine Science paper in my third year on a whim and fell in love with its interdisciplinary aspects, compatibility with Biological Sciences and global relevance. So I switched into a secondary major of Marine Science.

“My favourite project was part of BIOSCI 206 where we got to go to Whangārei Heads and choose some biological aspects of the environment on the rocky shores to investigate. We collected, processed, and interpreted data, then wrote up a scientific report relaying our findings. Being fully immersed in the various aspects of experimental design and data collection has only reinforced my love for biology and motivates me to see what lies beyond undergrad.

“The calibre of teaching I’ve encountered is remarkable. Irrespective of the sub-specialisation I’ve taken papers in, lecturers show tireless enthusiasm, passion and dedication to enabling student success.

“My ultimate goal is to become a scientist and an academic. Short-term, this means a Postgraduate Diploma in Science (Marine Science) and then a Master of Science. Based on how these fare, hopefully a PhD follows.”

Mena Welford

**Graduate: Bachelor of Science in
Biological Sciences and Marine Science**



Ngā take akoako – Pūtaiao

Why study science?

The Bachelor of Science (BSc) programme allows you to incorporate different areas of interest and expertise, and its flexible structure means you don't have to make absolute decisions early on.



BSc subjects

Biological, Health and Life Sciences

- Biological Sciences
- Biomedical Science
- Exercise Sciences
- Food Science and Nutrition
- Marine Science
- Pharmacology
- Physiology

Chemical and Physical Sciences

- Chemistry
- Food Science and Nutrition
- Environmental Physics
- Green Chemical Science
- Medicinal Chemistry
- Physics

Geography, Earth and Environmental Sciences

- Earth Sciences
- Environmental Physics
- Environmental Science
- Geographic Information Science
- Geography
- Marine Science

Human, Social and Behavioural Sciences

- Anthropological Science
- Exercise Sciences
- Geography
- Psychology

Mathematical and Computational Sciences

- Computer Science
- Data Science
- Geographic Information Science
- Information and Technology Management
- Logic and Computation
- Mathematics
- Quantitative Economics
- Statistics

Quick facts

Full-time: 3 years
(Part-time study options are available.)

Points: 360
(24 x 15-point courses)

Taught at: City Campus

Subject areas: Choose from the large variety on pages 14–26

Application closing dates:
8 December 2023 (Late applications will be considered if places are available.)

Classes start:
Summer School: 5 January 2024
Semester One: 27 February 2024
Semester Two: 17 July 2024

science.auckland.ac.nz/bsc

In your second year and beyond:

- You will enrol in a range of more advanced courses relating to your main subject, as well as other areas within the Science schedules to add breadth to your knowledge
- You must complete two courses from the General Education schedules

In your final year:

- You will complete a capstone course and complete your major

What you'll be studying

In your first year:

- You should enrol in eight courses in up to three subject areas to discover your strengths and interests
- You will probably take four courses in Semester One and four courses in Semester Two

*A flexible degree
incorporating
different areas
of interest*

Find out more
science.auckland.ac.nz/bsc

**Find out more about our majors,
specialisations and pathways
on pages 14–26.**

Ngā take akoako – Pūtaiao Whatutoto

Why study Advanced Science?

If you have a clear idea about the direction you want to take in science, and you're ready to undertake a four-year programme, then the Bachelor of Advanced Science (Honours) could be for you.

Quick facts

Full-time: 4 years
(Part-time study options available.)

Points: 480
(32 x 15-point courses)

Taught at: City Campus

Subject areas: Choose from the wide variety on pages 14–26

Application closing dates:
8 December 2023 (Late applications will be considered if places are available.)

Classes start:
Summer School: 5 January 2024
Semester One: 27 February 2024
Semester Two: 17 July 2024

science.auckland.ac.nz/badvsci-hons



BAdvSci(Hons)

We designed this programme with budding scientists in mind. You'll emerge from your four-year degree with advanced disciplinary knowledge and research skills relevant to your chosen specialisation. Depending on your grades, you may qualify to enter directly into a PhD programme. If you don't pursue postgraduate studies, you will be well placed to seek employment in your sector of interest.

BAdvSci(Hons)
for students who
want to pursue
postgraduate
research

Find out more

science.auckland.ac.nz/badvsci-hons

What you'll be studying

In your first year:

- You will probably take four courses in Semester One and four courses in Semester Two
- You should include courses relating to your chosen specialisation, as well as a core course and other courses in the Science schedules

In your second year and beyond:

- You will enrol in a range of more advanced courses relating to your chosen specialisation, as well as additional core courses and other courses within the Science schedules to add depth to your knowledge
- You must complete two courses from the General Education schedules

In your final year:

- You will enrol in a range of postgraduate courses related to your specialisation
- You will complete your own research project related to your specialisation, in collaboration with one of our researchers
- Depending on how well you do across your courses, you may be eligible for direct entry into a PhD

BAdvSci(Hons) specialisations

- Applied Physics
- Chemistry
- Computational Biology
- Computer Science
- Environmental Change
- Green Chemical Science
- Marine Science
- Mathematics
- Physics
- Psychology
- Statistics

Find out more about our specialisations on pages 14–26.

Conjoint programmes

Conjoints allow able students to complete another undergraduate programme alongside their BSc or BAdvSci(Hons) in a reduced time frame. If you have broad interests and you don't want to limit your studies to one degree, a conjoint could be for you.

Conjoints strengthen your employability. A Science conjoint gives you an advantage in the professional world because you'll be able to work with scientists and apply the principles of science to your role. Conjoint students must complete both programmes before they're able to graduate.

Both the Bachelor of Science and the Bachelor of Advanced Science (Honours) are available in conjoint programmes.

You can combine either of them with programmes offered by other faculties:

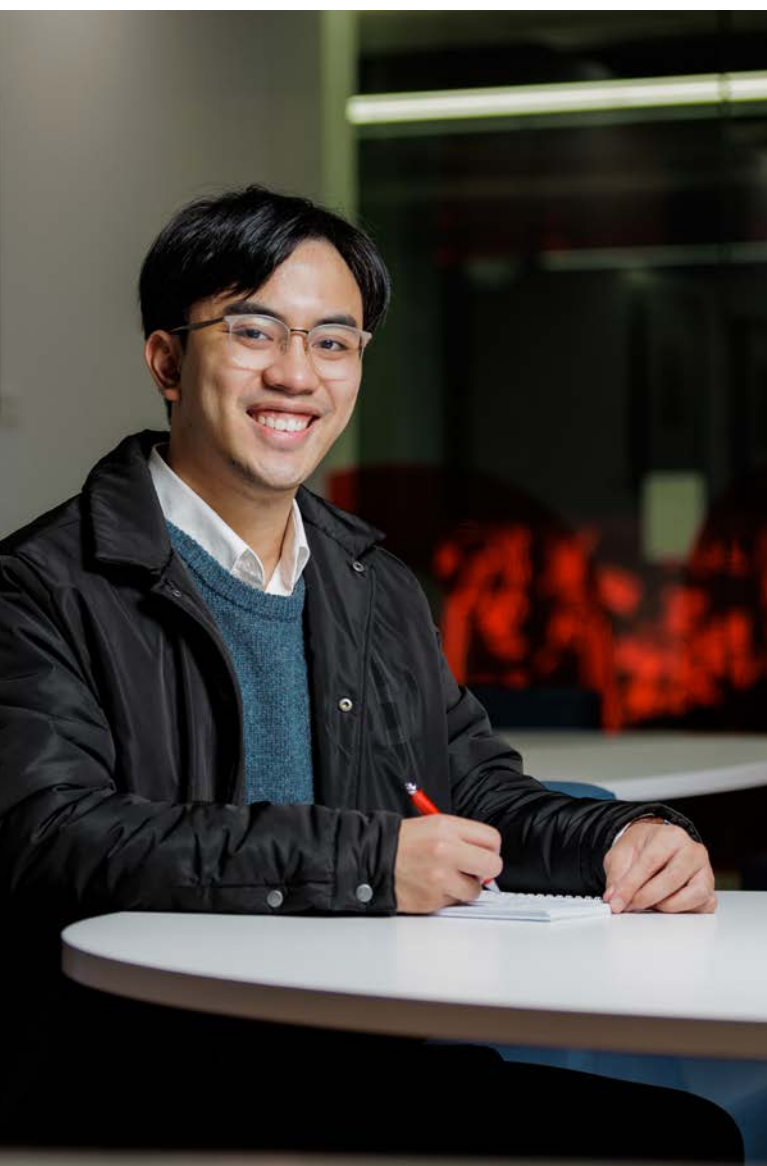
- Arts: BA/BSc or BA/BAdvSci(Hons)
- Commerce: BCom/BSc or BAdvSci(Hons)/BCom
- Communication BC/BSc
- Design: BDes/BSc or BAdvSci(Hons)/BDes
- Engineering: BE(Hons)/BSc or BAdvSci(Hons)/BE(Hons)
- Fine Arts: BFA/BSc or BAdvSci(Hons)/BFA
- Global Studies: BGlobalSt/BSc or BAdvSci(Hons)/BGlobalSt
- Health Sciences: BHSc/BSc or BAdvSci(Hons)/BHSc
- Law: BSc/LLB, BSc/LLB(Hons), BAdvSci(Hons)/LLB or BAdvSci(Hons)/LLB(Hons)
- Music: BMus/BSc or BAdvSci(Hons)/BMus
- Nursing: BNurs/BSc or BAdvSci(Hons)/BNurs
- Property: BProp/BSc or BAdvSci(Hons)/BProp

With the exception of Engineering, Law and BAdvSci(Hons) conjoints, these programmes can be completed in four years, although many students take an extra semester to complete the requirements.

Not all Science subject areas are available in a conjoint programme – read more on pages 14–26.

It is important to note any special conditions that may apply. Check *The University of Auckland Calendar*.

auckland.ac.nz/conjoints-by-faculty



"I decided to pursue a Bachelor of Science majoring in Statistics alongside my Commerce degree in order to augment my business knowledge with the skills required to deliver strong data-driven solutions. Statistics is a rapidly growing field that is widely applicable across many different career paths. As the amount of data and information produced rises year by year, the need for experts who can transform these into value and insights will continue to grow."

"Within my programme, I greatly appreciated the fantastic lecturers and staff within the Statistics department. There were plenty of places to ask for answers to any questions that I had during my studies – like chats with lecturers, or the Statistics help room. This always made me feel supported in my learning."

"My advice is to make the most of your time in university, as there are many great opportunities and experiences available for you. Don't forget to make mistakes and to learn from them. And be sure to spend plenty of time with your friends and family!"

Miguel Antonio

Graduate: Bachelor of Science and Bachelor of Commerce
Conjoint (majoring in Statistics, Economics and Finance)

Science subjects

For all information and conditions, please refer to *The University of Auckland Calendar*.

Biological Sciences

Biology is the science of the 21st century. Think about everything you see or read – about epidemics, cancer, climate change, about new species in old lands, old cures for new diseases, about how we rely on the bacteria that live on and in us, and the possibility of life on other worlds. To understand all this, you need to understand how life works, and biology is the study of life.

At Te Kura Mātauranga Koiora, the School of Biological Sciences, we teach and conduct research across all scales of the living world, from molecules to ecosystems. Modern biology is also interdisciplinary, and embraces other STEM disciplines, including chemistry, mathematics, statistics and computer science. For this reason, you will receive a world-class education at the School of Biological Sciences, and you will also have the opportunity to pursue your own research in areas that you are passionate about, beyond the traditional boundaries of classical biology.

As a Biological Sciences student, you'll take common core courses in each year of study. Beyond these compulsory courses you can choose to keep it general, or else follow one or more pathways in specialist fields of biology that deliver a series of focused and complementary courses:

- **Biochemistry and Cell Biology:** Explore the structure and function of life's molecules and the complex interactions they make within cells to drive all of life on Earth.
- **Biotechnology:** Understand the commercial development of new knowledge and discovery in the biosciences
- **Ecology:** Learn about the factors that control the distribution, diversity and abundance of terrestrial organisms. Explore conservation management in a social and cultural context, while you gain key ecological field, lab and statistical skills.
- **Evolution:** Study the origins and diversification of life over billions of years. You will learn the data and methods we use to study the evolution of everything from viruses to humans, DNA to dinosaurs, mass radiations to mass extinctions, population genetics to phylogenomics, and the origin of new genes to the origin of major adaptations like limbs, flight, sex, immune systems, and language.
- **Genetics:** Understand the molecular basis of heredity and the role of genes in disease.
- **Marine Biology:** The ocean covers 70% of our planet and hosts a vast array of biodiversity from the coasts to the darkest depths. You will gain an understanding of the complex ecosystems, diversity, physiology and evolution of ocean life through field work and lab practicals. With the ocean under considerable pressure, you will learn about resilience in ocean ecosystems in applied and conservation contexts.
- **Microbiology:** You'll learn how knowledge of our 'invisible' microbial world has been explored. You will use diverse molecular, microscopy- and culture-based methods. This pathway will leave you in no doubt of the importance of understanding microbial life. This knowledge can help maintain global human and environmental health while capitalising on extraordinary biotechnological opportunities offered by our microbial planet.
- **Plant Biology:** View plants from a molecular, cellular, physiological and biotechnological perspective
- **Zoology:** Explore the animal world, learning about the evolution of anatomy, physiology and behaviour in both the laboratory and in the field.

As part of your degree you can take the Biological Sciences capstone course, BIOSCI 399 Biology: The Science of the 21st Century, which will allow you to debate contemporary issues in biology, and explore how these issues are interpreted from a cultural, political and economic perspective.

Complementary majors include Anthropological Science, Chemistry, Computer Science, Earth Sciences, Environmental Science, Exercise Sciences, Geography, Psychology and Statistics.

- ✓ BSc major
- ✓ Available in a conjoint



Biomedical Science

If you have a passion for understanding the scientific basis of health and disease in humans and animals, then Biomedical Science could be the specialisation for you.

This challenging and immensely rewarding specialisation will deliver rigorous scientific training in a range of disciplines, offering unique insights into important and rapidly developing areas of modern research.

The specialisation is highly prescriptive, and is one of only two University of Auckland pathways through which you can be selected for Medicine (MBChB) at the end of your first year of study. The first year of the Biomedical Science specialisation includes compulsory courses that all students must take. However, as you progress through your second and third years, you can choose to keep it general or opt for one of the following pathways to focus your studies:

- **Anatomical Imaging Science:** Learn how detailed anatomy can be made accessible for teaching, medical imaging, surgical planning and biomedical applications. You'll study the foundations of anatomical dissection, various approaches to medical imaging, and image analysis.
- **Cancer Biology and Therapeutics:** Gain an in-depth understanding of the molecular and genetic basis of cancers; study therapeutic strategies for treating the disease and learn about the pharmacological principles of drug discovery.
- **Cardiovascular Biology:** Gain an in-depth understanding of the structure, function and regulation of the cardiovascular system in order to investigate the origins of various diseases that are prevalent in our community.
- **Cellular and Molecular Biomedicine:** Explore the foundations for our current understanding of many diseases, which allows the design and development of effective diagnosis and treatment.
- **Genetics:** Genetics holds tremendous promise for understanding, diagnosing and treating disease. This pathway will give you the foundations for understanding how our genes underlie health and wellbeing.
- **Infection and Immunity:** Explore the complex interplay between microbes and their hosts and learn the essential principles of infectious disease, vaccination and immunological disorders.
- **Neuroscience:** Understand the brain and related structures in health and disease is the final frontier. You'll study the developmental origins of the nervous system, its structure and function, neurological diseases and cutting-edge approaches to improve outcomes from the treatment of brain disease.



- **Nutrition and Metabolism:** Nutrition is a key determinant of health. This pathway will give you the foundations for understanding the role of nutrients in metabolic regulation and the influence of the genome on nutrition.
- **Reproduction and Development:** Reproduction is key to life. In this pathway you'll discover that humans are not as good at reproduction as you may think, and you'll study the amazing technologies that have been developed to enhance reproductive success.

As part of your specialisation you can do the Biomedical Science capstone course. This will allow you to debate contemporary issues and use your scientific reasoning to challenge misunderstandings and misrepresentation in biomedical research – all while you hone your skills as a scientific communicator.

✓ BSc specialisation

Computational Biology

Computational Biology equips biologists and life scientists for research that now routinely requires computation and complex data analysis.

As a Computational Biology student you'll be able to choose from a range of complementary courses in Biological Sciences, Chemistry, Computer Science, Mathematics and Statistics. In your fourth year, you'll complete independent research under the guidance of an academic mentor. This research will give you the opportunity to integrate and apply your knowledge and skills while thinking critically about what you've learnt.

This specialisation will offer you fundamental knowledge across Biology, Computer Science and Statistics. You will develop Computational Biology, Genomics and Bioinformatics skills that are required by employers in academia and industry, where analysis of life science data is increasingly important.

- ✓ BAdvSci(Hons) Specialisation
- ✓ Available in a conjoint



Exercise Sciences

In Exercise Sciences you'll study the physiological, psychological, biomechanical and neural influences on human performance in exercise, sport and the workplace. The programme focuses on both health and disease. This practical and diverse major will offer you the skills you need to work with people in movement science, health, wellness, rehabilitation and sport science.

Laboratory work plays an important role in the Exercise Sciences major and is based around the analysis and evaluation of data collected from people engaged in physical activity. The Department of Exercise Sciences has research facilities to support studies. These include the Exercise Physiology, Biomechanics and Movement Neuroscience Laboratories, and the Health and Rehabilitation Clinic. As part of your major you can do the Exercise Sciences capstone course, EXERSCI 399 Applying Exercise Science, where you will use your theoretical knowledge and practical skills in a supervised research project.

Complementary majors include Biological Sciences, Chemistry, Computer Science, Physics, Physiology, Psychology and Statistics.

- ✓ BSc major
- ✓ Available in a conjoint

Food Science and Nutrition

See Chemical and Physical Sciences, page 18.

Marine Science

See Geography, Earth and Environmental Sciences, page 21.

Pharmacology

Pharmacology is the study of chemicals that are biologically active and can be used to modify, cure or prevent illness. In practice, this requires a detailed understanding of both how the body functions and the problems that can occur. By identifying cellular and chemical abnormalities of the disease state, it's possible to design molecules to fix them.

As a Pharmacology student you'll study how drugs work at the molecular level in living organisms. You'll also explore factors that influence safe and effective drug use in various populations. You'll take courses that focus on the interaction of drugs with target molecules, the biochemical processes involved in achieving clinically relevant drug concentrations, and the ways in which diseases can be treated in a variety of organ systems.

As part of your Pharmacology major you can do a capstone course, PHARMCOL 399, where you work both individually and in small groups to apply the knowledge you've gained and demonstrate mastery of fundamental methods in Pharmacology. You'll investigate the processes of drug development within the ethical and legal framework for using experimental animals and human subjects in New Zealand.

Complementary majors include Biological Sciences, Chemistry, Physics, Physiology, Psychology and Statistics.

- ✓ BSc major
- ✓ Available in a conjoint

Physiology

Physiology is the study of how living organisms function, from the cellular to the whole-body level. Understanding how organisms work helps us to understand what goes wrong in disease, and provides a scientific basis for its treatment. Physiology is highly quantitative and has close links with biochemistry, molecular biology, mathematical modelling and pharmacology, as well as zoology and neuroscience.

We offer world-class, research-inspired teaching. We connect fundamental biology with biomedical and bioengineering fields in many topics, including endocrinology and cardiovascular, respiratory, renal, vision, hearing, neurological, fetal, neonatal, cellular and molecular science.

As a Physiology student, you'll take courses in Biological Sciences, Chemistry, Medical Science, Physics and Statistics to give you a solid quantitative grounding and to encourage critical thinking, science innovation and translation.

As part of your Physiology major you can do a capstone course, PHYSIOL 399, where you'll demonstrate your knowledge and skills through the design of a scientific research project. You'll explore the role of science and scientists in society, ethics, science communication, and commitment to Māori and Pacific health advancement.

You'll graduate with expertise and knowledge that will allow you to take up diverse opportunities in research, clinical medicine or industry.

Complementary majors include Biological Sciences, Chemistry, Exercise Sciences, Mathematics, Pharmacology, Physics, Psychology and Statistics.

- ✓ BSc major
- ✓ Available in a conjoint



"I decided to pursue an undergraduate degree in Science, as this has always been my passion. Throughout school it was the subject I enjoyed the most. Choosing my major was hard but I have always had an interest in psychology and wanted this to be the main focus of my degree."

"I found that I loved to learn about why people do the things they do and how we can use this knowledge to understand people's everyday behaviours. In the future, I would love to go into the health side of psychology, by becoming a clinical psychologist or psychiatrist."

"I've really enjoyed some of my assignments and projects. In PSYCH 108 we were required to write an essay about an activity or environment that allows us to flourish as an individual. It allowed me to write about a subject I was passionate about. I really enjoyed this assignment and put a lot of time and effort into it, so I received a high grade for it. I also love the selection of PSYCH papers you are able to choose from in stage 2 and 3 of the course."

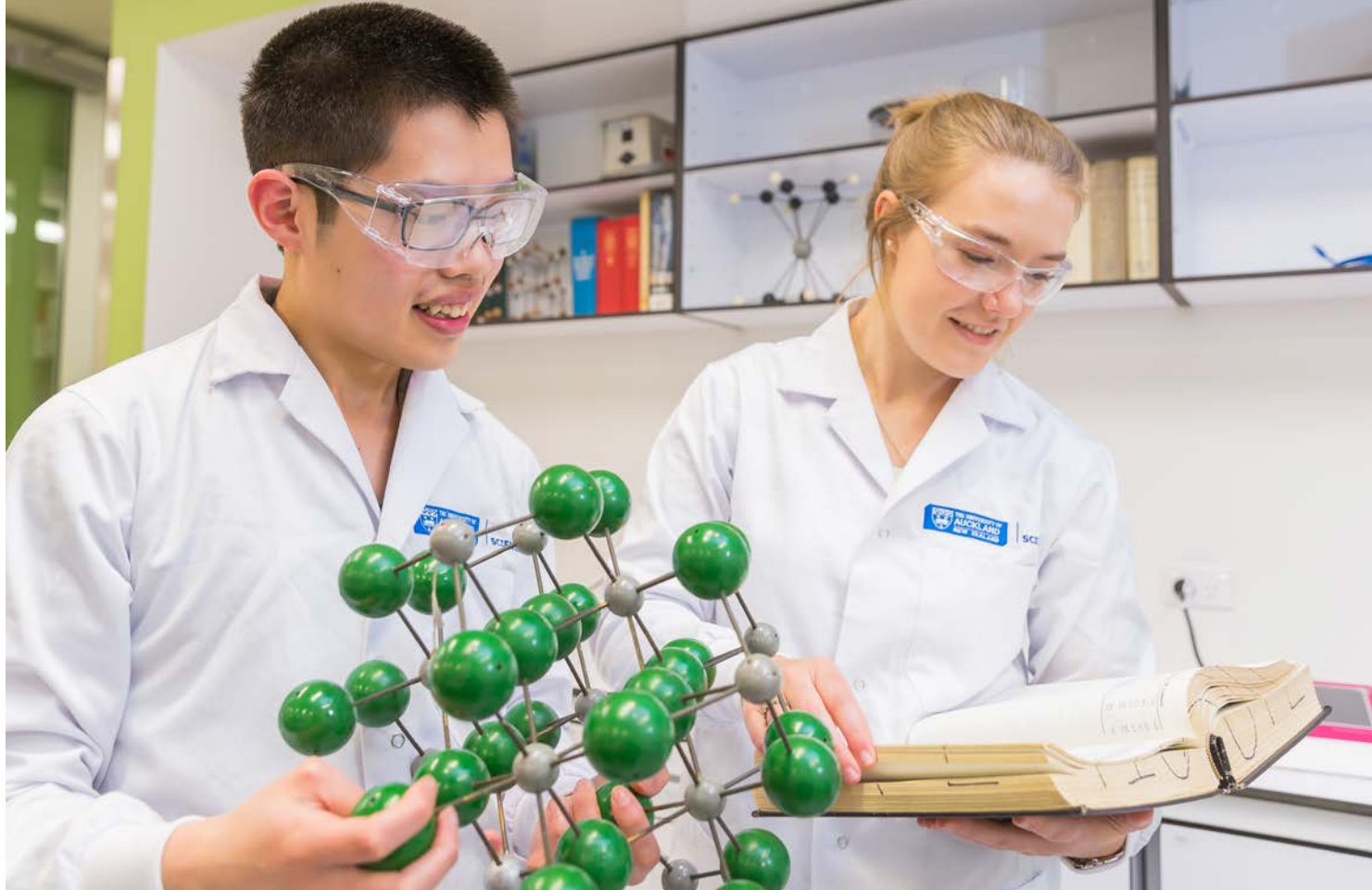
"I am of NZ European and Tongan descent, so last semester I had the opportunity to be a part of an amazing programme called Leadership Through Learning. It's a leadership development programme for Māori and Pacific students across all disciplines at the University."

"The programme allowed me to meet some amazing people, as well as teaching me many leadership skills. It also taught me about the cultures that make up the indigenous community at the University, which I now feel part of."

"The amazing coordinators and tutors in this programme become your whānau at the University, creating a space that brings a sense of belonging and aroha. I would highly recommend it to anyone who has the opportunity to be a part of it."

Jessie Houston

Student: Bachelor of Science majoring in Psychology



Applied Physics

Applied Physics is designed for students with a strong interest in the application of physical theories to solve problems and a desire to undertake research.

Students can choose from four sub-disciplines: Medical Physics and Imaging Technology, Nano and Materials Physics, Photonics, and Space Systems. Alternatively, they could select their own combination of a diverse range of courses.

The programme has a strong applied focus with a 45-point fourth-year research project, typically to be carried out in collaboration with a local-industry or medical partner. The many strong relationships our researchers have already established with NZ high-tech companies will allow students to choose from a wide range of potential industry projects.

The degree is designed to position graduates to enter New Zealand's high-tech industries. It also allows them to proceed to graduate study.

- ✓ *BAdvSci(Hons) Specialisation*
- ✓ *Available in a conjoint*

Chemistry

Chemistry is the science of atoms and molecules. It deals with molecular structure and synthesis, chemical reactions and theoretical models that explain molecular behaviour. Chemistry is a central science – it aims to understand the structure and properties of

the world around us. It underpins fields as diverse as biology, geology, environmental science, medicine and engineering. The practice of Chemistry leads to new substances and better processing reactions. It also enhances our understanding of materials, biological processing and the environment. All core courses have a hands-on laboratory component, and your Chemistry studies will develop your ability to think logically, analyse complex systems, communicate clearly, and be creative, numerate and computer literate.

If you study Chemistry as a BSc major, you can do CHEM 399, the Chemistry capstone course, where you will work individually and in small groups to showcase the skills you've gained throughout your major, delivering your findings in both written and oral form.

Complementary BSc majors include Anthropological Science, Biological Sciences, Earth Sciences, Environmental Science, Geography, Mathematics and Statistics.

The BAdvSci(Hons) specialisation focuses on chemistry as a multi-disciplinary science. It includes an introduction to recent research, interdisciplinary aspects of chemical science research and pathways to commercial applications of chemistry through research. The BAdvSci(Hons) in Chemistry will teach you about the interplay of chemistry with other scientific disciplines and also with the commercial world, both of which are increasingly relevant in today's society.

For BAdvSci(Hons) students there are compulsory core courses, but you can explore additional areas of your choice once you're in your third year. In the final year of your degree,

you'll also complete two advanced courses, which will prepare you to engage in research. This experience with research will provide you with a strong foundation for postgraduate study in Chemistry.

- ✓ *BSc major or BAdvSci(Hons) Specialisation*
- ✓ *Available in a conjoint*

Food Science and Nutrition

This challenging and prescriptive specialisation offers two distinct pathways.

If you pursue the **Food Science pathway** you'll study all aspects of manufacturing, processing and production in food-related industries, including nutrigenomics, emerging technologies, food safety and product development.

If you pursue the **Nutrition pathway** you'll study human nutrition, the maintenance of good health and the wellbeing of populations. These topics require you to consider the environmental, social, economic and cultural aspects of eating behaviour and how they impact health.

As part of your Food Science and Nutrition specialisation you can do FOODSCI 399, the Food Science and Nutrition capstone course, where you will work with other students to identify and develop a new food product or system in response to a nutritional issue.

- ✓ *BSc specialisation*

Environmental Physics

Environmental Physics is the study of the Earth and environment, using physics and mathematics. It spans from the deep interior of the Earth to its surface, oceans and atmosphere. Environmental Physics aims to explain the physical phenomena we observe today in order to discover their past history and model their future behaviour.

As an Environmental Physics student you'll learn how to apply your knowledge of mathematics and physics to the study of global processes. You'll explore plate tectonics, natural hazards, natural resources, the oceans, atmosphere and climate.

As part of your major you can do the Environmental Physics capstone course, ENVPHYS 399, where you'll investigate and report on key geophysical phenomena, using experimental, observational, computational and numerical processes.

Complementary majors include Computer Science, Earth Sciences, Environmental Science, Geography, Mathematics, Physics and Statistics.

- ✓ *BSc major*
- ✓ *Available in a conjoint*

Green Chemical Science

Green Chemical Science involves the use of chemical principles, science and technology to advance society in ways that are sustainable and safe for the environment – and to tackle global issues that impact on sustainability. The approaches include interdisciplinary studies in catalysis, synthesis, toxicology, analytical methodology, materials science, and biochemistry.

As a Green Chemical Science student you'll have an interdisciplinary and highly practical learning experience. You'll study topics such as pollution elimination, clean water production, production of materials from renewable feedstocks, mitigation of global warming, and the development of renewable energy technologies.

If you choose to study Green Chemical Science as a BSc specialisation, you can do CHEM 399, where you will work individually and in small groups to showcase the knowledge you have learned throughout your specialisation.

If you study Green Chemical Science as a BAdvSci(Hons) specialisation, you will acquire advanced disciplinary knowledge and research skills that will prepare you to engage in research in the fourth and final year of your degree.

There's an increasing number of science jobs available in the sustainability arena. Studying Green Chemical Science will equip you with

the necessary skills and knowledge to take advantage of these career opportunities, and to contribute to society in a meaningful and informed way.

- ✓ *BSc specialisation or BAdvSci(Hons) Specialisation*

Medicinal Chemistry

Medicinal Chemistry encompasses the design, biochemical effects, regulatory and ethical aspects of drugs for the treatment of disease. It's one of the most rapidly developing areas of chemistry, both globally and locally.

As a Medicinal Chemistry student you'll gain a strong foundation in biological and chemical techniques that are relevant to the pharmaceutical world. You'll also have the chance to learn about the synthesis, reactivity and analysis of organic compounds, and you'll gain valuable insight into the pharmacological, regulatory and ethical aspects of these bioactive compounds.

As part of your Medicinal Chemistry specialisation you can do CHEM 399, where you will work individually and in small groups to showcase your knowledge of modern drug-discovery and development that you have learned throughout your specialisation.

- ✓ *BSc specialisation*

Physics

Physics is a fundamental and versatile science. By understanding the principles of physics and the laws of nature, it is possible to gain a deep insight into the world around you, especially as a lot of modern science and technology is underpinned by Physics. A degree in Physics will give you an understanding of the nature of matter as well as training in experimental

methods and the mathematical analysis of physical processes.

As a Physics student you'll find out how to undertake rigorous investigations into matter, the concepts of energy and force, and the laws of nature. You'll have the chance to apply your learning to areas such as acoustics, astronomy, electronics (including medical imaging and devices, fibre optics and telecommunications), lasers, meteorology, nuclear physics and quantum physics.

If you study Physics as a BSc major you can choose to keep it general, or follow one of two Physics pathways (Photonics or Medical Physics and Imaging Technology), in order to focus your studies further.

- **Photonics:** is the science and technology of light. Students on this pathway will gain specialist training in photonic and electronic engineering, advanced physics and mathematical electronics.
- **Medical Physics and Imaging Technology:** is the science of biomedical optics, biophotonics and medical physics. Students on this pathway will gain specialist training in the use of optical and laser technologies for biomedical studies, with applications in sensing, medicine and modelling.

As part of your BSc major you can do a Physics capstone course, PHYSICS 399, where you'll employ core methodologies (experimental, observational, computational and numerical) to investigate some aspect of a key physical phenomenon. You'll relate your findings to contemporary research in the field, and also consider wider societal aspects and issues.

If you study Physics as a BAdvSci(Hons) specialisation, you'll take core courses in Physics, Mathematics and Computer Science to sharpen your disciplinary focus. In your fourth year, you'll complete an independent research project and dissertation.

- ✓ *BSc major or BAdvSci(Hons) Specialisation*
- ✓ *Available in a conjoint*





Earth Sciences

The Earth Sciences major explores the processes that have shaped Earth, from its deepest interior to its surface, and into neighbouring space. It investigates the complexity and interactions of Earth's systems. It addresses the impact of natural processes on society, and vice versa.

As part of your Earth Sciences major you can do the Earth Sciences capstone course, EARTHSCI 399, where you will carry out research or practice in Earth Sciences using the skills and knowledge you've gained throughout your studies.

Complementary majors include Anthropological Science, Biological Sciences, Chemistry, Environmental Science, Physics and Statistics.

- ✓ BSc major
- ✓ Available in a conjoint

Environmental Change

Our environment is in constant flux. Environmental change has both natural and human causes. As the Anthropocene progresses, human influence on the environment will increase, but it will be layered over natural environmental variability.

The BAdvSci(Hons) in Environmental Change is ideal for students who are interested in gaining a deep understanding of the science of contemporary environmental change research – research that is multi-disciplinary, collaborative and holistic.

As an Environmental Change student you'll have flexibility in your choice of courses, but climate change will be a central theme. You'll have opportunities to learn how the past is dated and reconstructed, how to project future environmental change, and the implications of change on societies.

In your fourth year, you'll apply your advanced knowledge and skills as you undertake independent research and a dissertation. This could be the gateway to doctoral research, or to employment as a skilled practitioner whose holistic perspective has prepared them to tackle the challenges of a rapidly changing modern world.

- ✓ BAdvSci(Hons) Specialisation
- ✓ Available in a conjoint

Environmental Science

Environmental Science aims to understand the environment, using input from a wide variety of science disciplines. These include biology, chemistry, geography, earth sciences, physics and engineering, in conjunction with social sciences like economics and human geography.

Environmental Science focuses on the environmental effects of human activity and is dedicated to protecting and restoring natural heritage, minimising human impact and reversing environmental degradation.

In your Environmental Science major you will study a range of topics, including conservation project management; policy and planning for sustainable development; computer modelling of environmental problems; and human interactions with environmental systems and processes. As part of your major you can do the Environmental Science capstone course, ENVSCI 399, where you will undertake an independent research project.

Complementary subjects include Biological Sciences, Chemistry, Earth Sciences, Geography, Mathematics, Physics and Statistics.

- ✓ BSc major
- ✓ Available in a conjoint

Geographic Information Science

If you've ever dropped a pin into Google maps, or found the shortest route using the public transport network, then you've engaged with Geographic Information Science (GIScience). This major is the study of the data structures and techniques used to capture, process and visualise geographic information.

It is estimated that 80 percent of data collected has some spatial component, whether it's a city name, a street address or even a precise set of co-ordinates. We'll teach you how to use data collected by satellites and drones, government-sourced data, and social media platforms to examine a wide range of social and natural processes.

As a Geographic Information Science student, you'll use a range of methods to answer questions like, "What is the relationship between urban inequality and disease?" and "What are the effects of sea level rise on coastal areas?" You'll also have the chance to use modelling techniques to analyse data intensive contexts, such as the flow of resources across a public transportation system.

As part of your major you can do the GIScience capstone course, GISCI 399, where you'll design and carry out an independent research project under the guidance of an academic mentor.

Complementary majors include Computer Science, Data Science, Earth Science, Environmental Science, Geography, Marine Science and Statistics.

- ✓ BSc major
- ✓ Available in a conjoint

Geography

Geographers ask questions about society and the environment. They study the natural processes of the physical environment, as well as human activities and their consequences. Some geographers specialise in coastal, glacial or fluvial processes and landforms, climatology, biogeography, hydrology or environmental change. Others study regional economics, population change, the problems of rural or urban areas, and the experience of particular groups in society.

As a Geography student you'll study weather, wave, tide and river monitoring and analysis; demographic and economic analysis; the interpretation of physical and cultural landscapes; mapping, cartography and geo-visualisation; analysis of soils and sediments; and many more topics. Fieldwork is an important part of studying Geography.

As part of your major you can do the Geography capstone course, GEOG 399, where you'll undertake an independent, field-based research project and communicate your findings.

Complementary majors include Biological Sciences, Chemistry, Computer Science, Earth Sciences, Environmental Science, Psychology and Statistics.

- ✓ BSc major
- ✓ Available in a conjoint

Environmental Physics

See Chemical and Physical Sciences, page 19.

Marine Science

New Zealand occupies a strategic position in the Southwest Pacific Ocean. One challenge we face as a country is the ongoing development and sustainable management of this vast marine realm. Understanding and managing the oceans requires a multi-disciplinary approach. Scientists need core skills in one or more disciplines and the ability to research collaboratively. Marine Science is available in the BSc and the BAdvSci(Hons).

If you study Marine Science as a BSc major, you'll take a variety of courses from Biological Sciences, Earth Sciences, Environmental Science, Geography and Statistics. In your final year you can do a capstone course, MARINE 399, where you'll demonstrate your learning by working on a student-led project.

Complementary BSc majors include Biological Sciences, Chemistry, Earth Sciences, Environmental Science, Geography, Mathematics and Statistics.

If you study Marine Science as a BAdvSci(Hons) specialisation, you'll take a range of core and advanced courses to explore current scientific and management issues. In-depth case studies will demonstrate the multi-disciplinary nature of the work required to solve significant marine science problems. You'll also take courses to develop quantitative skills in data exploration, modelling and statistics, as well as advanced practical research skills courses. In your fourth year you'll complete an independent research project. This will prepare you to continue on to doctoral study if you attain the required grades. Alternatively you could enter the workforce.

- ✓ BSc major or BAdvSci(Hons) Specialisation
- ✓ Available in a conjoint



Anthropological Science

Anthropological Science bridges the natural sciences, human sciences and humanities, allowing you to develop a deep awareness of cultural and biological diversity. This major offers you the chance to hone scientific skills and understand new technologies that will support research in bio-anthropology and archaeology.

As part of your major you can do the Anthropological Science capstone course, ANTHRO 399, which will encourage you to make connections between your academic learning and the professional world. You'll conduct individual and group-based research with significance to a range of stakeholders, including Heritage New Zealand, Auckland Council, Auckland Museum, and iwi and hapū.

Complementary majors include Biological Sciences, Chemistry, Earth Sciences, Environmental Science, Geography, Psychology and Statistics.

- ✓ BSc major
- ✓ Available in a conjoint

Exercise Sciences

See *Biological, Health and Life Sciences*, page 16.



Geography

See *Geography, Earth and Environmental Sciences*, page 21.

Psychology

Psychology is the scientific study of how people behave, learn, think, feel and respond. It investigates important questions such as what motivates human beings, how do their priorities change over the course of their lives, what constitutes wellbeing, and how can people learn to live better together.

As a Psychology student you'll study a variety of approaches to the discipline, ranging from the quantitative to the qualitative and personalised, and from theoretical to practical. Practical work in the laboratory or field is an essential part of this subject. Psychology is available in the BSc and the BAdvSci(Hons).

If you study Psychology as a BSc major, you can do a capstone course in your final year, PSYCH 399 Communicating Psychology. You'll work independently and in small groups to communicate psychological ideas and research, using a range of media, including grant proposals, podcasts and print.

Complementary BSc majors include Anthropological Science, Biological Sciences, Chemistry, Computer Science, Exercise Sciences, Pharmacology, Physics, Physiology and Statistics.

If you study Psychology as a BAdvSci(Hons) specialisation, you'll take courses from a range of disciplines, including social and applied psychology, behavioural psychology, clinical psychology, cognitive neuroscience and cultural psychology. In your second year you'll have the chance to specialise further as you take advanced courses that will prepare you for research at postgraduate level. In your fourth year you'll complete a practical research project under the direction of an academic supervisor, which will prepare you for entry into doctoral study if you attain the required grades. Alternatively you could enter the workforce.

- ✓ BSc major or BAdvSci(Hons) Specialisation
- ✓ Available in a conjoint





“I completed a BSc in Physics and Geophysics in 2021, and went on to study Physics with Honours. I felt like studying physics was a way to quantitatively understand the world around me. It also was one of the few majors that could eventually lead to studying astrophysics topics.

“Environmental Physics attracted me because I was interested in the environmental impact of human activity and how the geology of the surface of earth tells us a story about its past. Additionally, New Zealand is a geologically young and active country, so I hoped I would get to go on a lot of field trips and see a lot of these natural phenomena in person.

“Physics provided me with a solid foundation for learning about the earth, atmosphere, and oceans. I also like that the broad nature of what I study doesn’t restrict me to one industry or job – I feel like I have gained a lot of transferable skills during my study (which aren’t industry specific).

“Coming to university was definitely a big change for me after working full time for six years in the Royal New Zealand Airforce. Ultimately, I think I gained a lot more than Physics knowledge from my time here – I learned a lot about myself, my weaknesses, my strengths, and even my academic interests (which I thought I already knew when I started). I felt that if I reached out to my lecturers with a genuine issue, that they would help me and they would understand. This really took a lot of the stress out for me over the last couple of (unpredictable) years.”

Mahima Seth

Graduate: BSc in Physics and Env. Physics, and BSc (Hons) in Physics in Environmental Physics



Computer Science

Computing technology permeates our lives, and with that comes the demand for specialists to imagine, develop and maintain that technology. Computers are indispensable in fields such as education, medicine, commerce and engineering – as well as leisure. We can't imagine what we would do without them, and the innovations just keep on coming. Computer Science is growing in complexity as technology itself becomes more complex, and as computers (and computational processes) become an intrinsic component in a growing number of academic and professional spheres.

If you take Computer Science as a BSc major, you can study topics such as artificial intelligence, cyber security, data science, networks and the internet, software engineering, algorithms, complexity theory, computer vision, graphics, human-computer interaction, logic, programming languages and robotics.

As part of your BSc major you can do COMPSCI 399, the Computer Science capstone course, where you'll work in small teams on a substantial project from conception through to production. This major will allow you to develop logical thinking, problem solving, abstract thought and analysis – all skills that are highly valued by employers.

Complementary BSc majors include Information and Technology Management, Mathematics, Physics, Psychology and Statistics.

The BAdvSci(Hons) Computer Science specialisation is designed to accommodate the growing need for both deeper and broader understanding of computers. It will appeal to you if you're interested in building knowledge or capacity, or if you're keen to work in interdisciplinary areas. The specialisation has a particular focus on innovation and developing new knowledge through research activities, leading to advanced knowledge in the discipline. You'll have a broad introduction to recent research in computer science, which will prepare you to undertake your own postgraduate study.

If you study Computer Science as a BAdvSci(Hons) specialisation, you'll take six compulsory courses that cover the core areas of software development, computer systems and theory of computing. As you move into your second and third year you'll explore one of these areas in more depth, and you'll take two advanced research courses that will prepare you to complete a research component in your final year.

- ✓ BSc major or BAdvSci(Hons) Specialisation
- ✓ Available in a conjoint



Data Science

Data Science is a rapidly growing field with an unmet demand for suitably qualified graduates. Big data is everywhere, but to extract information we require the ability to manage – and analyse – the data.

A Data Science specialisation will provide initial preparation for students wishing to pursue a career in this area. It brings together courses from Computer Science, Statistics and Mathematics to provide a strong, coherent background in the field.

You'll learn how to process data and manage databases; bring together data from disparate sources; extract information and value from data; conduct statistical and predictive modelling; and develop effective critical analysis, communication and reflective skills. As part of your specialisation you can do the Data Science capstone course, DATASCI 399 Creating Value from Data, where you'll work on a group-based project to showcase the skills you've gained.

✓ *BSc specialisation*

Computational Biology

See *Biological, Health and Life Sciences*, page 15.

Geographic Information Science

See *Geography, Earth and Environmental Sciences*, page 20.

Information and Technology Management

Information and Technology Management is a business-focused major that will appeal to you if you're interested in combining computing skills with current business practice.

You'll study the applications of technology and information management in the commercial sector, focusing on the analysis and design of information systems for business. As an Information and Technology Management student you'll take courses that allow you to understand information management from systems, data-handling and process perspectives. As part of your major you'll complete a capstone course where you'll work in a small group to analyse a problem, devise a solution, produce a system and present your work.

Complementary majors include Computer Science, Mathematics and Statistics.

- ✓ *BSc major*
- ✓ *Available in a conjoint*

Logic and Computation

Do you have a flexible mind capable of creative, speculative thought, precise calculation and practical problem solving? If you're interested in computer science, linguistics and philosophy, Logic and Computation could be the ideal choice for you. This major focuses on the development of computer languages, and it has strong applications in the areas of artificial intelligence, speech recognition, and associated software development.

As a Logic and Computation student you'll have the chance to gain sound practical knowledge of programming and logical analysis, and to develop the conceptual, analytical and communication skills needed for a deeper theoretical understanding of the discipline. You'll also study the philosophical and linguistic issues at the root of the science of computation. As part of your major you can do LOGICOMP 399, the Logic and Computation capstone course.

You can apply your learning in an individual or small-group research project, based around the role of logic and computation in modern society.

Complementary majors include Computer Science, Information and Technology Management, Mathematics, Physics and Psychology.

- ✓ *BSc major*
- ✓ *Available in a conjoint*

Mathematics

The subject of Mathematics has many faces: it can be challenging, beautiful, powerful, fascinating, and even mysterious to some people. But, above all, it is useful. Mathematics is a central science, and it interacts with many other disciplines – wherever problems need to be solved, Mathematics has a role to play. As a Mathematics student you'll study a range of concepts and theories, as well as analytical, computational and modelling tools that you can apply to areas as diverse as the biological sciences, information and physical sciences, economics, engineering and finance.

If you study Mathematics as a BSc major, you can choose to keep it general or follow one of two Mathematics pathways in order to focus your studies further:

- **Applied Mathematics:** The study of mathematical methods that can be used to understand problems in a wide range of sciences, engineering, finance, and other industries
- **Pure Mathematics:** The study of abstract concepts, and the development of analytical, logical, creative thinking, and problem-solving skills

As part of your BSc major you can do the Mathematics capstone course, MATHS 399, where you'll work with other students to explore the role of mathematicians in society and culture. Your project will give you the chance to develop your skills in communication, critical thinking, teaching and creative problem solving.

Complementary BSc majors include Computer Science, Data Science, Environmental Physics, Physics and Statistics.



If you study Mathematics as a BAdvSci(Hons) specialisation, you'll take courses across the spectrum – from algebra, combinatorics, complex analysis and differential equations to mathematical modelling, functional analysis and operator theory, numerical analysis and topology. In your final year you'll complete an independent research project under the guidance of an academic mentor. This will help to prepare you for further postgraduate study or to enter the workforce.

Mathematical skills are in great demand by employers – the BAdvSci(Hons) specialisation will equip you with advanced knowledge in pure and applied mathematics, as well as the computational and research skills required to make great contributions in science, technology or commerce.

- ✓ BSc major or BAdvSci(Hons) Specialisation
- ✓ Available in a conjoint

Quantitative Economics

The Quantitative Economics specialisation aims to produce graduates with strong analytical and mathematical skills for advanced economic

theory and its application. The challenges of modern society demand a greater focus on the relationship between the economy, human society and the environment. As a result, industry will require transdisciplinary graduates with specialised skillsets. The University of Auckland is currently the only university in the country offering a programme of this kind. Completing this programme will equip you with capabilities specific to disciplinary knowledge and practice, critical thinking, solution seeking, communication and engagement, independence and integrity, and social and environmental responsibilities. You will learn to apply mathematical knowledge to concrete situations in Economics, specify and estimate regression equations to support data analysis applicable to real-world issues and demonstrate the ability to synthesize information to effectively coordinate decisions across a variety of domains. Graduates of this programme will be well prepared to pursue a future in a broad range of sectors, including government and policymaking, consulting and business or a pathway to post graduate study in Economics or Mathematics. You can also complete the MATHS 399 capstone course.

- ✓ BSc specialisation

Statistics

We live in an information age. Computers allow us to collect and store information in quantities that previously would never have been dreamt of. However, data is useless until people can make sense of it. If you're interested in looking critically at numerical information without being misled, then Statistics could be the ideal subject for you.

Statistics is the human side of the computer revolution – statisticians take raw, undigested data, often in very large sets, and make sense of it to solve problems and provide valid information in almost every area of life. As a Statistics student you'll study how to ask the right questions, how to design ways to collect and analyse data, and how to present information in meaningful ways.

If you study Statistics as a BSc major, you can choose to keep it general, or follow one of two Statistics pathways in order to focus your studies further:

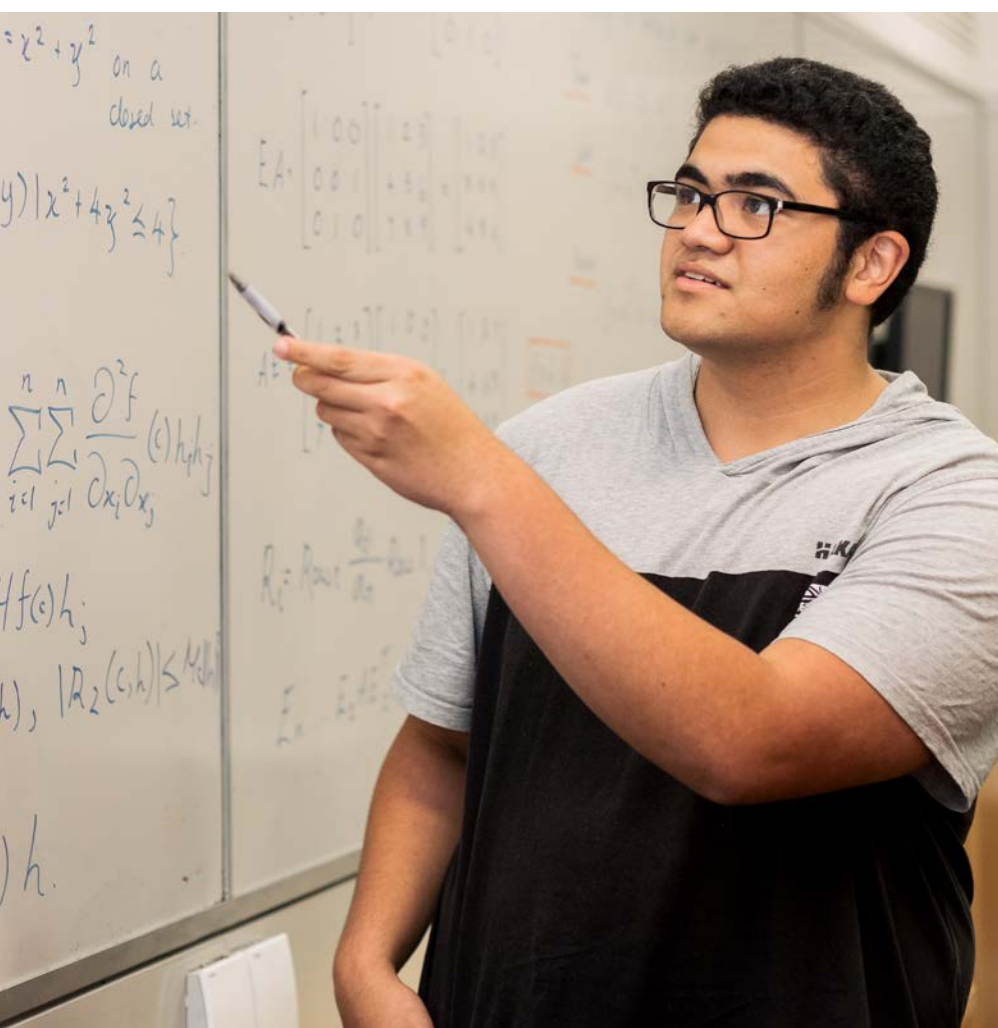
- **Applied statistics:** This is for students who are primarily interested in the practice of statistics.
- **Statistics and probability:** This is for students who are interested in both the application of statistics and the theory underlying statistics and probability, including stochastic modelling. If you intend to progress to postgraduate study, you should take this pathway.

In the final year of your BSc you can do the Statistics capstone course, STATS 399 Statistics in Action, where you'll integrate your statistical knowledge and collaborate with other students to solve a statistical problem. Statistics complements all other BSc majors.

If you study Statistics as a BAdvSci(Hons) specialisation, you'll take courses in mathematical statistics and probability theory, as well as applied statistics and data analysis. You will also support your specialisation with advanced courses in Mathematics.

In your fourth year you'll undertake an independent research project, which will equip you with the advanced research methods you'll need for doctoral study. You'll gain deep knowledge and practical investigation skills. These will reinforce your abilities in the art and science of extracting meaning from seemingly incomprehensible data.

- ✓ BSc major or BAdvSci(Hons) Specialisation
- ✓ Available in a conjoint





Modules

Modules complement your subjects and enable you to add extra value to your undergraduate Science programme.

What are modules?

A module is a grouping of three skills-based courses on a particular theme. Modules are optional. You can take one or two modules in addition to your main Science subjects. Completed modules will appear on your academic transcript.

Why should I take a module?

Modules are designed to complement the skills you'll develop in your other Science subjects, and add extra value to your Bachelor of Science or Bachelor of Advanced Science (Honours). Modules allow you to develop and diversify your skill set for future employment.

How do I take a module?

It's simple – all you need to do is enrol in your first course and then come in for a chat with an adviser at your local student hub.

Science students can also choose one module offered by other faculties at the University.

Email: studentinfo@auckland.ac.nz

Phone:

Auckland: (09) 923 5025

Outside Auckland: 0800 61 62 63

International: +64 9 373 7513

auckland.ac.nz/student-hubs
science.auckland.ac.nz/modules

Modules available

Data Analysis

Gain a practical understanding of applied data and statistical analysis.

Exercising the Body and Mind

Learn about the science behind exercise and fitness.

Innovation and Entrepreneurship

Understand the process of identifying and creating opportunities for new approaches, products and enterprises to deliver creative solutions and meet user needs.

Quantitative Critical Thinking and Communication

Develop the ability to interpret and evaluate reports, and to construct sound arguments.

Science in Society

Acquire critical skills and understanding in communication, innovation and engagement in order to help address societal issues.

Science Scholars*

Take part in one-on-one mentoring and research activities; participate in dedicated lectures, seminars and activities.

Software Development

Gain the skills required to plan, design and write computer programs using standard computer programming languages.

Spatial Data Analysis

Acquire basic skills in spatial analysis, spatial data structures and the representation of spatial information.

Studies in Food and Health

Gain scientific insights into our daily encounters with food and health in the home, the market and the media.

Sustainability

Develop your understanding of sustainability to make an informed and positive response to this significant social challenge.

*This module is only available to students who are part of the Science Scholars programme. See Science Scholars Programme, page 30.

“One thing I loved about my time studying Mathematics and Statistics is the Tuākana programme, which supports Māori and Pacific students. To me, Tuākana is about having a place to feel you belong in the system, which is valuable for those students who are shy and feel embarrassed to ask questions. And that includes a lot more people than many might realise!”

“The Tuākana room was my second home; lecturers and tutors were there every day just to answer questions and to hang out. I remember waking up every morning throughout my whole degree, looking forward to going to the Tuākana space, and having that relationship with the tutors made me fearless when it came to learning – it helped me take more control of my study. I succeeded because I realised that fear is the only thing that stops you from growing.

“I also use my passion for Mathematics to teach kids in the community – I run a free maths class that has more than 200 kids in it currently. Some of them are now top in mathematics in their school, just from one year of study every Saturday. I’m proud to say the class has really opened the door for kids from all over Auckland, and kids all the way from Wellington, Hamilton, Christchurch, Australia, Tonga, Samoa, Fiji, China, India, the Philippines, and other countries.

“Ultimately I would do anything to help motivate students who are going through what I went through. Overcoming the fear of asking questions is the first step to discovering how to fly. Overcome that fear and you will find out how strong you really are, and how far you can go!”

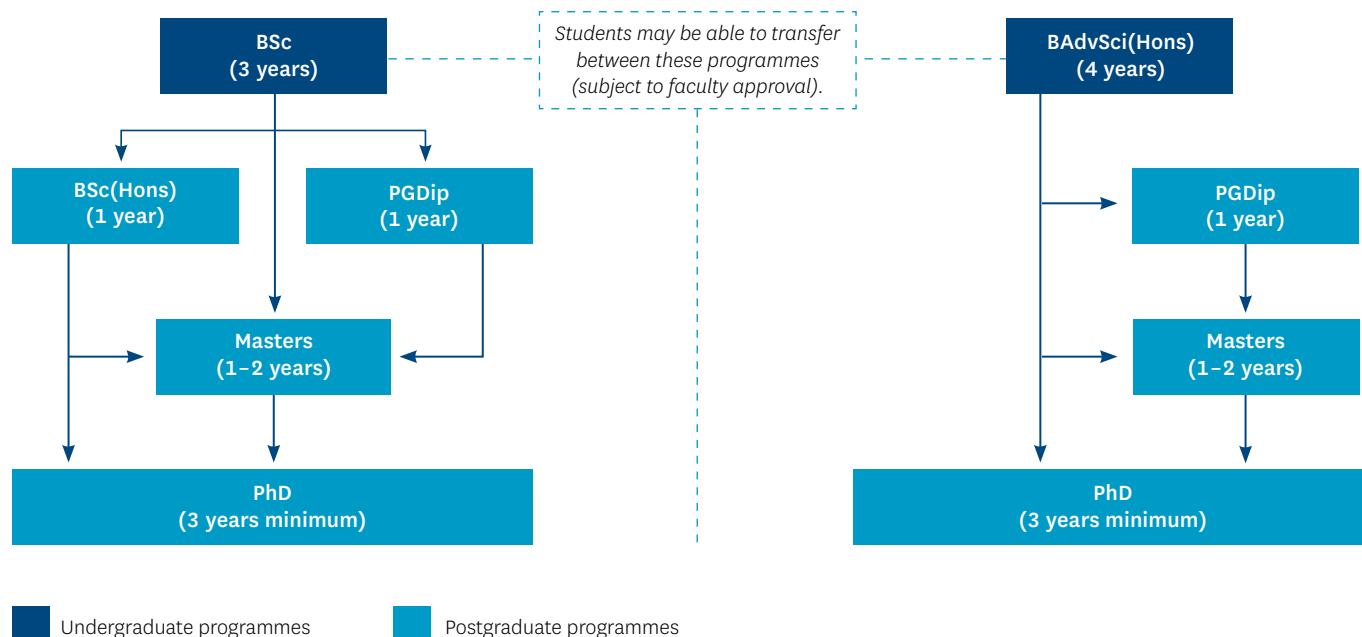
Halaevalu Tu’ipulotu

**Graduate: Bachelor of Science in
Mathematics and Statistics**



Our postgraduate programmes

Postgraduate pathways



Entry requirements

To gain entry to a degree programme at the University of Auckland, you must meet admission, programme and undergraduate English language requirements. This table shows the rank score, subjects and other entry requirements that will guarantee you admission to your programme in 2024. If you achieve the University Entrance (UE) standard but do not achieve a rank score that will guarantee selection into the programme you wish to pursue, your application will be given individual consideration, if places are available.

Undergraduate programme admission requirements for school leavers who have achieved University Entrance.			
Programme	NCEA (Level 3)	Cambridge International	IB
Bachelor of Science (BSc)			
– Biomedical Science	280	310	33
– Food Science and Nutrition	200	200	28
– All other majors/specialisations	165	170	26
Bachelor of Advanced Science (Honours) (BAdvSci(Hons))	260	310	32
Conjoint programmes			
Applicants must achieve the greater of the two rank scores for their selected programmes and must meet the entry requirements for both programmes. Not all degree programmes have conjoint options.			
Bachelor of Science conjoints	210	230	28
Bachelor of Advanced Science (Honours) conjoints	275	330	36



Life on campus

Science Scholars programme

Completed in conjunction with the Bachelor of Science (BSc) or Bachelor of Advanced Science (BAdvSci(Hons)), the Science Scholars programme combines one-on-one mentoring with cross-disciplinary interaction and research opportunities that aren't usually available in undergraduate study.

To support and extend each other, you'll join a select group of Science students from across the faculty, who work closely with the University of Auckland's leading scientists and teachers.

Entry to the Science Scholars Programme is competitive, and we are interested in both your potential for academic success, and your engagement with activities outside the classroom.



Student guide at Orientation.

The programme offers selected students:

- The opportunity to be involved in special research projects
- An academic mentor for the duration of their degree
- Academic counselling, including career counselling
- Personalised invitations to seminars
- The opportunity to meet distinguished visitors
- Enrichment activities that tap into the best research-informed teaching and learning methods

Students will also be part of a vibrant, scientifically focused community, with many chances to socialise as a cohort.

science.auckland.ac.nz/sciencescholars

Tuākana Science Programme

Tuākana Science is a community open to all Māori and Pacific students. In addition to providing space to hang out, study and connect with other students, Tuākana offers opportunities at every stage of university study.

From topic-specific tutorials, one-on-one sessions, and exam preparation for undergraduate students, through to scholarships, tutoring jobs and career mentoring for senior students, Tuākana aims to extend your academic and career development so you reach your full potential.

science.auckland.ac.nz/Tuākana

Science Ambassadors Programme

In the Science Ambassadors Programme, senior students volunteer their time to help new students settle into University life.

As a first-year Science student you'll be connected to an ambassador on your Orientation day.

Your ambassador will be there to answer your questions about university life, check in with you regularly, and give tips and support for you to excel in your new journey.

www.auckland.ac.nz/scienceambassadors

Science Students' Association

The Science Students' Association (SciSA) is a student-run organisation that all Faculty of Science students are invited to join. In addition to offering various social events throughout the year, the association runs academic workshops, research showcases, study groups and other opportunities for students to put learning into practice. Together with the faculty, this group actively creates an environment in which students' many interests are nurtured and their wellbeing is supported.

Get in touch with the Science Students' Association via their Facebook page.

facebook.com/ScienceStudentsAssociation

Nesian Indigenous Science Student Association

NISSA is a student social club that aims to support the cultural and social wellbeing of Māori and Pacific students within the Faculty of Science. Get involved via their Facebook page or Instagram instagram.com/nissa.uoa



Science Students' Association



Nesian Indigenous Science Student Association at Orientation

Rainbow Science Network

The Rainbow Science Network's vision is for an inclusive culture that acknowledges and respects all sexual orientations and gender identities and values the contribution we collectively make to life in the Faculty of Science. Connect with the Rainbow Science Network via their webpage.

science.auckland.ac.nz/rainbowsience

Student clubs and societies

Being involved in clubs gives you the opportunity to meet other Science students, gain new skills and develop your social and professional networks.

There is a wide range of Science clubs you can join, from the Archaeological Society (ArchSoc) to the Developers Society (DEVS).

"I knew I wanted to do a science major because there is always more to learn in science. I have always had a passion for the environment and been interested in understanding the way it functions. I knew that I wanted variation in my future job so I chose this pathway this pathway in the hopes that one day I would be able to work in the outdoors with nature as well as in an office environment."

"I like that it has given me the option to explore the different pathways included in environmental change environmental change. There is a broad range of classes to pick from, and the lecturers and tutors have a range of classes to pick from. Not only that but the lecturers and tutors have a real passion for what they are teaching, which makes the classes interesting."

"I would tell anyone who is thinking of studying Environmental Change to go for it. If they are anything like me (curious and with a passion for nature) then this is definitely the degree for them. You never know until you try. I have found that throughout my degree my passion for the environment and studies in this area continues to grow."

"University is a great chance to get out of your comfort zone and make friends. Students are very friendly. Lecturers, tutors and supervisors are great and have been extremely helpful during covid times, making everything as smooth as possible."

Ivana Jurasovic

Student: Bachelor of Advanced Science (Honours) in Environmental Change



Dates to remember

Mānawa Mai Info Evening and Open Day 2023

Info Evening: Tuesday 27 June

Open Day: Saturday 26 August

Open Day is all about experiencing our University. So haramai! Meet our awesome staff and students, get hands on with our interactive activities and experience lectures. Open Day is a lot like student life itself. It's also a chance to take a look at all your study options.

There's a lot on, enjoy loads of entertainment, scout out our City and Grafton campuses – and of course, see what your future might look like.

Nau mai, haere mai! Register at:

manawa-mai.ac.nz.

Orientation | Wiki Whakataki

Orientation takes place the week before lectures start each semester.

Faculty Orientation Day is designed to help you feel more connected with your faculty of study, while allowing you to meet staff and students who you will come across during your time at the University. You will be buddied up with your UniGuide who will be there to answer any questions you may have about university life.

Semester Two 2023 Orientation welcome

Faculty Orientation: Week beginning 10 July 2023

(Semester Two 2023 begins 17 July.)

Semester One 2024 Orientation welcome

Faculty Orientation: Week beginning 19 February 2024

(Semester One 2024 begins 26 February.)

For more information see auckland.ac.nz/orientation

Find out more about International Orientation Week.

auckland.ac.nz/internationalorientation

For more information call 0800 61 62 63 or

email studentinfo@auckland.ac.nz



facebook.com/science.uoa



twitter.com/ScienceUoA

Disclaimer

Although every reasonable effort is made to ensure accuracy, the information in this document is provided only as a general guide for students and is subject to alteration. All students enrolling at the University of Auckland must consult its official document, the current Calendar of the University of Auckland, to ensure that they are aware of and comply with all regulations, requirements and policies.

Closing dates for applications for admission to Science programmes in 2024

1 December 2023

This is the deadline for new students to submit their Application for Admission if their 2023 programme includes Summer Start courses.

8 December 2023

This is the deadline for new students to submit their Application for Admission if their 2023 programme includes Semester One and Semester Two courses only.

If you are a new student, only one Application for Admission is required. This form is due on either 1 December or 8 December, depending on whether you want to take Summer Start courses as well.

Applications received after these dates will be considered if places are available.

Academic year 2024

Kura Raumati | Summer Start/Summer School 2024

Lectures begin	Thursday 4 January
Auckland Anniversary Day	Monday 29 January
Waitangi Day	Tuesday 6 February
Lectures end	Friday 9 February
Study break	Saturday 10 February
Exams	Monday 12 – Wednesday 14 February
Summer School ends	Wednesday 14 February

Wehenga Tahī | Semester One 2024

Semester One begins	Monday 26 February
Mid-semester break/Easter	Friday 29 March – Friday 12 April
ANZAC Day	Thursday 25 April
Graduation	Monday 1, Wednesday 3, Friday 5 May tbc
Lectures end	Friday 31 May
King's Birthday	Monday 3 June
Study break	Tuesday 4 – Wednesday 5 June
Exams	Thursday 6 – Monday 24 June
Semester One ends	Monday 24 June
Inter-semester break	Tuesday 25 June – Friday 12 July

Wehenga Rua | Semester Two 2024

Semester Two begins	Monday 15 July
Mid-semester break	Monday 26 August – Friday 6 September
Graduation	Tuesday 26 September tbc
Lectures end	Friday 18 October
Study break	Monday 21 – Wednesday 23 October
Labour Day	Monday 28 October
Exams	Thursday 24 October – Monday 11 November
Semester Two ends	Monday 11 November

Wehenga Tahī | Semester One 2025

Semester One begins	Monday 3 March
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“I’ve always had a passion for the environment; growing up with hobbies that constantly had me in the outdoors made me want to learn about and explore the physical world around me. The more I progressed in my high-school studies, I found that I also had a passion for technology, problem solving and understanding the role that humans play within the environment, particularly sustainability. Studying both GIS and Environmental Science at the University of Auckland perfectly blended these ideas together.”

“I love that the programme is heavily focused on teaching you the practical skills and giving you the opportunity to communicate your learning through various modes, not just traditional assignment styles. It has allowed me to feel more confident in my degree when pursuing jobs after graduation, with a more solid foundation of understanding topics and software. I also appreciate the range of topics we cover throughout the degree, as it really gives you the chance to pinpoint the areas you are most passionate about or interested in.”

“Even with the majority of my time at the University of Auckland being spent online, the virtual environment still allowed me to connect with other students, lecturers and tutors. We were always able to get in contact and ask questions, receiving a bunch of support. What I have appreciated most is the dedication of the educators (both tutors and lecturers) to better our learning, and helping us to achieve the best we each can.”

“The Science Faculty also has many extracurricular activities, such as hackathons, quiz nights, clubs and career events, which are all super useful for making connections, friends, and for exploring your interests.”

Taryn Smith

**Student: Bachelor of Science in
Geographic Information Science and
Environmental Science**



How to apply

So, you've made your decision about what you want to study, and now it's time to apply. What do you need to do? It's a two-step process to apply for and enrol in your chosen programme.

First you need to apply

Complete the Application for Admission online. If you haven't already, you'll be asked to sign up for a new account. It's easy, and soon your application will be underway.

auckland.ac.nz/apply

Next you'll receive an acknowledgement email asking you to provide supporting documents (and in some cases to complete other requirements*) before your application can be assessed.

Remember, you can apply for more than one programme. You can check your application status online at any time.

Your final offer of a place depends on two things: your admission to the University (which for school leavers may depend on your final school results) and your assessment by the relevant faculty.

If your application is successful, we'll email you an offer – normally from mid-January.** To accept or decline this offer, log onto **auckland.ac.nz/apply**

Some late applications may be accepted after 2023 school results are available. It is advisable, however, to apply for all programmes that you might wish to pursue before the closing date. Multiple applications are acceptable, and all applications received by the closing date will be considered when 2023 academic results are available. Late applications will be considered if places are available.

Next you need to enrol

If you need some help with the enrolment process, take an online tutorial.

auckland.ac.nz/enrolment

Find out more about our subjects and courses online.

science.auckland.ac.nz/programmes

You can also visit the Student Hubs website.

science.auckland.ac.nz/student-centre

Check out Mānawa Mai Open Day.

manawa-mai.ac.nz

If you are beginning tertiary study for the first time, you may be eligible for one year of fees-free study. Check our website for more information.

auckland.ac.nz/feesfreefirstyear

We recommend that you enrol in your courses as soon as you've accepted your offer of a place. Remember to build your timetable by selecting courses and placing these into your enrolment cart. Validate these to ensure you have no timetable clashes. If there is a timetable clash, select another time, or you may need to select another course. If everything is ok, enrol in your courses.

Stuck? At any point in the process you can find answers to your questions online at

askauckland.ac.nz

Phone during business hours or email us:

0800 61 62 63

studentinfo@auckland.ac.nz

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largest faculty
of Science******

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science.auckland.ac.nz

**For some programmes, you may be required to submit supplementary information (eg, a portfolio of work, referee reports, an online form) or to attend an interview/audition.*

***If you are not offered a place in the programme(s) of your choice, you will receive an email outlining alternative options.*

****science.auckland.ac.nz/excellence*





**UNIVERSITY OF
AUCKLAND**
Waipapa Taumata Rau
NEW ZEALAND

For personal assistance please visit us at your local Student Hub, where students and whānau are welcome to talk with our expert advisers:

City Campus:
General Library, Building 109,
5 Alfred Street, Auckland

Grafton Campus:
Philson Library, Building 503
Level 1, 85 Park Rd, Grafton
(Entry via the Atrium)

South Auckland Campus
Te Papa Ako o Tai Tonga:
6 Osterley Way, Manukau

Whangārei Campus
Te Papa Ako o Tai Tokerau: L Block,
13 Alexander Street, Whangārei

Email us: studentinfo@auckland.ac.nz
Or phone: 0800 61 62 63
International: +64 9 373 7513
Web: auckland.ac.nz



science.auckland.ac.nz