

Mātai Pūtaiao Koiōra Rongoā

Undergraduate Biomedical Science

If you're an able student with a passion for understanding the scientific basis of health and disease in humans and animals, then Biomedical Science could be the specialisation for you.

What you will learn

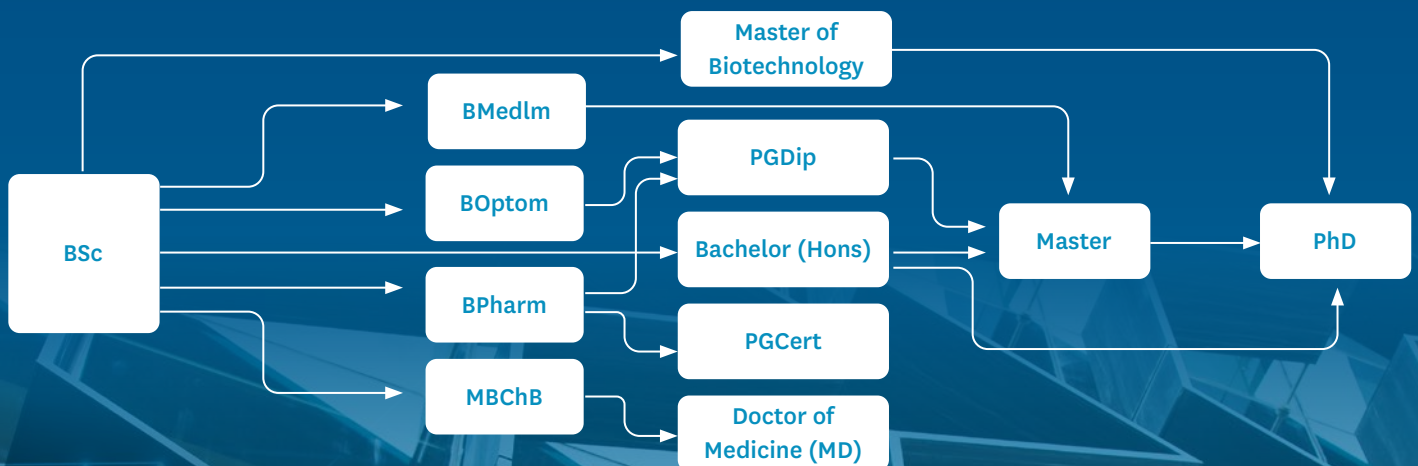
Biomedical Science encompasses the scientific basis of health and disease in humans and animals.

This challenging and immensely rewarding specialisation will deliver rigorous scientific training in a range of disciplines, allowing you to gain unique insights into this important and rapidly developing area of modern research.

Biomedical Science is jointly taught by the Faculty of Science and the Faculty of Medical and Health Sciences.

The specialisation is highly prescriptive, and is one of only two ways in which you can be selected for Medicine (MBChB) at the end of your first year. You may also apply for selection into Optometry, Medical Imaging or Pharmacy at the end of your first year.

If you're interested in studying Biomedical Science with us you'll find it beneficial to have a strong science background, including high school biology, chemistry, physics and/or mathematics.



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Career opportunities

A field with future growth

Biomedical Science equips students for a wide range of opportunities in scientific industries or the health sector. It offers a strong foundation for a number of careers, including medicine.

It attracts a high level of public interest and has made transformative contributions over the past decade, stimulating growth in a wide range of industries including medical research, pharmaceuticals, veterinary science and agriculture.

You could find work in a biomedical or biotechnology company as a scientific officer or technician, or alternatively work as a science teacher, science writer or a biomedical researcher in a university or government agency such as a Crown Research Institute. Many honours graduates in Biomedical Science will move on to careers as research leaders after further graduate training.

Our Biomedical Science graduates have been employed in the following jobs:

- Life Sciences Consultant
- Research Assistant
- Embryologist
- Health Reporter
- Clinical Trials Data Manager

What you can study:

You can choose to keep your Biomedical Science specialisation general, or you can choose one of the following pathways:

Anatomical Imaging Science

Cancer Biology and Therapeutics

Cardiovascular Biology

Cellular and Molecular Biomedicine

Genetics

Infection and Immunity

Neuroscience

Nutrition and Metabolism

Reproduction and Development

Find out more

about how your degree will be structured and what courses you need to take at

auckland.ac.nz/science/ug-biomedical

“Having grown up with a passion for science, my broad interest made it difficult to narrow my focus to a specific field. For this reason, a degree in Biomedical Sciences seemed like a great fit, offering a foundation that can lead to many different career paths.”

“At this stage, I aim to pursue postgraduate studies with a Masters in Biomedical Sciences, hopefully in neurogenetics.”

Annabel Hii

BSc Biomedical Sciences



Read Annabel's full story at:
auckland.ac.nz/science/annabel-hii



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Mātai Kōiora Rorohiko

Undergraduate Computational Biology

The research conducted by biologists and life scientists now routinely requires computation and complex data analysis.

What you will learn

Computational Biology is designed to equip people with fundamental knowledge and skills across biology, computer science, mathematics and statistics in order to develop computational biology, genetics and bioinformatics skill sets.

Learn how to develop algorithms, methods and models to understand biological systems, evolution and relationships.

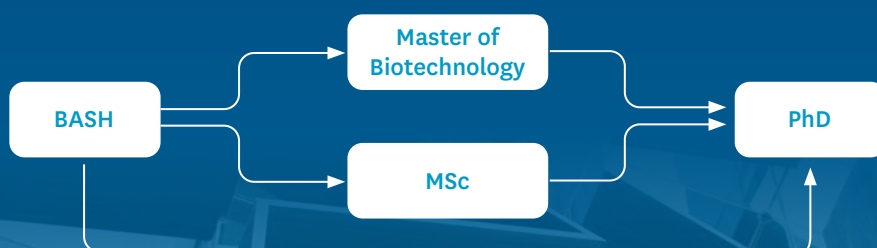
There are many routes into a degree in Computational Biology. If you've done any one of these subjects at high school, you will be well-equipped to get started: biology, chemistry, computer science, mathematics, statistics, physics.

Complementary subjects

Computational Biology is studied as a specialisation in the Bachelor of Advanced Science (Honours) degree, or BAdvSci(Hons).

As a Computational Biology student you'll take a range of complementary courses from the following subject areas:

- Biological Sciences
- Biomedical Science
- Chemistry
- Computer Science
- Mathematics
- Statistics



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Career opportunities

A new biology for the digital age

A Computational Biology specialisation can open up opportunities in biological and life sciences research, as well as in industry.

You'll develop expertise in computer science, statistics and data analysis, which provides you with the core skills necessary for a career in computational biology, but are also transferable to careers in software design, software development and data analysis, especially where some knowledge of the life sciences is useful.

You could find yourself modelling complex human diseases, analysing large amounts of genomic data, or creating computational models for gene editing in commercial species.

Your ability to develop algorithms, statistical methods and models to understand biological systems will give you cutting-edge skills to tackle the deluge of big data in the digital age.

Jobs for our Computational Biology graduates include:

- Bioinformatician
- Biotechnology consultant
- Data scientist
- Environmental scientist
- Academic researcher
- Pharmaceutical technician
- Scientific adviser
- Software designer

What you can study:

Algorithms and machine learning

Biodiversity, ecology and evolution

Genetics

Statistical modelling

Software development

Find out more

about how your degree will be structured and what courses you need to take at

auckland.ac.nz/science/ug-comp-biology



“I decided to pursue a BSc in Biology with the eventual goal of completing a Masters Degree and then a PhD. Currently I am in the process of completing my Masters thesis.”

“My goal with achieving a PhD is to become a lecturer and be in a position to help more Māori students like myself, giving guidance and support in the same way my supervisors have helped me.”

Daniel Harrison

MSc in Biological Sciences and BSc in Biology.



Read Daniel's full story at: auckland.ac.nz/science/daniel-harrison

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THE UNIVERSITY
OF AUCKLAND
NEWMARKET

Newmarket
Campus



Mātai Kori Tinana

Undergraduate Exercise Sciences

Are you fascinated by what influences human performance in exercise, sport and the workplace?

What you will learn

Exercise scientists study the mind, muscle, mechanics and metabolism of the moving human body and the role of exercise in human health.

Studying Exercise Sciences will facilitate skills for lifelong learning, critical and analytical thinking, communication, independence, collaboration and intellectual curiosity.

In laboratory classes you will develop hands-on skills in interacting with human participants and measurement of human activity and performance.

You will develop an understanding of how the body moves, how it responds to physical

activity (and inactivity), how fitness levels can be tested and adapted, and the connections between physical activity and health.

If you're interested in studying Exercise Sciences with us, it would be beneficial to have studied high school biology or human biology. Chemistry, physics, calculus, statistics and physical education also provide helpful background knowledge.

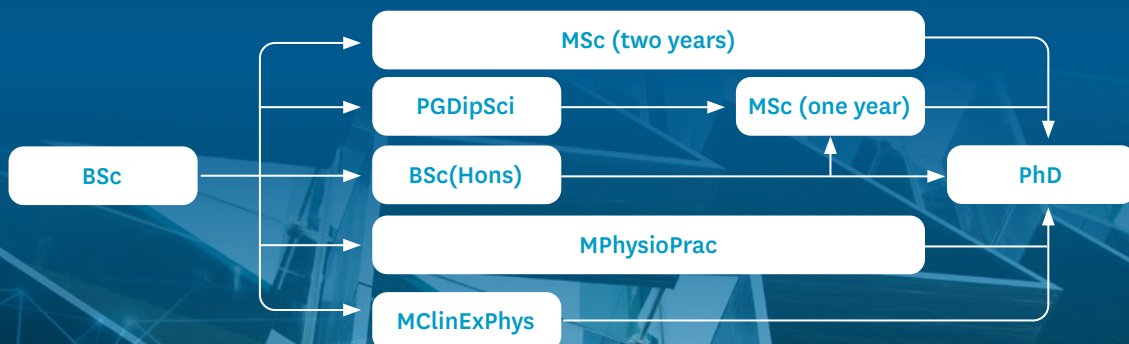
Choosing a subject

With so many options it's sometimes hard to choose what you want to study, but we've got you covered. You can study a double major with our Bachelor of Science to gain a broader base of skills and knowledge.

Complementary majors include:

- Biological Sciences
- Chemistry
- Physics
- Physiology
- Psychology
- Statistics

The Applied Exercise and Sport Sciences pathway, which is the equivalent of two majors, is for students who want a career in the exercise sciences. It provides all the knowledge you need for international accreditation as an Exercise Specialist at the end of your BSc.



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Career opportunities

An important discipline for everyday life

Exercise Sciences is an important discipline that relates to all aspects of our everyday life. Our courses cover human anatomy, exercise physiology, biomechanics, exercise prescription, exercise and sport psychology, and movement neuroscience.

There is a growing demand for people who can not only research and analyse performance techniques, but can work as allied health professionals to optimise human performance to improve general health and wellbeing through exercise.

As a graduate you will be prepared for a career in exercise science, high-performance sport, sports science, health and wellness, physical fitness, and movement science.

This degree provides the perfect pathway to further study in order to pursue a career in physiotherapy and clinical exercise physiology.

Jobs related to Exercise Sciences:

- Exercise scientist
- Sport scientist (consultant in biomechanics, exercise, nutrition, physiology)
- Corporate exercise specialist
- Human movement scientist
- Injury prevention consultant
- Sport and fitness practitioner
- Community sport facilitator
- Group fitness leader
- Respiratory physiologist
- Clinical exercise physiologist
- Cardiac physiologist
- Physiotherapist

What you can study:

Human anatomy

Exercise physiology

Biomechanics

Exercise prescription

Sport and exercise psychology

Movement neuroscience

Find out more

about how your degree will be structured and what courses you need to take at

auckland.ac.nz/science/ug-exercise-sci



“Growing up I was always very active in playing sports and dancing ballet. My love for the human body came from ballet. It taught me which muscles are used in a movement, and how to improve a movement by understanding how the body works.”

“I was driven to carry on learning about the human body, so I enrolled in a Bachelor of Science in Exercise Sciences, hoping to apply it to both exercise and the treatment of people living with chronic conditions and disease.”

“I chose the University of Auckland because it has a great reputation, and Auckland was only a few hours away from where I grew up in Rotorua. The programme also offers a lot of practical experience with the benefit of working with patients in our clinic.”

Sasha Douglas

PG Dip in Clinical Exercise Physiology.



Read Sasha's full story at: auckland.ac.nz/science/sasha-douglas

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auckland.ac.nz/science/ug-exercise-sci

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Mātai Pūtaiao Kai me Taioranga Kai

Undergraduate Food Science and Nutrition

There is a wealth of science behind the food we eat, how it's made, and how it affects our health. This science is part of a fascinating subject that is highly relevant to the lives of everyone.

What you will learn

Food Science and Nutrition is the science behind the food we eat. From the effect food has on our behaviour and wellbeing, to new applications in food development, processing, compliance and food safety.

When studying this subject at the University of Auckland, you choose between two distinct pathways: Food Science or Nutrition.

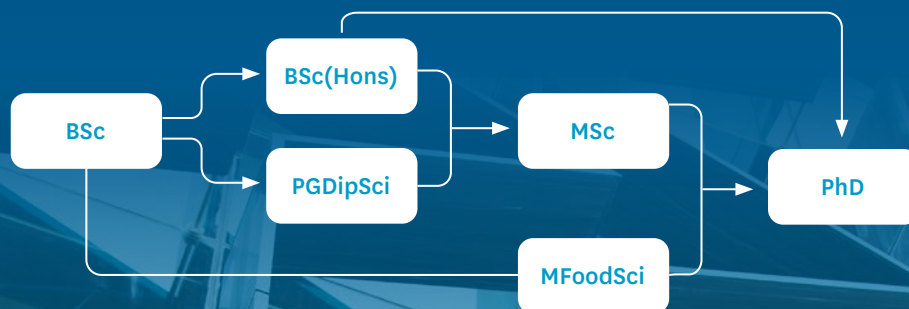
If you choose the Food Science pathway, you'll study topics like food manufacturing, processing and production, food components and their properties, food safety, and product development.

If you choose the Nutrition pathway, you'll study topics like human nutrition, the health and wellbeing of individuals and populations, and the environmental, social, economic and cultural influences on eating behaviours.

Food Science and Nutrition includes courses from Biological Sciences, Chemistry, Medical Science and Population Health, to answer questions like:

- What constitutes a healthy diet?
- Is there a way to engineer food to improve its nutritional value?
- How does the human body break down food to provide us with the energy we need?

Food Science and Nutrition involves many scientific disciplines. You'll find it useful to have a broad science background, including high school chemistry and mathematics for the Food Science pathway. High school biology, physics and statistics are helpful but are not essential. Note that high school food technology is not required.



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Career opportunities

Food Science

The food and beverage industry and food research institutes need well-trained Food Science graduates who can help to ensure safe, innovative and high-quality food production. Industry is constantly striving to meet consumer demands for foods that are not only safe but healthy, sustainable, natural, convenient and have good sensory properties to maintain wellbeing. Your day-to-day work could include research, food and ingredient manufacturing, food safety, product development and food analysis.

Nutrition

With an increasing awareness of the role of the foods we eat and their effect on health, our nutrition graduates are equipped to work in health promotion in the community, health policy in government, research, nutrition consulting as a registered nutritionist, nutrition information services, food industry, and the health and fitness industry. You could also choose to undertake specialised postgraduate training in order to register as a dietitian.

Our Food Science and Nutrition graduates can be employed in many aspects of the Food, Nutrition, and Health industries. Some examples are:

- Danone, and Danone Nutricia Specialised Nutrition, Nestle, Bronson & Jacob and other large food multinationals;
- Heinz-Watties, Synlait, Westland Milk, Fonterra, Ceres and many classic NZ food companies;
- Retail health consultant, Auckland Clinical Studies;
- Ministry of Primary Industries, The Ministry of Health and other regulatory and policy government roles;
- Registered Nutritionist at companies such as Radix Nutrition, Zespri;
- Public health positions at The Heart Foundation, Healthy Auckland Together, Health Promotion Agency, and Healthy Families NZ;
- Plant and Food Research and other research organisations;
- Many laboratory and testing companies.

If you follow the Food Science pathway, your study will include:

A consolidation of chemistry, biology and mathematics subjects in first year

Taking foods apart to look at the individual food components, their functionalities and nutritional quality

Food microbiology, food processing, food preservation, emerging technologies and their benefits

Product development

If you follow the Nutrition pathway, you'll study topics such as:

Human anatomy and physiology

Biochemistry and metabolism

Population health

The many factors influencing eating behaviours

Find out more

about how your degree will be structured and what courses you need to take at

auckland.ac.nz/science/ug-food-nutrition



“I have always had a passion for creating food; from reading cookbooks, being hands-on in the kitchen doing little experiments and watching how it’s made via video online. But really keeping it all together by understanding all the processes that goes on behind bringing these products to life.

“My ultimate dream was to see something that I created on a supermarket shelf and being enjoyed by consumers, and a part of that started off with doing this degree.”

Bonnie Lam

BSc in Food Science and Nutrition (Food Science pathway).



Read Bonnie’s full story at: auckland.ac.nz/science/bonnie-lam

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auckland.ac.nz/science/ug-food-nutrition

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Mātai Pūtaiao Moana Undergraduate Marine Science

Marine Science draws on a range of disciplines to advance our understanding of the functioning and management of the oceans. Our students have a diverse range of ethnic backgrounds including Māori and Pacific people, and come from all over New Zealand and around the world.

What you will learn

Marine Science is the scientific study of the oceans and combines research areas in aquaculture, coastal processes, fisheries science, marine biology, marine conservation, marine ecology, marine geology, ocean management and oceanography to explore the marine habitat. Alongside learning about the theory of Marine Science, you will have the opportunity to develop practical skills in research design and analysis of the marine environment.

Leigh Marine Laboratory

Marine Science is centred at the Leigh Marine Laboratory, which offers unique opportunities in marine research. Facilities include a 16m research vessel and several smaller boats, diving support, a flow-through seawater system for tank experiments, onsite accommodation for students and visitors, a library and access to the University's online resources, aquaculture facilities, a meteorological station and well-equipped laboratories.

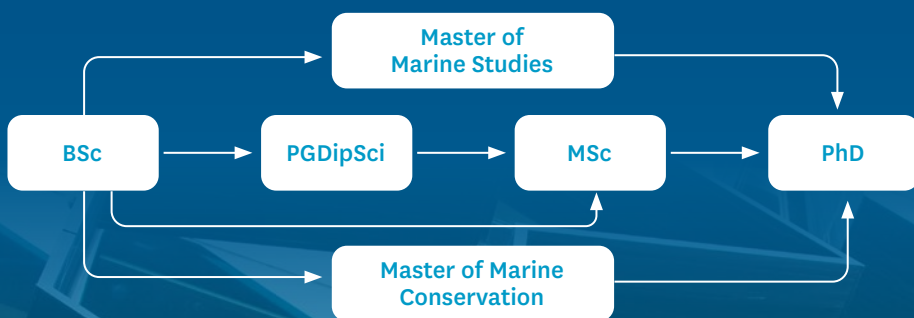
You don't have to have taken any particular subject at high school to study Marine Science with us. However, biology, chemistry, geography, physics, mathematics or statistics will provide you with helpful background knowledge. You'll also use written and oral communication skills, so high school English is a useful subject too.

Choosing a subject

With so many options it's sometimes hard to choose what you want to study, but we've got you covered. You can study a double major with our Bachelor of Science to gain a broader base of skills and knowledge.

Complementary majors include:

- Biological Sciences
- Earth Sciences
- Environmental Science
- Geography
- Mathematics
- Statistics



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Career opportunities

A world of opportunities

The versatility of Marine Science and its multidisciplinary relationship with other sciences means our graduates find employment in the areas of aquaculture, conservation and environmental management and research focused on the marine environment.

New Zealand has the world's fourth largest exclusive economic zone. It must be managed sustainably to ensure it provides for our social and economic wellbeing.

There are plenty of issues to investigate, from the management of New Zealand's extensive marine areas, to oceanography and climate impacts, to the welfare of marine animals and fish stocks. All of these issues need good scientists and well-trained technicians who understand the marine environment, and means the number of jobs in marine science is increasing steadily.

Whether you are interested in seafood, conservation, management or contributing to the science that will influence our future, you will find employment in a wide range of organisations.

Our Marine Science graduates have been employed in the following jobs:

- Aquarist, Kelly Tarlton's
- Survey engineering technician, Land Partners Ltd
- Aquaculture and water quality technician, Pacific Reef Fisheries
- Water and well systems engineer, American Samoa Power Authority
- Marine biologist, Norwegian Institute of Marine Research
- Creative brand strategist, Mecca Entertainment
- Laboratory technician,ASUREQuality
- Fisheries Act observer, Ministry for Primary Industries
- Oceanographer, US Naval Research Laboratory

What you can study:

Biodiversity and marine ecology

Fisheries and aquaculture

Environmental modelling

Data analysis

Climate and ocean processes

Dynamics of marine systems

Molecular ecology and evolution

Environmental chemistry

Water quality science

Coastal and resource management

Find out more

about how your degree will be structured and what courses you need to take at

auckland.ac.nz/science/ug-marine

"I wanted to study to learn more about the marine environment and help protect it for future generations."

"I hope to work in conservation or fisheries and aquaculture, where I aim to help create a sustainable marine environment in New Zealand."

Aven Zhuang

Bachelor of Advanced Science (Honours) in Marine Science



Read Aven's full story at:
auckland.ac.nz/science/aven-zhuang



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auckland.ac.nz/science/ug-marine

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Mātai Pūtaiao Koiora

Undergraduate Biological Sciences

Biology lies at the core of New Zealand's economic and natural environments. The biological sciences have never been more important for preserving our economic prosperity and the natural biodiversity of our islands in the face of global threats such as climate change and population growth.

What you will learn

Studying Biological Sciences at the University of Auckland offers you the chance to learn under world-renowned researchers and academics as you take advantage of the cutting-edge facilities and equipment available. Discovery in the biosciences has advanced at breathtaking speed. This has led to a new generation of therapies in health and medicine, sustainable consumer-focused products in agbiotech industries, and novel strategies for the protection of fragile ecosystems.

The Biological Sciences major captures the transformational potential of modern bioscience across all areas, giving students an integrated knowledge base across the discipline, with training in the relevant skillsets for employment in this area while offering the opportunity for specialist study choices in niche areas.

If you're interested in studying Biological Sciences with us, a broad background in general sciences and a solid understanding of high school biology and chemistry is a good start.

Choosing a subject

With so many options it's sometimes hard to choose what you want to study, but we've got you covered. You can study a double major with our Bachelor of Science to gain a broader base of skills and knowledge.

Complementary majors include:

- Marine Science
- Chemistry
- Environmental Science
- Exercise Sciences
- Psychology
- Statistics



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Career opportunities

An exciting field with a great future

Studying Biological Sciences will refine your research skills and also allow you to develop expertise in written and oral communication, teamwork and leadership, and critical thinking.

As a graduate you will gain a unique, integrated perspective of the importance of biology in modern society and in the biological-based industries, leaving you well-placed to enter employment or progress to postgraduate study.

There are opportunities to apply this learning in a number of different career pathways in New Zealand and overseas. You may find employment in Government, industries, Crown Research Institutes and the private sector.

Jobs related to Biological Sciences include:

- Aquaculture, aquatic or marine biologist
- Biomedical representative
- Biotechnologist
- Entomologist
- Environmental consultant
- Fisheries or food scientist
- Lab technician or research scientist

What you can study:

You can choose to keep your Biological Sciences major general, or you can follow one of nine pathways:

Biotechnology

Ecology

Evolutionary biology

Genetics

Marine Biology

Microbiology

Biochemistry and Cell Biology

Plant Biology

Zoology

Find out more

about how your degree will be structured and what courses you need to take at

auckland.ac.nz/science/ug-biological

“I really liked the flexibility of being able to carry out my research in a working environment where I could get a feel for what my career could be like after I graduated, and yet also have access to student programs and facilities through the University of Auckland.”

Olivier Laroche

Doctorate in Biological Sciences.



Read Olivier's full story at:
auckland.ac.nz/science/olivier-laroche



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Mātai Whaiaroaro Undergraduate Physiology

Physiology is the study of how living organisms work, with a major focus on understanding what goes wrong when disease strikes.

What you will learn

Physiology is the study of how living organisms function, from the cellular to the whole-body level. If we understand how organisms work, we can understand what goes wrong in disease, and develop a scientific basis for its treatment.

Physiology is highly quantitative and has close links with biochemistry, molecular biology, mathematical modelling, pharmacology, zoology and neuroscience.

Prerequisites

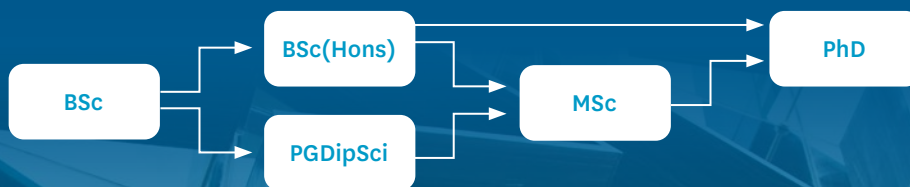
You don't have to have taken any particular subject at high school to be able to study Physiology with us. High school biology, chemistry, physics and mathematics are beneficial because they provide helpful background knowledge, but they're not essential.

Choosing a subject

With so many options it's sometimes hard to choose what you want to study, but we've got you covered. You can study a double major with our Bachelor of Science to gain a broader base of skills and knowledge.

Complementary majors include:

- Biological Sciences
- Chemistry
- Exercise Sciences
- Pharmacology
- Psychology
- Statistics



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Career opportunities

An active and developing science

Physiology provides a great foundation to find employment in research or in the rapidly growing healthcare sector in New Zealand and overseas.

A Physiology background is also very desirable for clinical professions. For example, it could lead to work in the areas of audiology, medicine, optometry and veterinary medicine. Physiology has always been important in medical research and drug development.

Graduates with a Physiology background are employed in a range of professions, in areas that include:

- Biomedical science
- Clinical research science
- Exercise physiology
- Healthcare science
- Pharmacology
- Audiology
- Medicine
- Optometry
- Veterinary medicine

Topics you can study include:

On average it takes three years to complete a BSc. Courses you can study include:

Human Structure and Function

Mechanisms of Disease

Cardiovascular Biology

Endocrinology of Growth and Metabolism

Neuroscience

Find out more

about how your degree will be structured and what courses you need to take at auckland.ac.nz/science/ug-physiology

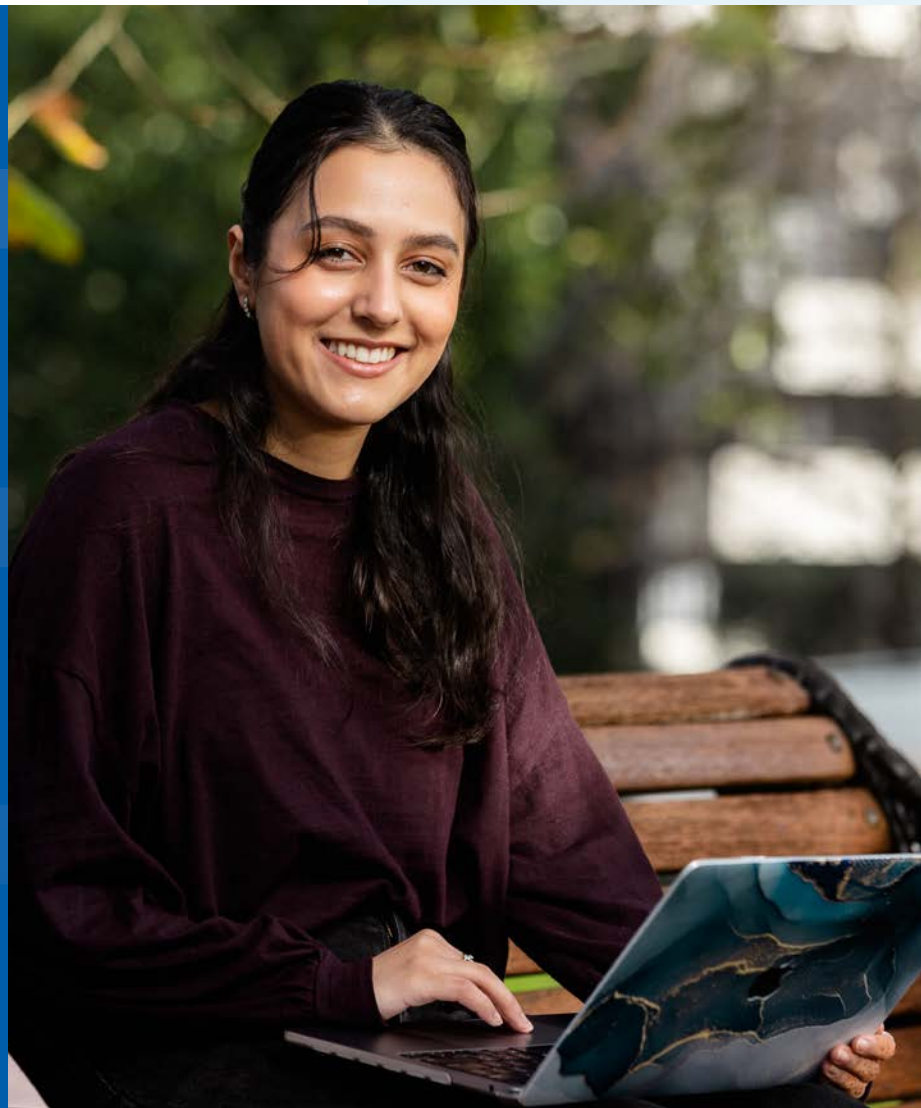
“A few papers into my first year, I realised it was the human physiology and neuroscience aspects that intrigue me the most within biology. At this point, I changed my major to physiology which offers a good selection of papers that delve into neuroscience, cardiac physiology, and research – right up my alley!”

Farheen Kothiwala

BSc (Hons) in Physiology



Read Farheen's full story at: auckland.ac.nz/science/farheen-kothiwala



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