



Mātai Pūtaiao ā-nuku Undergraduate Earth Sciences

If you're intrigued by the geological and Earth surface processes that shape our planet, from its deepest interior to its surface, and into neighbouring space, then Earth Sciences is the major for you.

Earth Sciences combines the geoscience disciplines of geology and physical geography. Earth Science graduates examine how the Earth's surface is shaped by natural and human processes, addressing the complex sustainability challenges that face our planet. For example, a smartphone can contain ~80% of the stable elements in the periodic table, and Rare Earth Elements (REE) are fundamental for the global clean energy transition.

What you will learn

Earth Sciences is about understanding how geology and surface processes interact. Understanding Earth systems allow us to learn from the past, comprehend present-day processes, and influence a sustainable future and a circular economy.

Skills you will gain include:

- Understanding the physical, chemical and biological processes of the Earth System
- Geological and spatial field data collection, management, analysis and visualisation
- Applying laboratory and analytical techniques to geological and surface processes and materials
- Understanding and communicating natural hazards and risks
- Problem solving and teamwork
- Respect for the physical environment and cultural heritage

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:

- Environmental Physics
- Environmental Science
- Geography
- Marine Science
- Geographic Information Science
- or any other major in Science.



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Career opportunities

Where does Earth Science take you?

Earth Science graduates are in global demand for sectors such as infrastructure and construction, sustainable resource extraction, as well as environmental and hazard management. While most commence their careers in New Zealand, our graduates are also recruited directly by Australian and UK-based employers.

Our Earth Science graduates have a unique breadth of understanding across both geology and physical geography. Typical roles are as geologists and scientists within environmental management, land development, engineering geological ground investigations, natural hazards monitoring, management and mitigation, as well as sustainable mineral exploration and extraction, and groundwater management/hydrogeology.

Earth Science graduates build successful long-term career pathways and become Chartered Geologists (CGeol) and Chartered Members of Engineering New Zealand (CMEngNZ), for example.

Our recent Earth Science graduates have been employed in the following jobs across both the public and private sectors in New Zealand and overseas:

- Engineering geologist, Tonkin & Taylor
- Geologist, Aurecon
- Exploration geologist, Ramelius Resources
- Paleontologist technician, Auckland Museum
- Geophysicist, RDCL
- Analyst, Ministry of the Environment
- Ecologist, Auckland Council
- Environmental Scientist, PDP
- GIS analyst, Auckland Council

What you can study:

Earth's Materials

Natural Hazards

Tectonics and Structural Geology

Geophysics and Geochemistry

Engineering Geology

Earth Surface Processes

Evolution of the Earth

Find out more

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

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

“My passion for Astrobiology and finding life on Mars inspires my research in this field. I hope it will lead to a future in a research or industry role, allowing me to realise my dreams and make a difference to myself and the geological community.”

“I’m in the final year of my BSc and planning to pursue an honours degree, continuing my research on siliceous hot spring deposits.”

Dominique Stallard

BSc Earth Science



Read Dominique’s full story at:
auckland.ac.nz/science/dominique-stallard



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Mātai Taiao Ahupūngao

Undergraduate Environmental Physics

Environmental Physics is a study that uses physics to understand the Earth's processes from deep inside the planet, to its oceans and atmosphere. With this knowledge, environmental physicists understand the Earth's past and present, and model our future environment.

What you will learn

As an environmental physics student, you'll study the physical processes of the Earth, including the hazards posed by earthquakes and volcanoes, the currents in oceans and atmosphere, weather, and climate.

Environmental physics brings together a deep understanding of all the physical properties at work on our planet.

Studying environmental physics at the University of Auckland means you'll learn in an environment that is ranked first in New Zealand.

Prerequisites

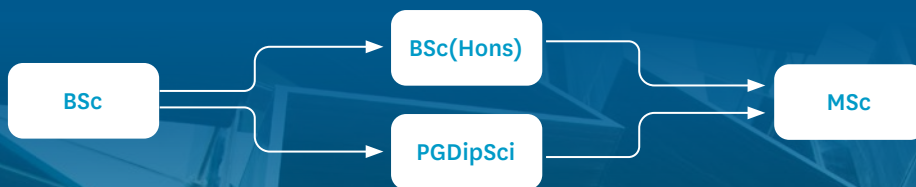
If you're interested in studying Environmental Physics with us, you will need to have taken physics and mathematics at high school. Geography, chemistry and statistics provide helpful background knowledge, but they're not essential.

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:

- Computer Science
- Earth Sciences
- Environment Science
- Geography
- Mathematics
- Physics



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Career opportunities

A workforce addressing the future

Important questions about the future of climate, energy, geohazards, and drinking water require a workforce that is well-versed in the different aspects of Environmental Physics.

As an Environmental Physics graduate, you are trained in a variety of disciplines during your studies. These include mathematical modelling, statistics, physics and computer science, and can lead to a variety of career paths.

Our graduates can be found researching the geophysical processes involved with climate, plate tectonics, earthquakes, volcanoes, the oceans and our atmosphere.

You can become an important part of a new Green and sustainable world, looking for solutions in sustainable energy and resource management.

Jobs for our Environmental Physics graduates include:

- Atmospheric scientist
- Energy industry consultant
- Geohazard researcher
- Ground and geothermal water exploration consultant
- Environmental and geotechnical specialist
- Mineral industry advisor
- Oceanographer

What you can study:

Climate

Structure and dynamics of the Earth

Natural hazards and resources

Oceans and atmosphere

Find out more

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

auckland.ac.nz/science/ug-environmental-physics

“I chose to take on two majors because my interests were so vast, I didn’t know what to pick! I am pleased I did. The two majors are so intertwined - analysing the Earth’s subsurface and surface processes using different tools and perspectives. “There is still so much unknown about the Earth’s processes, and this knowledge gap ignites my curiosity and passion that has motivated me to pursue postgraduate qualifications.”

Meegan Soulsby

BSc Environmental Physics



Read Meegan’s full story at:
auckland.ac.nz/science/meegan-soulsby



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Mātai Pūtaiao Taiao

Undergraduate Environmental Science

If you're passionate about protecting our natural heritage, mitigating the impact of human activity and solving environmental problems, then Environmental Science is the subject for you.

Is Environmental Science for you?

Environmental Science examines how humans interact with natural systems so we can better understand environmental problems and work toward a more environmentally sustainable future. Environmental Scientists are broadly trained and prepared to deal with complex and changing problems. If you are concerned about environmental issues, want to know more about the science underlying them, and are looking for a career where you can make a difference then Environmental Science is for you.

What you will learn

You will focus on local and global environmental problems, their underlying issues, and pathways to environmental solutions. You will work independently and in teams and use experiences in the field and lab to apply what you learn.

As an Environmental Science student you'll study biological and physical processes underlying environmental problems, use quantitative approaches for analysing environmental information, learn how to communicate environmental issues, and apply your knowledge for environmental decision making. You will also be exposed to indigenous knowledge and mātauranga Māori.

Skills you will gain

- Understanding, manipulating, and presenting environmental data
- Applying scientific methods for policy and management
- Modelling environmental systems
- Understanding and communicating environmental risk
- Teamwork for problem solving

Choosing a subject

With so many options it's sometimes hard to choose what you want to study, but we've got you covered. The broad nature of the degree and streamlined curriculum makes it work well as a double major.



Complementary majors include:

Biological Sciences
Chemistry
Earth Sciences
Geography
Marine Science
Statistics



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Career opportunities

A world of opportunity

The future is bright for graduate careers in environmental science, with opportunities in Aotearoa New Zealand and abroad. The knowledge and skills you develop during your study will help to prepare you for a range of different jobs including those in all levels of government, environmental officers and planners in a range of businesses, field and laboratory scientists in research centres, environmental consultants, iwi liaison and public engagement.

Depending on their career goals, our graduates often go on to do postgraduate study, and can be found employed in a very diverse range of careers throughout the business sector, government, education and non-governmental organisations. With a degree in Environmental Science you will be prepared for challenges outside the University.

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

- Environmental planner, Beca Group
- GIS technician, Cyient Emea
- Environmental manager, Leighton Contractors
- Co-editor and writer, Metal Temple
- Teacher, Rutherford College
- Environmental consultant, Tonkin + Taylor
- Kaitohu, Te Puni Kōkiri
- Environmental data analyst, Bay of Plenty Regional Council
- Researcher, AgResearch Ltd
- Policy Officer, Ministry of Foreign Affairs and Trade

What you can study:

Interactions between humans and environmental systems

Environmental change, including climate

Environmental modelling

Applied Ecology

Environmental contaminants

Communicating environmental issues

Water and Land Resources

Find out more

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

auckland.ac.nz/science/ug-environmental



“In my role at Auckland Transport, I lead and support teams to develop and deliver travel behaviour change programmes.

“These programmes aim to increase sustainable commuting and instil road safety awareness through engagement and partnerships with schools, communities, and internal stakeholders.

“The people I work with are very passionate in their work and are kind and supportive towards one another. Working in the public sector, I enjoy knowing that I am making a difference in people’s lives.”

Cody Lim

Master of Environmental Science.



Read Cody’s full story at: auckland.ac.nz/science/cody-lim

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Mātai Matawhenua Undergraduate Geography

Geographers ask questions about society and the environment. They study the natural processes of the physical environment, as well as the activities and consequences of humans in this environment.

What you will learn

Geography is exciting and relevant. You'll enjoy Geography if you're interested in the worlds around you and want to make a positive difference. Geography addresses a wide range of contemporary challenges such as: climate change and sea-level rise, dirty rivers, uneven economic development, sustainable communities, migration, housing and health policy, urban pollution, indigenous rights, and environmental management.

Geographers study places, human and physical interactions and the processes that shape those interactions. They explore why nations, regions, cities and communities develop differently in different settings, how landscapes are formed, how social, economic and natural landscapes are related, and how to make better worlds by responding effectively to human-environment problems.

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, or the experience of particular groups in society. Fieldwork is an important part of majoring in Geography – you'll undertake field trips to explore New Zealand's landscapes.

You don't have to have taken geography at high school to be able to study Geography with us. However, if you have taken high school geography you will have been introduced to some key concepts and skills, which you'll find beneficial. You'll also use written and oral communication skills in your Geography major, 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

Chemistry

Computer Science

Earth Sciences

Environmental Science

Psychology



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Career opportunities

A foundation for a host of occupations

Geography is exciting, challenging and relevant to today's world. Geographers study the natural processes of the physical environment, as well as the activities and consequences of humans in this environment.

A Geography degree gives graduates an edge. The skills you learn mean you can be found working in a wide range of occupations in an equally wide range of organisations. You might use your training directly in your workplace, or find the broad education and flexible skills are in high demand in the wider job market.

You may specialise in coastal, glacial or fluvial processes and landforms, climatology, biogeography, hydrology or environmental change. Or you could find yourself exploring the transformation of urban places, globalisation and

its effects, migration and population change, or issues of ethnicity and identity. You could also specialise in spatial analysis, bringing the power of geographic information science to bear on a wide range of research problems.

Our Geography graduates have been employed in the following jobs:

- Planning services, Beca Group
- Geospatial specialist, Auckland Council
- Sustainability and climate change team, PwC
- Coastal scientist, Tonkin + Taylor

Other positions and roles include:

- Policy and planning
- Environmental and resource management

What you can study:

Weather, wave, tide and river monitoring and analysis

Demographic and economic analysis

Mapping, cartography and geovisualisation

Analysis of soils and sediments

How to interpret physical and cultural landscapes

Find out more

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

auckland.ac.nz/science/ug-geography

“Geography is such a fantastic subject in that it is broad and covers a wide range of courses from climatology to socio-economic change.”

Courtney Simpson

BA Geography, BSc (Hons) Geography, MSc Environmental Management.



Read Courtney's full story at:
auckland.ac.nz/science/courtney-simpson



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auckland.ac.nz/science/ug-geography

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Mātai Pūtaiao Kōrero Matawhenua

Undergraduate 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). GIScience is the study of the data structures and techniques used to capture, process and visualise geographic information.

What you will learn

As a GIS student you'll be taught 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. You'll use modelling techniques to analyse data intensive contexts, and you'll try to answer questions like:

- What is the relationship between urban inequality and disease?
- What are the effects of sea level rise on coastal areas? How do resources flow across a busy transportation system?
- What are the risks of exposure to air pollution?
- How to map crime hotspots?
- What are the flood and landslide risks in different areas of New Zealand?
- What would be the best location to build a new wind farm or a hospital in the country?

- What does human movement tell us about disease transmission?
- What can we do to understand social dynamics and can we predict and map the effects of climate change?

This undergraduate major will provide you with the knowledge and skills to design and conduct appropriate analyses, and experience of working with cutting-edge tools and datasets. GIScience will also help you tackle the hardest challenges facing society.

You don't need a background in geography or computing at high school to study Geographic Information Science with us. The major embraces the latest GIS technologies and ways of thinking to enable you to apply your knowledge from a range of subjects.

First and second year courses do not have prerequisites but the third year courses build upon the knowledge gained in year 1 and 2. The program can be entered at the second year level without prerequisite knowledge.

Choosing a subject

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Complementary majors include:

Computer Science
Earth Science
Environment Science
Geography
Marine Science
Statistics



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Career opportunities

A career for a rapidly changing world

It is estimated that 80% of data collected has some spatial component, whether it's a city name, a street address or even a precise set of co-ordinates.

Professionals in a wide range of fields use GIS tools to turn geographic data into maps, tables and other kinds of information needed to make informed decisions.

In a rapidly changing world, detailed, up-to-date geographic data are indispensable for governance, for commerce, and for research intended to improve our understanding of social and environmental systems.

As a GIScience graduate you'll possess sound theoretical knowledge and be able to demonstrate independent technical proficiency across the social, ecological and physical domains of GIScience application.

You could be employed by a large corporation or a local, regional or the national government. You could also work as a consultant with plenty of opportunities for travel.

Jobs related to Geographic information Science include:

- Cartographer
- Climate scientist
- Conservationist
- Data scientist
- Geographer
- Geospatial database developer
- GIS Analyst
- GIS technician
- GIS software developer
- Mapping and surveying technician
- Spatial data scientist

What you can study:

Spatial thinking

Geography of the human environment

Earth surface processes and landforms

Programming techniques

Remote sensing

Find out more

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



“I have been able to understand and investigate the world’s complex natural and social processes, the problems we face into the future, and most importantly, how we can be the solution.

“Even if you have many passions, you’ll be able to gain new insights and ways of showcasing them through learning and understanding GIS, as there are so many opportunities to use creativity and merge your own ideas and interests into practical assignments. It’s such a broad field and although the courses scratch the surface into each aspect, if there’s any software or technical skills you enjoy, I would encourage you to enhance them in your own time and supplement your learning that you receive in the programme - assignments often don’t have boundaries, and they let you explore and go outside the box.”

Taryn Smith

BSc in Geographic Information Science and Environmental Science.



Read Taryn’s full story at: auckland.ac.nz/science/taryn-smith

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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.

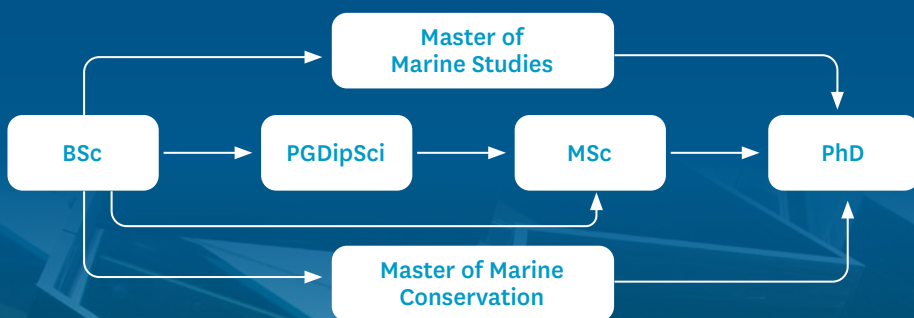
You don't have to have taken any particular subject at high school to study Marine Science with us. However, biology, chemistry, geography, physics, mathematics or statistics will provide you with helpful background knowledge. You'll also use written and oral communication skills, so high school English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